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THE ULTIMATE GUIDE

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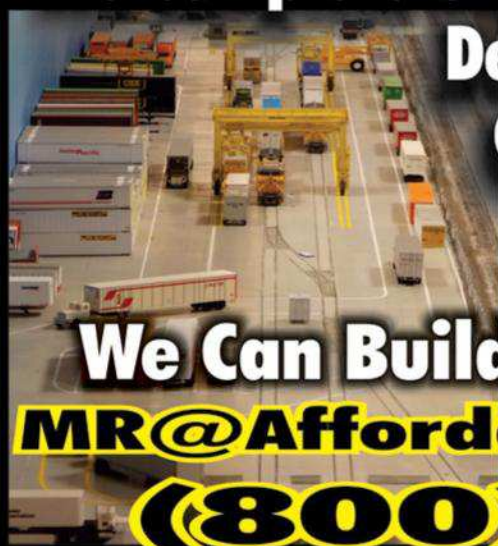
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THE ULTIMATE GUIDE

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I get free video?

You bet! In fact, when we created *The Ultimate Guide*, video was at its heart.

You see, we make a lot of video for *Model Railroader* magazine's subscription video website, MR Video Plus. And we felt that it was a shame that many of those great topics never make it into print.

Video is an incredible tool for explaining how to do things. Seeing how to apply a weathering coat to a boxcar or attach leaves to a model tree makes it much easier to learn the technique. However, there are still some things that print does better. It's much easier to pore over a printed track plan or follow construction drawings when you can lay them out on the table in front of you.

The Ultimate Guide gives you all the benefits of video and print in one package. Each of the stories in this magazine has a corresponding video for you to watch on MR Video Plus. To make it easy, we've grouped them as a playlist at MRVideoPlus.com/TUG1. You can choose which one you'd like to see, or play all of them straight through. Feel free to watch them as many times as you'd like.

And if you enjoy the videos that come free with *The Ultimate Guide*, consider subscribing to MR Video Plus. Every month our friendly team of experts create new videos exclusively for MRVideoPlus.com, and you won't want to miss a single episode.

— David Popp

(the guy over there)

What does the well-dressed video producer wear?



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Producer
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Associate Editor
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Contributor
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Contributor

A. David Popp
Kent Johnson
Benjamin Lake
Jenny Maaske
Gerry Leone
Charlie Conway
Kathy Millatt
Cody Grivno
Eric White
Tony Koester

Phone
E-mail
Fax

262-796-8776
MRVP@mrvideoplus.com
262-796-1142

The Ultimate Guide Art & Production Team

Art Director
Senior Graphic Designers

Thomas G. Danneman
Scott Krall
Drew Halverson
Rick Johnson
Jeff Wilson
Cindy Bader
Chuck Braasch

Lead Illustrator
Managing Editor
Production Specialist
Endbug Designer

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Model Railroader Video Plus is a subscription video website that provides programming on all things model railroading. Want to learn how to build a layout? We've got videos about that. How about programming a Digital Command Control locomotive? We've got that too. Wonder how the real railroads move trains over the line? We cover it! We have more than 1,000 videos on the MR Video Plus website, and every month we add even more exclusive new videos for our subscribers to enjoy. Check out MRVideoPlus.com and become a subscriber today!

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The awesome MRVP Crew



Really, REALLY loves denim!

Kent Johnson
Associate Producer

JOB: Pretty much directs everything we do
FAVE: Shrimp pizza
FACT: Has performed with a Grammy award winning artist



Custom-builds PCs for fun!

iPad is surgically attached

Sketchers – MRVP studio shoe of choice

Ben Lake
Associate Editor

JOB: Makes everyone else look good
FAVE: Netflix "The Crown"
FACT: Not named after Benjamin Lake, Oregon, Minnesota, or Arkansas



Designer sweater bought in Chicago

Boots from Wet Seal

Jenny Maaske
Assistant Editor

JOB: Edits everything!
FAVE: Jalepeño Cheddar Cheetos
FACT: Has 203 pictures and 39 videos of her cat on her phone

His beloved Paasche H airbrush

Survived 200+ episodes of Cody's office



Cody Grivno
Associate Editor

JOB: Cody's Workshop
FAVE: Johnny Carson re-runs - "Heeeere's Johnny!"
FACT: Met wrestlers Baron von Raschke and Jesse "The Body" Ventura



The trusty Canon

Caution: Do NOT take flying!

Drew Halverson
Senior Graphic Designer

JOB: Drew's Trackside Adventures
FAVE: Snowy Owls
FACT: Named after Los Angeles Rams wide receiver Drew Hill



Favorite Dr. Who: Tom Baker

Had same mustache for 44 years

Gerry Leone
Contributing Editor

JOB: Off the Rails
FAVE: Monty Python & The Holy Grail (he's seen it, like, 50+ times!)
FACT: Lead guitar for an 80's rock band for 20 years



Nickname: Run-and-gun Ninja

This camera is better than a 6-man crew

Charlie Conway
Contributing Editor

JOB: Taking Care of Business
FAVE: De Havilland Beaver on floats (sorry Bessie!)
FACT: Former Alaskan bush pilot



Self-confessed chocoholic

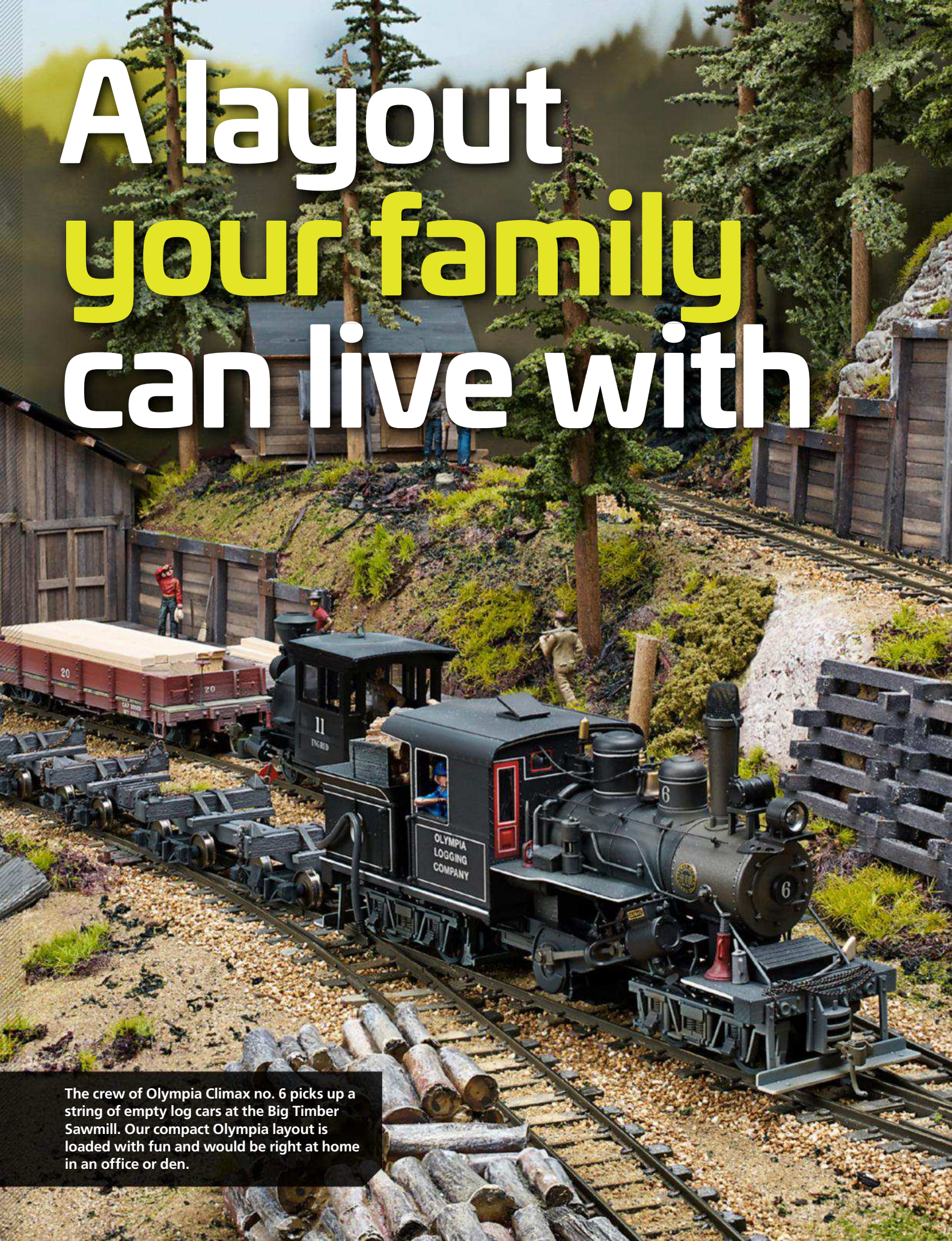
Works best in fuzzy slippers

Kathy Millatt
Contributing Editor

JOB: Let's Make a Scene
FAVE: Loves to play Halo
FACT: Has travelled to 30 countries and been to 35 U.S. states

+ FREE on MRVP!
Learn more about our cast of characters at MRVideoPlus.com/TUG1

A layout your family can live with



The crew of Olympia Climax no. 6 picks up a string of empty log cars at the Big Timber Sawmill. Our compact Olympia layout is loaded with fun and would be right at home in an office or den.



Our On30 Olympia switching layout is built to fit most living spaces.

by David Popp

So you want to build a railroad, but you're having a hard time finding dedicated space for a layout room? If that's your situation, consider building a shadow-box layout, such as our O scale narrow gauge Olympia logging railroad.

Our design places a compact model railroad inside a pleasing museum-type display case. When complete, the self-contained layout looks at home in the corner of any office, den, or rec room. And it's built on wheels, so you can roll it into the room when you want to run trains, and set it against the wall when not in use.

Meet Olympia

Our project centers on the fictitious Olympia Logging Co., but follows common industrial narrow gauge railroading practices. It can be set just about anywhere that you would find rugged forested countryside.

Olympia's primary purpose is to pull carloads of cut timber from the lumber camps and deliver them to the company's sawmill. The railroad then hauls the cut boards out of the forest for trans-loading onto standard gauge cars.

The railroad also keeps the mill and the camps supplied with provisions.

Small can be big

Despite its compact 22" x 78" footprint, we built the layout in O scale to take advantage of the larger models' high level of detail. Because O scale narrow-gauge rolling stock is roughly the same length as standard-gauge HO models, the larger scale's trains easily fit into the smaller scale's space.

That space also includes highly detailed scenery. Tall elements such as trees and cliffs make the scene appear larger. And although the trains are narrow gauge, the structures, figures, and details are standard 1:48 proportion models;

On30 Q&A:

• Is on30 still O scale? Yes. Structures, figures, and other details are all regular O scale models.



in O scale, everything from the trains to the trees has more fidelity just because it's larger.

The end result is a compact model railroad that looks right at home with the rest of the household.

WATCH THIS ON



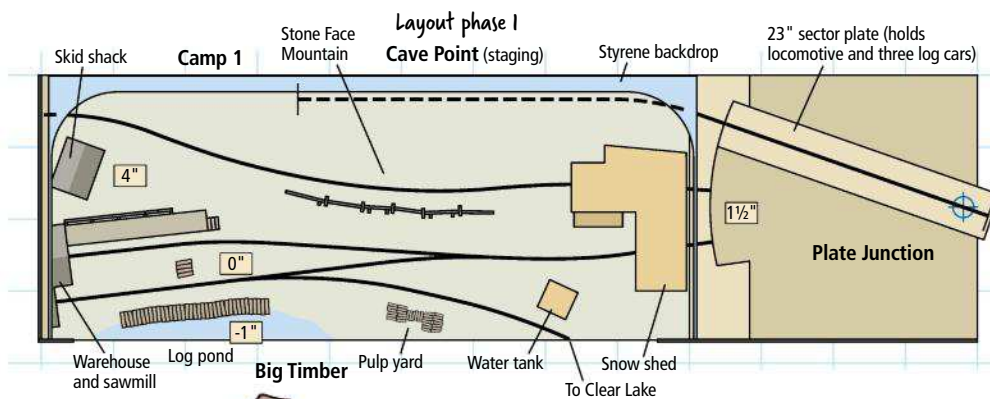
Free Video!

See the Olympia Logging Co. layout in action at MRVideoPlus.com/TUG1

>> It all goes into the box

Track plan at a glance

Name: Olympia Logging Co.
Scale: On30 (1:48 narrow gauge)
Size: 22" x 78"
Minimum radius: NA
Minimum turnout: Peco On30 code 100
Maximum grade: 6.9 percent
Height: 40"



Olympia Logging Co.

O scale (1:48)
 Layout size: phase 1 – 22" x 78"
 phase 2 – 24" x 78"
 Scale of plan: 3/4" = 1'-0", 6" grid
 Illustration by Rick Johnson
 Find more plans online in the ModelRailroader.com Track Plan Database.

The plan for our Olympia layout depicts three distinct places, a logging camp, a sawmill, and a junction with a Class-1 railroad.

At the top of the hill is the logging camp, which straddles the single-track line. While just the tip of the camp is modeled, represented by

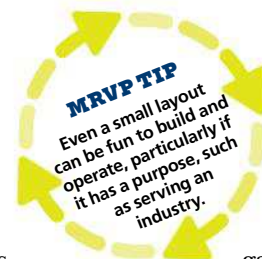
a lone skid shack, the track wraps around behind the shack and through the trees, giving the impression that the rest of the operation, such as

loading logs on to cars, extends beyond this point.

On the lower level there is the warehouse, a log pond, and a water tank. There's also a station for loading pulpwood cars.

There's no run-around track here, so the logging company keeps a tiny Porter switcher at the mill to assist in moving cars around the complex and making up outbound trains.

The third track is a hidden staging track, extending under Stone Face Mountain. This track represents the Olympia's connection with a standard-gauge railroad and the outside world. Lumber and other materials would be



transferred between the narrow-gauge and standard-gauge

cars at this location. The hidden track isn't really hidden at all, as it is open at the back of the layout and used as a fiddle track. We added a re-railer to ours, making it easy to swap cars and make up new trains.

At first glance, the track plan seems fairly sparse. But keep in mind that logging locomotives are typically geared and move slowly as they switch cars, and that's where the fun is anyway.

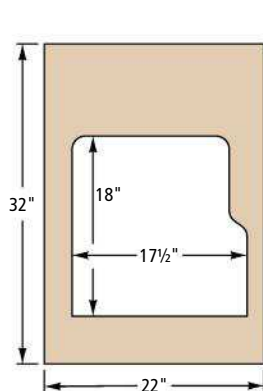
+ MORE on MRVP!

We can't show you everything you need to know to build Olympia in this story, but by subscribing to MR Video Plus, you can watch more than 40 videos covering all construction aspects.



Ingrid, Olympia's tiny switcher, awaits her next assignment by the water tower. The extra engine, based at the sawmill, eliminates the need for a space-eating runaround track.

>> Beautiful benchwork

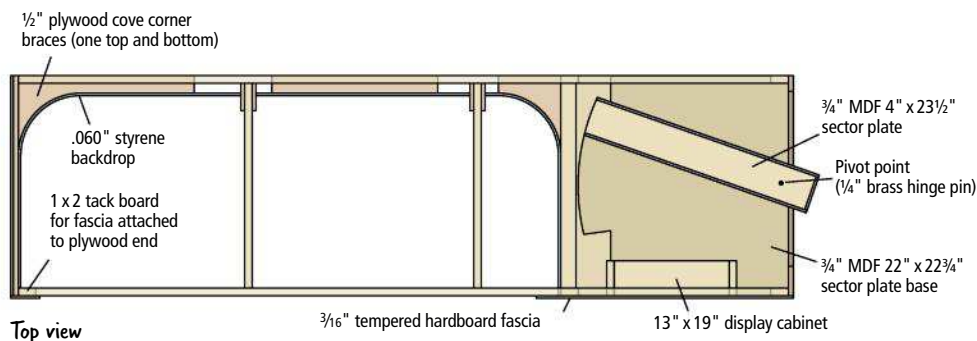


Plywood end panels

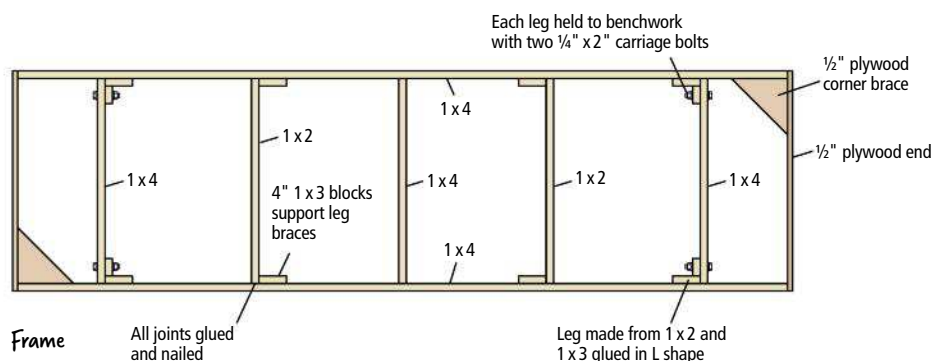
1/2" plywood

Scale of drawing: 3/8" = 1 foot

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Top view



Frame

To fit in with the rest of the household, the benchwork for Olympia needs to have a certain furniture quality to it. We made our layout from clear board stock. The frame is made with 1 x 4s, and the cross members are a mix of 1 x 2s and 1 x 4s. The

ends of the frame are made from 22" x 32"-1/2" plywood end panels. These also form the main supports for the shadowbox, as explained in the next section.

We built the legs from 1 x 2s and 1 x 3s glued at right angles to form Ls. The legs

and their 1 x 2 angle braces attach to the frame with 1/4" carriage bolts and can be easily removed for transport. We installed 2" castors on the bottom of the legs so that the layout can be rolled around the room as needed.

The only part of the layout's frame-work visible from normal viewing angles is its legs. We left ours bare pine, but they could also be painted or stained. And you could swap out the legs entirely with a rolling cabinet or a bookcase, providing for extra storage space.

We made the subroadbed from 1/2" plywood. To support the plywood, we cut scrap pieces of one-by material into risers. We glued the risers

Benchwork materials list

Legs

- ☐ 1 x 3 - 8' (3)
- ☐ 1 x 2 - 8' (3)
- ☐ 1/4" x 2" carriage bolt (8)
- ☐ 1/4" x 3" carriage bolt (4)
- ☐ 1/4" washers and wing nut pairs (12)
- ☐ 2" locking swivel casters (4)
- ☐ no. 10 x 1" pan-head screws (16)

Frame

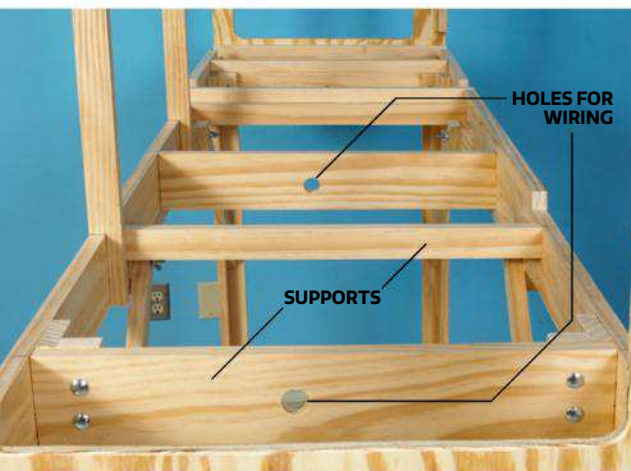
- ☐ 1 x 4 - 8' (3)
- ☐ 1 x 2 - 6' (3)
- ☐ 4 x 8 - 1/2" plywood (1)

Sector plate

- ☐ 2 x 4 - 3/4" MDF (1)
- ☐ 2 x 4 - 1/4" tempered hardboard (1)
- ☐ 1/4" x 3" brass hinge pin (2)

Shadow box

- ☐ 4 x 8 - 3/16" tempered hardboard (1)
- ☐ 1 x 2 - 8' (4)
- ☐ 1 x 2 - 6' (2)
- ☐ 1 x 3 - 6' (1)
- ☐ 12 1/2" x 18 1/2" Plexiglas sheet (1)
- ☐ Small brass hinges (2)
- ☐ Magnetic cabinet latch (1)



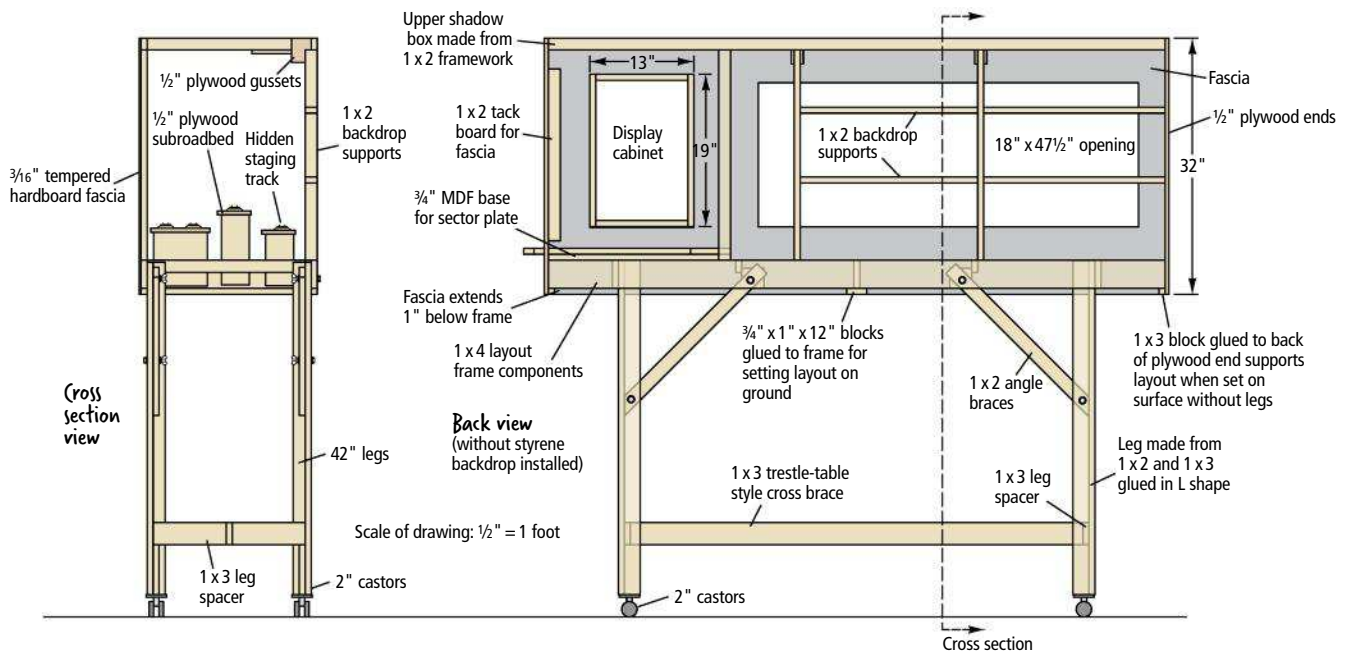
Holes provide access for the wiring, and scrap pieces of one-by boards support part of the subroadbed.

directly to the tops of the frame and cross members. The frame also supports the sector plate, as explained

in a following section.

Although simple, the box frame and its legs makes a sturdy layout platform.

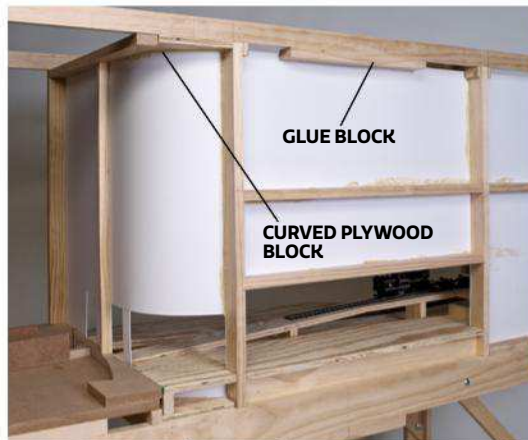
>> Shadow box and backdrop



David shows off the Olympia's benchwork and shadow box frame. The plywood end plates have openings to allow for access to the sector plate and future expansion.



This view of the back of Olympia shows the .080" styrene backdrop after David and Kent glued it to its support framework of 1 x 2s.



The shadow box and its backdrop create the layout's diorama quality, and it proved fairly easy to make. As shown in the illustration, I used a simple 1 x 2 frame to connect the tops of the plywood end plates. I then faced the front and left end of the layout with 3/16" tempered hardboard and painted it semi-gloss black.

To fill the big blank space in front of the sector plate, I built a display case. The shallow case is made from a frame of 1 x 3s with a 1/4" groove cut into the ends so they can hold a recessed pane of 12 1/2" x 18 1/2" Plexiglas. The frame also has notches cut into it to hold two shelves. I made a door for the back of the case

from 3/16" hardboard, mounting it with small brass hinges and a magnetic cabinet latch.

On the back of the shadow box are two vertical 1 x 2 backdrop supports and two sets of cross members, plus an additional support between the sector plate and the layout. Although I thought this arrangement would make a good lightweight frame to support the .080" styrene we used for the backdrop, it turned out to be more trouble than it was worth. On another version of this layout I substituted the backdrop frame for a sheet of 1/4" plywood, which supported the thin styrene much better.

>> Build a sector plate



TOP: The Olympia's sector plate connects to any of the layout's three tracks. The 23" plate will hold a locomotive and three log cars.

LEFT: This view looking down the sector plate shows how it connects the three tracks. Turnouts would have required a much longer run.

To connect the

staging, sawmill, and logging camp tracks, we installed a sector plate.

A sector plate is a movable section of track that rotates on a pivot at one end. It is a simple but effective means for transferring entire trains from one track to the next.

Sector plates are also real space-savers. Ours takes up about a third of the space we would have needed to connect the staging, camp, and mill tracks

using turnouts. As shown above, our 23" sector plate can accommodate one locomotive and three log cars, which is perfect for the size of our railroad.

However, you can make a much bigger sector plate, should you have the space available for longer trains.

The plate is made from $\frac{3}{4}$ " MDF – a durable composite

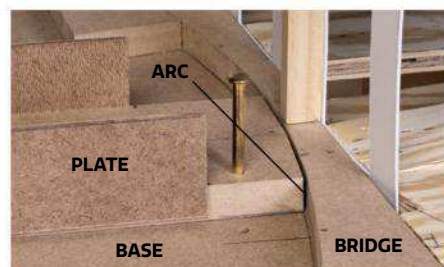
construction material. One piece of MDF forms the base. The movable plate is also a piece of MDF, and we sided ours with $\frac{1}{4}$ "

tempered hardboard walls to keep the trains from falling off when swinging it into position.

The plate connects to the rest of the layout by means of a bridge, which is another piece of $\frac{3}{4}$ " MDF

QUICK FIX

A sector plate is an easy way to connect hidden tracks, and it uses far less space than ordinary turnouts.



The finished bridge was attached to the $\frac{3}{4}$ " MDF base with carpenter's glue. The end of the plate is cut in a matching arc.



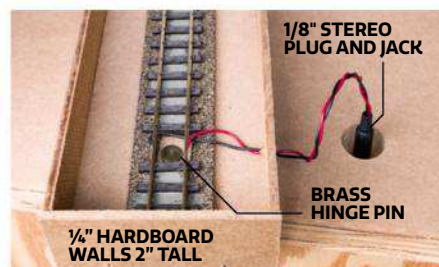
Once the plate was installed, the MRVP team laid the Peco code 100 On30 flex-track, making sure to line up the rails.

with an arc cut into it to accommodate the swing. We used $\frac{1}{4}$ " brass hinge pins for both the pivot and the stop index, as shown in the photos.

The MDF is very smooth, and the plate slides over the base easily. We installed a $\frac{1}{8}$ " stereo plug and jack on our sector plate to make the electrical connections. By removing the stereo plug from its socket, the plate can be lifted off the layout for travel or for easy cleaning.

On30 Q&A:

- What is it? On30 scale narrow-gauge trains that run on 30" gauge track (the same width as H0 scale track). Some modelers and manufacturers call it on2 $\frac{1}{2}$.
- Why is it important? On30 allows you to run larger models in about the same space as H0 trains.

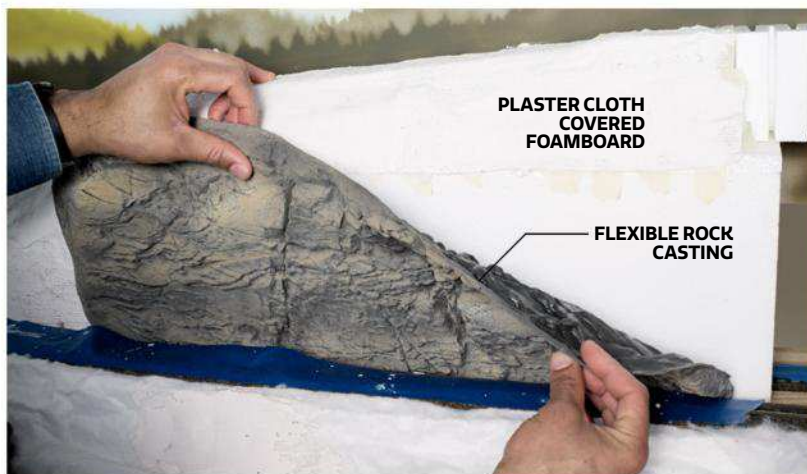


The plate is removable, thanks to the $\frac{1}{4}$ " brass hinge-pin pivot and an $\frac{1}{8}$ " stereo plug and jack for power.

>> Rock'n scenery



This massive rock face is a focal point on the layout. The MRVP team used latex house paint to blend the rocks together.



Kent used a Cripplebush Valley Models granite no. 4 rubber rock casting for the centerpiece rock face on the Olympia layout.



Using a various knives, David sculpted the surrounding rocks from Sulptamold to match.

The large, exposed rock face at the center of the layout is a focal point, and we wanted it to make a big first impression on the viewer. Instead of casting plaster rocks for this important feature, MRVP's Kent Johnson purchased an 8" x 22" rubber rock casting from Cripplebush Valley Models (cripplebush.net). The rubber cast-

ing featured beautiful detail, and because it's flexible, it conformed nicely to our extruded foam scenery base. Kent cut the casting into three large pieces and then cemented them to the scenery with latex caulk.

The rubber casting didn't cover all of the rockwork the layout required.

David stepped in and made similar rocks using Sulptamold. This papier-mache like material consists

of paper fibers and plaster. David troweled the Sulptamold onto the surrounding surface. Then,

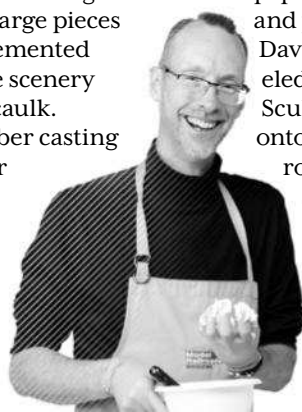
while the material was still damp, he carved the Sulptamold with various knives to blend it in with the rubber rocks.

To finish the project, David painted all of the rocks (rubber and Sulptamold) with a base coat of dark brown latex house paint. Once

+ **MORE on MRVP!**

Subscribers can watch Olympia Logging Series parts 20-22!

the base coat had dried, he then applied lighter grays and browns over the surface in light coats, until he achieved the look shown in the photo.



David says...

"Never think of scenery as permanent. Be willing to try something over."

>> Lights, trees, and more...



Although the modeled portion of Olympia measures just 22" x 54", the layout looks as though it's part of a larger world.

Without lighting, the shadow box would be very dark. We used two LED rope-light sets to illuminate the layout. The LEDs provide a lot of light and are very cool to operate. We mounted them to strips nailed to the top of the cross members at the top of the shadow box.

To simulate distant hills, we had our artist friend Jay Smith paint simple trees on the backdrop with his

airbrush. Jay used two colors of green paint, and he made his own cardboard templates. The key to Jay's technique is to hold the template away from the backdrop about 1/4" to make the edges of the treetops fuzzy.

The model trees on the railroad are assorted sizes of lodgepole pines from Grand Central Gems. We drilled small holes in the bases and added brass rod mounting pins.

Once all of the big scenery work was finished, we added several small wood kits to the layout, including a skid shack at the lumber camp, a small water tower, and a warehouse. The large snow shed effectively hides the holes in the backdrop that lead to the sector plate.



Homemade cardboard templates, two colors of green paint, and an airbrush are all we needed to paint the trees on the backdrop.



What's a logging railroad without trees? Grand Central Gems lodgepole pines grace the rocky ridge, and many extend above the viewable scene.

Try This!

Cool and cost effective, the MRVP team used LED rope lights to illuminate the modeled parts of the Olympia.



+ MORE on MRVP!
Subscribers can watch Olympia Logging Series part 19!

>> One way to run a railroad

TRAIN OF SUPPLIES AND WORKERS

CARD: RESUPPLY THE CAMP

STACK OF JOB CARDS

Thanks to a simple card-activation system, the Olympia provides hours of fun. Looks like the logging camp needs supplies!

Logging railroads

aren't quite the same animal as a typical Class 1 main line, which most often runs its trains on set schedules. Instead the Olympia is an industrial railroad, and its train movements are dictated entirely by the needs of the industry it serves.

If the sawmill requires empty flat cars to load lumber, the crew delivers them as

soon as they can get the cars from storage. When supplies are needed at the lumber camp, the crew picks up a boxcar from the supply depot and hauls it into the woods.

And when the next batch of cut timber is ready to go to the log pond, the train crew



heads out to the camp, collects the cars, and runs them to the sawmill.

Although each task on the railroad may be routine, the order in which they occur varies widely from day to day. For a small model railroad like the Olympia, this type of operation keeps the switching work interesting. No two operating sessions will be exactly alike.

To simulate that activity, we've devised a simple card-activation system for running the Olympia. Each job card depicts a particular task to perform and what cars are needed.

For example, let's say the operator has drawn a card to switch the log camp. The crew picks up



We installed simple shelves above the staging track to store cars waiting to go out.

their locomotive in the staging track and runs up the hill to the camp. There they are required to collect any loaded cars and haul them back down the hill to the sawmill. When complete, the crew returns to its base of operations at Plate Junction (the sector plate) and then draws the next job card from the deck.

There are 13 cards in all, but some are

duplicated to represent tasks that occur more frequently than others. You can see the process in the video Olympia Logging Series Part 40 on MR Video Plus. Under the video is a PDF that has all of the operating cards and simple instructions to get you started.

Starting positions

- Engine starts at Plate Junction
- Camp 1 gets two log cars (one loaded, one empty)
- Big Timber gets two log cars (one loaded, one empty) and one empty gondola
- Tank engine (stationed at Big Timber) starts at water tank

One operating turn

1. Draw a Job Card
2. Perform the card's actions
3. Return engine to Plate Junction
4. Perform work: load or unload cars

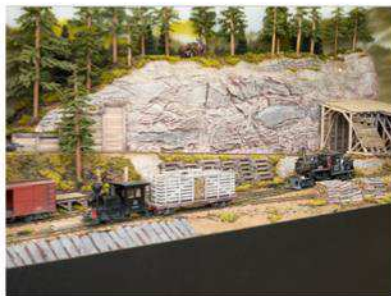
>> Three examples of turns

Example 1 – Pulpwood Run

Pulpwood Run

- If loaded pulpwood flat is at Big Timber, pick it up and deliver it to Cave Point
- Or if no pulpwood flat at Big Timber, pick up empty at Cave Point and spot it on pulpwood track

The pulpwood run card gives us two choices – one if there is a loaded car at Big Timber and one if there isn't. As shown in the photo, there is a loaded car on the track, so we can follow the first option on the card. Since there is no run-around track here, we



need help to place the car behind the locomotive for its trip to Cave Point. We can use Big Timber's tank switcher to pull the car and place it on our train.

Example 2 – Special Order

Special Order

- Pick up one empty boxcar or gondola at Cave Point, along with the caboose
- Deliver the empty car to Big Timber loading dock, then return the caboose to Cave Point

Our second job card example calls for a special order lumber car. This means that the mill has a rush job to fulfill, perhaps some custom-cut specialty boards for a good customer. This card has two actions for the crew to complete – pull a car from Cave Point plus the caboose (we can imagine



company officials are along for the ride), then deliver the car to Big Timber. In the photo, the crew is just spotting the empty boxcar (indicated by the open door) before heading home.

Example 3 – Switch log pond

Special Order

- Pick up all empty log cars at Big Timber and return to Cave Point (maximum 3)

This time our job card has a single instruction – pick up all empty log cars from Big Timber and take them to Cave Point.

In the photo, our engine has tied on to the three empty cars and is about to pull them off to Plate Junction. The fourth car in line will stay behind, as it is still loaded with logs for the mill. But even if it were empty, the card says we are limited to three – that is all that we



can fit onto the sector plate!

Card-activated operation is a fun and flexible way to run a railroad, and you can adapt it to many different types of switching layouts. 🖱️

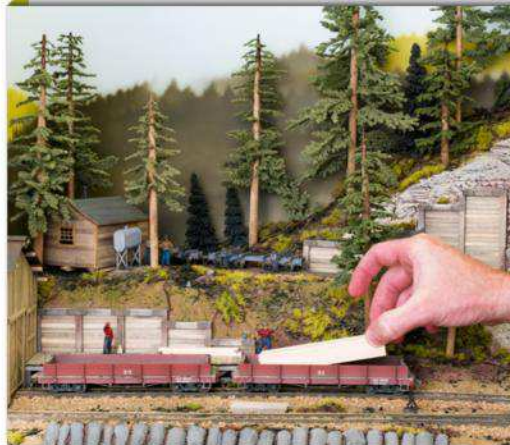
Working for the company

The last phase of an operating turn is called “perform work.” This simulates the time it takes for the logging company employees to load or unload cars during their workday. You can establish any number of turns to be a workday, but we found that six is a good number.

With each turn, employees can load or unload two log cars or gondolas or one of each. Or they can use the turn to load or unload a single boxcar, tank car, or pulpwood car.

We've simulated loads in several ways. Logs, pulpwood, and boards are simple loads to make and easy to install by hand in open-top cars. Our boxcars have movable doors, making those even easier – an open-door car is empty and a closed-door car is loaded.

Tank cars are tricky, having no doors or open loads. We used a blue pushpin stuck into one of the stake pockets to depict a fully loaded tank car. When empty, the pushpin is removed.



A gondola is loaded with cut lumber at the sawmill during the perform work step.



The blue pushpin shows that this tank car is full of water and ready for pickup.

Build a bigger layout



As seen here, the 22" x 78" addition to the Olympia layout is well underway.

Doubling the Olympia provides more operation

by David Popp

No two ways about it, our Olympia On30 project railroad, as seen on the previous pages, is a compact model railroad. And while the little logging layout yielded a good modeling and operating experience, admittedly, with just a bit more space we'd have had a lot more options. So it should be no surprise that long before we'd finished building the first version of Olympia, I'd already started making plans for a bigger, better layout.

When space at the *Model Railroader* offices for former project railroads became a problem, I moved the Olympia to my basement and drew plans for an expansion.

I drafted several options, including one that made the layout L-shaped. Eventually I opted to simply extend the railroad in a straight line with a second 22" x 78" shadow box, effectively doubling its size.

The 13-foot run of the new Olympia pro-

vides space for all the things I couldn't fit into the first version, including a small sawmill, an engine service track, a trestle, and a logging camp. It also has extensive new trackwork and includes run-around spots on both the up-

per and lower levels. While I was at it, I replaced the 23" sector plate with a 31" model. The new, larger plate allows for switching longer trains between staging and the running tracks. It can hold a locomotive,

three log cars, and a caboose.

Growing pains

The expansion didn't come without a cost. Olympia's benchwork, trackwork, and scenery were not originally

+ MORE on MRVP!

The Log Blog is a monthly series on MRVP covering the expansion of the On30 Olympia Logging Railway.

David says...

Don't be afraid to make changes to an existing layout — it almost always makes a better model railroad.



WATCH IT NOW!



Free Video!

Watch an episode of the Log Blog for free at MRVideoPlus.com/TUG1

Fun Fact:

The old layout had just 2 turnouts. The new one has 9!

built with expansion in mind, and all had to be extensively modified. (Compare the track plans on pages 8 and 17 for details.) I needed to open the benchwork at the end of the layout to connect the new section, so I cut away the front support post, as well as some of the plywood end panel. I also needed to remove a large section of the styrene backdrop, which was a bit unnerving as I was unsure I could duplicate the paintwork done

by former Kalmbach illustrator Jay Smith.

As for the track and scenery, I've always enjoyed the look of the layout, so at first I tried to preserve as much of the original work as I could. Eventually, however, I realized I was trying too hard to save things I shouldn't be keeping. If the new layout was going to be successful, I had to let go of most of the foreground track and scenery, including the original log pond. Once I finally made that decision, it added a breath of life to the project and the new design fell into place easily.

Off and running

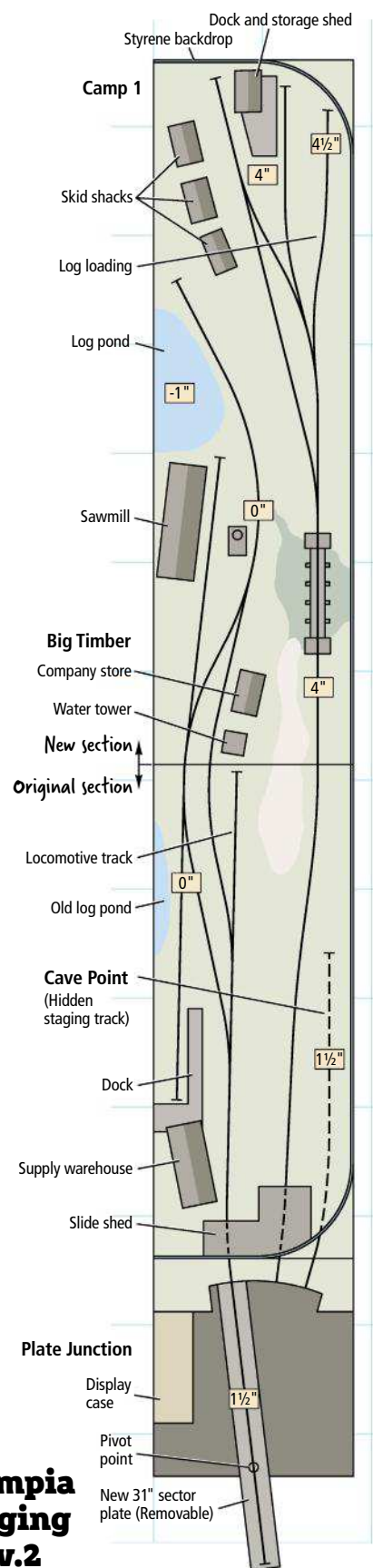
It didn't take long to discover that I'd made the correct decision. Once I could run a few trains on the new track, I realized that the modified layout provides much more fun than the old one. Even with the run-around tracks, switching is still challenging. And with more places to set out and pick up cars, there's more work to do. As a bonus, with

the addition of a full logging camp on the upper deck, the railroad can finally handle two operators at the same time.

Extending the Olympia has been rewarding, providing many enjoyable hours of model building and layout construction. If you're considering building your own version of Olympia, and you have the space for it, I highly recommend starting with the larger layout shown here. Don't get me wrong – the original layout is still fun to build, but in model railroading, even just a little bit more space can make a layout a whole lot better, and that has worked amazingly well on the Olympia. 🚂

Track plan at a glance

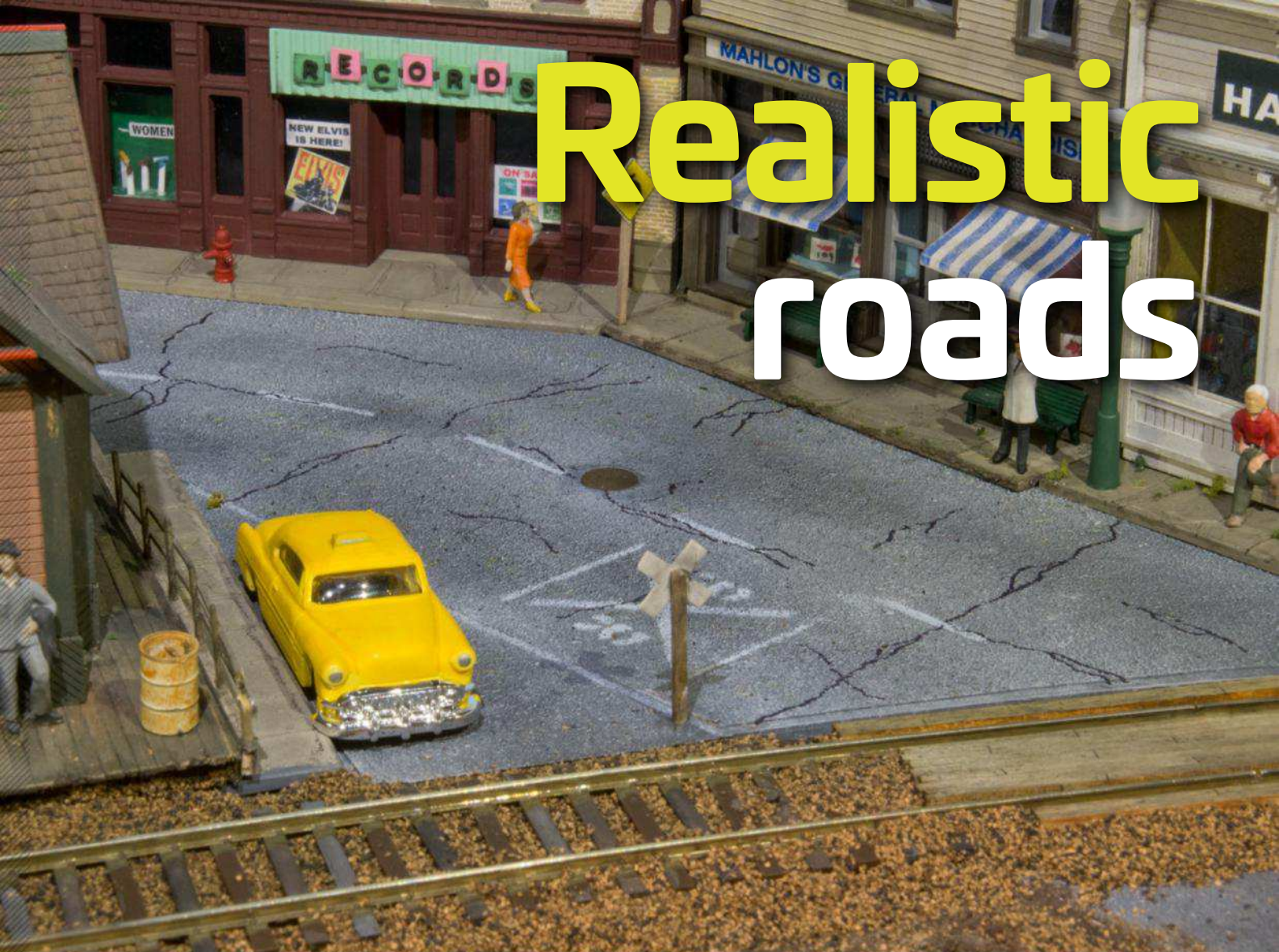
Name: Olympia Logging Co. v.2
Scale: On30 (1:48 narrow gauge)
Size: 1'-10" x 13'-0"
Minimum radius: NA
Minimum turnout: Peco On30 code 100
Maximum grade: 6.9 percent
Height: 40"



Olympia Logging Co. v.2

O scale (1:48)
 Layout size: 22" x 13'-0"
 Scale of plan: 5/8" = 1'-0", 12" grid
 Illustration by Rick Johnson

Find more plans online in the ModelRailroader.com Track Plan Database.



Realistic roads

Using sandpaper and paint to create realistic asphalt

by Gerry Leone

I've never been very happy with the way asphalt streets look on a layout, especially mine. They seem far too monochromatic – just a single shade of black or gray.

The distinguishing characteristic of older asphalt streets is the aggregate, the little white stones that show once the top layer of tar has worn away.

I did a lot of experimentation in an attempt to get the “white stone” effect. I tried painting styrene dark gray and lightly over-spraying it with light gray spray paint,

but the effect was too dense; with an airbrush it was too fine. Using chalks and pastels proved too uncontrollable. I even tried spraying Tes-tor's Dullcote on gray

foam core, hoping for a rough surface that would pick up a light dusting of pastels, but it didn't.

I finally tried dry-brushing paint over ordinary sandpaper.

Voila! The technique gave me the worn asphalt look I was after, and it even proved to be very easy to accomplish – building the streets right at my workbench.

WATCH THIS ON



Free Video!

See more of how Gerry turns sandpaper into realistic roadways at MRVideoPlus.com/TUG1

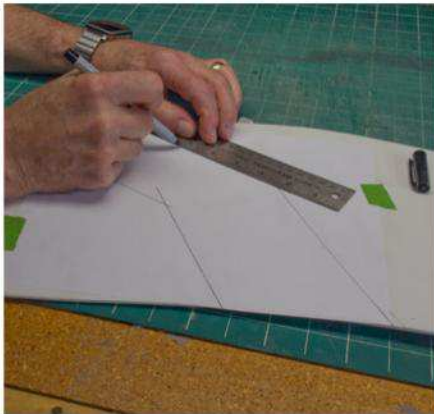
Before and After



Before: This is how the town looked before the streets were installed. Because I built and painted the streets on the workbench, I could install them on the railroad quickly.



After: Once I'd laid the streets, I finished the surrounding scenery. These techniques allow you to make streets for your own layout that look realistic enough to drive on.



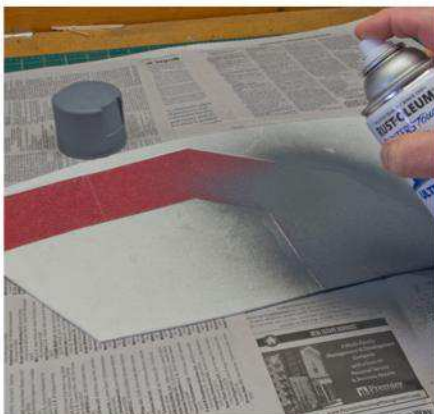
1 I began by laying out the street on a sheet of .060" styrene. This let me do all the painting and detailing at my workbench, rather than on the layout, and it gave the street a solid base.



2 I found 100-grit sandpaper works best. I cut it to the shape of the street, then spread Weldwood contact cement on both the styrene and sandpaper and let it dry for 30 minutes.



3 Once the contact cement had dried to the touch, I rolled the styrene and sandpaper together tightly. The contact cement keeps the sandpaper from curling when water-based scenery is added.

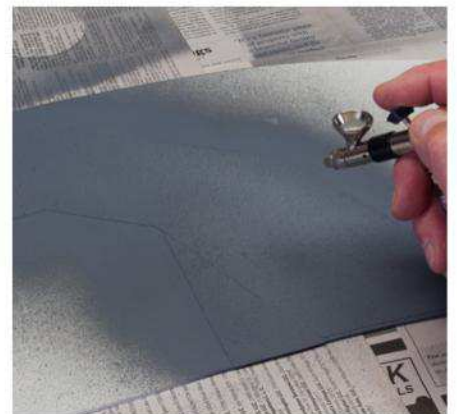


4 I sprayed the sandpaper with the base paint, Rust-Oleum Painter's Touch 2x Ultra Cover Flat Gray Primer.



Gerry says...

"It's a compromise: The 100-grit sandpaper aggregate is out of scale, but when you see it you can't help but think, 'asphalt street.'"



5 Next I diluted Vallejo Light Grey paint (1 part paint to 5 parts water) and randomly airbrushed some large streaks and patterns. Keep it subtle! This will add some visual interest and keep the surface from looking too uniform.



6 The key to getting the bare white stones effect is drybrushing. I used a fan brush and Vallejo Sky Grey, cleaning most of the paint off the brush on a piece of cardboard before very lightly applying it to the sandpaper.



7 I used Vallejo White to lightly dry-brush the lines. Ten-foot stripes with 30-foot gaps are standard, but I made mine shorter and tighter because it looked better in my little town. I masked the lines for $\frac{1}{16}$ " width.



8 I added manhole covers (white metal castings by Scale Structures) by using a $\frac{5}{16}$ " leather punch to make a hole in the styrene base. I painted the castings dark brown and glued them in place. Touch up the edges with gray paint.



9 I made the grade crossing markings using a brass stencil from S&S Hobby Products. I drybrushed the paint onto the road's surface, much like applying the stripes. It's very important that the stencil doesn't move while painting, so I secured it with blue masking tape.

MR Plus Tips!

- Even though the sandpaper is tactile, no one will ever really touch it. So the effect you get is completely visual: small, white stones on a dark gray background.
- Finer sandpaper doesn't have enough texture to grab the drybrushing and coarser sandpaper looks out of scale.
- When drybrushing the light gray, don't follow traffic patterns. Instead, use random strokes so the sandpaper grit picks up the drybrushed paint from all directions and angles. Practice before doing the "real" roadways.



10 To make cracks and tar patches I used a black fine-point Sharpie permanent marker, drawing lines parallel and perpendicular to the flow of traffic. The more cracks and tar lines you add, the older the street will look.



11 Joints between pieces of sandpaper can be effectively hidden with cracks and tar patches. You can also hide them with pedestrian crosswalk lines, as shown here.



12 Use a makeup sponge to add black and light gray pastel chalks in the direction of the traffic flow. This simulates oil drips and tire marks, helps tone down the black Sharpie tar lines, and ties the other weathering together.

Materials list

- ☐ 100-grit sandpaper
- Evergreen styrene**
- ☐ .060" Styrene sheet (no. 9060)
- Acrylicos Vallejo paints**
- ☐ Light Grey (no. 71.050)
- ☐ White (no. 70.951)
- ☐ Sky Grey (no. 70.989)
- Rust-Oleum**
- ☐ Painter's Touch 2X Ultra Cover Flat Gray Primer
- DAP**
- ☐ Weldwood Nonflammable Contact Cement (water-based)
- Pan Pastels**
- ☐ Black (no. 800.5)
- ☐ Neutral Gray (no. 820.5)
- Scale Structures Ltd.**
- ☐ Manhole covers (no. SS2333)

7

Great modeling tricks!



These tips can be used for a host of modeling projects on your layout

by Eric White

They started asking me to do things for Model Railroader Video Plus shortly after I joined the *Model Railroader* staff. First, there was a snow shed for the Olympia Logging layout. While I was at it, they had me build a sawmill too. Next the MRVP team filmed me weathering freight cars, casting plaster tunnel liners, and doing several other modeling projects.

Eric used some of the great modeling techniques he shares here to build this complex shop structure for our Eagle Mountain layout.

1 Don't stick to the plan



If you're going to build something, you need a plan. If you can have more than one plan, that's even better. It's often possible to assemble parts right on top of the plans, as I did on this Hunterline slide shed for the Olympia layout. Hunterline included a few copies of the bent diagram. If you make

photocopies, make sure they match dimensionally. Some copiers can distort the drawings.

I taped plans to a section of plywood and protected it with a layer of waxed paper. The soft plywood takes pushpins well, which hold parts in place. The waxed paper keeps glue from sticking to the paper.

WATCH THIS ON



Free Video!

Watch Eric demonstrate his shading techniques for free on MRVP! MRVideoPlus.com/TUG1

From stripwood to plaster, these projects required a variety of techniques. Each project taught me a little something, and if there's one thing I've learned in this hobby, the more modeling tricks you know, the better your finished models will look. Perhaps you'll find some of these tips useful for your next modeling project.

2 A dusty rusty finish



On the other end of the Olympia,

I built a low-relief saw-mill to disguise where the tracks run into the backdrop. I used leftover stripwood from the snow shed, but I wanted a corrugated metal roof. We had some Plastruct corrugated roofing in the shop, so I started by airbrushing the white plastic parts with Model Master Gunmetal Gray acrylic paint. I then went to town with AIM Products weathering powders (now available from Monroe Models). After coating the scale

4 x 8-foot panels in Light Rust, Dark Rust, and Grimy Black powders, I coated the pieces with Model Master Lusterless Flat spray paint.

After the clear flat was dry, I glued the individual panels onto the structure with carpenter's glue. Coating the individual panels with powder made it easy to get a variegated look to the roof. The powders also provided the rough texture I wanted for the metal roof on this backwoods building.

3 Grime never sleeps

Speaking of weathering powders, they're also excellent for weathering freight cars with minimal risk. I used the powders on the N scale cars for our Red Oak layout. If you don't like how the powders look on a car, soap, water, and a toothbrush will quickly

provide the real-life equivalent of CTRL-Z/undo.

Since the cars are small, I used micro brushes to spread the powder and cotton swabs to remove the excess. Most of the cars had a flat finish, but a few with a satin finish



required a shot of Testor's Dullcote to provide tooth to hold the powder. I used Grimy Black, New Rust, Old

Rust, Dark Earth, Medium Earth, and Medium Gray. I was careful to apply the powders in the direction of

water flowing over the cars. Once I was happy with how a car looked, I fixed the powders with more Dullcote.

4 Liner notes



Our HO scale Eagle Mountain layout has a tunnel on it. However, the mountain, being made from cardboard

webbing and plaster-impregnated gauze, is hollow. Therefore, the tunnel needed a liner.

The tunnel portal was

cast plaster, so I used plaster for the liner. To cast the liner, I built a mold using strips of styrene to simulate the wooden forms the prototype would use. Styrene is nice and smooth, making it easy to remove the castings from the mold without using a release agent. And the joints between the individual strips of styrene provided plenty of texture.

The photo at right shows my first casting. See all the bubbles? So did I, and I didn't like them. I tried again, mixing the Hydrocal to a thinner consistency,



much like pancake batter. Before it set, I held a power drill, sans drill bit, against the side of the form. I let the drill

chuck's fingers vibrate against the mold to release trapped air, which eliminated most of the bubbles.

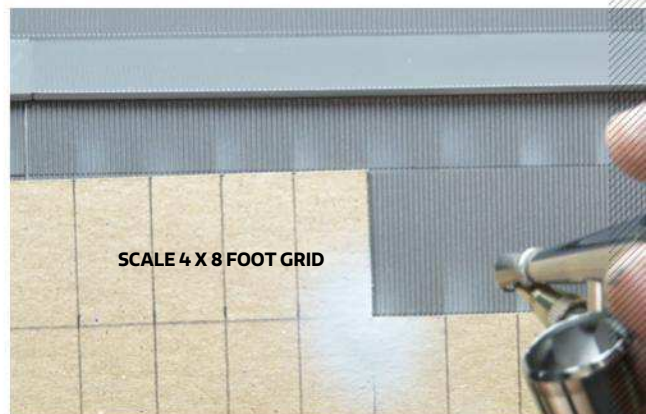
5 The shadows know

Also on the Eagle Mountain Railroad are several large buildings sheathed in corrugated metal. I used a Walthers rolling mill kit to get the material, which has good detail molded in. But I knew the large expanses of

gray siding would be rather dull, so I added some additional detail using paint and my airbrush.

My essential tool for painting shadow lines on the corrugated roofs and siding is an L-shaped cardboard mask with a

scale 4 x 8-foot grid drawn on it. After painting the walls with gray primer, I airbrushed light gray highlights and grimy black shadows using my mask. The grid made it easy to keep everything aligned. The highlights really play up the idea of the harsh sun in the layout's desert locale.



6 Up on the rooftop

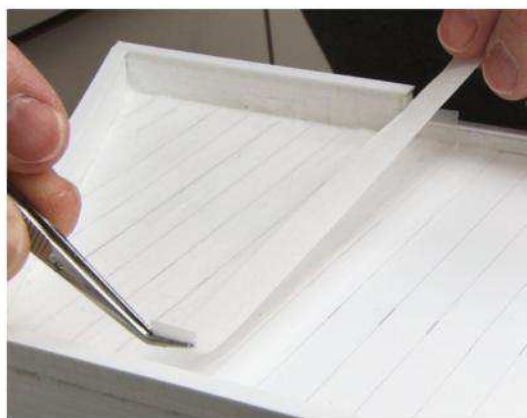


Flat roofs are common on industrial buildings, and there are many techniques for making them. For the icehouse

on the Winston-Salem Southbound, I used tracing paper to simulate rolled roofing. You can find the material at craft

stores in the drafting department.

The thin paper has a smooth finish and takes glue well. I used white glue for this project, and the paper conformed to odd roof shapes without wrinkling. A typical roll has enough paper to finish all the roofs on your layout, and your friends' as well ... unless one of your friends is Rod Stewart. That guy has a lot of roofs!



7 Mixing things up



Sometimes it's best to keep it simple.

Ben Lake did the heavy lifting on this project, turning a photo of a

1940s concrete mixer into a 3-D model using hours of research and considerable talent with 3-D modeling software.



(No, you can't just scan the photo into your computer and get a model out of it – yet.)

I just had to get the truck ready to carry the mixer body. That involved lengthening the frame and adding a second rear axle. Instead of trying to model every detail of the frame, I

found some compatible styrene strip and cut pieces to splice in the extra length and to back up the splices. The new rear axle is a piece of plastic tubing from Evergreen – you can't see the axle detail, so why add it? 📷

Eric says...

Almost every modeling project I get involved in ends up teaching me one or more ways to do something new or to do it better.



From factory to...

faded

Make a stock model look weatherbeaten in less than two hours

by Cody Grivno

Imagine the pressure. It's a few minutes after 1 p.m. on a Friday afternoon. I'm handed a clean HO scale Athearn Genesis EMD GP38-2 diesel locomotive decorated for Southern Pacific. My assignment: weather the model and have it ready for a photo shoot on Monday morning. Could I get this done before the close of business on Friday? You bet. In fact, I completed the task in less than two hours, and you can too.

My instructions for weathering the GP38-2 were to make it look like it has been in service for a while. As SP fans know, some of the railroad's diesels looked pretty rough, with faded paint, soot stains, and discolored let-

tering caused by heat from the dynamic brakes.

When weathering under a tight deadline, efficiency is key. Instead of completely disassembling the shell, I removed a few critical parts: the wheels, fuel tank (so I'd have a place to hold the model), and most of the window glazing. I left the side windows in place, as they would be easy enough

to mask. I didn't mask the lights on the locomotive. I cleaned them prior to applying the clear flat finish.

In less time than it takes to watch a football game, you can turn that stock locomotive into a more prototypical looking model. So get your favorite weathering colors, some Micro-brushes, an airbrush, and get started.

An airbrush, some acrylic paint, and about two hours are all it takes to give your diesel locomotive that hard-working, sun-faded look!

Materials list

Model Master acrylic paints

- ☐ 4636 Clear Flat Finish
- ☐ 4873 Reefer White
- ☐ 4882 Oxide Red
- ☐ 4884 Roof Brown
- ☐ 4885 Railroad Tie Brown
- ☐ 4887 Grimy Black
- ☐ 4888 Engine Black

Miscellaneous

- ☐ Silver paint marker
- ☐ Super fine and fine Microbrushes

+ MORE on MRVP!

Watch Cody weather this model from start to finish for free on MRVideoPlus.com/TUG1



1 To start, I used a screwdriver to gently remove the bottom clip of each gear-box. I then lifted out the wheels and reattached the clip to cover the gears. With the wheels removed, the electrical contacts inside the truck sideframes are exposed. To prevent paint from getting onto the contacts, I inserted small chunks of packing foam between the sideframes and gear-boxes. Acrylic paints are foam safe.



2 Next, I used a cotton swab dipped in 70 percent isopropyl alcohol to clean the GP38-2's shell and fuel tank. Skin oils will affect paint adhesion, and I didn't want fingerprints showing up when I applied the weathering colors. There were a few small spots of a sticky residue, perhaps the material used to keep the pins on the handrail stanchions in their sockets, that I cleaned off as well.



3 Removing the side cab windows would have taken too much time. Instead, I closed the windows and masked them with the adhesive-backed portion of a Post-it Note. After cutting the Post-it Note to size, I set it on the windows with tweezers and lightly burnished it with a toothpick. I like Post-it notes because they have a low-tack adhesive that doesn't leave residue on the windows.



4 I used several Model Master acrylic paints from Testor to weather the model. I heavily thinned all of these colors with 70 percent isopropyl alcohol. I didn't measure the paint and alcohol exactly. Instead, I put in just enough paint to cover the bottom of a 1-ounce paint jar, then filled the rest of the jar with isopropyl alcohol.



5 With the air compressor set between 10 and 15 psi, I started applying the thinned white. I put five coats on the horizontal surfaces. On a Southern Pacific engine, these areas are exposed to the hot California sun the most. I applied three coats to the vertical surfaces and the fuel tank.



6 Next, I applied Oxide Red. I used Oxide Red for spot applications on the trucks, step wells, fuel tank, and pilots – all areas close to the rails. Since the GP38-2 was being photographed on a model railroad based around an iron ore mine, I wanted just a hint of iron ore dust on the lower portion of the locomotive.



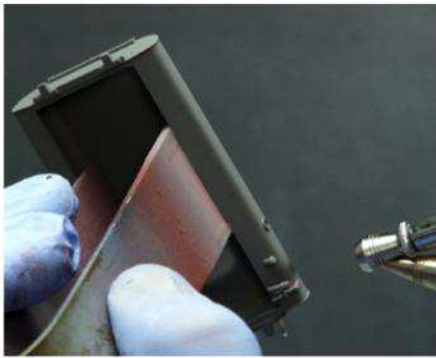
7 To help tie the weathering together, I applied two coats of thinned Roof Brown to the entire model. When applying the color, I used a different spray pattern for each coat. I sprayed the first coat horizontally and the second coat vertically. I did this because the handrails were still attached to the model. If I sprayed in one direction, the handrails and stanchions would act as masks, leaving shadows on the body shell. Spraying in both directions eliminates that problem.



8 One of the drawbacks of acrylics is the paint tends to dry on the tip of the airbrush needle during long sessions in the spray booth. Instead of disassembling the airbrush for cleaning between colors, I wiped the tip of the airbrush needle with a cotton swab dipped in Windex. Do this carefully, as the tip of the needle is delicate and can be damaged easily.



9 Finally, I used thinned Engine Black to build up soot stains around the exhaust stacks. I also carried some of the stains down the sides of the hood. In addition, I used the black to simulate grease and oil on the trucks. When in doubt on where to apply weathering effects, refer to prototype photos – the Internet is full of them!



10 I also used thinned Engine Black on the fuel tank. I put a streak of black under the filler neck to simulate spilled fuel. I also sprayed a little black on the ends of the fuel tank to capture the look of oil and grease that's been slung up from the trucks.



11 Before applying the clear flat finish, I needed to remove the paint from the headlights, warning lights, and number boards. The thinned paint came off with little effort using a super fine Microbrush dipped in Windex.



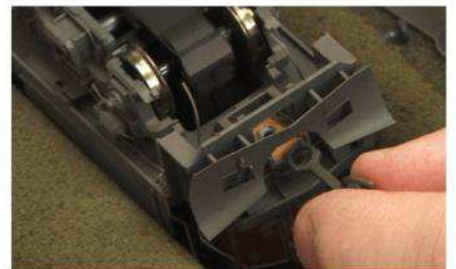
12 With the lights and number boards clean, I applied Model Master Clear Flat Finish (no. 4636) with an airbrush. I thinned the clear flat 50/50 with 70 percent isopropyl alcohol. Two coats were enough to give the model a uniform flat finish.



13 While the clear flat was drying, I went back to the workbench and painted the wheels. First, I cleaned the face and back of each wheel with a cotton swab dipped in 70 percent isopropyl alcohol. Next I applied Model Master Railroad Tie Brown to the wheel faces using a Microbrush. Be sure to keep paint off the tips of the axles and the wheel treads.



14 While the paint was drying, I used tweezers to remove the foam pieces between the sideframes and the gear boxes. I used a slotted screwdriver to remove the bottom clip from the truck gearboxes. Then I gently spread the sideframes and inserted the wheels. Once the wheels were in place, I reattached the bottom clips.



15 I took this opportunity to replace the plastic couplers with metal Kadee couplers that I'd already painted Railroad Tie Brown. I used a medium-shank coupler on the rear of the locomotive and a long-shank coupler on the front (to clear the snow plow).



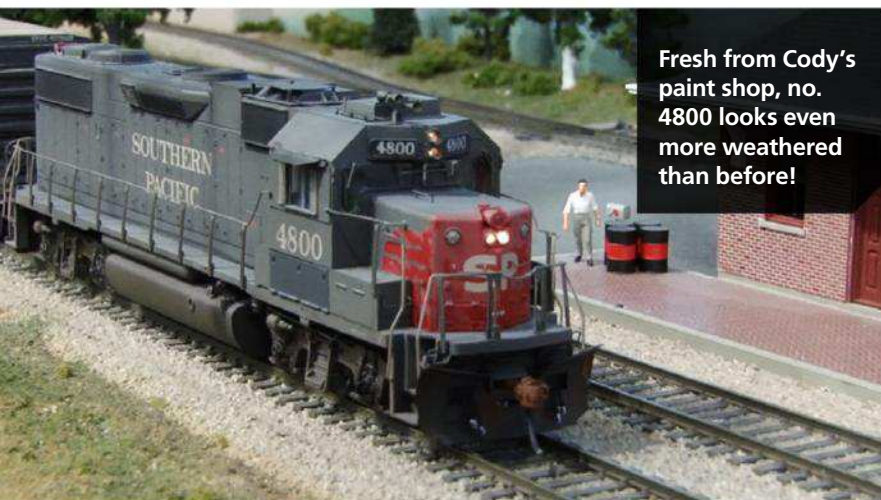
16 I finished the project by reinstalling the fuel tank and the window glazing. I also painted the trip pins on the couplers Grimy Black and touched a silver paint marker to the tip each pin to simulate a glad hand. In two hours, I was able to turn a stock locomotive into one with a prototypical, in-service look. On Monday morning, SP GP38-2 no. 4800 was ready for its photograph. 📷

Cody says...

Painting wheelsets with a Microbrush is often faster and neater than using an airbrush.



Take weathering to the next level



Five tips to make your locomotives even more realistic

by Cody Grivno

Newly weathered Southern Pacific EMD GP38-2 no. 4800 was relaxing at the engine terminal on our Milwaukee, Racine & Troy staff layout when she was called on to be a cover model for the magazine you're holding. Thinking the locomotive was ready for prime time, David Popp and Drew Halverson took the Geep to our photo studio to have it photographed. Sadly, the GP38-2's performance fell flat.

What was wrong? Well, for starters the trusty Kadee no. 5 coupler looked oversized. Also, three of the six m.u. cables were missing. And the snowplow and scarlet nose weren't sufficiently weathered. And do I need to mention that the crew was out on break?

Clearly the GP38-2 still needed some cosmetic work to be photo worthy. So I took the locomotive back to the shop along with some prototype photos, and I quickly made a list of five mini projects that would greatly enhance the appearance of the model. In fact, these five things can be used on most any diesel locomotive to make it even more realistic.

+ MORE on MRVP!
Watch Cody complete these techniques shown here for free at MRVideoPlus.com/TUG1

>> Tip 1: Couplers



Although Kadee no. 5 couplers work great, the firm also sells smaller no. 158 self-centering whis-ker couplers. These are much closer to scale size and have nicely detailed cast-metal parts. Instead of weathering the couplers with an airbrush like I normally do, I tried something different. First, I sprayed the couplers with Testor's Dullcote.

Next, I applied AIM Products (now Monroe Models) Rusty Brown weathering wash. The pigments settle to the bottom, so I shook the bottle until the contents were thoroughly mixed. I used a super fine Microbrush to apply the alcohol-based wash. The Rusty Brown wash dries to a gritty finish similar to the texture of a full-sized coupler.

The trip pin is used to separate couplers over uncoupling magnets. However, it also captures the look of the air hose found on locomotives and freight cars. To make the pin look more like an air hose, I painted it Black. I then touched a silver paint marker to the tip of the trip pin. This simulates the glad hand on the air hose.

Materials list

Paint

- ☐ Model Master Railroad Tie Brown (no. 4885)
- ☐ Model Master Earth (no. 4877)
- ☐ Model Master Light Ghost Gray (no. 4762)
- ☐ Monroe Models Rusty Brown weathering wash (no. 975)
- ☐ Monroe Models Weathering Powder Dark Rust (no. 3105)
- ☐ Monroe Models Weathering Powder Dark Earth (no. 3107)
- ☐ Model Master Insignia Red (no. 4714)
- ☐ Polly Scale Lark Dark Gray (no. 414182)
- ☐ Polly Scale Rust (no. 414323)
- ☐ Testor's Dullcote (no. 1260)
- ☐ Vallejo Dark Rust Model Wash (no. 76.507)
- ☐ Vallejo Gray Model Wash (no. 76.516)
- ☐ Vallejo Oiled Earth Model Wash (no. 76.521)

Pencils

- ☐ Prismacolor Warm Gray 20 percent colored pencil

>> Tip 2: Nose weathering



Many prototype SP engines had peeling paint on the nose. I'd weathered the locomotive with thinned white paint, so the scarlet was quite muted. To capture the look of peeling paint, I needed to use a brighter color. Model Master Insignia Red matched the prototype photos well. I removed the plow and handrails, then used a 20/0 brush to apply the paint. Since we're actually putting color back in places, think of this as reverse weathering, and it's a technique that you can't really get wrong. The goal is to make it look like there are lighter and darker patches of red.

>> Tip 3: Crew figures



"surgery" on the plastic crewmen. Using a pair of sprue cutters, I cut off the legs at mid thigh. Then, using a reasonably close paint color, I touched up the bare plastic where I'd made the cuts. Remember, these figures will be inside the cab, so it will be difficult to see if the paint isn't an exact match.

Using a sanding stick, I removed the paint from the bottom of each figure. This ensures a strong glue joint. Then I used a toothpick to apply medium-viscosity cyanoacrylate adhesive (CA) to the bottom of each figure. I set them in place with tweezers.

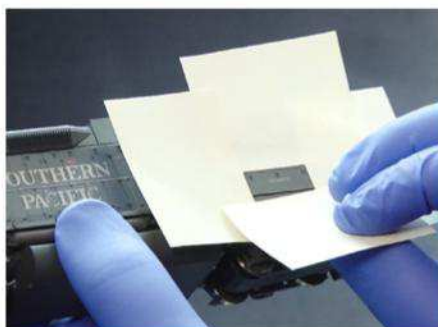
QUICK FIX
Use CA to attach figures securely to the seats in the cab. You don't want them coming loose!

Next, I added the crew figures.

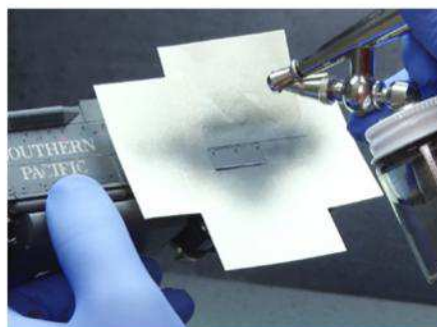
After removing the draft-gear boxes, I gently lifted the shell from the chassis. Then I carefully removed the cab and unscrewed the interior.

I selected two seated Preiser figures that we had in a box in the *Model Railroader* workshop. In order for figures to fit in the cab, and to keep the screw holes for the cab interior accessible, I had to do some

>> Tip 4: New access door



A prototype photo inspired this step. In the image, the door below the cab on a Southern Pacific U33C was freshly repainted. To replicate that look, I used Post-it Notes to mask the area. The self-adhesive notes work well for masking items with right-angle corners, and the adhesive doesn't leave residue on the model.



I applied Polly Scale Southern Pacific Lark Dark Gray with an airbrush. I sprayed the color in a north-south, east-west pattern to ensure even coverage. I built up the gray in light coats with the air compressor set at 15 psi. This reduces the chance of paint blowing under the Post-it Notes. Two coats provided sufficient coverage.



I let the paint dry for a couple of minutes and then removed the Post-it notes. The color-separation lines were sharp on all four sides. The finished effect was of a new or freshly repainted access door on an older locomotive.

>> Tip 5: Rusting the snowplow



I started by spraying the plow with Testor's Dullcote. I applied Vallejo Dark Rust Model Wash (no. 76.507) to the front and back with a Microbrush. When that dried I applied the same firm's Oiled Earth Model Wash (no. 76.521). As I applied the washes, I worked from top to bottom, keeping the Microbrush parallel with the edges of the plow.



I drybrushed the upper half of the plow with Polly Scale Southern Pacific Lark Dark Gray. Wipe off most of the paint from the brush on a paper towel, then apply just a trace amount on the model. I worked from the top, highlighting just the upper half. This step brings some of the gray color back and contains the rust and grime color to the lower half of the plow.



On one corner of the plow, I used a technique I call "halo" rusting. Using a 20/0 brush, I applied the Light Ghost Gray in a swirling motion in the upper right corner of the plow. When applying the paint, make the edges uneven. Next, I applied Rust. I brought the color close to, but not covering the edge of the Light Ghost Gray. I finished the halo effect with Railroad Tie Brown.



Prototype plows typically have spattered dirt and grime on them. To capture that look, I drybrushed the plow with assorted colors and a stippling brush with short, stiff bristles, used in a stippling motion. I started with Grimy Black, then Railroad Tie Brown, then finishing with a few patches of Model Master Earth.



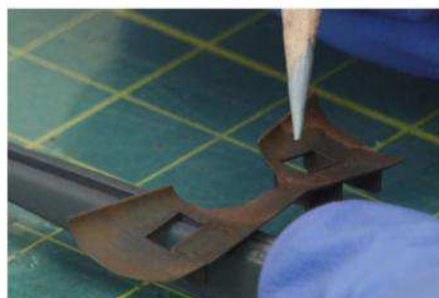
I applied a coat of Vallejo Gray Model Wash (no. 76.516). This acts as a control coat to help tie all of the colors and weathering effects together. I let the wash dry thoroughly and sprayed the plow with Dullcote.



After that, I applied Monroe Models Weathering Powders to the plow. I started with no. 3107 Dark Earth, applying it to the sides and top of the plow. I applied the powders in a gentle scrubbing motion. To help tone down the halo weathering, I also applied pastels over the rust patch on the upper right corner.



I then applied Dark Rust Weathering Powder along the U-shaped cutout for the draft-gear box and coupler. I scrubbed the powders in place first, then pulled the powders straight down.



The last effect was the bare metal from where the m.u. cables had rubbed against the plow. I used an artist's pencil (PrismaColor Warm Gray 20 percent). You can buy these at arts and craft stores. I made quarter circles by the m.u. cable access door. The effect should be subtle. I repeated this technique on the bottom of the plow below the two m.u. cable access doors.



I used the stencil brush to stipple a bit more Grimy Black at the bottom center of the plow, then gave it a final layer of Dullcote. I reinstalled the handrails, m.u. cables, and plow. I carefully slid the shell back on the chassis, put the weathered couplers in the draft-gear boxes, and screwed them to the chassis. See the cover for the finished model. 🎬

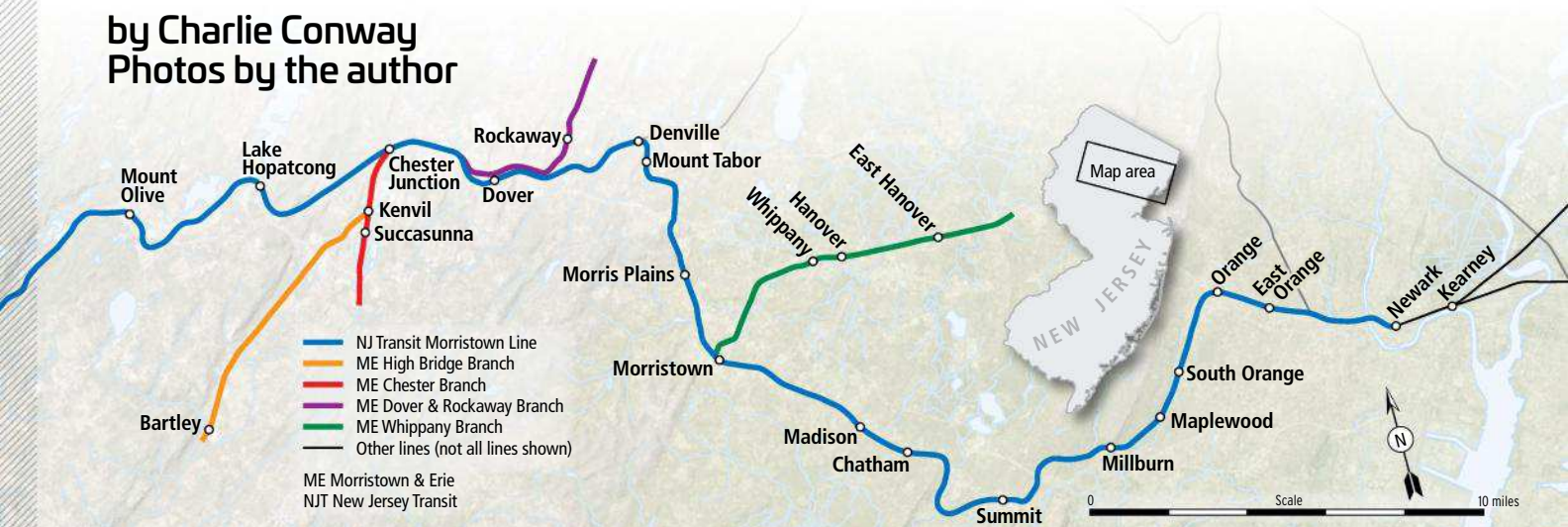
A modern railroad running Alcos? That's exactly what you'd find on the Morristown & Erie, a modern short line with a long heritage. Number 19 is an Alco C-424 built in 1964.



The Morristown & Erie Railway

Past and modern railroading meet to offer a best-of-both-worlds prototype you can model

by Charlie Conway
Photos by the author



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Watch Taking Care of Business: The M&E part 1 for free at MRVideoPlus.com/TUG1

Today's shortline

railroads offer advantages for modelers with an interest in the contemporary scene, but who don't care to tackle a Class 1 railroad. If the idea of running 50-year-old diesels alongside new passenger locomotives and cars appeals to you, the Morristown & Erie Railway may be the prototype you've been looking for.

The M&E originated as the Whippany River Railroad in 1895. The line, renamed Morristown & Erie after a merger in 1903, served paper mills and heavy industries until the 1970s when these core customers began to disappear as a result of a general downturn in manufacturing in the Northeast.

The Morristown & Erie of today dates to 1982 when a local businessman, Benjamin Friedland, bought the railroad out of bankruptcy and launched an aggressive campaign to develop new customers. The railroad expanded steadily. At its height operated four

branch lines in Morris County and provided switching service to the Bayway Refinery in Linden, N.J. Three of these branches are owned by Morris County, and unfortunately for the M&E, the county awarded the service contract to another railroad in 2017.

The combination of vintage Alcos and modern heavy freight was an essential part of the Morristown & Erie's character, making it an interesting prototype to explore and model. For that purpose, I've focused on the operations of the railroad in the summer of 2017, while it still served the four branch lines.

Landscape with character

Railroads are embedded in a particular place and reflect the history of the surrounding communities and the railroad itself. The Morristown & Erie operates a little over nine miles of its original right-of-way, which is now referred to as the Whippany Branch. The rest of its operations (until the fall of 2017) took place on the New Jersey Transit Morristown Line (ex-Delaware, Lackawanna & Western) and over branch lines leased by Morris County that once belonged to the Delaware Lakawanna & Western and the Central Railroad of New Jersey.

The landscape of Morris County is gently rolling and heavily wooded, dotted with lakes, and laced with rivers and streams. Although it lies only 30 miles west of Manhattan, the county is suburban, with a distinctly rural character.

Whippany Branch *M&E's original line*

This branch has the most suburban and commercial character. It's home to the Whippany Railway Museum.

Dover & Rockaway Branch *Ex-CRNJ*

This line is heavily wooded near the junction with the NJT main line. It then passes through the town of Dover to industrial areas to the east.

Chester Branch *Ex-DL&W*

This is another heavily wooded branch that climbs gently out of the Rockaway Valley. The south end of the line enters a more urban area.

High Bridge Branch *Ex-CRNJ*

This branch contains both heavily wooded and urban stretches.

Abundant vegetation

The rolling countryside of Morris County is lushly forested with oaks, maples, tupelos and other Northeastern hardwoods. Dense tree cover can present modelling challenges, but it can also act as a view block.



Legacy structures

Many charming trackside structures remain along the branch lines and the NJT Morristown Line, which was originally part of the DL&W. The Morris Plains train station is a notable example.



Bridges and water

The Dover and Rockaway Branch crosses the Rockaway River near Main Street in Rockaway on a four-span plate girder bridge with cut-stone piers and abutments. The bridge dates from the late 19th century.

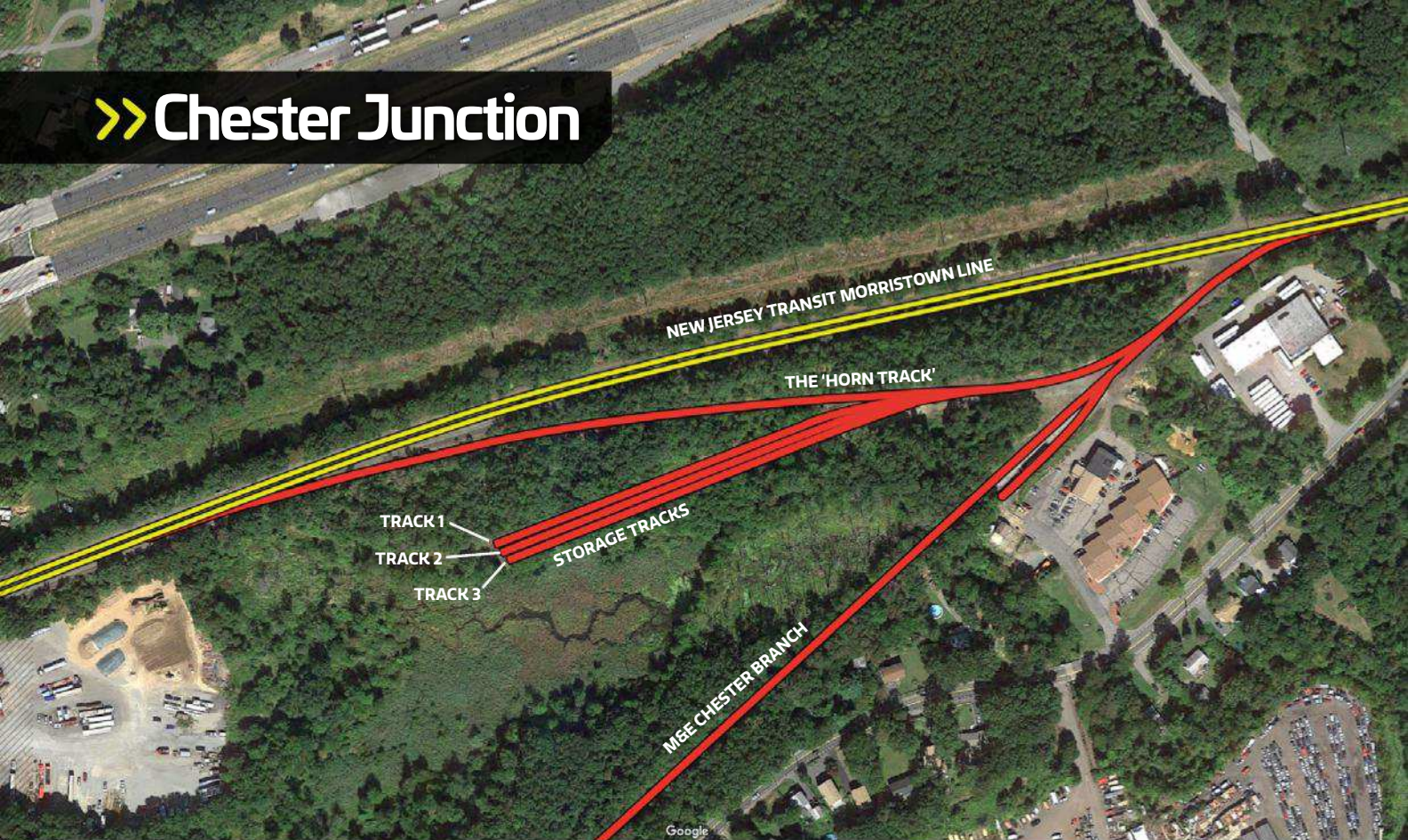


Towns everywhere

The branch lines pass through the heart of many small-town business districts, often weaving through tight spaces. Older commercial buildings that were once rail-served abound and would make interesting models.



>> Chester Junction



With an interchange track, a small yard, a spur for maintenance-of-way equipment, and no run-around track to speak of, there's a lot going on at Chester Junction. Norfolk Southern trains leave inbound cars for the M&E on the "Horn Track" and pick up outbound ones from there as well. The M&E also makes money by storing cars for other companies, and many of those cars are stuffed into the yard tracks. Frequently M&E crews need to dig out stored cars as required by their owners, so between the crowded interchange and storage yard, working Chester Junction is usually something of a puzzle.

Who's Charlie?

Charlie Conway is an architectural project manager and **MRVP Contributing Editor**.

He lives in Seattle with his wife, Sheila.

His interests include video production, modeling, flying, and sailing.



Industries to model

Serving local industry is the core of the Morristown & Erie's business. Shippers come and go due to competition with trucking and as companies succeed or fail in the marketplace.

The M&E's shippers fall into two main categories: manufacturers and distributors. Manufacturers may receive raw materials or components by rail. They may or may not ship their finished products over the railroad. Distributors usually receive products by rail, but then sell them to retail customers on the premises or distribute them locally by truck.

Taken together, the shippers on the M&E generate a wide variety of car loadings and types, including boxcars, center-beam and bulkhead flatcars, tank cars for hauling liquids and compressed gasses, and covered hoppers. Following are snapshots of several industries of note.

Whippany Branch

- Renewable Energy Group (biodiesel fuel)

- Anderol Specialty Lubricants (lubricants)
- Givaudan (food products)
- B&G Foods (food products)
- Troy Hills transload facility (broad variety of products)

Chester Branch

- Holland Manufacturing (tapes, paper products)
- Kuiken Brothers (lumber, building materials)

High Bridge Branch

- Blue Ridge Lumber (lumber, building materials)
- Triumph Plastics (plastic pellets)
- Toys R Us warehouse (consumer goods)

Dover & Rockaway Branch

- Polyfil (plastic polymer additives)
- Endot (plastic piping)
- TriPak (plastics, packaging) now Harvey Building Products (windows)
- 84 Lumber (lumber, building materials)

Kuiken Brothers Lumber Company

Kuiken Brothers Lumber is a retail building supply company in Succasunna, N.J. It receives a variety of bulk building materials, including lumber, composite wood joists, plywood, mill-work, and gypsum drywall. The Kuiken siding can accommodate up to three boxcars at the dock-height loading area and three center-beam or bulkhead flatcars at the grade-level unloading area. The facility is large, with four open-sided material storage sheds and an 80,000-square-foot retail building occupying eight acres. Modelers can use the storage shed nearest the siding as a view block.

Freight cars required

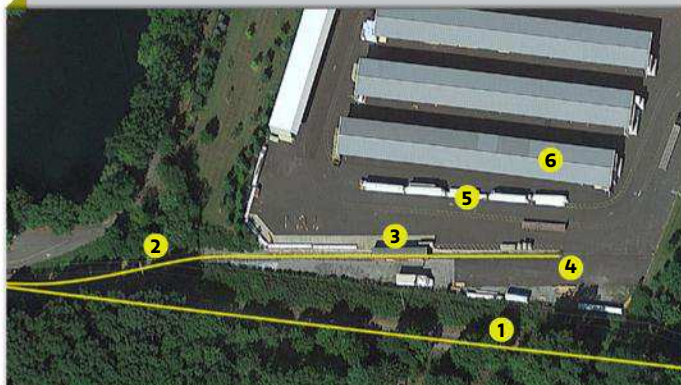
- Boxcars
- Center-beam and bulkhead flatcars



Lumber storage sheds could be used as a view block.



Kuiken Lumber's loading dock for boxcars.



- | | |
|-------------------------------------|--|
| 1 – Chester Branch | 4 – Center-beam flatcar unloading area |
| 2 – Kuiken Brothers siding and gate | 5 – Material staging |
| 3 – Boxcar unloading area | 6 – Open-sided sheds |

Holland Manufacturing Co.

The Holland Manufacturing Co., in Succasunna, makes laminated and printed tapes, labels, industrial paper products, and protective laminates. This plant, one of three Holland plants in New Jersey, covers about 110,000 square feet with a frontage along the railroad of 640 feet. It is served by two sidings: a short siding on the north serves the tank car unloading area; a longer siding serves a pneumatic plastic pellet unloading area and a covered loading dock that can hold up to four boxcars. The tank car unloading area is fenced for security and features a dedicated car heating system and lading pump.

Freight cars required

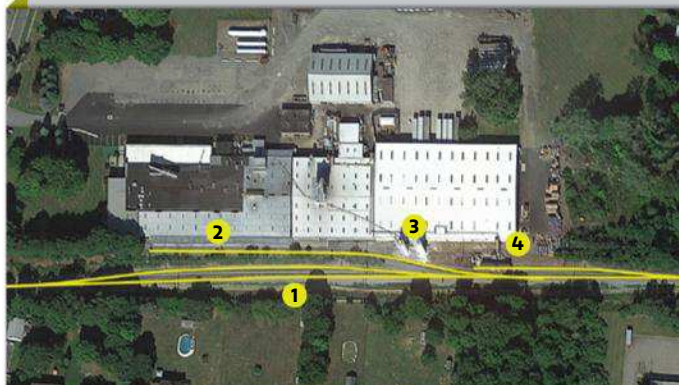
- Boxcars
- Plastic-pellet hoppers
- Tank cars



Holland's covered loading dock can hold four boxcars.



Plastic pellet tanks and fenced-in tank car unloading.



- | | |
|--------------------------------------|--|
| 1 – Chester Branch and passing track | 4 – Tank car unloading track and fence |
| 2 – Covered loading dock | |
| 3 – Plastic pellet unloading | |

County Concrete Corp.

County Concrete's Kenvil, N.J. sand pits and concrete batch plant are bisected by the Chester Branch, but it's not served by the M&E. However, on an M&E-inspired layout, the plant could easily be modelled as a rail-served industry, adding both visual and operating interest.

The plant would ship sand to other County Concrete terminals and receive cement in covered hoppers. It would require a single track with a spot for conveyor loading or wheel loading of sand into small hoppers. It would also need a spot for pneumatic unloading of cement.

Freight cars required

- Open sand hoppers
- Cement service covered hoppers



The M&E runs through the heart of County Concrete.

Endot Industries

Endot Industries, in Rockaway, N.J., is a manufacturer of plastic pipe products for applications including water and gas service, conduit and geothermal installations. Endot's manufacturing plant lies near the end of the Dover and Rockaway Branch; it is flanked by Harvey Building Products on the south and by the Polyfil Corporation on the north.

The manufacturing building is rather plain, with the curving rail siding and plastic pellet unloading silos and covered canopy on the south side. The most visually interesting aspect of the facility is the colorful pipe storage yard.

Freight cars required

- Boxcars
- Plastic-pellet hoppers



Past the gates are Endot's pellet tanks and main building.



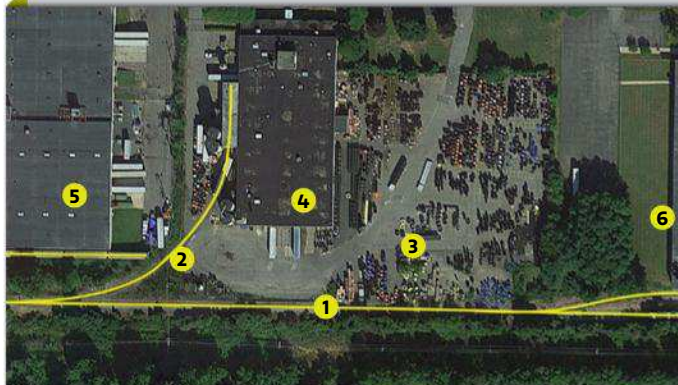
A single spur here could ship sand and receive cement.



The colorful plastic pipe would make interesting models.



- | | |
|--------------------------|----------------------------|
| 1 – Chester Branch | 5 – Concrete truck parking |
| 2 – Sand pits | 6 – Office |
| 3 – Sand processing | |
| 4 – Concrete batch plant | |



- | | |
|-------------------------------|------------------------------|
| 1 – Dover and Rockaway Branch | 4 – Endot plant building |
| 2 – Endot siding | 5 – Harvey Building Products |
| 3 – Pipe storage yard | 6 – Polyfil Corp. |



M&E Superintendent Rich Compana hands over the paperwork to the crew of MO-1, today's branchline local.

The Morristown & Erie

normally served its customers with a single daily local train originating in Morristown, called the MO-1. The crew was called at 7:30 a.m. and the train departed about 45 minutes later, after receiving a job briefing from the dispatcher and completing the required checks.

M&E crews operated under the authority of two dispatchers – their own, and for operations on New Jersey Transit rails, the NJT dispatcher. They communicated with both by radio. Once the crew received a track warrant to run on home rails, they were free to carry out their work, but movements on the NJT lines were also governed by trackside and in-cab signals.

At Baker Interlocking, where the Whippany Branch diverges from the NJT Morristown Line, the switch and derail were powered and controlled by the NJT Operations Center in Kearny, N.J. At the other

junctions, M&E crews lined switches and derails manually. This required releasing electric locks that tied the switches to the signal system and contained delay timers to allow approaching trains time to react to changes in signal aspects.

Freight traffic on the NJT lines is limited to 40 mph. M&E crews could expect to be held at signals for overtaking NJT passenger trains. The Morristown Line is electrified east of Dover; beyond that point, NJT trains are hauled by diesels or the new Bombardier ALP-45DP dual-power locomotives.

The workday for the crew of MO-1 was largely a matter of delivering inbound cars to customers on the branch lines and gathering outbound cars for interchange. The M&E interchanged most of its traffic with Norfolk Southern at Chester Junction, which had a double-ended interchange track and three storage tracks.

Space constraints and the need to avoid fouling the NJT main meant that M&E crews usually shoved deliveries up the Chester Branch

to a double-ended siding at Succusunna, N.J., where they could run around the train.

After they had switched the Chester and High Bridge branches, the crew of MO-1 would switch the Chester Junction yard before departing with inbound cars for the Dover & Rockaway Branch. The process was repeated with outbound cars from the D&R Branch and inbound for the Whippany Branch. The crews would return to home rails on the

Whippany Branch at the end of the shift.

M&E crews faced many operating challenges that could be replicated on a layout. Where there are no convenient run-arounds, they relied on gravity, or static drops to swap ends with a cut of cars. They also faced unpredictable delays from such problems as balky equipment, vehicles parked on the right-of-way, and fallen trees. Working on the M&E was always an adventure. ■



The crew gets around the train by making a gravity drop on the D&R Branch. The brakeman is riding the lead hopper.

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Modern short line magic



50-year-old Alcos working on a modern short line is all part of the fun for a bedroom-sized HO scale version of the M&E Ry.

Kid gone to college? Renovate his room with this HO scale switching layout!

By David Popp



ATLAS ALCO C424

Once in a while, after years of having no space to build a layout, an opportunity presents itself — such as one of your kids leaving for college. Our room-sized HO scale version of the Morristown & Erie Ry. will fill his old room nicely and give you hours of fun.

When it comes to finding a modern prototype railroad that fits into a compact layout space, it doesn't get any better than the Morristown & Erie. Until last year, the short line's operation was made up of four branch lines that served a variety of customers. Everything was linked together by New Jersey Transit tracks, which also affords a little commuter modeling.

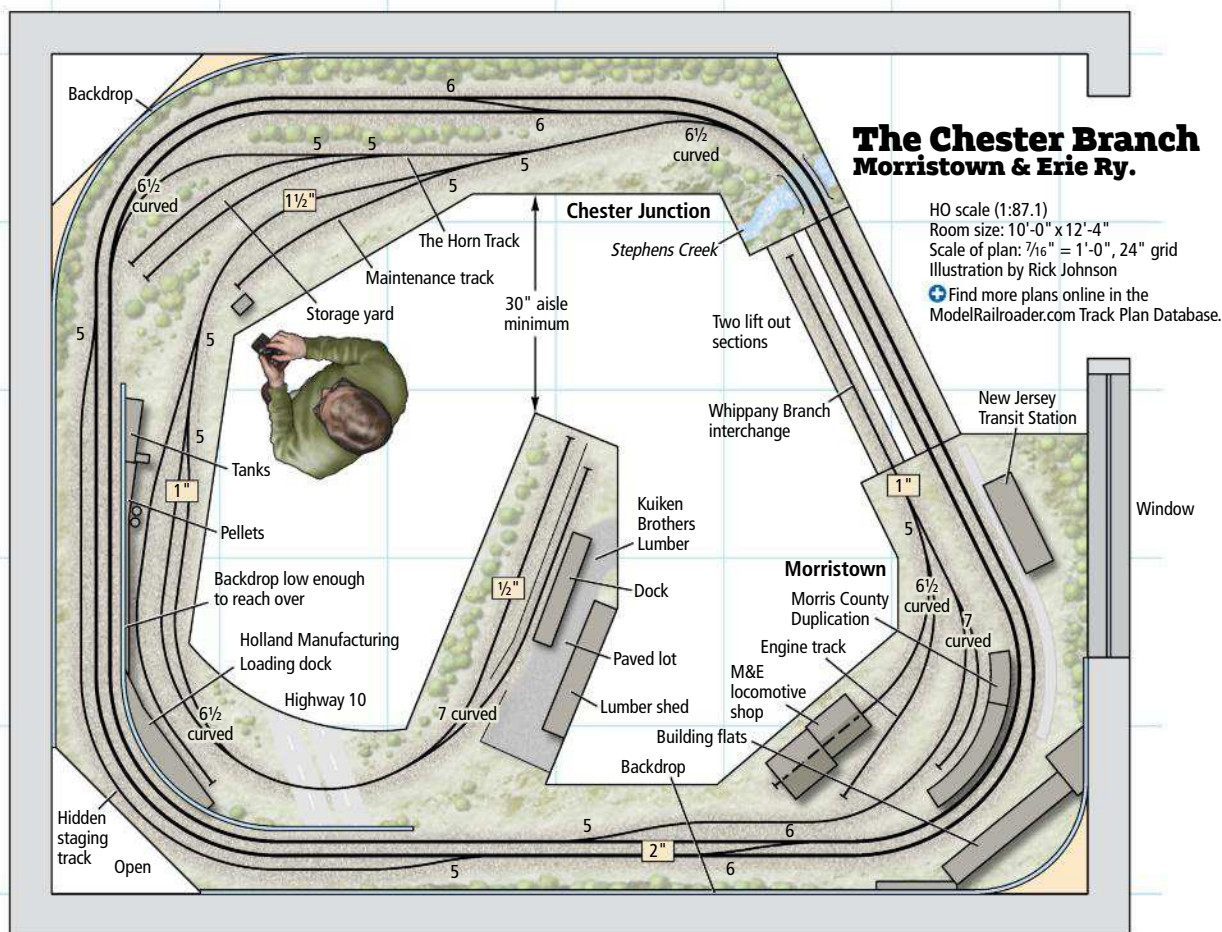
Our plan fits in a room slightly bigger than 10 x 12 feet. It features key scenes found in the video *Taking Care of Business: The Morristown & Erie Part 1*, allowing the modeler to duplicate a typical morning's work on the Chester Branch. To that end, we've included the engine shops at Morristown, the interchange at Chester Junction, and Holland Manufacturing



Free on MRVP!

Watch our M&E 3D track plan video at

MRVideoPlus.com/TUG1



Track plan at a glance

Name: The Chester Branch
Prototype: Morristown & Erie Ry.
Era: 2016
Scale: HO (1:87)
Size: 10'-0" x 12'-4"
Minimum radius: 24" main line, 20" branch
Minimum turnout: Peco no. 5
Maximum grade: 3 percent

and Kuiken Brothers Lumber Co., located at the branch's end.

The room is circled by a double-track loop representing the M&E's mainline run on the NJT. We've also included the NJT's Morristown station, providing a place for commuter trains to

make stops. The layout includes a short section of staging, positioned behind a low backdrop. Although we've drawn one staging track, there's room for a second.

Build it

The layout can be built in sections that bolt together. Because of its simple elevation changes, you could cover the frames with ¼" plywood, then use different thicknesses of foam insulation board as the subroadbed. Woodland Scenics foam incline sections would be perfect for building the grades between levels.

The trackwork is designed for common turnouts and flextrack. The curved turnouts are drawn to

match Walthers code 83 products.

You can support the layout with conventional legs or by attaching it directly to the walls. For a more finished look, you could set it on prefabricated bookshelves or cabinets – think Ikea.

Entering the room is made easy thanks to two 3-foot lift-out sections; one is for the main and one is for the engine shop's tail track, which represents an interchange point with M&E's Whippany Branch.

Run it

An operating session begins with a Norfolk Southern transfer train leaving staging and working the Chester Junction interchange track.

Next, the M&E crew collects their engine at the shops and any cars from the Whippany Branch tail track destined for Chester Junction. They also work Morris County Duplication. Although it wasn't an active spur in 2016, we've included the printer on our plan. It would receive carloads of paper or ink.

The crew then takes their train onto the NJT main line. The M&E train makes several laps to simulate the distance required to get to Chester Junction. You could also run a New Jersey Transit train or two, giving the M&E crew some realistic traffic to deal with.

Once at Chester Junction, the crew

Why the M&E is Cool:

Finding a modern railroad using 50-year-old Alkos is always cool. We just love that sound!

works the interchange, the storage yard, and the Chester Branch's industries. From there, they collect any cars to be delivered to the Whippany Branch, and head back to Morristown.

Our plan offers a lot of fun in a fairly compact space. If you get a good jump on it in the fall, by the time your student comes home for Christmas, he will probably need to sleep on the couch! 🛋️



Bringing your layout to life...

... by bringing life to your layout

by Gerry Leone

There's a big difference between adding details to a layout and adding emotion to a scene. And while each has its place in our model worlds, I find that it's the "emotion details" that seem to make a layout live and breathe.

If you can create a little scene that brings out a reaction in your visitors – like surprise, or a smile, or the thrill of discovering

something – you've given your visitors something that goes straight through their eyes and into their hearts. And you've

brought life to your layout.

That's not to say that every mini-scene or extra detail should tug on emotional

heartstrings. In fact, too many of these types of scenes will turn your layout

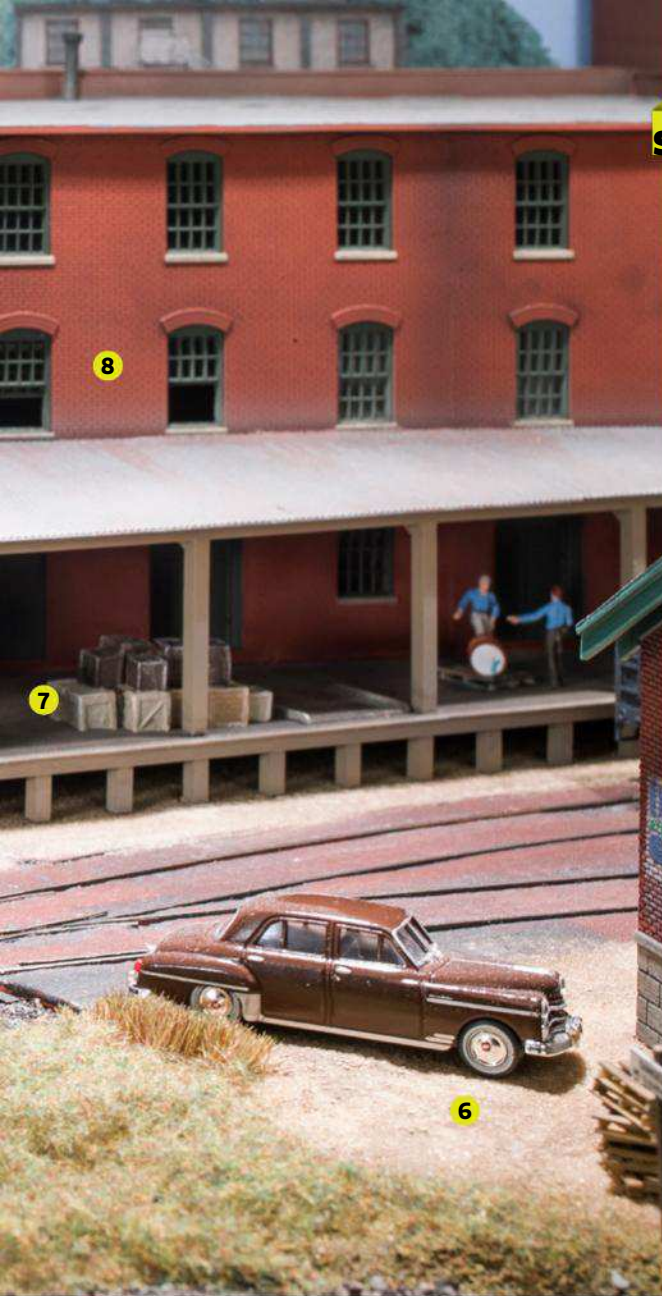
into a cartoon – a caricature of real life. But the world is a cluttered place, and

WATCH THIS ON



Free Video!

Follow Gerry as he adds details to a scene at MRVideoPlus.com/TUG1



Structure and loading dock details

1. Some of the first details you'll notice in the prototype Winston-Salem photo are the 55-gallon drums on the dock – you can't miss 'em! To make the Atlas building true to the prototype, I added dozens of drums in a range of colors. I also grouped them by color, much the same as real workers would, so sorting the contents would be easier later on. A wide variety of manufacturers make 55-gallon drum castings.
2. Be sure to add some human interaction! Workers talking to supervisors and to each other convey the sense that this is a busy location and there are lots of jobs to be handled.
3. Let your visitors experience the surprise of discovery! Here, a man shouts out the window to ... surprise! ... a man on the ground across the tracks. When visitors make that discovery you've given them a mental smile and brought some true emotion to your layout.
4. Don't let the walls box you in. Equipment on its way in or out, open doors, and people looking out of windows all help bridge the gap between "inside" and "outside," and imply that there's life inside that styrene building.
5. Not everything has to happen on the dock. Workers walking next to tracks, pushing carts, or fixing equipment add to the scene and help blend the hard-scape of the structures with the landscape of the layout.
6. It's not all heavy machinery! The boss and office folk have to work somewhere — and park somewhere. Adding a nice car to an industrial scene immediately says "this belongs to the man in charge" and adds another layer of realism.
7. Docks are busy places, and few of them are tidy. Don't forget details like randomly stacked pallets, crates waiting to be shipped, and dock plates. Just don't clutter the dock to the point where no one could get their job done!
8. Remember that humans work inside those buildings, so cracking open a few windows here and there goes a long way to giving any industrial building some implied life.
9. What's the first thing anyone sees on a layout? Usually the roofs of buildings. Adding details like smoke jacks, chimneys, vents, pipes, and fans will not only give visitors something interesting to look at, they'll add to the realism.
10. One of my all-time favorite layout details is cinder blocks. Look at any prototypical industrial scene and you'll see them everywhere. They're another detail visitors will love to discover because they see them everywhere, too! Sprinkle them sparingly here and there and let them hide, waiting to be discovered. Funaro & Camerlengo makes great cinder block castings.

a tipped 55-gallon drum next to a dock or a tire in the ditch can add a lot to the realism of a layout.

But every so often, give your visitors something that will hit them where they live: an old man sitting in the park with his dog, a young child anxiously climbing a tree, kids playing baseball in the street, a shade tree mechanic fixing that car for the umpteenth time. These scenes from everyday life are the scenes that draw out

our emotions. They're also the ones that, to a visitor, elevate your layout to a whole new level.



Gerry Says:

one of my favorite adhesives is **Formula 560 Canopy Glue by Pacer**. It gets tacky within minutes and dries clear. It's slightly flexible so it withstands little knocks and bumps. It's ideal for attaching phone lines to poles, figures to the ground, details to walls, signs to posts...just about everything!



Small industrial scene

1. Nothing says “industrial area” like pallets. They’re everywhere: stacked on docks, lying in fields, and piled randomly here and there. Most likely these particular pallets were deemed defective and tossed here to get them out of the way. These pallets, by AM Models, are some of my favorites, but Walthers, Preiser, and others make wonderful ones as well. Remember to weather them well!
2. Piles of crates and boxes add “implied life” to any industrial dock – someone either just dropped them off or is waiting to bring them in. Bar Mills makes great resin castings of crate piles, as do a wide variety of other model manufacturers.
3. Viewers love to spot people in model railroad scenes. The most effective figures are those who don’t look like they’re in the middle of an action (like running), but instead, look like they’re about to move, such as this man and his dolly. In a few seconds he’ll be off to put away the first crate, but for now, he’s resting a bit.
4. The ground between tracks and loading docks is the perfect place for Mother Nature to show her wild side. Scrubby plants and weeds will help hide the bottom of the dock and structure’s foundation, too.

SURPRISE! It's fun to discover details

Industrial spill on dock

Have a little fun every now and then! Here, in an area of the dock that most people won’t immediately notice, a worker feverishly explains to the foreman how a drum of “green crud” happened to fall over and spill. Visitors love discovering fun little details like this because they’re surprising – and “surprise” is a powerful emotion.



Three guys next to acetylene torch

Here’s a detail most people will miss because it’s almost hidden behind a building (which was removed for this photograph). Three workers argue about how to get their acetylene torch working. When visitors discover one scene like this, they’ll search your layout for even more.



“No clearance” sign

Look around – there are signs everywhere in real life! So be sure to include some on your layout. This “No clearance” sign is not only prototypical, but it adds a nice vertical element to an otherwise flat, featureless area.





Cluttered urban areas and yards

1. Here's a neat little detail that doesn't get modeled very often: the fuel oil tank for a furnace or heater inside the building. This detail, included with the Walther's State Line Farm Supply model, adds a lot of character to an otherwise featureless wall. It's also weathered to show its age, with lots of old fuel spills down the side.
2. Sometimes cinder blocks can be useful! An enterprising worker used this one to hold up a sign, which was probably knocked down multiple times by careless drivers. It's a detail that tells a story, and takes only a minute to create!
3. Modifying figures to create new actions is surprisingly easy. Use a modeling knife to do a little arm surgery, a little back surgery, and voila! You have an eye-catching scene in which workers are getting things done!
4. Don't forget to add details that will keep spotted cars from rolling off the tracks. Here a pair of Hayes wheel stops by Tomar Industries does the trick. You could also add a large car bumper (from Walther's and others), or just a pair of old ties crossed and buried at the end of the track.
5. Workers aren't the neatest people in the world when they need to get a job done. Old lumber used for bracing and old crate lids are sometimes discarded on the spot, so don't forget to place a few scrap and broken

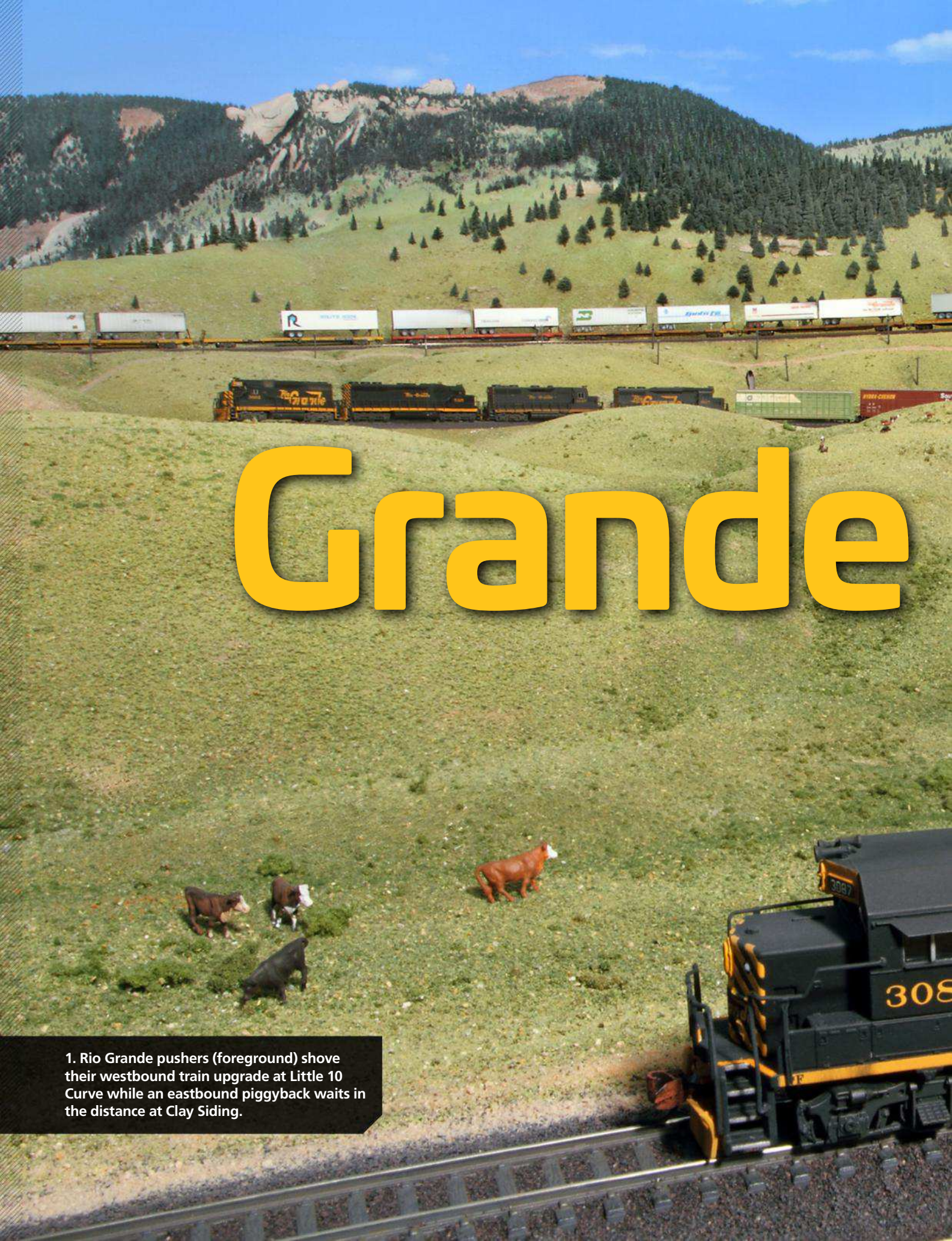
boards, barrels, or boxes and crates in out-of-the-way places. These are details that imply life without having to show actual figures.

6. Always choose vehicles that are appropriate for the era you're modeling — they're an easy way to give visitors a timeframe reference. This Classic Metal Works truck not only sports a "period" coat of paint, but also custom decals, which help unite this layout area to the large industry in the background.
7. Again, open windows on a structure imply that there are living, breathing people inside. They help make the industry seem busier and more full of life. These tilting windows break up the otherwise flat wall.

Try This!

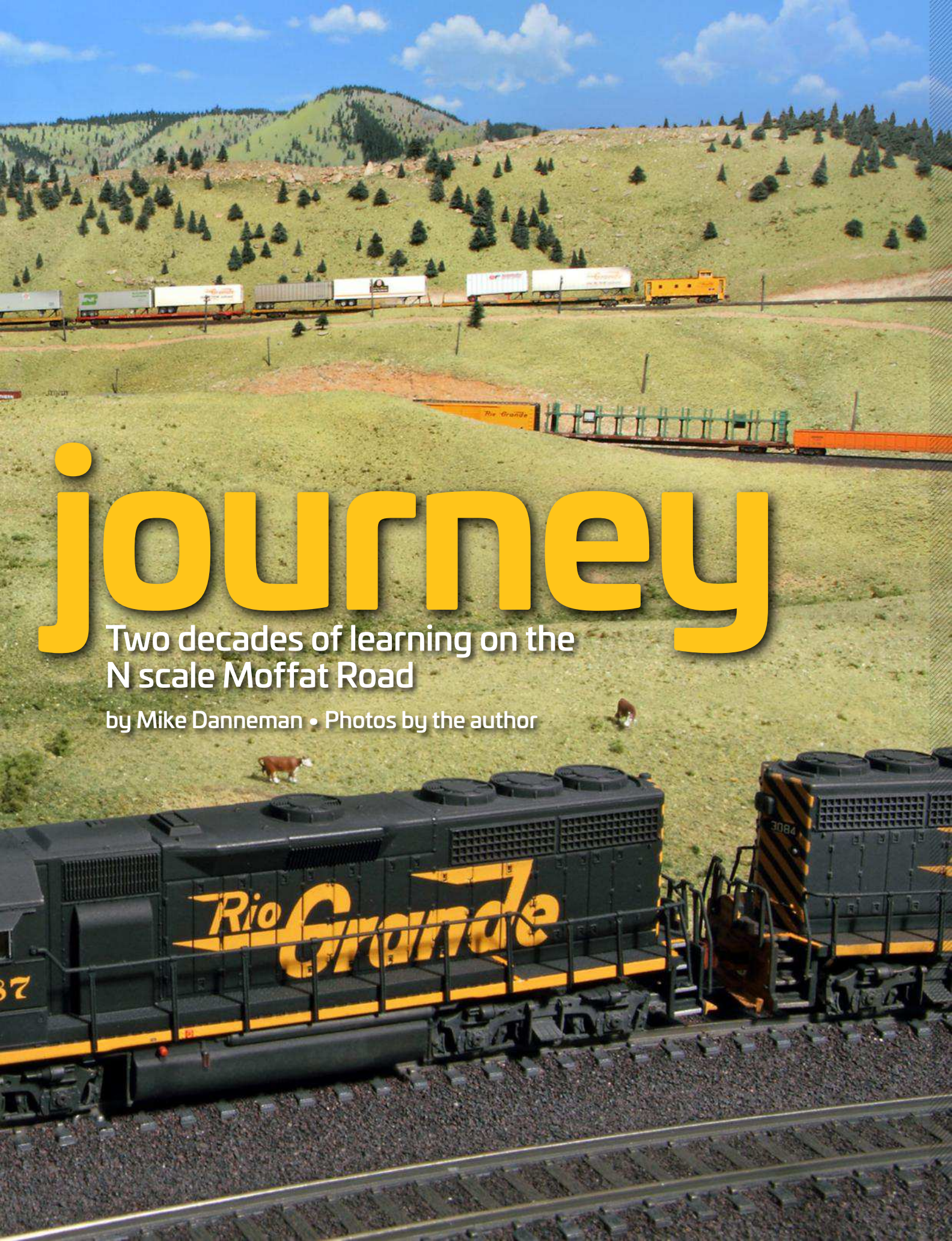
Details are fun, but to make them effective you need to strike a balance. Too many and things simply look cluttered and will "overload" visitors' eyes. Too few and your visitors will lose interest. Give your layout some breathing room between major details and scenes so visitors can appreciate each one individually.





Grande

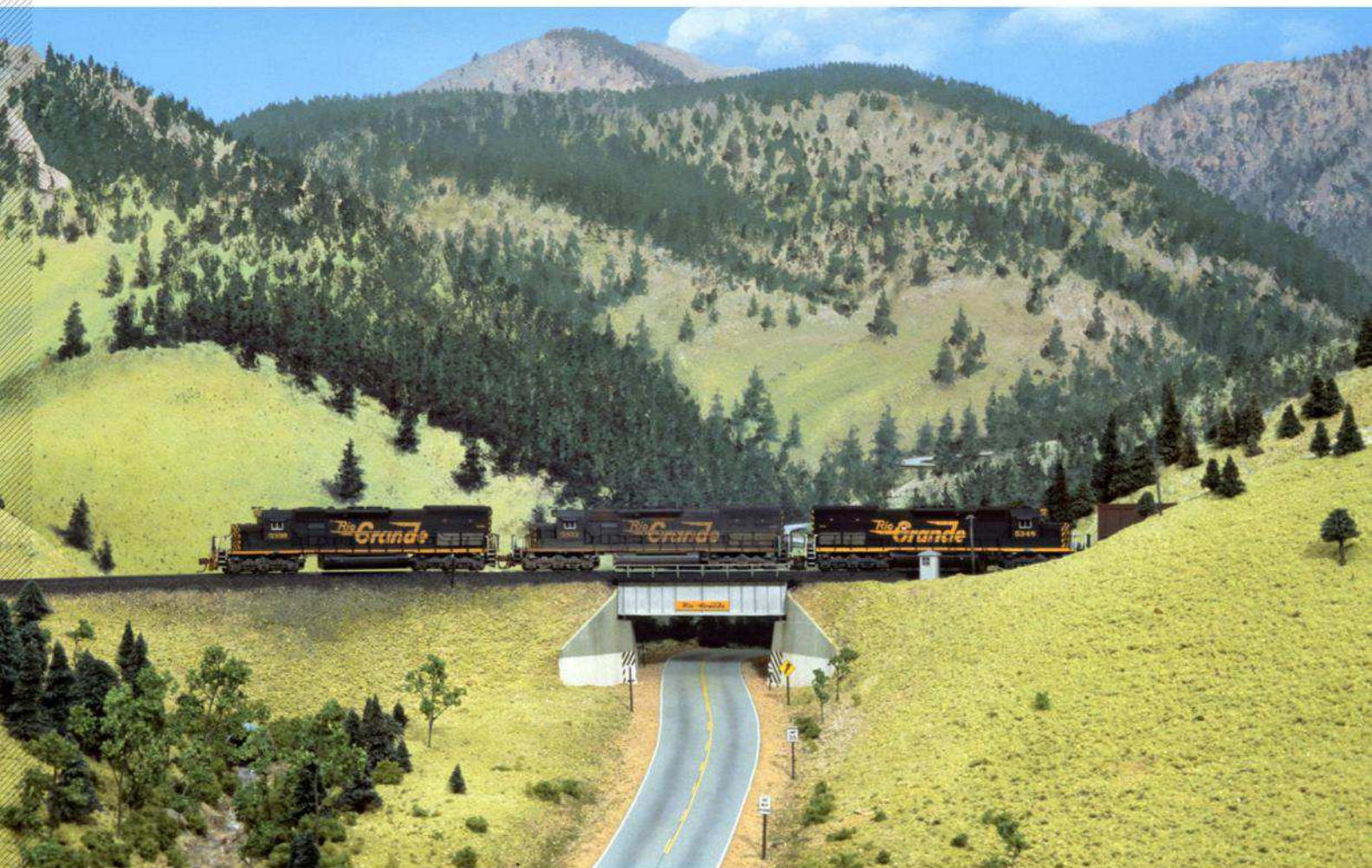
1. Rio Grande pushers (foreground) shove their westbound train upgrade at Little 10 Curve while an eastbound piggyback waits in the distance at Clay Siding.



journey

Two decades of learning on the
N scale Moffat Road

by Mike Danneman • Photos by the author



2. A trio of Rio Grande "Tunnel Motors" lead their train across Colorado Highway 72. The hand-painted backdrops match colors and blend with the foreground scenery, creating scenes that seem to go on for miles.

Twenty years ago, after moving into our home in Colorado, I began an excursion into building a large N scale layout featuring the Denver & Rio Grande Western line west of Denver.

WATCH THIS ON



Free Video!

See trains rolling on Mike's Rio Grande layout at MRVideoPlus.com/TUG1

Benchwork began in January 1999, and mainline track soon followed with the gold spike driven in November 1999. Once the rest of the track and wiring were completed, I looked forward to getting my hands dirty with some scenery.

The scenery base is carved foam insulation board, with Hydrocal rock castings and Sculptamold for initial textures. After a coat of earth-color latex paint, often tinted with acrylic paints, fine rock and ground foam were added, affixed with matte medium.

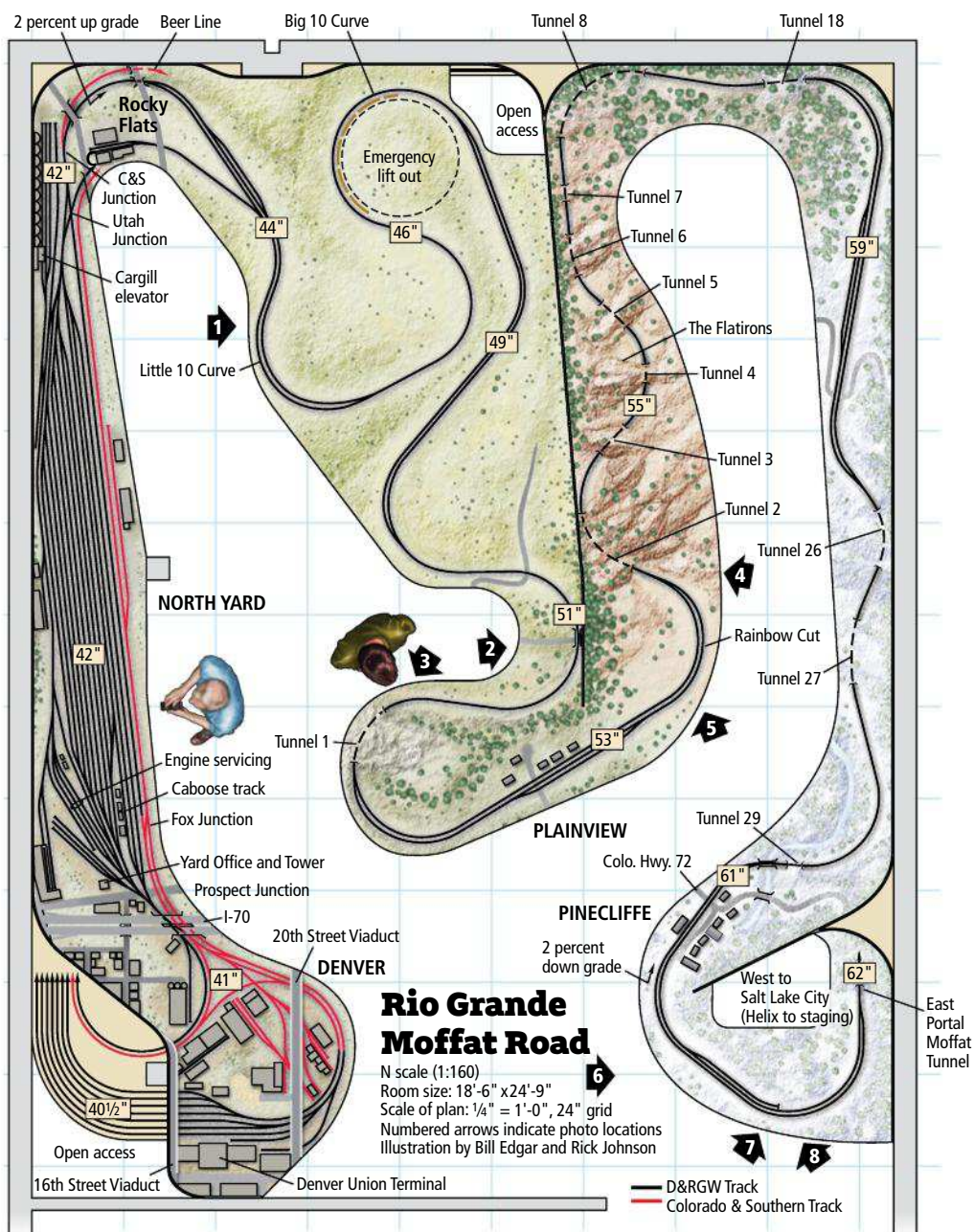
One feature of the railroad that I really wanted to present was the 2 percent climb from Denver to Moffat Tunnel. I wanted my springtime scenery to change as a train traversed the grade.

A trip up the line

Let's take a ride on a westbound train out of Denver. We leave the urban bustle and climb into peaceful, grassy foothills around Big 10 Curve. Evergreen trees begin to line the right-of-way as the train climbs over Highway 72 at Coal Creek Canyon.

Foothills turn into rugged Front Range mountains as we pass through eight tunnels climbing through Plainview and the unique Flatiron rock formations. While roaring through Crescent, a dusting of snow can be seen on trees at this higher elevation.

Passing through Tunnel 29 into Pinecliffe, the train is surrounded by a winter wonderland, even though it's springtime back in

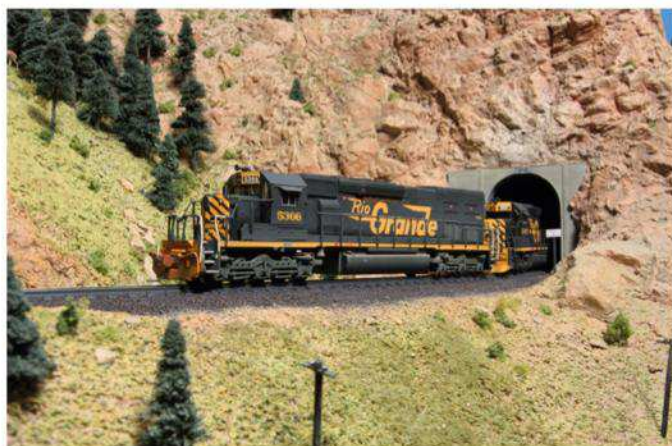


Track plan at a glance

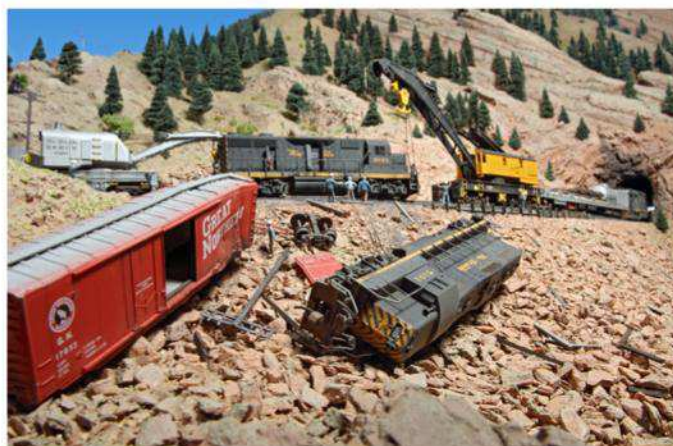
Name: Denver & Rio Grande Western Moffat Road
Scale: N (1:160)
Size: 18'-6" x 24'-9"
Maximum grade: 2 percent
Minimum radius: 18"
Benchmark: open grid
Subroadbed: 5/8" plywood
Backdrop: 1/8" hard-board, painted

MR Plus Tips!

- Backdrops don't have to be superdetailed to be effective (they shouldn't call attention to themselves). Match the backdrop colors to the foreground scenery colors to achieve the illusion of great depth.
- Look for opportunities to add to operational challenges. Helper service, plow trains, wreck trains, and tunnel ventilation restrictions have all made running trains more interesting.



3. The line from Denver to Moffat Tunnel passes through several shorter tunnels. The lead locomotive is an SD40T-2 "Tunnel Motor," designed with low radiator openings to take in cooler air while operating in tunnels.



4. Two "big hooks" are on the scene to get a locomotive back on the tracks following a derailment. Mike has two wreck trains that are sometimes called to service during operating sessions.



5. The Flatirons are distinctive, angled rock formations along the Front Range (above) that required several tunnels.
 6. A spiral helix (right) connects Moffat Tunnel with a staging yard under Denver, allowing continuous running.

Denver. Approaching Moffat Tunnel, the sun disappears and distant mountains are now in a veil of falling snow.

This change in elevation and weather is a key highlight of the layout's scenery and operations.

Let it snow!

Before it "snowed" on the layout, I completed the scenery as on other parts of the layout – except for trees. Track, roads, and stream beds were masked, as was the fascia and backdrop. I soaked the scenery thoroughly using water with a

drop or two of liquid soap added.

I then filled a sieve with dry Hydrocal plaster and sifted it onto the wet scenery like it was snowing! I reapplied lights mists of water to keep the plaster soaked, then allowed it to set. To increase the snow depth, I repeated the steps.

Thicker applications of snow are made from Liquitex Modeling Paste, an opaque preparation of marble dust and polymer emulsion.

The creek bed was finished by first painting it



a deep blueish-black with acrylics. Several layers of acrylic gloss medium represent flowing water. Boulders sticking out of the stream

were covered with gesso.

Ice effects on parts of the stream surface were done with two-part casting resin. I spread the resin randomly



and thinly on waxed paper. Before it set, I sprinkled on some powdered glass for added texture. These thin pieces of “ice” were then peeled off and affixed to areas around the stream with white glue.

To make snow-covered roads I applied Hydrocal in the same fashion, working in 6" sections. I then used a vehicle to create ruts as the plaster set up.

For snow on the tracks, I used Arizona Rock & Mineral Snow, which has a sparkly appearance. I essentially ballasted my track in the snow scenes at the desired depth with this material. I also made small snowbanks along the deeper sections.

The trees are made from bumpy chenille. For the trees in the snow scene I used the same techniques as the scenery, but I flocked them on flats in the garage or outdoors to keep plaster dust at a minimum.

To strengthen the Hydrocal around the tracks and layout edge, I applied a soaking of matte medium. This helps keep the Hydrocal from chipping and makes the snow scenery very durable. Keeping the snow scenery clean is just like keeping the rest of the layout clean—an occasional vacuum job.

Snow has also added to the operations. An extra plow train out of Denver is occasionally called and run to East Portal and back to “keep the snow from accumulating.”

Helper locomotives

The 2 percent grade from Denver to the Moffat Tunnel allows operating rear-end helper locomotives. When we first tried this, they often derailed trains on curves. My solution was “derating the horsepower” of helper engines by removing one worm gear from the drive train so that only one truck was powered. The reduced power kept them from pushing cars off the track, while maintaining the realism of multiple locomotives. I also use helpers on eastbound loaded coal trains going downgrade. The prototype Rio Grande frequently did this to add more dynamic braking.

Only heavy westbound freights out of Denver get rear helpers. We follow prototype Rio Grande rules in that helpers behind a caboose must not exceed eight axles (rule 14-A), and helpers ahead of a caboose must not exceed 18 axles (no problem on my layout!). Another rule (14-B) we try to follow is that, when it can be avoided, cars

Creating the Flatirons

The Flatiron rock formations west of Plainview were a scenic challenge. My base scenery is foam insulation board stacked, glued, and shaped. I also used foam for the Flatirons, but instead of stacking them I placed the boards on an angle as shown in the photo below. I carved the formations with a hot wire tool and a sharp foam knife, gluing the boards together (but not to the layout) with low-temp hot glue.

I built the base scenery up to the level of all of the tunnels, allowing it to be properly lined and ballasted. I then placed 1" and 2" foam sheets at an angle to form the basic Flatiron slabs based on prototype photos. I built up the scenery base using more foam boards where needed, stacked conventionally.

After lots of carving, all of the scenery base was done. Once the scenery looked more refined and shaped like the prototype, I filled the seams between boards with Sculptamold. I also left the Flatiron slabs removable. These sections were covered with a thin layer of Sculptamold at the workbench.

In other areas around the Flatirons, I hot-glued Hydrocal rock castings to the scenery base (along with talus rock glued conventionally with matte medium), both tinted with the same latex paint. Once I was finally satisfied with the look of the Flatiron rock sections, I glued these into the scenery and patched the joints with tinted Sculptamold and acrylic paints. I also used acrylics to further detail the rock formations, adding cracks, shadows, and highlights. These paints also blended the Flatirons with the painted scenery on the backdrop.

I finished the rest of the scenery (ground foam, trees, pole line, details) conventionally as on the rest of the layout.



Angled foam sheets provide the basic form for the Flatirons, with rock castings glued in place atop them.

70 feet and longer or less than 50 gross tons (empty) should not be nearer than five cars ahead of helpers when two locomotives are used.

Once a train gets to the top of the grade at Moffat Tunnel, the rear helper is cut off. Helpers head into the short house track at Cliff if they need to be in the clear or if needed for an eastbound coal train. Oth-

erwise, helpers head back to Denver as light engines.

Call the wreck train

When prototype railroads had a derailment, they would call a wreck train to the scene. As we operated the layout more, we'd experience the occasional derailment due to a turnout thrown under a train or some other human-error mishap. Normally with



7. The calendar is turned back to 1962, as three Kraus-Maffei diesel-hydraulic locomotives emerge from Moffat Tunnel and begin their trek downgrade toward Denver. It's still winter at Moffat even though it feels like spring in Denver.

these derailments, the train involved would stop and someone would “skyhook” the offending locomotive or cars back on the track.

Then the thought came to me: Why not build a wreck train that could run to the site of a derailment from Denver? The prototype Rio Grande also kept a large 250-ton derrick at centrally located Grand Junction, Colo. Nicknamed “Samson de Grande” in an

employee contest, this crane was the largest on the system and would be brought to really large wrecks. Also, when a derailment was severe enough, “big hooks” would be sent from each end of the wreck.

I added two wreck trains, eventually building good representations of both the Denver and Grand Junction outfits. This way, for bad derailments I can dispatch both trains to work the

wreck. Only when the train has arrived can we re-rail equipment. This train is also used to haul any “wrecked” cars back to Denver for further inspection and repair. These trains have added a new dimension to operating sessions.

Helix

To provide continuous running, a helix connects Moffat Tunnel and Denver Union Station. The roadbed

for the 4 x 5-foot oval helix was cut from a single piece of plywood in one long, continuous saber-saw cut. Track centers spaced 1 $\frac{3}{8}$ ” apart give the helix five turns to keep the grade below the minimum. The inside of the roadbed is lined with matte board to protect equipment and give the helix a nice finished look. The rear portion of the helix is hidden from normal view, but is open for track maintenance and



cleaning. The front portion of the helix doesn't have any supports in the way, making track cleaning a breeze.

The time a train spends in the helix represents its travel through the 6.21-mile Moffat Tunnel. On the prototype Rio Grande, the tunnel is single-track with a speed limit. Also, after passage of each train, the tunnel must be purged of exhaust before another train can enter. Trains often have to wait in sidings on either side of the tunnel for

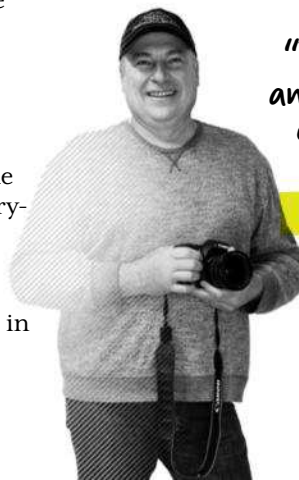
it to be vented. So in some ways, the helix nicely represents the run through the Moffat Tunnel, and it does slow traffic down, just like the real thing.

A fascinating journey

My 20-year journey building and operating the Moffat Road has been everything I hoped it would be. I hope it still provides the same interest and experience for many more years in the future. ■



8. It's a good thing the plow train proceeded this westbound train, shown here at Cliff siding as it approaches Moffat Tunnel. Snow still covers the parked cars in the siding.



Mike says...

"There's much more to get done, and the railroad still provides hours of enjoyment and moments of reflection. Building a layout based on a prototype took me many places I wanted to be and pulled me into some venues I never expected."

T-Trak tales



It may look like a patchwork quilt, but the MRVP team and friends had a great time building this collection of T-Trak modules.

These square-foot modules are a fun way to try something new!

by Kent Johnson
Photos by Bill Zuback

What is T-Trak?

- T-Trak is a modular railroad system based on a few simple standards for size, track placement, and electrical connections. T-Trak uses Kato Unitrack, enabling modules to just “click” together and be taken apart again very easily. For more information and tips on getting started, visit the group’s website at t-trak.org.

Looking for something different?

Try building an N scale T-Trak module! Let’s face it: Even if you have a home layout, sometimes you get the itch to try new ideas or scenery techniques. That’s where T-Trak modules come in handy. Building a compact module or two can help you hone some new skills and keep the hobby fresh.

The T stands for Tabletop, and the modules can measure just a single square foot or smaller. Like other model railroad modules, you can build several and string them together to follow a theme, or you can make them all different, as the Model Railroader Video Plus crew did on our layout shown above.

T-Trak is also a good option for those who don’t have much space. You can build a layout that forms a circle of track in just over 4 square feet. Those pieces can be pulled apart when not in use and stored in a box, on shelves, in a cabinet, or in a plastic storage tote.

And T-Trak doesn’t need a table, either – you can set it all up on the floor just as easily, or even outside (providing it doesn’t rain).

Part of the T-Trak fun is that you can share your work with others. There are many T-Trak clubs, and they meet at train shows and events to click all their modules together and spend an enjoyable evening or weekend running trains.

Many MRVP team members built modules for our project. After reading a few of their T-Trak Tales, you may just find yourself building your own T-Trak module!

>> 3-D print a golf cart

My T-Trak design is a small scene depicting Forest Hills Golf Course in La Crosse, Wis. This course is unique because it has a Class 1 railroad cutting through the middle of it. When BNSF recently expanded this portion of the line from single track to double track, it also added a pedestrian underpass to protect golfers from the added train traffic.

When modeling a golf course, you expect to see golf carts. Unfortunately, I couldn't find a modern N scale golf cart kit anywhere, so I

made one! In this case, I started by searching for technical drawings and photographs to aid in creating the model.

Using the photos and drawings, I was able to design a golf cart with a suitable

amount of detail for an N scale model on my computer using an open-source program called Blender (www.blender.org). Although describing how to design a 3-D model is beyond the scope of this article, the Blender website includes a lot of helpful information to get you started.

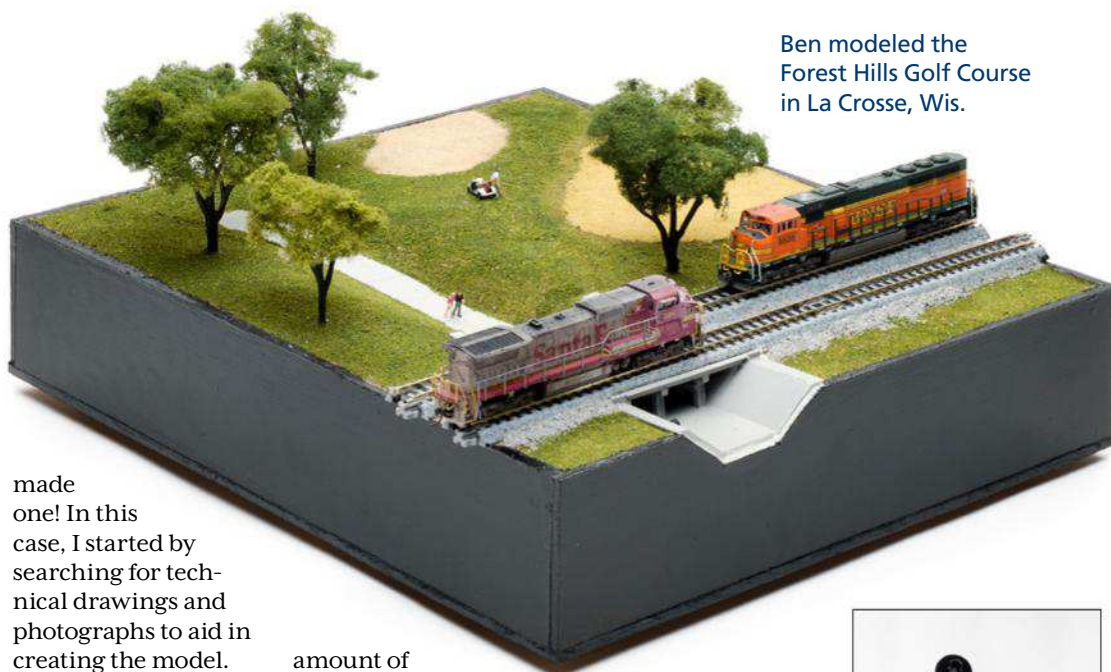
Once the plan was ready, I uploaded the files to Shapeways. com, and a week or

two later I received the printed model in the mail.

You don't have to design your own model to benefit from Shapeways – you can go there to purchase many great models that others have designed and produced. Many models and kits are available in N, HO, O, Z, and even large scales.

After treating the model, painting it,

Ben modeled the Forest Hills Golf Course in La Crosse, Wis.



This is the 3-D cart straight from the printer and ready for painting and golfers.



This signal for our Canadian layout is another 3-D project.

and applying some figures, it has really become an attention-getter on my T-Trak module.

WATCH THIS ON



Free Video!

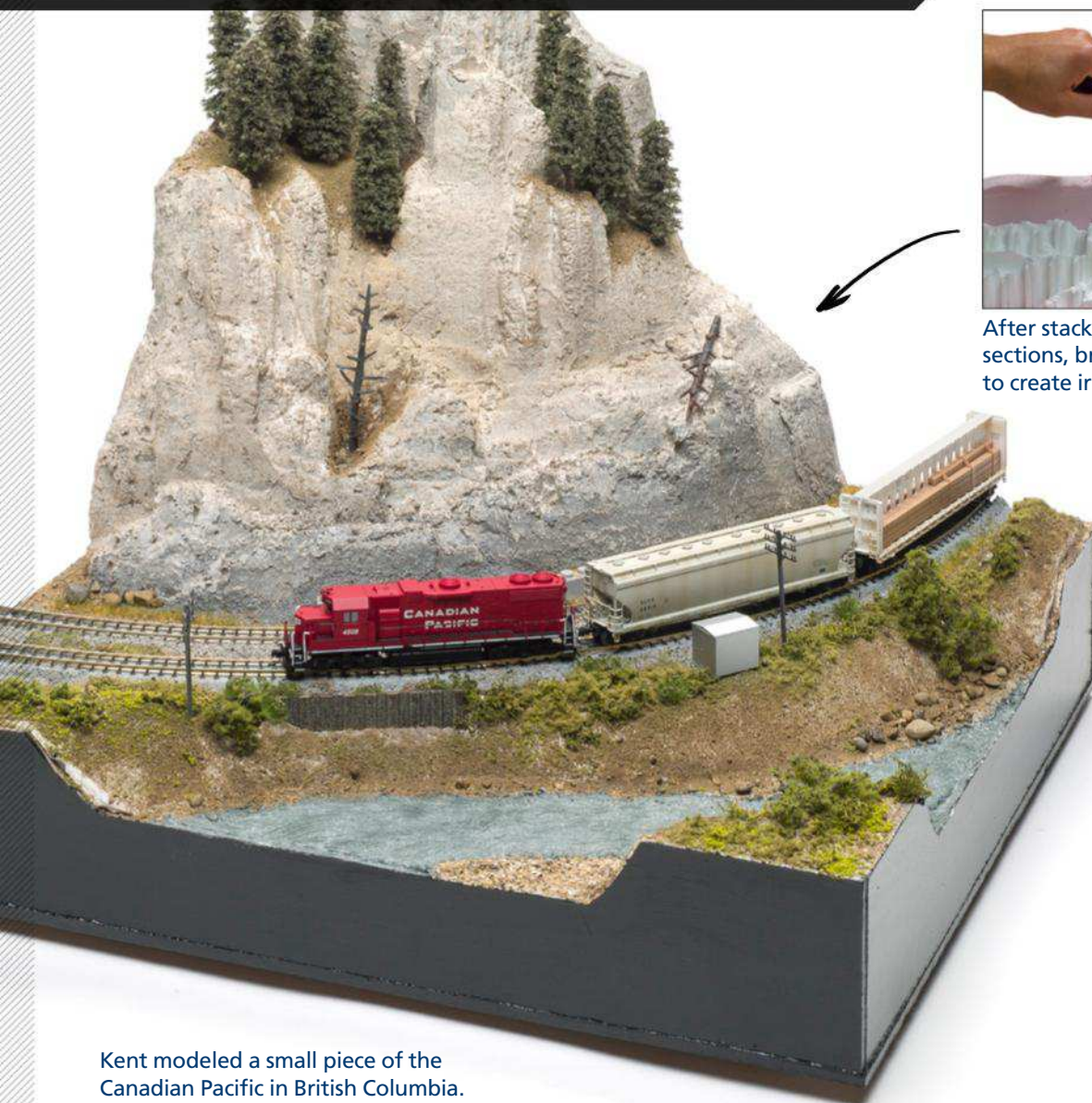
Follow the T-Trak adventure on MR Video Plus for free, starting with our first project video at MRVideoPlus.com/TUG1

Ben says...

You never know what skills you'll use when building a model railroad. I've used 3-D modeling tools for video and design work for years. However, this was my first attempt to use that skill to create something for a layout. Styrene and a hobby knife still have a place in my toolbox, but 3-D printing has taken my work to the next level.



>> Interlocking foam mountains



After stacking the interlocking foam sections, break or cut away the tops to create irregular shapes.

QUICK FIX

You won't regret buying a cheap steak knife for working with foam board!

Kent modeled a small piece of the Canadian Pacific in British Columbia.

Think big, but build small. That directive can pose a real challenge when you're looking to fit a mountain range into even the largest of model railroad empires, let alone in 4 square feet. But while T-Trak specs restrict width and depth, there's nothing limiting how *high* you can build. Naturally, I'd

use that liberty to my advantage modeling the unique rock formations found along Canadian

National's route through Thompson River canyon in British Columbia.

Having traveled extensively in Canadian Canyon country (Drew's Trackage Adventures, episodes 29-31), I knew precisely how the eroding wall of rock should look. But selecting a modeling material was more of a quandary. Then,

after experimenting with a number of foam-based products, I found Woodland Scenics foam profile board (ST1419) was a spot-on solution.

After applying hot glue to laminate boards into *vertically* orientated layers, I then used a steak knife and a Surform rasp tool to scratch strata into the foam.

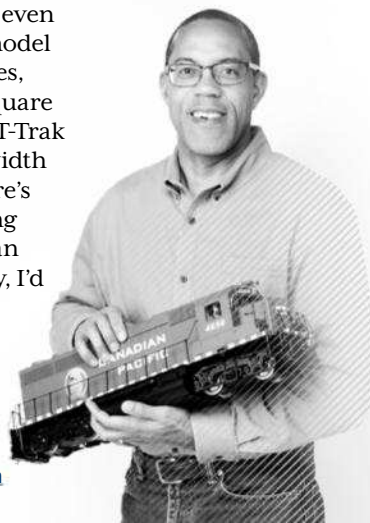
Next, I used a putty knife to back-fill the gaps with Sculptamold. I let the wet material dry completely before using a sea sponge to apply a patchy coat of tan and gray latex paint.

Finally, I added patches of brown ground foam, Woodland Scenics armatures (TR1124), and a few pine trees along the rock formation.

I've often heard that working with white foam bead board is dreaded and to be avoided. But in this case, it proved to be an indispensable aid in creating just the right look for my tall (but small) module!

Kent says...

While I'm an O scale modeler at heart, T-Trak modules proved to be a great way for me to test new scenery techniques that can be scaled up or down to suit.



>> Making the Everglades

Some of my favorite railfan trips have included chasing trains on the Florida East Coast Railway. As such, I decided to build my T-Trak module to represent a typical scene in southeastern Florida, which I dubbed Alligator Alley. It features a piece of a container yard and a bit of the Everglades.

Making the Everglades was a fun process. After cutting away pieces of the foam base to elevate the track and the container terminal, I used Sculptamold to form the swamp. Next, I painted the exposed ground a dark brown color, but painted the bottom of the swamp black to simulate depth.

I poured the swamp using Woodland Scenics Realistic Water, a one-step product. Before it set, I tinted the water murky brown using a few drops of acrylic



The Florida East Coast Ry., as depicted on Drew's T-Trak module.

paint. I let the water dry for nearly a week.

The secret to getting a good swamp is filling it with good-looking vegetation. I used a Grand Central Gems 295-GM1 spring green grass mat. This material was easy to

break apart and glue to the surrounding ground with white glue. Although it's naturally green, I used a brush to paint the material different shades, adding varying levels of lushness. I let the edges overlap

the surface of the water, producing a realistic swampy look.

To finish the scene, I added a few Woodland Scenics Royal Palm trees (TR1617) and a 3-D printed alligator I found on eBay. A quick way to add realism to each palm is to grab a dead burr from outside and slide it up the trunk, right under the top. This simulates dying fronds. Slide the gator in the grass and call it a day!

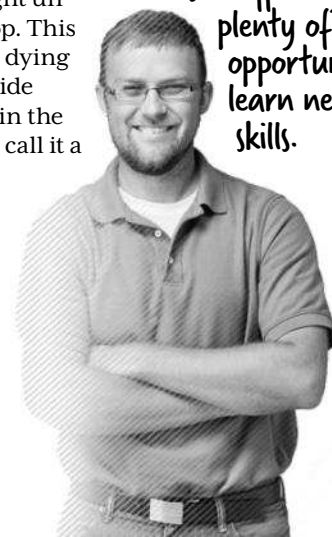
Drew says...

The best part of working on a T-Trak module is that it's not overwhelming.

I had just a square foot or so of project space to work on, making it easy to build while still offering plenty of opportunity to learn new skills.



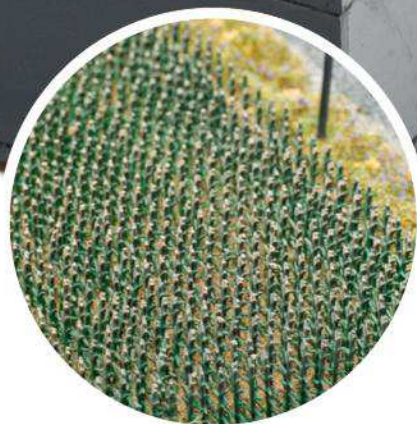
Grand Central Gems spring green grass mats and a little ground foam complete the scene. Be sure to watch out for alligators!



>> Modeling a cornfield



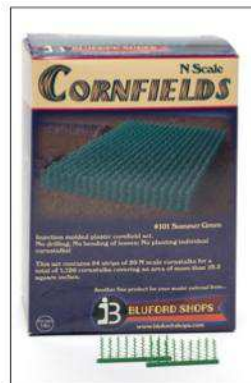
Jenny modeled the Wisconsin & Southern as seen from her parents' backyard.



Jenny says...

Not only did I learn how to model a cornfield, I learned many basic scenery skills as well – this project confirmed that scenery is my favorite part of model railroading.

The best part was re-creating special details, such as my parents' garden, the giant rock I climbed on as child, and the lilac bush that smells so lovely in summer.



Bluford Shops
no. 101 Summer
Green Corn

I really enjoyed the T-Trak project because what I was modeling hit close to home – literally! I modeled a section of my parents' yard, which is just a cornfield away from the Wisconsin & Southern. The biggest task I faced was modeling that cornfield. Luckily, I didn't have to plant individual corn stalks!

I read an article in the September/October 2015 issue of *N Scale Railroad-ing* where the author explained how he modeled a cornfield using a kit from Bluford Shops. This inspired me to pick up a Bluford Shops kit for myself.

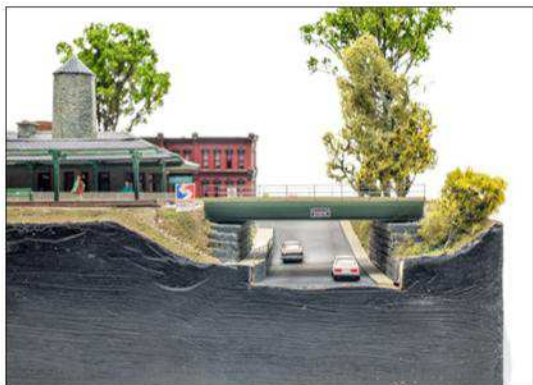
The N scale cornfield kit contains 54 strips of 20 cornstalks each. The base strips have pins and sockets on either side to

connect the strips together to make rows. I added some glue to the joints to make the connections more secure.

In an attempt to stagger the rows of corn, I had to trim the length of the base strips to get the pins to match with the sockets. It became more of a hassle than I had bargained for, so ultimately my rows ended up in alignment. However, I didn't want a perfectly rectangular block of plants for my cornfield, so I made the first couple of rows shorter and rounded out one of the corners of the field, forming a rough triangle.

To give my corn stalks a realistic look, I used Rust-Oleum paints. First, I sprayed them with Meadow Green and then gave them a coat of Forest Green. I finished with a light spray on the tops of the stalks with Camouflage Sand to replicate tassels.

>> Using elevation to add interest



Even in small spaces, changes in elevation, such as this underpass, add visual interest to a scene. Eric's module depicts a commuter station.

Our T-Trak project

was a lot of fun, but it came with some significant restrictions. Size, of course, was the first one, with track alignment a close second. Since I couldn't go out, I went up and down. Up was easy – I planted some tall trees. Down took a little more work.

The base of the module was extruded-foam insulation board, so it was easy to carve away material. I modeled the Elkins Park station scene on Philadelphia's Southeastern Pennsylvania Transpor-



tation Authority (SEPTA). The cross streets in the area run under the tracks, so I dug a trough in the foam to create an underpass.

There's a sidewalk that's raised above road level to simplify access to the opposite side of the tracks for outbound passengers. This added another

level and a bit more texture as the abutments for the bridge were made of large stone blocks.

Lowering the tracks and adding trees well above gives viewers' eyes another thing to look at. Flat surfaces are easy to

comprehend, so we get bored looking at them. By adding a little "surface excitement" to a scene, suddenly the model becomes much more visually interesting. Give it a try. 🎬

Easy to make

While we built our own modules following the specifications on the t-trak.org website, you can buy easy-to-build module kits from a couple of suppliers. Masterpiece Modules (masterpiecemodules.com) and T-Kits (t-kits.com) both supply kits for most of the common (and a few uncommon) T-Trak module shapes. Once assembled, all you need to do is add track and scenery and you are ready to run trains!

Eric says...

Google Street View was my friend on this project. It allowed me to travel 900 miles to see an area I was familiar with, but no longer had access to. I was also able to create signs for the station and a local business by zooming in on the pictures. I even reproduced the bridge clearance sign for the overpass.



Ready, set, switch!



David and Jenny crew the Tar Branch Local on the Winston-Salem Southbound HO scale layout. This compact railroad is less than 16 square feet, yet provides hours of operating enjoyment.

Running the Winston-Salem Southbound provides big operation in a compact space

by David Popp and Jenny Maaske

One question I hear a lot from readers and viewers is, “can you really have a satisfying operating session on a small layout?” Obviously that depends upon the layout, but if it’s something like our HO scale Winston-Salem Southbound Ry., then the answer is unequivocally yes!

Our WSS layout measures a little over 8 feet long and is 30” at its widest. It has a simple swing-up two-track staging yard that holds just seven cars. How can such a small layout offer much in the way of operational interest?

The secret is in the design. I based

the model railroad upon the prototype Southbound’s Tar Branch, which in the 1950s served an amazing array of compact businesses along the north end of its line. It’s those industries that provide hours of realistic and rewarding switching work on the railroad.

To prove the point, Tony Koester, Jenny Maaske, and I set up the Winston-Salem Southbound layout for operation. Along the way we created a pair of videos to show you how you can do the same thing on your own model railroad. The following pages highlight the

processes we used, provide hints for doing the same on your railroad, and give you an overview of what it’s like to run a trick on the Tar Branch job. To watch the complete videos, see the box at right. Before you know it, you’ll be ready to operate your own small railroad!

+ MORE on MRVP!

We have two great videos that show you how to get the most out of running trains on the WSS layout:

- **Preparing for Operation:** Tony and David teach you how to get a small layout ready to operate.
- **Switching the Winston-Salem Southbound:** David and Jenny walk you through the steps of running a WSS operating session from start to finish.

>> Set up



The Tony Factor

Yes, we could have set the layout up ourselves, but it was far more fun to involve friends, so we brought in author and operations expert Tony Koester to help. While he was here, Tony taught us a thing or two about how real railroads ship things around the country. And he showed us how to make our own waybills and car-routing paperwork using Microsoft Word.

Winston-Salem Southbound Operating Information

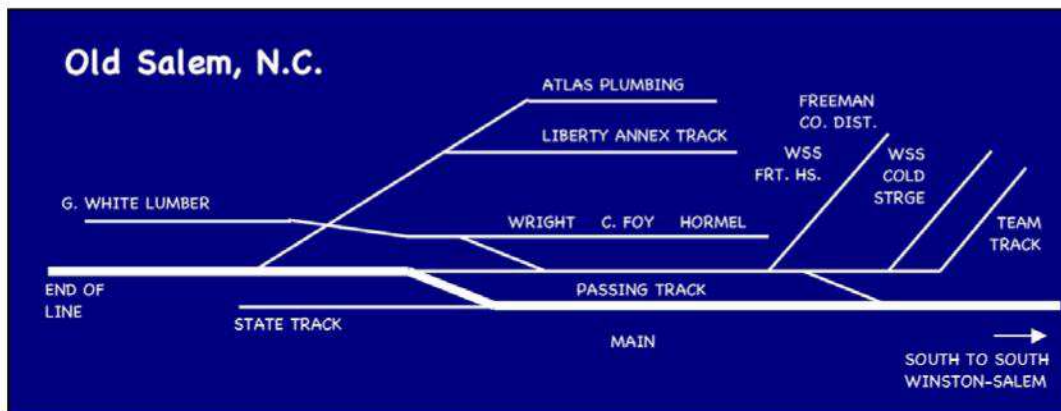
Business	Car spots	Receives
Atlas Plumbing Supply	3	Pipe, fittings, duct, radiators, air compressors, fans, fixtures, furnaces, boilers. They also got stuff that comes in tank cars that was then transferred to steel drums. The Sanborn map shows storage of paints and lacquers in that part of the building, so my guess is that is it.
George White Lumber	1	
H.G. Wright Dist. Co.	1	
Clyde L. Foy Co.	1	
George Hormel & Co.	1	

Industry lists

The best starting point for setting up a railroad for operation is an industry list. This is a catalog of all the rail-served industries and what they ship. The photo shows just a handful of spur tracks, but their historic counterparts serve a dozen or more customers, and all of those are identified on our industry list.

Track maps

While we were at it, we used Word again to make a small track map for the layout. A track diagram or map shows all of the industries, as well as all spotting locations for freight cars. On larger layouts, you'll want to make a diagram for each town. Remember: Although you know where everything is, your friends might not.



Layout freight car roster

Road name	Road no.	AAR type	Description
Wabash	75693	XM	outside-braced
East Coast Lines (club car from MA)	ECL 1938	XM	outside-braced
New York Central	NYC 277768	XM	outside-braced
Southern	23393	XM	steel
Chicago & North Western	141352	XM	dbl sheathed
Nashville, Chattanooga and St. Louis Ry.	NC&StL 18288	XM	steel (1932 AAR)
Nickel Plate Road	NKP 5279		
Norfolk & Western	N&W 44538		
Baltimore & Ohio	B&O 27443		
Atlantic Coast Line	ACL 23046		
Virginian	VGN 13939		
Norfolk & Western	N&W 73516		
* We have coal loads for Crystal Ice & Co			
Southern	198004		



Got freight cars?

After putting together the industry list, we took inventory of our freight cars to make sure we had what we needed to serve our customers. We then set to work filling out our waybills, starting with the car's reporting marks (official initials) and number, as shown on the NKP boxcar in the photo.

Waybill

TO STATION STATE
WINSTON-SALEM, N.C.

ROUTE
NKP-CLO-MAN-WSS-WINSTON-SALEM

CONSIGNEE & ADDRESS
CLYDE FOY CO.

INSTRUCTIONS

DESCRIPTION OF ARTICLES AND MARKS
BAGGED FLOUR

Shipping stuff

A waybill is the paperwork that follows a car wherever it goes, indicating what's in it, who receives it, and how it gets there. Thus we determined what was in each car and where it was going. While we made our own waybills, you can purchase printed versions from Micro-Mark – in either case, just fill in your own details.

>> Starting the session



Placing cars

For your first operating session, you'll want to place some cars on the railroad ahead of time, as Jenny and I are doing in the photo above. These cars may be loaded or unloaded, and many (but not all) represent cars that are waiting to be picked up by the next train. Waybills for each car should be placed in the corresponding bill boxes on the layout so the crew can find them. Lastly, put together a set of cars for the train to work the line. At this point you are ready to put your first operating crew to work!

The switch list

The initial task for your train crew is to make a switch list, which is a simple score sheet used by the conductor to keep track of the cars in the train. We made ours using Microsoft Word by following a prototype switch list. You can download a PDF copy under this video at MRVideoPlus.com.

To fill it out, start by looking at the waybills for the cars in your train. Write the reporting mark and destination for each car in the appropriate columns.

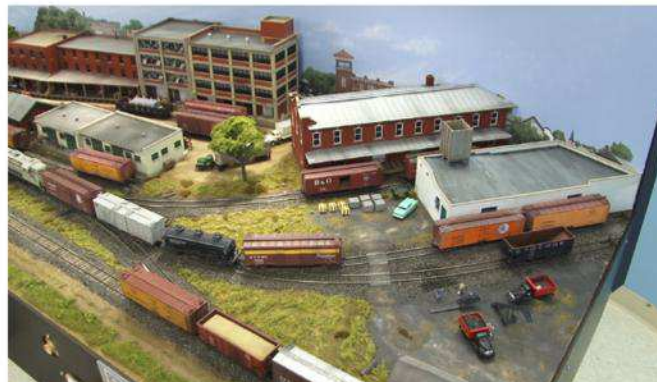
Next, read the waybills in the bill boxes in the first town your train will work. On your switch list, write the word "pick ups" one or two lines below your list of setouts, then fill in the information for the cars that you will need to pick up before leaving town. Be sure to note any special instructions.

As shown on the list above, we've used the letters "MT," which indicates the car is empty. Sometimes you can use an empty car you've picked up to fulfill a customer's request for a car needed for loading, so it is helpful to know which cars are available.

With the switch list filled out, your crew is ready to start switching cars. As you complete your work, you can check off the cars you've set out or picked up to help keep track of your train.

1	249	LO	Shore
2	022	TM	Davis
3	7007	RA	Annex
4	029	RA	Team
5	775	RA	Team
6	5279	RA	Team
7	495	MT	
8	362	MT	
9	473	MT	
10	282	MT	
11	023	RA	
12	036	RA	
13	693	MT	
14	958	RA	MT
15			
16			
17			
18			
19			
20			
21			

>> Working the train



Making pickups

Picking up cars is part of switching. In some locations, it is simply a matter of collecting a single car that may or may not be replaced by another. In more complex settings, such as the three tracks shown above, it's easier for the crew to first remove all four of the required pickups before delivering the inbound cars.



Making setouts

"Setout" is the term for a car that is to be delivered to a customer. The triple-dome tank car is being set out on the team track. The sand hopper in front of the engine is also destined for the team track, once the crew spots the cement car and the Southern boxcar elsewhere.

Re-spot cars

Baltimore & Ohio car 274431 carries a shipment of bricks, but it's only partially unloaded. The crew needs to pick up one car beyond it and set out another car for loading. The conductor finds the car has a green tag, meaning that the remaining load is secure and the car may be moved. When his train picks up the car, he adds it to his switch list, noting that B&O 274431 is a "respot." This serves as a reminder that the car needs to be put back at the freight house before the crew leaves town.

15	URTX		
16	NAB	0	
17	MDT	693	
18	VGN	958	
19	BeSpot	939	
20	B&O	431	RA

>> Wrapping it up



Outbound cars

Outbound cars are those leaving town with the train. On the Winston-Salem Southbound, where space was at a premium, the crew often shoved the outbound cars down the main line to get them out of the way. On our layout, we shove the outbound cars onto the staging tracks until it's time to put the train back together for the return trip. Cars can be spotted just about anywhere during an operating session, so every track on the layout has a bill box, even the temporary staging tracks.



Ready to restart

After the operating session is over, remove the outbound cars from the train and replace them with new inbound cars. Then, cycle the waybills for the cars on the layout that are going to become pickups, and green or blue tag any cars that are to remain. In about 10 minutes' time, your layout is ready to run again!



What David learned...

Detailed paperwork for waybills is really cool. It took a lot of time to find actual businesses, but I had a big head start by knowing nearly every business on the modeled portion of the railroad and what they did. I was amazed to learn that H.G. Wright, located on the Maple Street Annex, was a Miller Beer distributor. It explained why all the photos of the building had Milwaukee Road VRTX reefers in them — not what I'd expected to find in North Carolina!



What Jenny learned...

An operating session is very similar to a game or puzzle. The layout is the game board, and the freight cars are the game pieces that are to be moved around the board. The switch list is a scorecard and the waybills are the cards. The challenge of the game is to get all of the cars to their destinations, and sometimes there are roadblocks you have to find your way around in order to get all the cars where they need to be. No two operating sessions are the same!

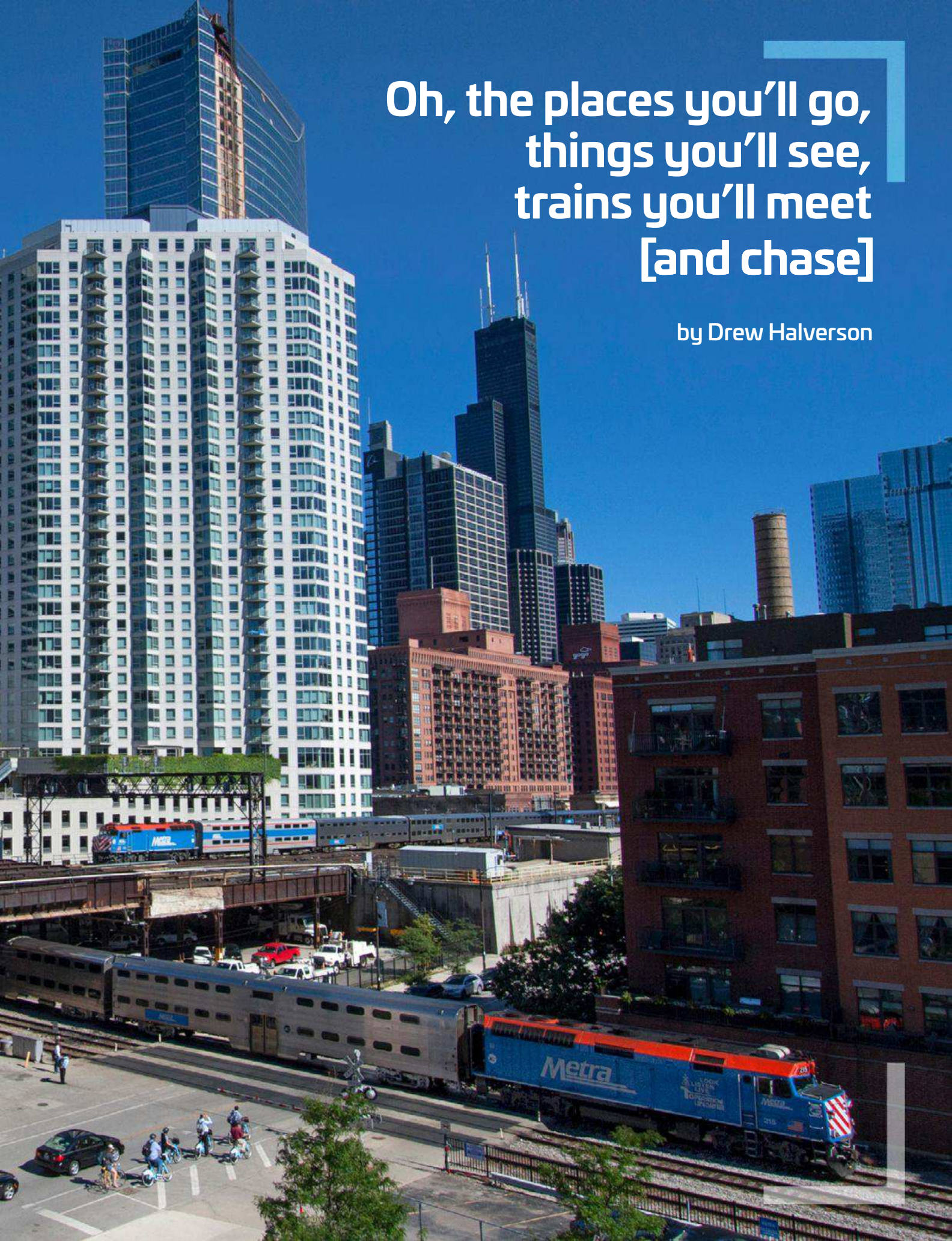
WATCH THIS ON



Free Video!

See an operating session on the Winston-Salem Southbound at MRVideoPlus.com/TUG1



A high-angle photograph of a city skyline, likely Chicago, featuring a prominent white skyscraper with many balconies on the left and the dark, tiered Willis Tower in the center background. In the foreground, a Metra train with a blue and red locomotive and silver passenger cars is moving along tracks. A street with cars and people is visible at the bottom. The sky is clear blue.

Oh, the places you'll go, things you'll see, trains you'll meet [and chase]

by Drew Halverson

WATCH THIS ON



▶ Free Video!

See an episode of Drew's Traskside Adventures at MRVideoPlus.com/TUG1

Going Traskside. For many model railroaders and railfans, this simple expression is equivalent to "goin' fishin'." However, for a rare breed of railroad enthusiasts or railfans like Drew Halverson and his thrill-seeking pals, the escapist phrase carries even more gravitas.

For Drew, a graphic designer by day, "Going Traskside" is a mantra that summons his seemingly supernatural skills and stamina to case, chase, and capture real railroads in action. Make no mistake, the art of documenting the North American railroad industry for historical or modeling purposes isn't new. But the lengths that upstarts like Drew are taking to further that effort is adventurous and downright exhilarating!

While not everyone is able to keep up with Drew's fast-and-furious-pace over land, sea, and air, no one is ever left behind on his adventures! Through Drew's Traskside Adventures video series, airing exclusively on the MRVP website and DVD collections, you can follow the trek and the trains everywhere he goes.

The next several pages share with you a compilation of Drew's best back stories, insights, beverage recommendations (and other local travel hints), and inspiring photos from some of his most notable trips.

— Kent Johnson, Producer, Editor, and Handler for Drew's Traskside Adventures



Drew says...

"The best thing about being trackside is inviting your senses into the mix. Inspiration ensues."



Chicago

TRAIN TALLY:

SWARM

GO-TO-GEAR:

UBER/LYFT APPS

MUST-HAVE MODEL:

KATO MP36PH METRA

COMMUTER ENGINE

BEST BEVERAGES:

GOOSE ISLAND 312

URBAN WHEAT ALE

SHERPA SAYS:

"GRAB A SEAT ALONG THE RACETRACK AND WATCH THE PARADE."

Ahhh, North America's railroad capital, where you'll never be far from one of the many railroads that serve the city. No car? Skip Uber and try Metra or the L. The former will take you across greater Chicagoland and put you trackside at locations along BNSF's Racetrack, UP's West Line and CP's Milwaukee District, to name just a few. Looking



for endless freight trains? Blue Island, on the city's south side, features 80-plus trains per day. Railroads span the Class 1 spectrum and include Iowa Interstate and IHB. If commuter traffic is more your style do what we did: pay the parking fee at Alta K-Station apartments and watch Metra's "Rush"—I'm talking 100-plus trains in over an hour—unfold from your perch in the garage. If you're looking

Previous pages: The "Rush" as seen from K Station

a: Metra F40PH-2 at tower A2

b: The Blue Island bridges host endless freight trains

for a view of the tracks and great food try Lawrence's Fish and Shrimp near Chinatown. Attractions come in just about every form but be sure not to miss the Museum of Science and Industry's massive HO scale layout.



Florida's East Coast

TRAIN TALLY:

A BAKER'S DOZEN

GO-TO-GEAR:

SUNSCREEN, SUNPASS

MUST-HAVE MODEL:

FOX VALLEY

N SCALE FEC ES44C4

BEST BEVERAGE:

MAD MANATEE IPA

SHERPA SAYS:

"LOOK FOR THE U.S.

SUGAR INTERCHANGE

FREIGHT AT

FORT PIERCE."

Take Highway 1 south from Jacksonville to Jupiter and you'll find no

shortage of attractions, from beaches and surf shops to restaurants and hotels. The Florida East Coast mainline parallels much of the drive,



making for easy access to sought-after locations such as the curve in St. Augustine and the iconic lift bridge in Stuart. We drove deep into Port Orange for something off the beaten path – a secret spot patrolled by a 13-foot alligator (according to legend) – after we spent all morning stuck (literally) in Fort Pierce!

My advice: Don't drive

anything but a 4WD vehicle into the sand, even *if it* does sport the Jeep brand.

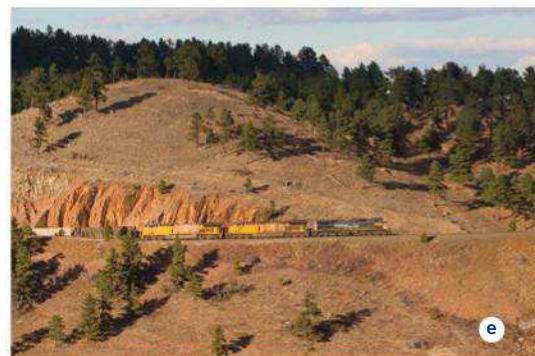
Want the perfect day? Rise and shine in St. Augustine for northbound trains 224 and 226, followed by the local out of Jacksonville's Bowden Yard. Grab some trackside chicken



c

at Zaxby's around noon, then grab hotshot 101 as it glides through the tidewater swamps. For

the next few hours hit the beach for some rest and relaxation, then return to the tracks.



e



f



d

c: Train 107 in the nation's oldest city

d: Look for lizards!

e: A UP coal train tackles the Moffat's steep grades

f: Denver's Union Station combines old and new architecture with the *California Zephyr*

g: Mike Danneman's Moffat Route N scale layout

Denver

TRAIN TALLY:

PLENTY IN THE CITY, NOT MANY ON THE MOFFAT

GO-TO-GEAR:

HIKING BOOTS, HAT

MUST-HAVE MODEL:

ATHEARN HO SCALE

UP SD70ACe

BEST BEVERAGE:

STEM RASPBERRY

APPLE CIDER

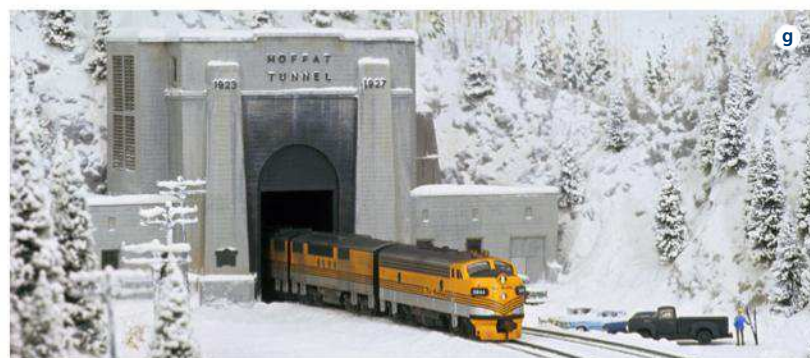
SHERPA SAYS:

"VISIT LoDo."

At 5,280 feet above sea level, Denver earns the nickname "Mile High City." Travel into the mountains alongside Union Pacific's Moffat subdivision and you'll climb even higher. The scenery is second-to-none, making the low train count easier to swallow. Amtrak's *California Zephyr* is your best bet. UP freights will typically require a wait, as we learned the hard way: nearly five hours while a westbound coal train stalled just below Big Ten Curve.

Downtown Denver, featuring UP and BNSF yards and main lines as well as light rail, has more traffic to offer. Toss in must-see Denver Union Station, sports

stadiums, and many shops and eateries, and you're sure to be entertained. No visit is complete without a stop by the Colorado Railroad Museum in Golden.



g

+ MORE on MRVP!

Subscribers can watch more than 40 Trackside Adventures episodes with Drew and crew at MRVideoPlus.com

See more Moffat magic on page 42



Sussex, Wis. Rock Quarry

TRAIN TALLY:

ONE AN HOUR-ish

GO-TO-GEAR:

HARDHAT, BOOTS,
SAFETY GLASSES,
GLOVES, RADIO
MUST-HAVE MODEL:
INTERMOUNTAIN
HO SCALE CN ET44AC
BEST BEVERAGES:
WATER, GATORADE

SHERPA SAYS:

"WHEN ON PRIVATE
PROPERTY SUCH AS A
ROCK QUARRY,
COMMUNICATION IS
KEY, ESPECIALLY WITH
YOUR HOSTS."

Every railfan knows a guy who knows a guy, and that's what landed us inside Lannon Stone Products Inc. The crew and I had a chance to capture footage of rock blasting, crushing, processing, loading, and hauling, all while watching trains! The views we saw here were afforded by our exclusive access to the site, but you can be sure to enjoy all of the big trucks, trains, and explosions on Episode 25!



- a: CN under the rocks at Lannon Stone
- b. Ben at the camera
- c: Rain at Dutch, Wyo.
- d: Antelope sighting
- e: Two Toyota FJs under two rainbows
- f: TD gives Bessie her close-up at BIL
- g: Wolf tracks at Tuscov, Mont., compared to a size-13 boot.
- h: Winter paradise at Trout Creek, Mont.



Wyoming

TRAIN TALLY:

PARADE IN THE PRB

GO-TO-GEAR:

BOOTS, TELEPHOTO
LENS, MEMORY CARDS

MUST-HAVE MODEL:

ATHEARN GENESIS
HO SCALE UP SD70M

BEST BEVERAGES:

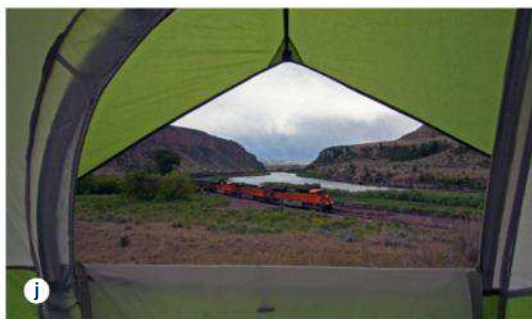
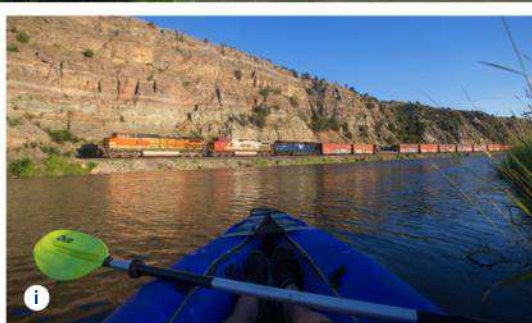
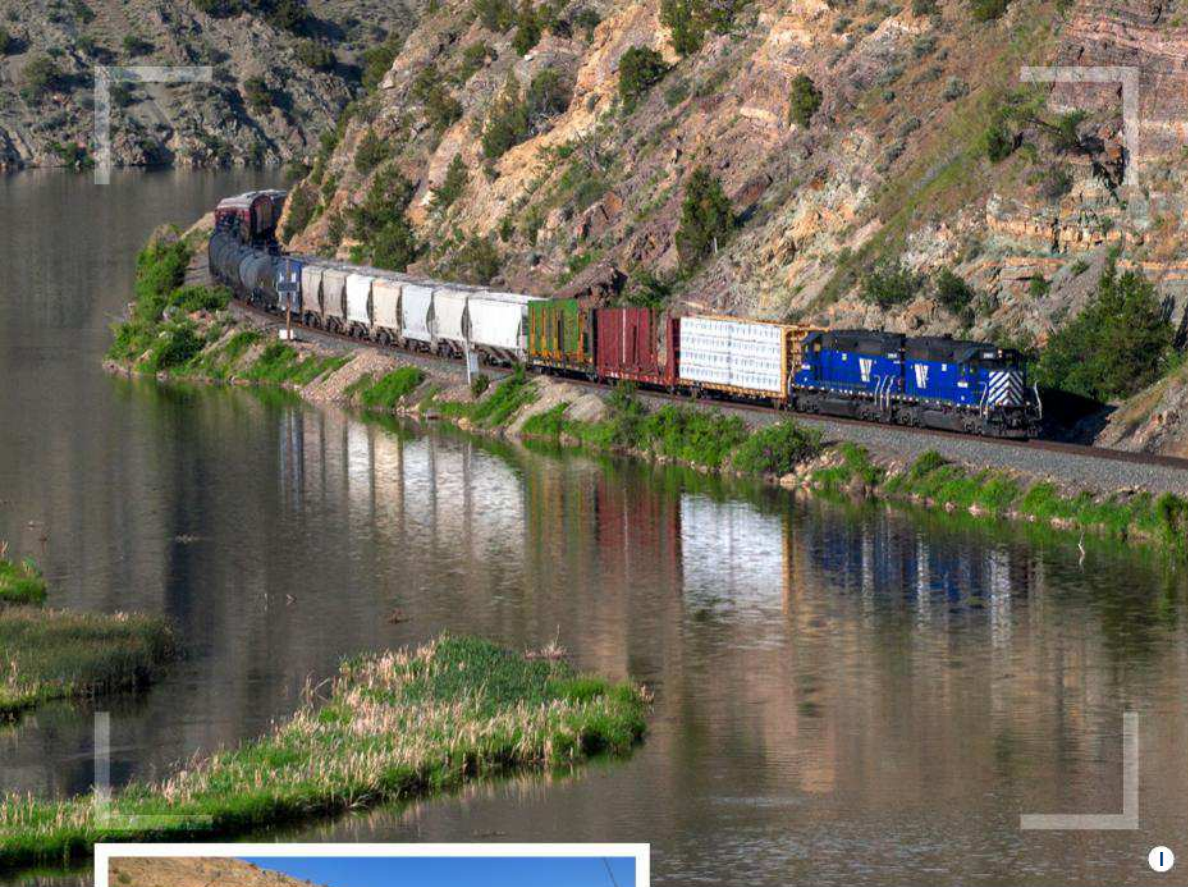
BLOOD ORANGE
IMPERIAL IPA

SHERPA SAYS:

"BIG SKIES MEAN
BIG STORMS.
WITH THOSE
COME BIG
RAINBOWS."

Want wide open spaces and endless coal trains? Try Wyoming! Visit the Powder River Basin, north of Douglas, Wyo., for a non-stop showing of loads and empties heading to and from a plethora of regional mines, including Antelope and Black Thunder, all powered by BNSF and UP lashups. Venture north toward Montana along the Wind River route for more variety but a smaller train count.





Montana

TRAIN TALLY:

DAILY DOZEN

GO-TO-GEAR:

KAYAK, HIKING BOOTS

MUST-HAVE MODEL:

ATHEARN N SCALE

MRL F45

BEST BEVERAGE:

MOOSE DROOL

SHERPA SAYS:

"INSTEAD OF A FRENZIED CHASE, TAKE A TIME OUT, SET UP A LAWN CHAIR, AND LET THE ACTION COME TO YOU."

Model Railroader art director Tom Danneman showed us Montana in Episodes 4, 27, and 28. It's no surprise he returns several times each year! Although you're most likely to see BNSF traffic throughout the state, Big Sky Country's best offering is Montana Rail Link. In the west there's no better place to see blue than MRL's 4th

subdivision between Thompson Falls and Missoula. At Paradise, the 10th sub splits from the 4th and typically hosts westbounds, including the iconic Gas Local. Venture further east, an hour south of Helena, and grab lunch at the Wheat Montana Bakery & Deli in Three Forks before watching rail-road action unfold from the rim of

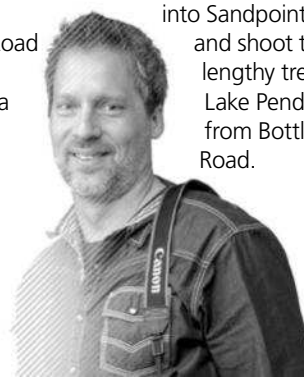
Lombard Canyon. This hidden expanse offers camping, climbing, fishing, and kayaking along the Missouri River with endless views of MRL action. Pitch your tent on the former Milwaukee Road right-of-way and witness a night full of railroading

action from the very bal- last that hosted electric operations. Lombard is a haven for rattlesnakes, so tread carefully.

Continue east along I-90 to watch helpers battle Bozeman Pass and grab lunch at the NP Diner in Livingston, the home to MRL's engine shops.

Billings marks the end of MRL trackage but BNSF keeps the rails sizzling all the way to

North Dakota. For an easy roadside location go west of Miles City to Joppa: A wayside off I-94 provides a view of a beautiful S-curve along the Yellowstone River. On the other end of the state, keep rolling into Sandpoint, Idaho and shoot the lengthy trestle across Lake Pend Orielle from Bottle Bay Road.



Tom says...

"If you choose to model the modern era in Montana, why wouldn't you model MRL?"

- i: Kayaking the Missouri River
- j: Camping on the Milwaukee Road right-of-way
- k: Eastern MT vista from a wayside
- l: Lombard canyon, a railfan paradise ...
- m: ... with snakes!
- n: Cattle gates and the Logan Local



a



b

Jasper, Alberta

TRAIN TALLY:

PLENTY

GO-TO-GEAR:

BIKE, BOOTS, BINOS

MUST-HAVE MODEL:

PREISER HO SCALE

BEAR FIGURE

BEST BEVERAGES:

JASPER BREWING CO.

6060 STOUT

SHERPA SAYS:

"KEEP YOUR EYES OPEN FOR WILDLIFE."

Ready for more knock-your-socks-off scenery? Canada's Jasper National Park hosts non-stop traffic along Canadian National's Edson subdivision, with natural beauty that rivals anything British Columbia has to offer. Here you'll see abundant wildlife, ranging from elk to wolves and moose to grizzly bears. Just



d

about any location along the tracks will yield stunning backdrops, but places like Henry House, Windy Point, and Robertson's Curve are must-stop spots. VIA Rail's Canadian makes a station stop in Jasper along with VIA's Skeena, running from Jasper to Prince Rupert, B.C. While in town you won't miss the depot and CN 4-8-2 no. 6015 parked out front. Numerous shops and restaurants

a: Iconic backdrop at Windy Point

b: Coal train at Cadomin, Alb.

c: VIA's *Canadian* racing the rain

d: Canadian National 4-8-2 no. 6015 in downtown Jasper

keep this tourist destination hopping, especially during the summer months. Looking for railroad action off the beaten path? Try Cadomin, Alberta, a 45-minute drive from Hinton and home to CN rock and coal traffic.



c



Drew says...

"It seemed like everything in the desert was there to inflict pain. When you visit, wear jeans and boots for protection!"



- e:** Saguaros along the Stormy
f: A-10 from the 357th FS at Davis-Monthan Air Force Base
g: A day in the desert with Jake Jacobson's Copper Basin Ry.
h: Riding the Copper Basin

Arizona

TRAIN TALLY:

REGULAR SPURTS

GO-TO-GEAR:

JEANS, SUNSCREEN

MUST-HAVE MODEL:

ATHEARN FERROMEX

SD70ACe (HO)

BEST BEVERAGES:

TECATE

SHERPA SAYS:

"VISIT THE CBRY."



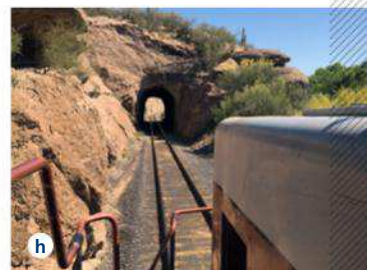
Nothing beats a trip to the desert during Wisconsin's coldest months – just ask the Milwaukee Brewers. My crew set up shop in Tucson before touring the Copper Basin Railway in Kearny, Ariz. If you're in the area, make the CBRY a priority and stop by the shops where you'll find friendly staff. CBRY president Jake Jacobson rolled out the red carpet. Highlights included cab rides, a 30-mile hi-rail



tour, and endless photo ops – all viewable on Episodes 39 and 40! Swing down to the border town of Nogales for a unique look at Union Pacific's route to Mexico. The sights and sounds (including Ferromex power) are worth a visit.

Make your base of operations in Tucson like we did and you'll see the Pima Air & Space museum and Davis-Monthan bone yard. A-10 and F-16 squadrons are based here, so it's

common to see these jets flying overhead. Union Pacific keeps things hot and heavy on the Stormy too. Photo highlights include the UP Yard, Cienega Creek bridge, and UP's dead-line near Benson. Great Mexican food is everywhere.



- i:** Lake Superior, Neys Provincial Park, and CP's Heron Bay sub are all in view from this lofty perch along Hwy. 17
j: Watch out for bear!

Superior

TRAIN TALLY:

SLOW TRICKLE

GO-TO-GEAR:

BUG SPRAY, BEAR

REPELLENT, HIKING

BOOTS, WATER

MUST-HAVE MODEL:

INTERMOUNTAIN
CP ES44AC (HO)

BEST BEVERAGES:

NORTHERN LOGGER

SHERPA SAYS:

"DRESS IN LAYERS."

Tunnels, slide fences, and tight curves characterize Canadian Pacific's Heron Bay subdivision as it traces the northern shore of Lake Superior. You'll find no place more remote on the CP system, and many photo locations require a hike. Rail traffic comprises six daily intermodal trains and two daily mixed freights. But for what the main line lacks in traffic, the surrounding scenery tips the scales. Be on the look out for black bear during the spring and summer months

and wear bug spray to combat the endless plague of black flies. Want payoff for minimal effort? Hang out around Neys Provincial Park where you'll find plenty of great photo ops and recreational activities.





a

The Iron Range

TRAIN TALLY:

PLENTY

GO-TO-GEAR:

SNOWSHOES (IN THE WINTER), BUG SPRAY

MUST-HAVE MODEL:

INTERMOUNTAIN

N SCALE DM&IR

SD38-2

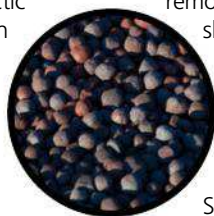
BEST BEVERAGES:

LOON JUICE

SHERPA SAYS:

"VISIT DURING THE FALL FOR AMAZING TREE COLOR."

In the Minnesota woods north of Proctor and west of Two Harbors lies the Iron Range, home to the most eclectic locomotives on Canadian National's roster and trainloads of iconic steaming taconite pellets. Since CN's takeover in 2011 traffic on the Missabe sub has increased, now featuring mainline freights, stack



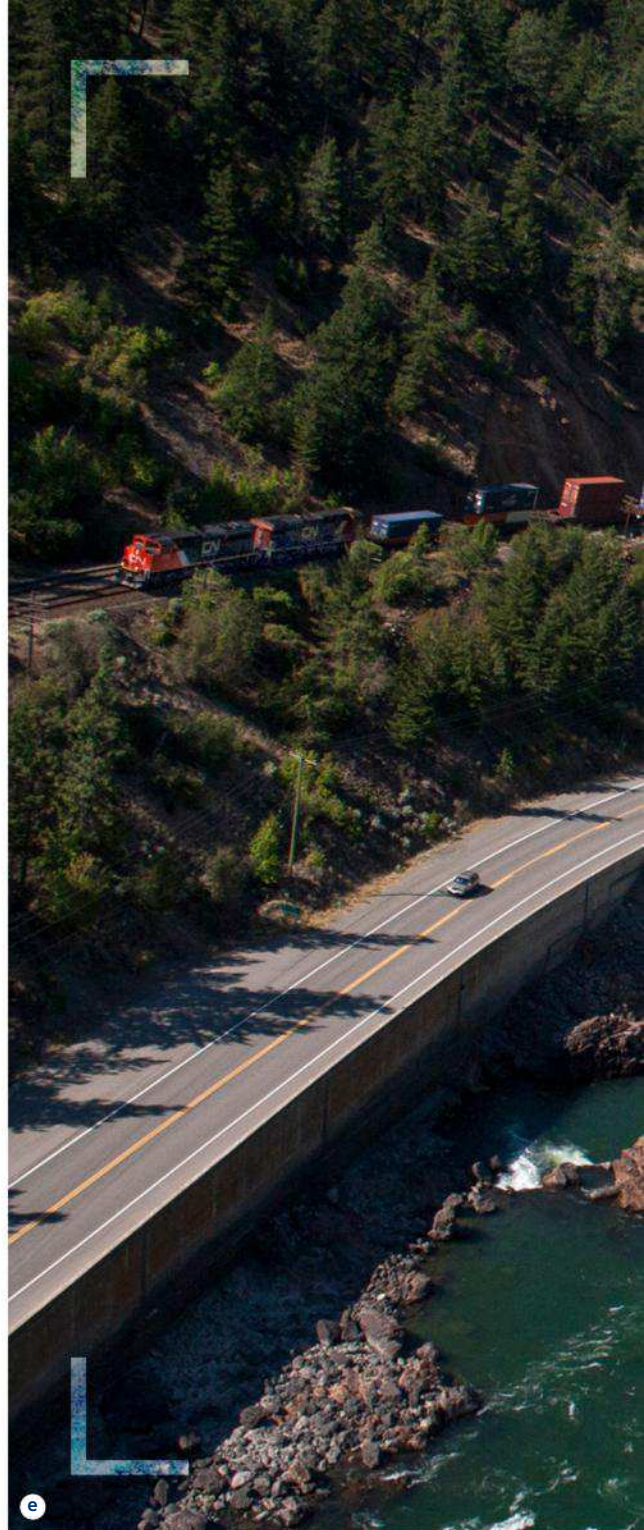
trains, and the original taconite shuttles. The Iron Range sub features less traffic and is more remote but better showcases the area's North Woods appeal. Don't forget to visit downtown Duluth's Lake Superior Railroad Museum and grab lunch at the 7 West Taphouse, like we did in episode 34 of Drew's Trackside Adventures.



b



c



e

a: DMIR SD40-3

no. 403 still sports maroon and gold

b: Truffle Pigs Bistro & Lodge in Field, B.C.

c: Sulfur empties on Kicking Horse Pass

d: Captian Chas cruising Kamloops Lake

e: Bessie-eye-view above the raging Thompson River near Spences Bridge



d

British Columbia

TRAIN TALLY:

PARADE

GO-TO-GEAR:

MULTIPLE LENSES

MUST-HAVE MODEL:

BACHMANN CANADA GRAIN HOPPER

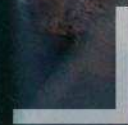
BEST BEVERAGES:

GRANVILLE ISLAND

SHERPA SAYS:

"STAY A WEEK."

Welcome to heaven on earth. British Columbia, Canada might just be my favorite place to railfan, mostly due to the epic experiences the crew and I shared there. Watch Episodes 29, 30 and 31 for a taste of the action as it unfolded from land, sea, and air within the Thompson and Fraser River



PHOTOS: DREW HALVERSON, TRUFFLE PIGS

Canyons. See CN and CP transcontinental main-lines running side-by-side in some of the planet's most treacherous canyons. The trains flow as steadily as the rivers, and the scenery – thick and lush along the Fraser, dry and



arid near the Thompson – never lets up. Witness iconic locations such as the bridges at Cisco, the slide sheds below Skihist Provincial Park, and the three Skoonka tunnels near Spences Bridge. Up for a little trackside water adventure? Take

on the Thompson at Kumsheen Rafting Resort in Lytton, B.C. or relax, like we did, on a pontoon from Burker Marina at Kamloops Lake. Take a week and venture farther into the

province for more trains in breathtaking scenery at Revelstoke, Glacier National Park of Canada, and the famous Spiral Tunnels near Field, B.C. After a day full of action on Kicking Horse Pass, stay the night and grab a delicious

dinner at the Truffle Pigs Bistro & Lodge. Visit Radium Hot Springs for more relaxation on your way east along CP's Windermere sub and cap off the trek at Fernie after following Crowsnest Pass. You simply can't go wrong. 🍷



KJ says...

"Looking for a real railroad town? Stay in Field, B.C.!"

ASK MRVP

Your questions answered

by Jenny Maaske

SIGN INDICATES
THE BEGINNING
OF YARD LIMITS

Q: How do I determine where yard limits should start and stop on my layout?

- David Spring

A: According to the Consolidated Code of Operating Rules, a yard is a system of tracks within defined limits provided for the making up of trains, storing of cars and other purposes, over which movements not authorized by time-table or train order may be made

subject to prescribed signals and rules or special instructions. So, pretty much the yard area is anywhere the yard crew needs to operate. Once you've determined that, you may place yard limit signs on the running track at the end of it, as shown above.



Bachmann E-Z Lube grease is available in small jars from bachmanntrains.com.

Q: How do I lubricate a geared locomotive, specifically a Bachmann On30 Climax locomotive?

- David Young

A: Most locomotive models come with a life-time supply of lubrication in them. However, if you are hearing a loud noise coming from the gears when you run it,

then you should investigate the cause. It's possible that the drivetrain gears need a little more lubrication. Try applying a little grease, such as Bachmann E-Z Lube, to the gears using a micro brush. Be careful not to over-lubricate the model, especially if the model has electrical pickups close to the gears.

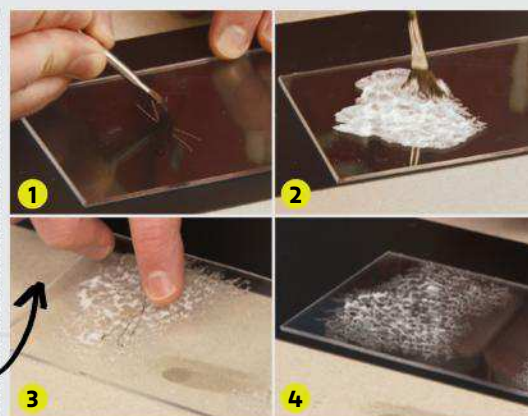
The Bachmann Climax has some enclosed gearbox spaces

that cannot be easily reached without disassembling part of the model. Don't attempt to lubricate those areas until you've tried lubricating the other gears. With this type of engine, the less often you take it apart, the better.

Q: How do you repair cracks in resin water?

- Ken Mason

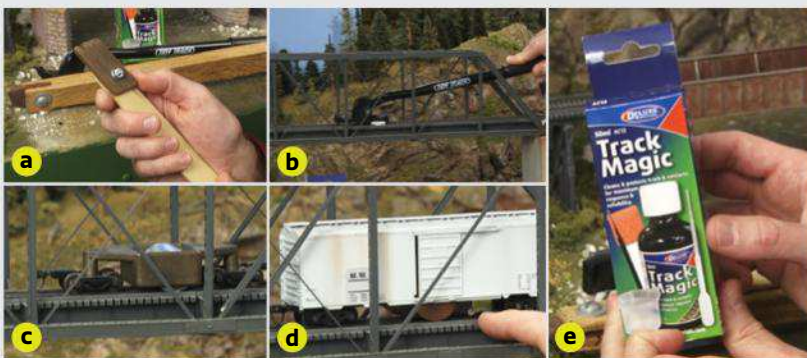
A: If there is an open fissure in the resin, you'll have to scrape everything off and start over. However, spider cracks are fixable, even in clear resin. If the water was poured over a dark base, such as black, start by applying a matching



This easy process will help mask cracks in resin water surfaces.

color of paint to the cracks **1**. While the paint is still wet, wipe it from the surface without removing the paint from the cracks. Next, stipple on Woodland Scenics Water Effects paste with a paintbrush **2**. This will

disguise the cracks and the lines with small waves. As the bottom two photos show **3**, when the paint and Water Effects paste both dry, everything should blend together nicely. **4**



Track cleaning options are seemingly endless, from the homemade Bright Boy on a stick, to various manufactured scrubbers, cars, and solvents.

Q: What are some track cleaning options for hard-to-reach places on a model railroad?

— John Martel

A: There are several tools you can use for cleaning track in tight spaces. One of the easiest things to do is to attach a Bright Boy track cleaner to a paint stirring stick **a** or wooden handle so you can reach into tight places.

Woodland Scenics offers a Tidy Track Rail Tracker cleaning kit (No. TT4555) **b**, which includes a cleaning tool for inside tunnels or around structures. It comes with a number of interchangeable heads for different types of abrasive cleaning.

Sometimes you'll have places where even a stick with a track-cleaning block won't reach. In this case you'll want a track-cleaning car. They are available in different varieties. The HO-3 with Kadee couplers (No. 60037) **c** is a brass rail cleaner made by Centerline Products. It has a heavy roller that's covered with a cloth that can be soaked with track-cleaning fluid. The HO scale Track Star (No. TS1161) **d** is made by

Aztec Manufacturing and has a Cratex roller (the same material used in the Bright Boy) that rolls along the track to clean it. It also has a magnet on it that picks up metal debris along the track, such as stray screws.

One other product is Track Magic **e** by Deluxe Materials (No. AC13). It's a liquid cleaner that comes with a sponge applicator and a few other tools to help you apply it to the model railroad. It's a great product to use, even if you are using Tidy Track or a Bright Boy, because it will also improve the conductivity of the railheads on your model railroad. You can use it on locomotive wheels, too.

Q: How can I work with cracked decals?

— Jacob Nieuwstraten

A: To prevent the decals from cracking further, spread an overcoat, such as Microscale liquid decal film, onto the



decal sheet using a small foam brush. When dry, the liquid decal film overcoat should be able to hold the decal together long enough to get it onto the model. 

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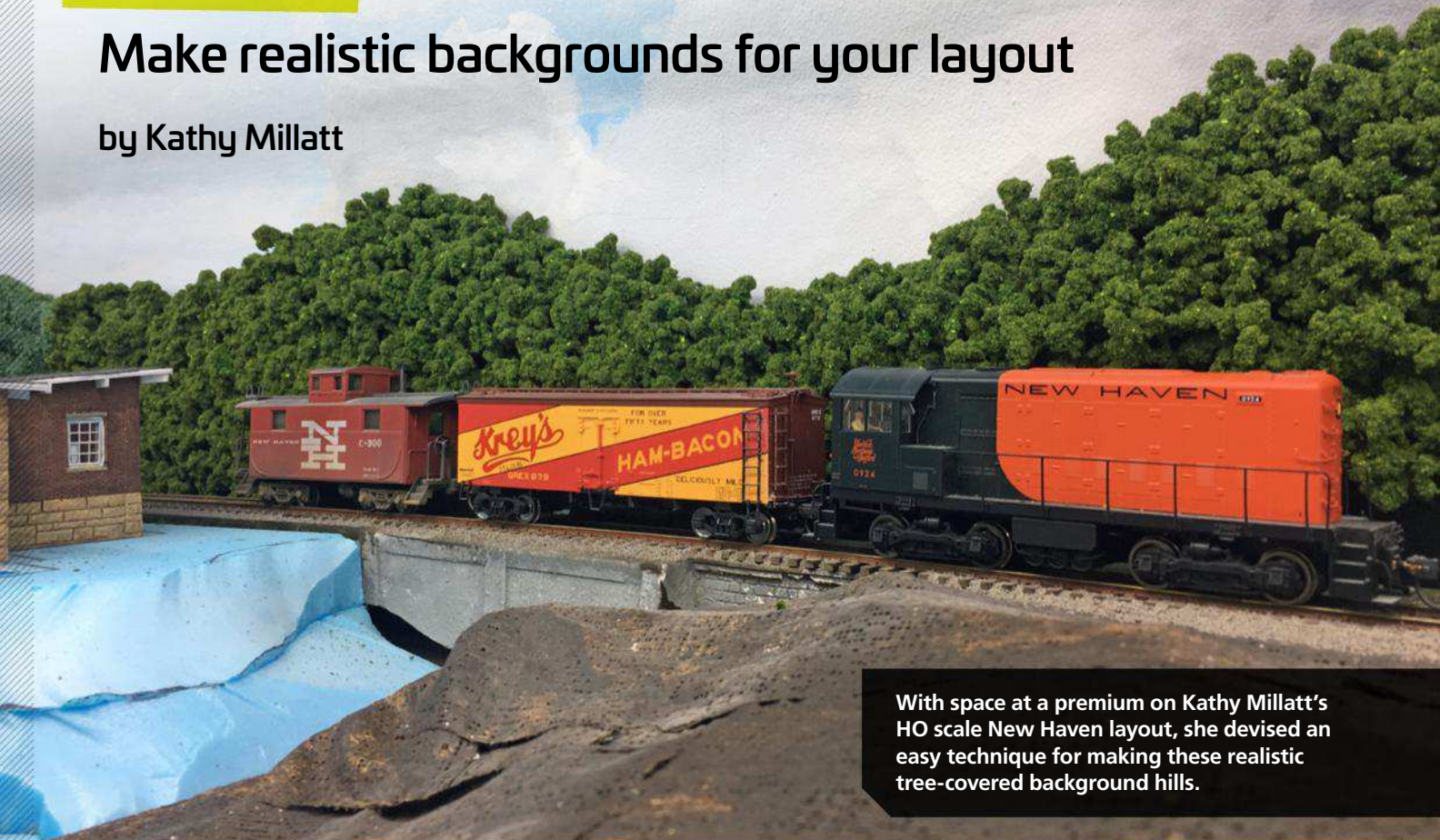
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EASY tree-covered hills

Make realistic backgrounds for your layout

by Kathy Millatt



With space at a premium on Kathy Millatt's HO scale New Haven layout, she devised an easy technique for making these realistic tree-covered background hills.

Backdrops are a key part of any layout and can really set the scene. I use a simple technique to make 3-D tree-covered hills as backdrops on my HO New Haven layout. They look realistic and take up a minimal amount of space. The best part is that this technique can be used in a variety of scales.

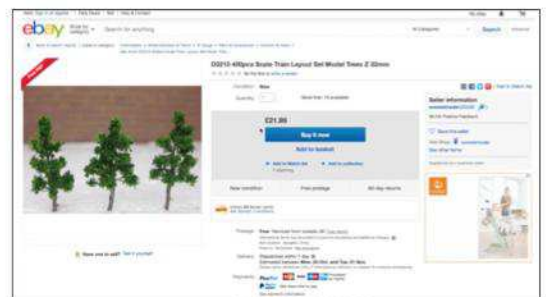
WATCH THIS ON



Free Video!

Watch Kathy make tree-covered hills from start to finish at MRVideoPlus.com/TUG1

Step 1: Surfing for trees



The first step is to find batches of small wire trees in bulk. I found these on eBay and they come in a range of sizes from 3.2 cm to 11 cm. I normally use 4 cm to 6 cm (1½" to 2½") on the backdrops but you can go up to 8.5 cm. It's important to buy wire trees — not plastic — because you need to be able to bend the trunks when you mount them. You can spot if they're wire by the twisted trunks in the photos. It can take some careful and persistent searching to find them.

Step 2: Glue & ground foam



The next step is to improve the color of tree foliage, as it can be a little garish. You need a spray adhesive: I find the craft glues spray best (3M and Krylon both make them). Hold each tree with some self-gripping tweezers and spray the glue on the foliage on all sides.



I want a nice, consistent color across all my trees so I predominantly use Woodland Scenics green blend blended turf (T1349). You can add a variety of colors if you want. Dip the trees in a container of ground foam and shake off the excess. I just put them on a newspaper to set.

Step 3: Foam forms



I mount them on 5mm foam board. I draw some wavy background hill shapes on the board and cut them out using a hobby knife. White will show through, so either buy black foam board or spray it with any cheap black spray paint. The paper on the foam board keeps solvent-based paint from damaging the foam.

Materials list

- ☐ Small wire and flock trees from 4 cm to 8.5 cm
- ☐ Woodland Scenics Green Blend, Blended Turf T1349
- ☐ Spray adhesive such as 3M Craftmount
- ☐ Foam board/foam core
- ☐ Flat black paint

Step 4: Layering trees



I push the first row into the foam that's exposed at the top. I use tweezers to grab the trunks and push them into the foam as far as their wire trunks will allow. I rarely use glue as the board usually grips the trunks sufficiently. You can then add some trees on the face of the foam board. Bend the wire trunks so the trees are vertical when pushed in — a 45 degree angle works best. I then punch a hole with my tweezers through the paper covering the foam and push in the trunk. If the hole is too big or the tree doesn't seem stable enough, a little white glue will hold it in place.



Now all you need to do is keep adding additional layers of trees. I stagger the trunks to not leave any gaps. As you work your way to the bottom of the hill, use slightly bigger trees to reinforce the illusion of depth — those at the bottom will be closer to the viewer, and therefore a bit larger.

Step 5: Install the hills



I use screws to attach the foam board into the backdrop. Look for places that still have gaps, adding spare trees as needed. The foreground scenery will blend everything together. This is an easy technique that nets realistic results, and inexpensive bulk trees make it all possible. 🎬

+ MORE on MRVP!

Kathy has a regular series on MRVP, called Let's Make a Scene. In every episode, Kathy covers a scenery project on her HO New Haven layout. Even if you're an experienced modeler, Kathy always has some new tips, tricks, and ideas to share. Check it out at MRVideoPlus.com

Kathy says...

"Don't worry about making mistakes. When I first bought some trees off eBay I was disappointed by how small they were and their garish colors, but they turned out to be the perfect tree for my backdrops."



6 expert design tips



Linden on Tony's HO railroad accurately depicts the north end of this small Hoosier town as it appeared in 1954, making it both realistic and fun to model.

Build a better layout by starting with well-planned parts

by Tony Koester • Photos by the author

We tend to speak about our “model railroads” as though each was a coherent whole. It often pays to step back a ways to make sure what we're planning will one day congeal into a coherent statement about what we are trying to convey. Let's examine the process of planning, building, and operating a model railroad by exploring several logical steps that make the process easier and more rewarding.

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Free Video!

Take a video tour of Tony's HO Nickel Plate Road railroad at MRVideoPlus.com/TUG1

1 Start town by town

Even on the smallest of layouts, a model railroad is supposed to represent leaving “Here” and going to “There,” which is much

more interesting than just having a place to run assorted trains. What is “Here”? Here is a town or portion of a city. It may be where you live

now or your hometown fondly recalled from the past. It may be a totally mythical place “imagined” as a composite of memories. Most

importantly, it is a specific place.

So step 1 is to choose Here. Define Here. Draw a track plan of Here. Arrange some prefab

track on the floor or a table to see if your plans for Here will actually work. If not, revise Here until you are happy with how it looks.

2 Where is “There”?

Railroads exist to take cargo and people from place to place, or here to there. Let’s find a place to go to or come from. We’ll call it There.

If you have room to model a second or third town, that’s good, but modeled towns are not good candidates for There. Instead, we’ll call them Here 2 and Here 3. Unlike trucks, railroads don’t often carry cargo between closely spaced towns. Instead, they

typically move freight and passengers hundreds of miles at a time.

This is where staging and fiddle yards come into play. Staging yards are hidden by view blocks or scenery and can represent Chicago or New York or any other distant city. “There” has one or more tracks, forming what is called a staging yard, but it is not modeled.

Trains that start an operating session at

There are like actors hidden in the wings of a theater, waiting to make their entrances at the proper time.

By following the British practice of having someone “behind the curtain” rearrange the train consists, changing locomotives and cars in real time to make new trains, that’s called a fiddle yard. In either case, both staging and fiddle yards are called There.



A tunnel, overpass, or even a small grove of trees can mask the place where trains hidden behind a view block appear on the scenicked part of the railroad.

3 Making trains appear (and disappear)



If a layout doesn’t have even the simplest form of hidden staging space, one has to wonder how cars come and go from other railroads.

Just as actors come out from behind the curtains on cue to do their bit to further the aims of a play, so too do our trains suddenly appear out of There – the staging or fiddle yard – to play out their roles in today’s operating session. The portals that allow trains to move from There to Here might literally be tunnel portals, but an overhead

bridge or even a clump of trees will also hide the entrance from There.

This is a subtle but hugely important

concept behind realistic operation: Crew members (and even visitors) should not be able to view “off-stage” trains. Theoretically, they may be hundreds of miles away. Simply watching your trains loop repeatedly around an oval of whatever size can be relaxing, but it does not tap into the much broader potential of scale model railroading. To take the next step,

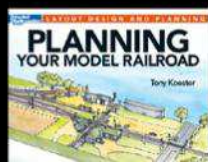
you should provide a way for trains and cars to appear and disappear as they come from or go to distant places.

That’s the conceptual key to realistic operation: seeing your railroad as but one tiny segment of the national rail network. Otherwise, how did that Burlington Northern boxcar get on your New England railroad? How

will you receive hoppers of Appalachian coal for Northeastern home furnaces and power plants? How will furniture made on your railroad get to consumers halfway across the country? The simple answer: They go from Here to There or come from There to Here, traveling from the modeled world to the staging yard and back.

+ FIND OUT MORE!

Tony has written a lot about designing and building layouts. See his book, *Planning Your Model Railroad*, at KalmbachHobbyStore.com



Tony says...

Examine everything you plan to do twice! Time and money are routinely wasted on false starts. Set a clear, achievable goal and then work to eliminate distractions along the way.



4 Working train by train



Local or way freights offer lots of switching opportunities and thus are perennial favorites on model railroads.

Just as we started

with a single town called Here, let's start with a single train, the daily local or way freight. A local sweeps ahead of through and fast freights so they don't have to delay their progress by stopping at every small town to work the various industries.

So an operating session might begin with the local rolling out of

There into Here. In the train will be cars for various industries at Here – perhaps a lumberyard, a grain elevator, and the local Standard Oil dealer.

Rather than giving the local free reign, however, we'll create a schedule of superior trains such as both east- and westbound passenger trains. You could have a friend run the passenger trains into

town following a schedule. Or you could switch half the town, clear up the main line for the passenger train, run it yourself, and then return to switching. When you leave town for There, the other passenger train would come into town as a grand finale. Adding one or two scheduled freights could similarly keep the local crew on their toes.

5 Modeling towns

If Here is an actual town, then a good bit of the enjoyment can be derived from scratch-building or kitbashing reasonably accurate models of the buildings that existed in your modeled era. If not, some homework will show what a similar town looked like in your era.

Two caveats: First, if you're not modeling today, you probably

won't know as much as you'd like about how the town looked back in, say, 1955. I recommend installing reasonable stand-ins until you find more information.

Second, kitbashed stand-ins tend to take roots. It's easy to leave them in place and never scratchbuild accurate replacements. Doing this too often can negate some enjoyable aspects

of our hobby and compromises realism.

Also, you needn't model all of the buildings that abutted railroad sidings. A siding along the front edge of the layout can be presumed to serve un-modeled buildings out in the aisle. Or thin flats can project up from the fascia or save space when placed against the backdrop.



Industries don't have to be physically modeled. On Tony's layout, the Jenkins concrete-block plant is located in the aisle. Cars for the plant are spotted on a track that runs off the layout.

MR Plus Tips!

- Modeling an actual location is often easier than trying to imagine what such a place might have looked like.
- Staging tracks, staging yards, and interchange tracks connect your layout to the national network, and are vital for realism.
- Almost any kind of car can be picked up or dropped off at an interchange track.

6 Interchange is good

One "industry"

requires almost no space and no structures: the interchange. An interchange track connects adjacent or crossing railroads so they can hand

off cars billed to destinations on the other line.

As such, an interchange can be considered a universal industry: An interchange can receive any type or

number of cars each day. On my railroad, of the nine towns and small cities I've modeled, eight have one or more interchanges with other railroads.



At Linden, Ind., on Tony's layout, his Nickel Plate Road exchanges cars with the Monon. Part of the interchange track is hidden as staging.

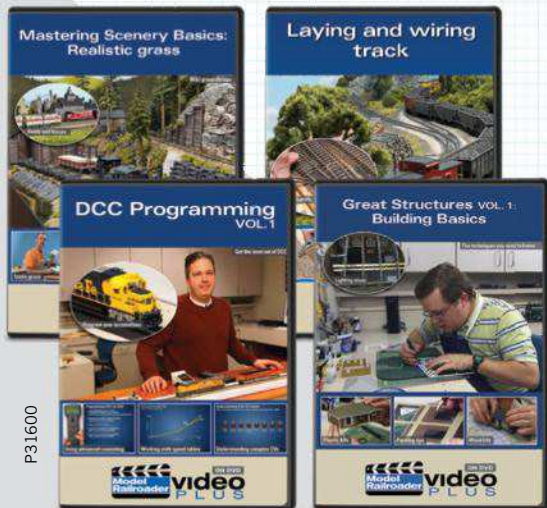
What have we learned?

Even if your railroad

doesn't go from Here to There, ideally it does go from one place to another. Ask yourself how your railroad fits into and complements the bigger railroad picture, rather than existing as an island unto itself. It's always worthwhile to take a step back to make sure that planning segues smoothly into construction, which in turn leads to a model railroad that will be a rewarding adventure for years to come. 🎬

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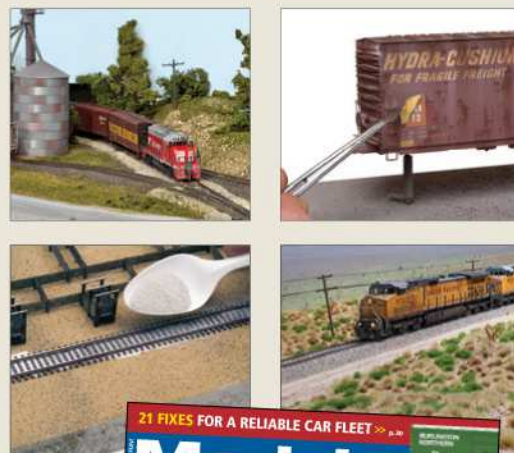
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Hosts Drew Halverson and Chuck Sable have fun on the set of *Rehab My Railroad*, MRVP's layout-make-over reality show.



Rehab revisited

A look at the past, present, and future of Chuck Sable's "reality show" HO layout

by Jenny Maaske

One of the programs offered on the Model Railroader Video Plus website is a reality-type show called "Rehab My Railroad." During the course of two seasons, host Drew Halverson, along with modelers Cody Grivno and David Popp, made improvements and upgrades to Chuck Sable's established HO scale 16 x 25 foot model railroad. The episodes covered a variety of model railroad construction techniques including scenery updates, re-laying track, installing switch motors, DCC troubleshooting, and more. There were many laughs, frustrations, and surprises captured along the way too!



On June 27, 2017, MRVP invited Chuck back into the studio to discuss the experience. Here's what went down.

Drew: We've got some questions for you, Chuck. As you know, we've rehabbed your railroad and we really want to get to the bottom of your thoughts on the project.

Chuck: OK [pause] – let's do it.

D: Alright. You seem somewhat uncomfortable and that's good! [Chuck looks at the camera and laughs]

D: Our first question... and this is what a lot of people wondered and I wondered too: Did you ever get annoyed when we were at your house? Basically tearing apart your railroad, your house?

C: I don't think I ever got annoyed. In my real-life job, I brought in people to work with my music groups, so it was just like a different cast of characters coming to the house, with the idea that you have to have your eye on the final result, which was to get the railroad better. It was somewhat taxing in terms of the demands upon you to host everybody and be on camera. Annoying, no, I don't think it was ever really annoying.

D: Of all the things we did in all the sections of your layout that we rehabbed, was there a favorite and a least favorite?



C: Probably the favorite one was the Madison section rehab that was done during Season 2 because it demanded so many things. We redid a street scene and backdrops. We reconstructed a new Madison passenger station, which ultimately was one of my dreams, anyway, as I

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Chuck had a lot more to say than we could put on these two pages. Watch this interview in its entirety for free at MRVideoPlus.com/TUG1

planned that layout many years ago. We added an industry power plant and redid switches, trackwork, and platforms. It was a massive project, and the results were outstanding.

D: What's the part that we maybe didn't do to your level of liking?



C: I don't know if there's anything you didn't do to my level of liking. The biggest frustration was that stupid "Cozy Corner" lakefront scene where we used the out-of-date Hydrocal, and we had to keep going back and redoing it! That was my fault because I used old plaster. Sometimes you learn by making mistakes.

D: Speaking of material in that corner and the lakefront, how many little N scale or HO scale nude figures now do you have on the layout? Is there

is whole nude beach there now?

C: No, there is not a nude beach. My second son gave me some HO scale figures in several stages of maybe inappropriate poses that are scattered throughout the layout now. [Pauses and smiles] You'd have to see it to appreciate it. [Drew laughs] I'm not going to disclose that on camera, but he always pulls pranks on me.

D: Have you done anything since we were there?



C: Yes, we have. We just got done doing a re-creation of the old Kalmbach building in downtown Milwaukee. Cody Grivno had given me some archival pictures of the thing and so we replaced the Swiss Packing company in Waukesha with that structure.



We extended the Madison freight yard about 16 inches out with a big clamp-on section to make prototypical operations better. We've also added some trees on the Butler hill going towards the lift gate. We added lights to the Madison station platforms and interior lights in the Madison station.

D: What was the best time you had with the crew?

C: I think just having them in the house and the banter that went back and forth. Sometimes spontaneous things would occur during the course of filming. The crew is very well versed in all their areas of specialty and it was just fun having them there.



D: Speaking of areas of specialty, I think hanging out by a grill is one of my areas of specialty. Someone else has an area of specialty and there are some questions out there. Did Cody really eat 2 brats or was it 3?



C: Actually, I went back and reviewed that video. I think he did eat three brats! His work was rather sluggish after that as a result! But Cody is a great modeler and he is a great eater.

D: The readers gave us a lot of comments. How did you respond to some of the negative ones? There were a lot of comments about your open ceiling. I know you took great offense to that! Or no?



C: Well... let me say this about that, as the politicians would say. We had five seasons of layout progress tours. I've had tour groups come through the layout. Two years of operating crews coming to the layout. And no one has ever made a comment, maybe out of courtesy because they were visiting, about the ceiling. I look at it as a distraction of what we were trying to accomplish, which was to get the railroad better. Yeah, the ceiling probably should have been redone, but again, ductwork issues and ceiling height issues. The ceiling is only a 7-foot ceiling, and that is part of the problem right there.

D: I can tell you don't think about this at all! [Laughs]

C: [Laughs] Well, I figured this was coming, so I kind of planned it out. But I mean, it was just kind of a distraction.



D: Were there instances where it was hard to be on camera?

C: I think the only thing that sometimes was tricky was that if you had to change roles. When you are trying to play host and make sure everything is going smoothly and then jump on camera and jump off camera, and do this and do that. That's probably the hardest part, just changing gears so that you are in that kind of mindset. I think the second season was easier because you got used to the ebb and flow of the workload.

D: Thanks for joining us!

C: Thanks for having me! It was a great couple of years! 📺

➕ MORE on MRVP!

There are more than 30 episodes of Rehab My Railroad and related videos for you to watch on MR Video Plus. To get you started, we've made episode 1 free. Watch it today at MRVideoPlus.com

OFF THE RAILS

Tool tips and workshop tricks

by Gerry Leone



Modelers love learning new tricks and picking up a new tool or two. Here are a few of my favorites to get you going on those projects you have waiting on your workbench. You can watch my monthly show on MR Video Plus.

Tools

Right on the mark –

If you plan your trackage by tracing full size tracks and turnouts on a piece of paper, the easiest way to transfer plans to your layout is with a pounce wheel, shown above. **a** Roll the wheel down the track centers, punching holes in the paper, then go

over the holes with a marker to transfer the line to your plywood or extruded foam. Follow the dots with your roadbed. Micro-Mark no. 15200 (Episode 8, “Dandy, Handy Tools”)

Go ahead, start something – When you’re trying to get

screws or bolts started in small, cramped places (like inside a loco), nothing beats a micro screw starter. **b** Push the button on the end and the grabbers open to get a grip on the screw or bolt, while the spring-loaded tip stays tight in the slot. Turn the tool to drive your screw or bolt home. Micro-Mark no. 85109 (slotted head), no. 85110 (Philips head). (Episode 1, “Three Great Tools”)

Turn on the heat –

Using a match or soldering iron to shrink heat-shrink tubing is a pain. Craft stores sell a “heat embossing tool” **c** that’s perfect for the job. Hotter than a hair dryer but not as hot as



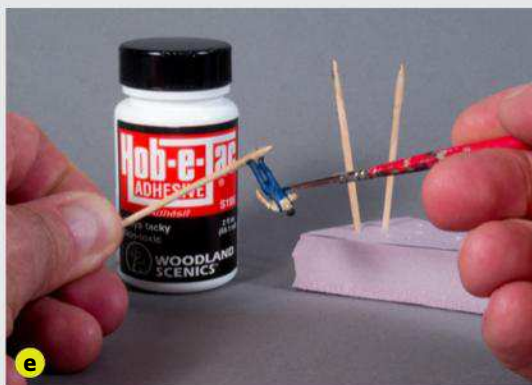
a paint stripper, the tool will shrink the tubing in seconds with no open flames or melted tubing! Micro-Mark also sells a heat gun for the same purpose. Hobby Lobby no. 506345, Micro-Mark

no. 84433. (Episode 8, “Dandy, Handy Tools”)

The eye of the holder –

Here’s an inexpensive way to get a drop of CA, CA accelerator, or liquid cement in exactly the right spot. Use a cut-off wheel in a motor tool to lop the top off the eye of a sewing needle. (Wear safety glasses!) The resulting “fork” **d** will hold a drop of whatever you





want it to hold, and put it wherever you want it. Get fancy and mount it in a small dowel. (CA clogging your needle eye? See the "Tricks" section!) (Episode 10, "CA Tips")

Stick 'em up –

Painting figures and details couldn't be easier when they're on a sticky stick. Just dip a toothpick into Woodland Scenics Hob-E-Tac adhesive, **e** let it dry, and you'll have a handy handle that lets you get at every angle. Place the figure on the end, and you're ready to paint. Woodland Scenics no. S195 (Episode 8, "Dandy, Handy Tools")



One step at a time –

It's difficult to drill large holes in thin styrene or sheet metal, and even harder to enlarge an existing hole. That's where a step drill **f** shines. They come in assorted sizes, and the diameter measurements are marked right on the drill. The result? An ultra-clean hole that doesn't catch and yank your drill bit as you work. Harbor Freight no. 91616, as well as most hardware stores and home centers. (Episode 7, "The Hole Truth")

Get a grip – Painting small items is hard when tweezers won't hold



them, or they scratch the paint. If you've ever made latex molds, you have a jar of Rub-R-Mold sitting around. Just give your tweezers a few dips, **g** let the Rub-R-Mold set, and you'll have a pair of tweezers that will hold figures and small details securely without marring paint. Available at most art materials stores. (Episode 4, "Cheap, cheap, cheap")

It's in the air – What cures CA? Moisture on the surface of what you're gluing, or on your skin, or humidity in the air. That's why CA stored on an open shelf will eventually thicken and harden all on its own. Extend the life of CA by storing it in an air-tight canister, **h** and extend it even further by adding silica gel. Flower stores sell it, and you can get it in various quantities at Wal-Mart (see their website). Some silica gels have indicators that turn colors (like you see here)



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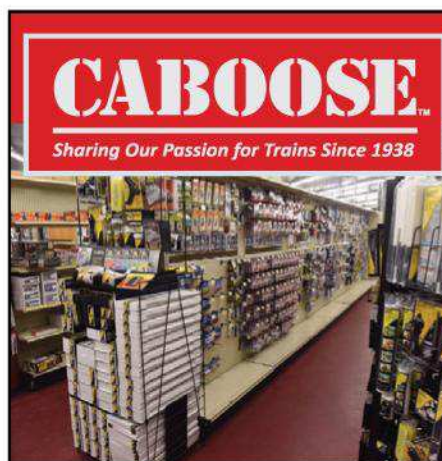


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that tell you when you need to refresh it by baking it in an oven for a few hours. (Episode 10, "CA Tips")

Sort it out – There's nothing more frustrating than having to stop your scratchbuilding project to sort through that pile of sheet styrene that's sitting in a box or

drawer. Why not file it under "sorted"? Visit an office supply store and pick up a document or letter organizer, **i** load up your sheet styrene (or sandpaper or other sheet-good materials) in the various slots, and you'll never have to weed through the piles again. (Episode 5, "Time Savers")



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Tricks



No more spills?

Eggs-actly! – Tired of accidentally spilling your liquid cement, paint, or decal setting solution all over your workbench? The solution is as close as your refrigerator: an egg carton! **i** Cut off the lid, cut the bottom into thirds, and turn ‘em

over. Most liquid cements, paint, and setting-solution bottles will fit in the open space perfectly. (Episode 2, “The Letter T”)

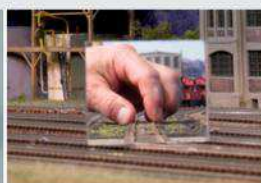
Mirror, mirror on the track – Sighting down a long stretch of track helps ensure you

get it nice and straight. But what if you can’t get your eyeball close to the track? Use a mirror! **j**



Your arm’s not long enough? Glue a dead 9V battery to the back of the mirror and stand it on the track. That super-straight straightaway will be a good reflection on your track-laying skills! (Episode 4, “Cheap, cheap, cheap”)

Fire it up – So you’ve built that CA/CA accelerator applicator (see the “Tools” section), but the CA has cured in the needle’s eye. How do you get it out? Holding the applicator tip in a flame for a few seconds **k** will burn that CA right out. Your applicator tool will be as good as new for a while again. (Episode 10, “CA Tips”)



Techniques

Door knobs that turn... heads –

Structure kits have never been better, but many still don’t include knobs on the doors. Remedy that with dollhouse nails. **l** In HO, the heads scale-out to about 3.5” – close to perfect! And they’re brass so they really look like brass doorknobs. Just use a

no. 76 drill to make small hole in the door and insert the nail. Micro-Mark no. 81844 and dollhouse stores. (Episode 14, “Minute structure details in a minute”)

Wire, wire everywhere – The underside of a layout can quickly turn into a rat’s nest of



wires. Keep ‘em organized with shower curtain hooks **m** (sometimes called “shower curtain pins”). Hang them from eye hooks drilled into your benchwork. When you need to add or work with a wire, pop open the shower curtain hook, remove the wire, and put it back when you’re finished. Everything stays organized and easy to get at. Available at hardware stores and kitchen & bath stores. (Episode 12, “Above and Below”)



Up on the roof –

Want an easy way to simulate rolled or tarpaper roofing on a structure? Visit your local drug store and pick up some paper tape. **n** It’s used for bandages, and because it’s made of a coarse, porous paper, it has a lot of great looking

texture once it’s painted. Cut the tape into scale three-foot widths, apply it to your model, paint it, and then hit it with some pastel chalks to bring out the texture even more. (Episode 14, “Minute structure details in a minute.”) **■**



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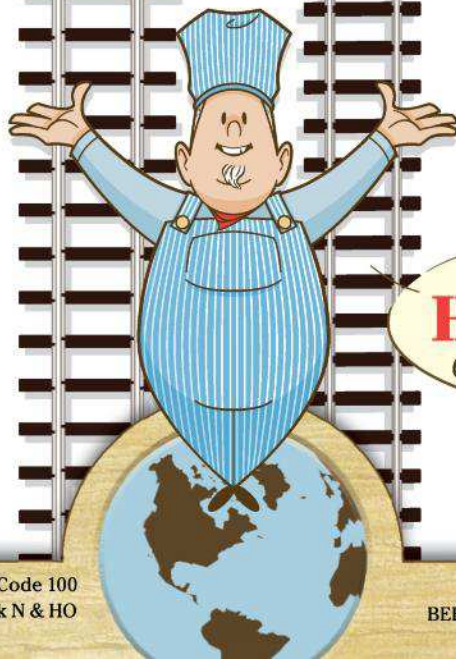
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