



RUNNING #EXTRA

More modeling every month

Lee Nicholas' **Utah Colorado Western**

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- Solder to Atlas frogs & zamak
- Improved electrical pickup
- Structure for an odd space
- Layout design with Sanborn maps
- ... and much more inside!



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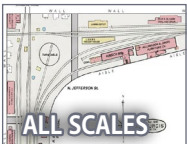
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EXTRA**

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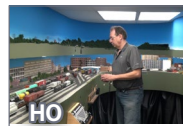
Yes, it's a model

from the MRH STAFF



MRH QAT: Making jigs, soldering track joints, ...

Compiled by JOE BRUGGER



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KEN PATTERSON



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GEOFF BUNZA



Lee Nicholas' Utah Colorado Western

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Salt Mine switching problem

GREG BAKER



Animated rollup door

RICK WADE



March 2019 news and events

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Compiled by the MRH STAFF

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PUBLISHER'S WELCOME

introduction



MRH Running Extra | March 2019

JOE FUGATE: MODEL RAILROADERS' GUIDE TO SAFE DIGITAL FILE STORAGE ...

★★★★★
RATE THIS ARTICLE

MODEL RAILROADERS IN THE 21ST CENTURY

usually have many digital files stored away. If you've been a reader of MRH, you probably have most of our back issues stored away.

If you've bought eBooks and downloadable videos from the MRH Store, then you've got even more digital goodies stashed away.

An all-to-common email we get goes like this:

"I recently had a computer crash and lost all my files. Can you please send me fresh download links again?"

We've also had authors working on projects for us lose their hard drive and all their work is simply *gone* and the loss borders on tragic.

And these days, many have a vast archive of digital family photos, and a data loss can destroy your family's entire pictorial history!

In the world of IT (Information Technology – the folks who do computers for a living), there is a saying: a file doesn't exist unless there are three copies, one of which is off-site.

So how do we protect our important files?

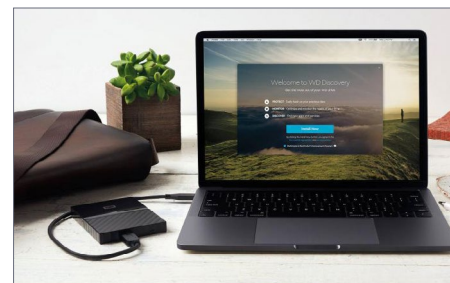
Yes, the obvious answer: make backups. Actually, it's not that hard or costly to do, you just need to *decide to do it*.

For example, here is a Kingston 64GB thumb drive on Amazon for only \$10: amzn.com/B00C5K8CQ2

PUBLISHER WELCOME | 2



1. For moderate file backup needs, this 64GB thumb drive only costs \$10. That's cheap insurance!



2. For more robust backups, this tiny 4TB Passport drive only costs \$100 – just plug it into a USB port.

Are your important files worth \$10? The decision to go ahead and spend the money for this inexpensive backup should be a no brainer.

If you want something more fancy and/or you have a terabyte or more of irreplaceable data, take a look at a Western Digital Passport drive. Here's a 4TB one on Amazon (\$100): amzn.com/B0713WPGLL

A Passport drive doesn't need a power cord, you just plug the USB cable into your computer and off you go. The drive is about the size of a pack of cigarettes, so it's compact and extremely convenient.

Plus, the Passport drive includes backup software for creating *scheduled backups*. While you're sleeping, your you can have your files getting backed up automatically. Now that's some peaceful sleep!

Finally, there's offsite backup. Google Photos, for example, lets you backup all your family photo treasures "in the cloud" (modern term for file storage that's internet-connected). Google Drive gives you 15 GB of totally free file storage "in the cloud."

With your files out in the cloud, your house could burn down, incinerating all your files into ashes, and they would still be safe.

Just remember this: the computer or device (tablet, phone) that you currently have all your files stored on is *guaranteed* to fail at some point. Have you *protected yourself* from that guaranteed event? ☒

THE LIMITED MODELER

column



MRH Running Extra | March 2019

JIM SIX LOOKS AT DESIGNING
A LAYOUT FROM SANBORN
INSURANCE MAPS ...



MOST OF US HAVE HEARD OF SANBORN MAPS –
they're old insurance maps.

You might ask, what's the value of an insurance map to a
model railroader – particularly with respect to our individual
limitations?

For starters, they contain a lot of information. You get railroad
track locations such as the mainline route, passing sidings and
other sidings, and even spurs up to and alongside the industries
served by railroad.

These maps have accurate renditions of the buildings served by
the railroad and include useful information about the buildings.
Industrial and commercial buildings include the company name.
The maps also show other buildings including houses, stores, etc.

The maps also show the roads and streets with names. In short,
they provide a wealth of information.

► **DOING MORE WITH LESS**

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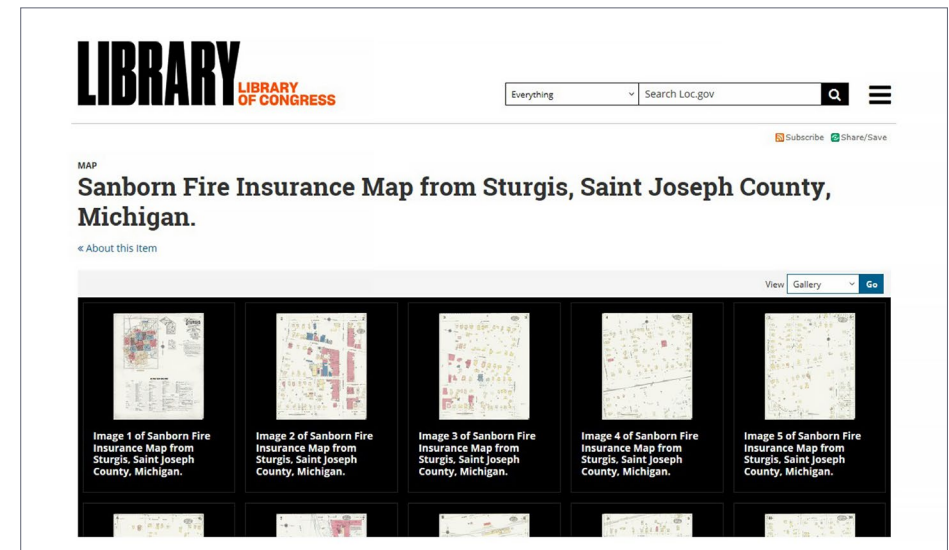
SANBORN MAPS ACCURACY?

Some people debate how accurate Sanborn maps are. I lean toward more accurate, although I've found a few possible errors here and there. Still, do not underestimate the amount of insight you can gain from these maps, even with some minor inaccuracies.

What more could a model railroader designing a new layout ask for?

BEFORE AND AFTER SANBORN MAPS

I started my layout a dozen years ago, long before I knew of
Sanborn maps.



1. You can find Sanborn Insurance maps online. I used maps for
Sturgis, Michigan to refine my layout design and found them
extremely helpful in doing optimum selective compression.

Last year I had a “water problem” in my basement train room that forced me to remove half my layout in order to make repairs to the basement. While not making me happy, this “event” allowed me to rebuild my layout better than it was before.

This time I am using Sanborn maps of Sturgis, Michigan as the basis for my new layout design. I intend to turn a near-disaster into a big gain.

We all are limited by the size and shape of our layout space. In my case, I have a 12' x 24' rectangular room, with two extensions outside the room for staging trains.

I consider this a somewhat average-size layout, perhaps just a little larger than some. It is certainly smaller than the layouts of Tony Koester and some other well-known model railroaders.

But my space is what it is and I intend to make the best use of it.

WHAT WE CAN LEARN FROM SANBORN MAPS

[2] shows the title area of a Sanborn map for Sturgis Michigan. This particular map is dated 1923. I also have a Sanborn map dated 1892.

As you will see, I combined the information from both years to come up with my 1927 map and layout design. Getting to the point, I converted a set of Sanborn maps into a “map” of my layout – at this point only half of my layout. I have not worked on the other half yet, but I will.

The report in [3] provides information about Sturgis, MI, this time in May 1959. All this information is useful for the model railroader. Knowing more about your setting adds realism to operating sessions. It enhances the “feel” and realism of the layout.



2. Sanborn map title block with a date of February 1923.

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The maps have a key [4] to aid in reading the maps in the set. Details include building construction, foundation type, frame type, siding type, type of windows, fire water pump locations, ground elevation, and more.

Note: Paste over Original Report. Sturgis, Mich.

STURGIS
ST. JOSEPH COUNTY, MICHIGAN
NEW REPORT, MAY, 1959
CITY IN GENERAL

POPULATION: 9,800 (Estimated).

METEOROLOGY: Prevailing winds S. W. to N. W.

TOPOGRAPHY: Level.

STREETS: Approximately 10% streets unimproved.

FIRE FIGHTING FACILITIES

WATER SUPPLY Municipally owned. Gravity and direct pressure system with supply from wells. Total pumping capacity 2,700,000 G. P. D. Total storage capacity 400,000 gallons.
Pressures range from 55 to 90 with an average of 62 lbs.
Average daily consumption 1,350,000 gallons.

FIRE DEPT.: Fully paid with 1 chief, 12 firemen and 1 miscellaneous personnel. 1 station.
2 combination pumper, hose and booster trucks and 1 hook and ladder truck.

FIRE ALARM: Gamewell Box System with headquarters at Fire Station, 122 N. Nottawa Street in two-story brick building.

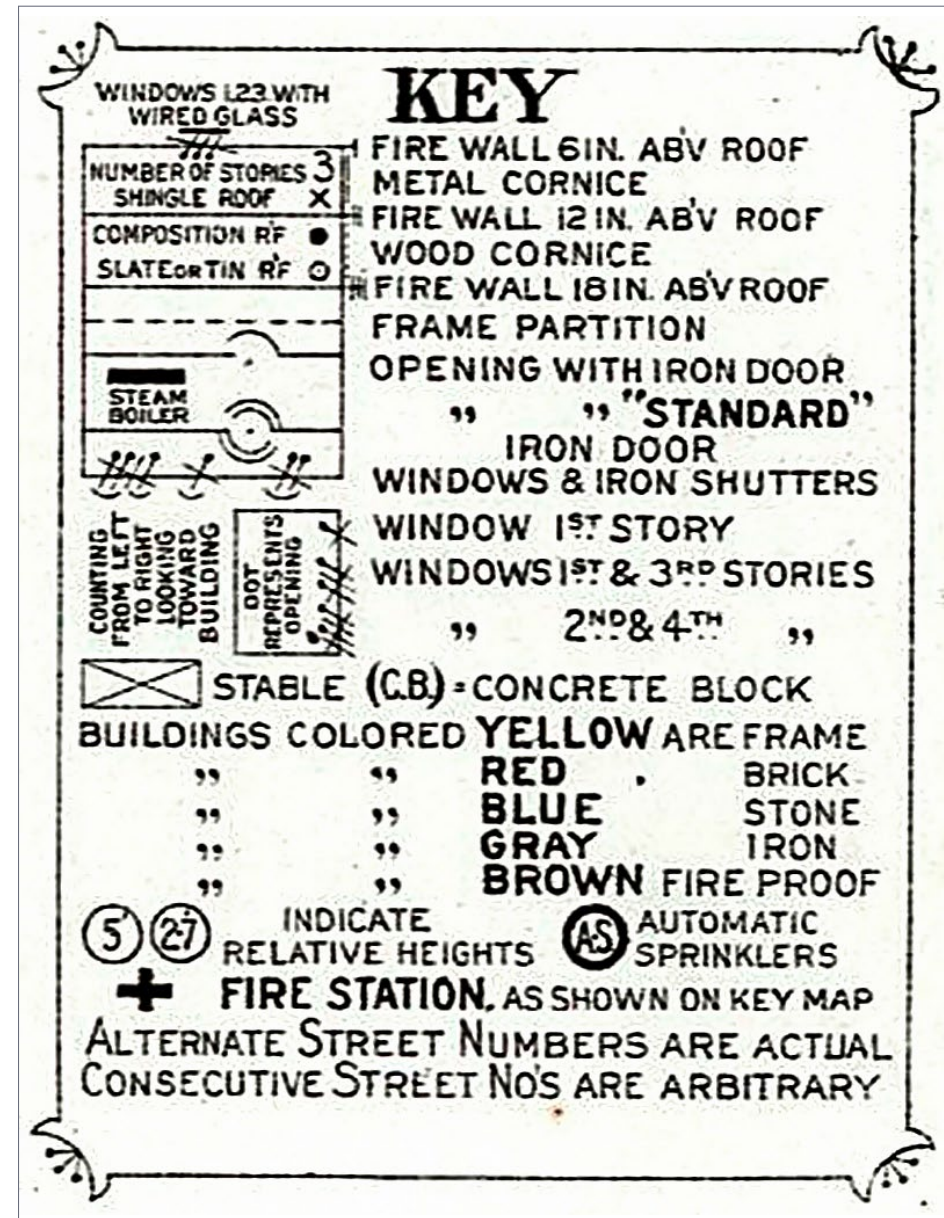
STRUCTURAL REGULATIONS

ROOFING: Wooden shingles prohibited within Fire Limits.

FIRE LIMITS: Frame construction restricted within limits as shown on Key Map.

3. May 3, 1959 report summary on Sturgis, MI from a Sanborn map. This enlarged digital copy of the original document is somewhat broken up, but still readable.

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4. Sample Sanborn Fire Insurance Map key. Look at all the information you can glean about the prototype structures!

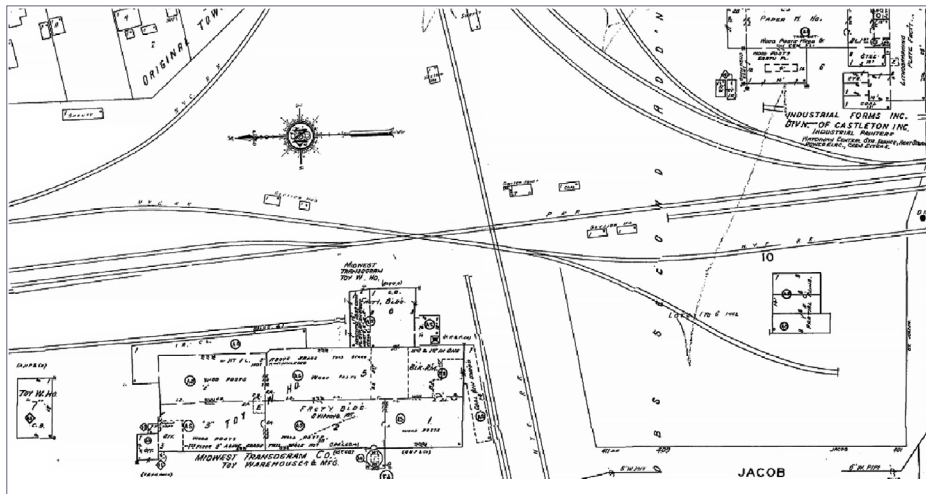
This information greatly aids the layout builder, especially for constructing the individual buildings. This all adds to the prototypical accuracy of your layout for little or no cost.

Looking at [5] and [6] you can see the intersection of three railroads. East/West (top/bottom) is the NYC (former LS&MS).

This is the original Toledo Division of the NYC. Two railroads run north/south (left/right) on the map. There is the PRR (former Grand Rapids & Indiana RR) and the NYC (former Michigan Central RR). Note how the track arrangement shows great detail.

The map shows railroad buildings such as section houses, an interlocking tower, and a coal shed near the tower. Tell me that this isn't great information for building a layout!

There are Sanborn maps for hundreds of locations around the country.

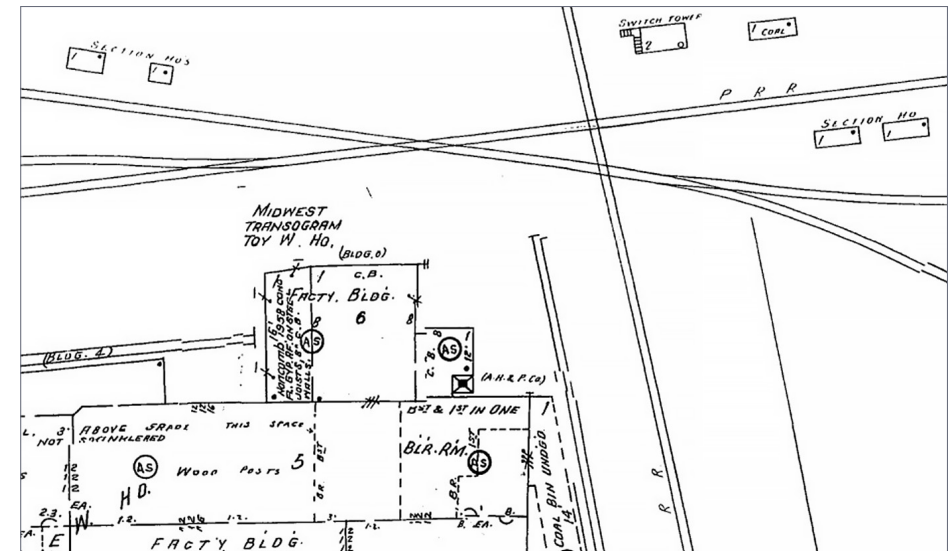


5. Here is an sample Sanborn map of Sturgis, MI, with north to the left.

SANBORN MAPS OF STURGIS

[7] shows a section of the 1892 Sanborn map of Sturgis, MI that is the same location at [5] and [6]. You can see there have been some track changes since 1892. There is also a turntable just to the southeast of the crossing of the railroads. There were interchange tracks at the southwest and the southeast of the intersection. The newer map shows another interchange track was added in the northeast quadrant of the intersection.

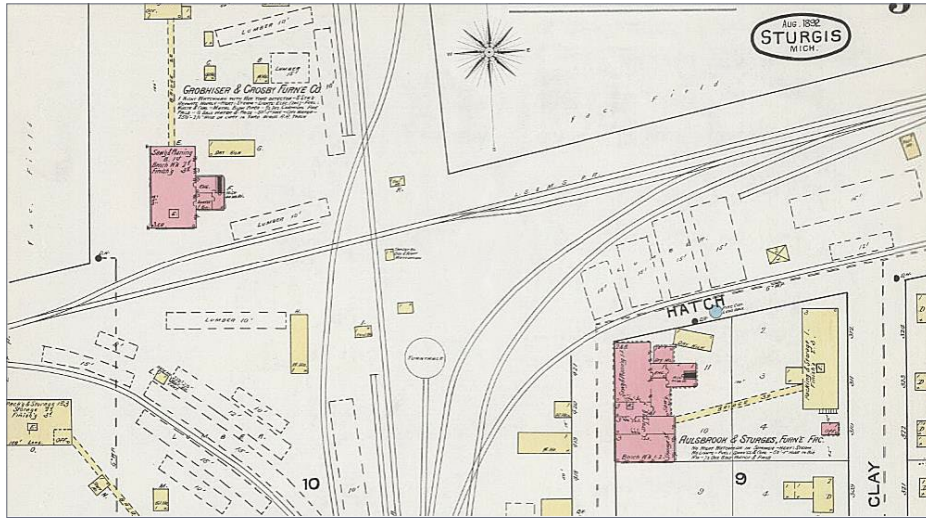
In [8] I show a zoomed-in view of image [7]. The factory at the lower right is Aulsbrook & Sturges Furniture Co. The shape and location of its buildings along with lumber storage areas are shown. This is all useful information for the layout builder.



6. Same Sanborn map as [5], this time with details shown close to full size.

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See [9] for an entire map section from the 1892 Sanborn map of Sturgis, Michigan. This is the primary area of Sturgis I am modeling.



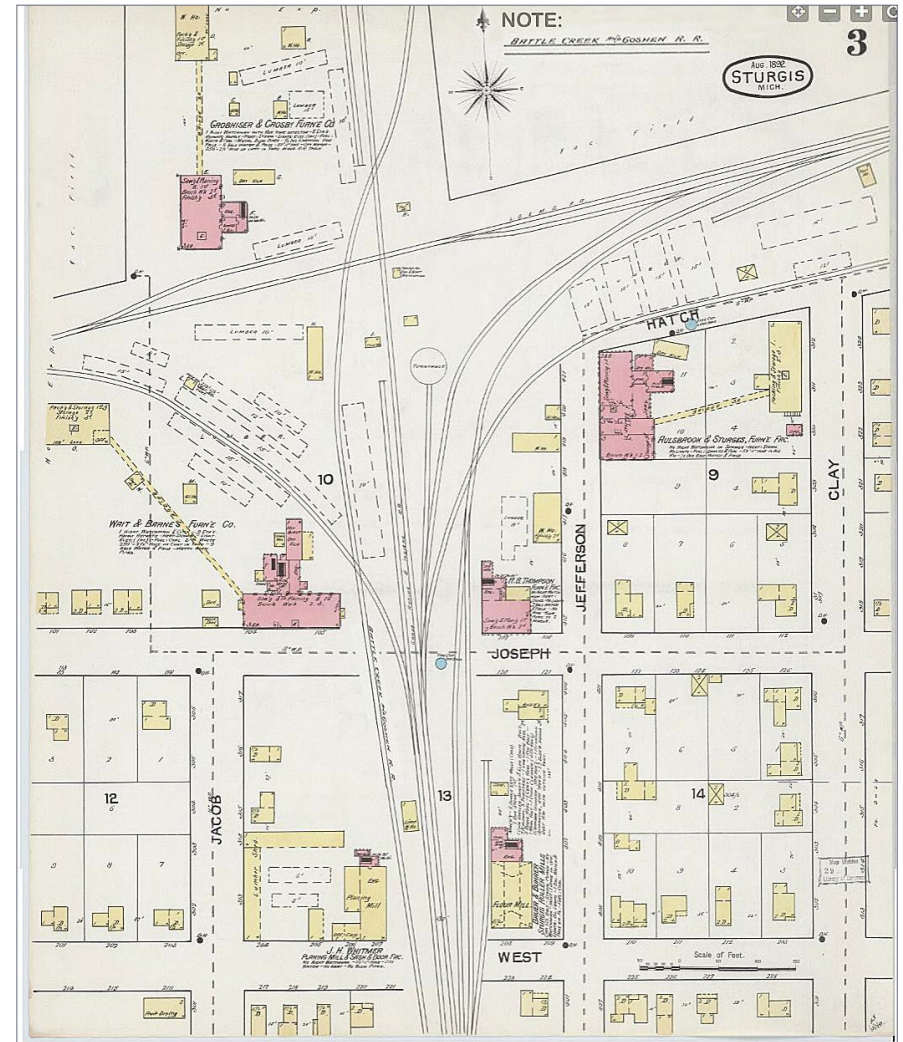
7. 1892 Sanborn map of the same location as [5] and [6], but this time with north to the top.



8. Closeup section of map in [7].

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I want to capture most of the operating capabilities shown on this map, but must place it in the corner of my layout room. I aim to include the crossing of the three railroads along with most of the industries shown.

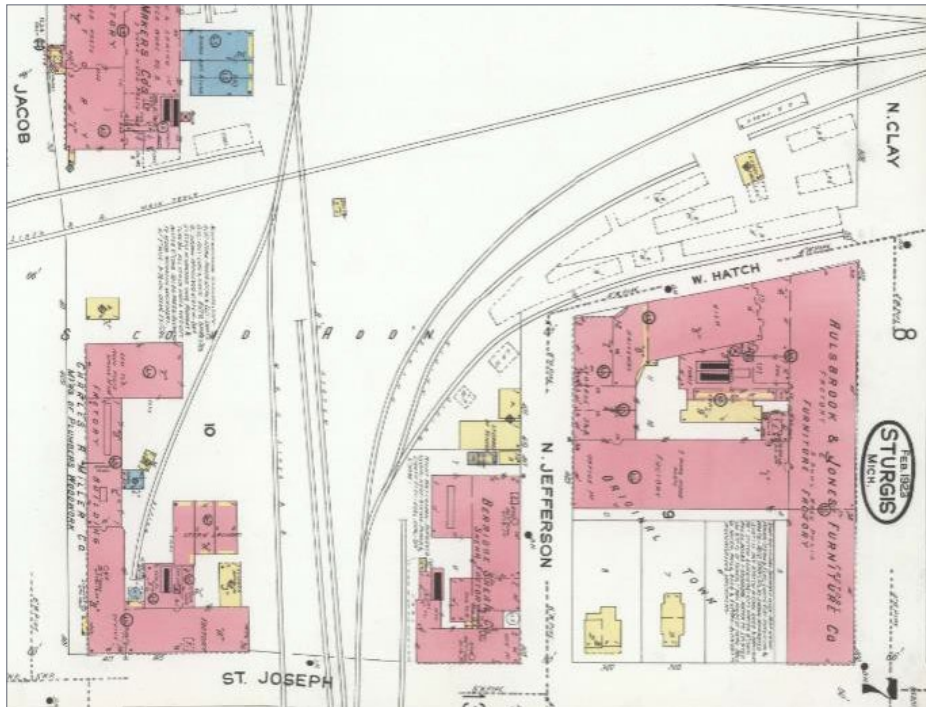


9. Same as [7] but a wider area to show more details.

Since I model 1927, I use only steam locomotives. These need to be turned, so the turntable should be included. I also need to know what changes took place between 1892 and 1927.

Map [10] from 1923 shows the same area as [9]. Comparing the two maps, I see there were track changes and even changes to the buildings as they grew. Because of this, my layout will more-closely match the 1923 map.

One of the track changes was the elimination of the interchange track in the southwest quadrant of the diamonds. This allowed the Wait & Barnes Furniture company to grow into the area



10. A 1923 Sanborn Map of the same junction as the previous map examples.

where the connecting track had been. In fact, Wait & Barnes became Charles A. Miller Co. during the intervening years.

When comparing map [9] with map [10], I note the railroad simplified the tracks in the southeast quadrant. I find the 1923 arrangement to be much more modelable for the space I have available.

Another industry change: Aulsbrook & Sturges Furniture Co. became Aulsbrook & Jones Furniture Co. and became much larger. Also, Berridge Shear Co. was added. It was not there on 1892 map. Obviously Sturgis grew between 1892 and 1923.

I could go on and on with the rest of Sturgis where the railroad was located, but I will spare you.

My point is that we modelers can study these maps and make much more informed decisions on what should be included on the layout and what should not. As a modeler of the prototype I would love to include everything, exactly where it was in 1927, and everything scaled to match the prototype – which the Sanborn Insurance maps make easy to do.

However, we all know that is not practical, so compromises must be made.

INDUSTRY DISCOVERY

Photo [11] shows Sturgis viewed southeast, just south of the area the preceding maps show. This 1922 photo looks pretty much like the 1892 maps but simpler than the 1923 maps. The photo is missing some of the buildings shown in the 1923 map. My point is that towns continually change as time passes.

One of the factories in Sturgis during my modeling era was the Royal Chair Co. that I started modeling a while back. This

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structure remains incomplete [12], but I will finish it. It definitely will have a place on the layout just south of the National Carbon Paper Co. – which I also have not finished.

If you look at map [13] you can see Royal Chair. NYC Lines (Michigan Central) served it. Taking a closer look at Royal Chair Co. [13], I see



11. Looking southeast at Sturgis, MI over both the GR&I (PRR) on the left and the Michigan Central on the right.



12. My unfinished model of the Royal Chair Co.

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the factory received coal, along with lumber and hardware. This means that both coal gons or hoppers along with boxcars served this facility.

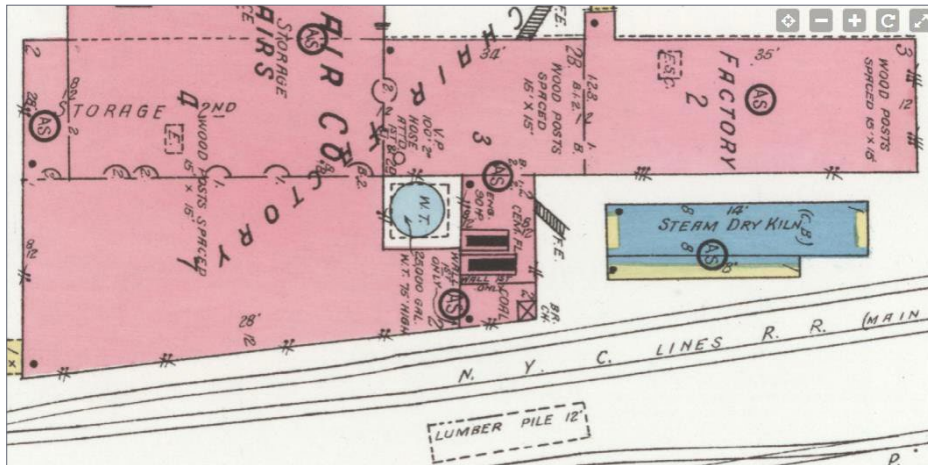
Just north of the Royal Chair Co. stands The National Carbon Coated Paper Co. While my model [15] is not an exact match



13. Closeup of Royal Chair Co.

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for the prototype, it has the “flavor” and will serve my needs for the layout. Map [16] shows the relative locations of Royal Chair and this paper plant. Map [17] shows a closeup of the National Carbon plant along with some interesting details.



14. Another view of Royal Chair.



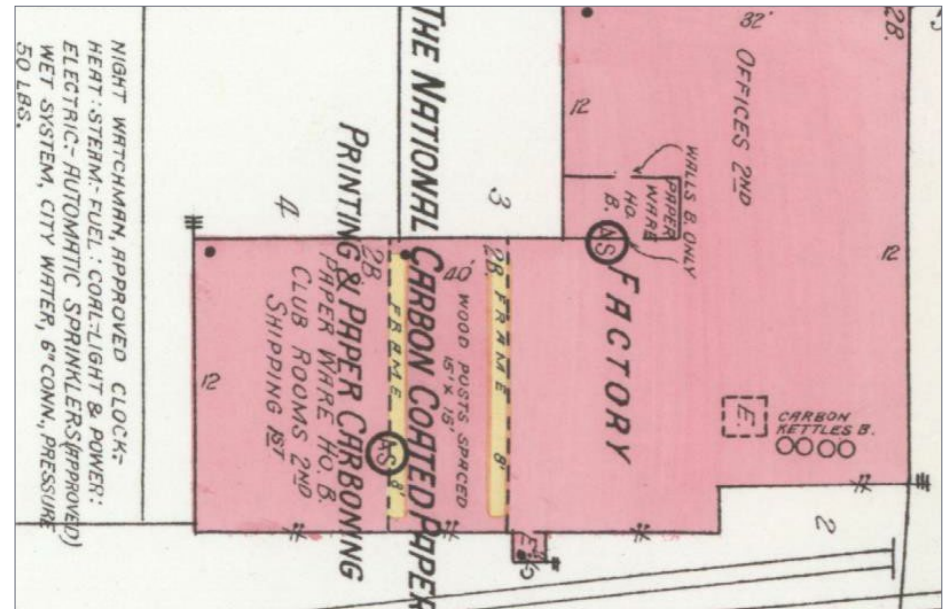
15. My model of National Carbon Coated Paper Co.

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I could walk you through every rail-served industry and all sections of the Sturgis, Michigan Sanborn Maps one at a time, but these examples should give you the idea.



16. Royal Chair is at the left and National Carbon Coated Paper is at the upper-right.



17. Closeup of National Carbon Coated Paper Co.

PUTTING IT TOGETHER INTO A PLAN

Sanborn Maps can be used to help us design a reasonable representation of a specific prototype. Permit me to *show you what I have done* with these maps.

Diagram [18] shows the layout plan I created by editing the Sanborn maps to fit my layout room and available space. This is about half the layout. I have not started work on the other half.

I retained all three railroads that served Sturgis, MI. The New York Central (former Lake Shore and Michigan Southern RR) runs east/west across the top of this plan. The Michigan Central (former Battle Creek and Goshen RR) runs north/south at the far left of the plan.

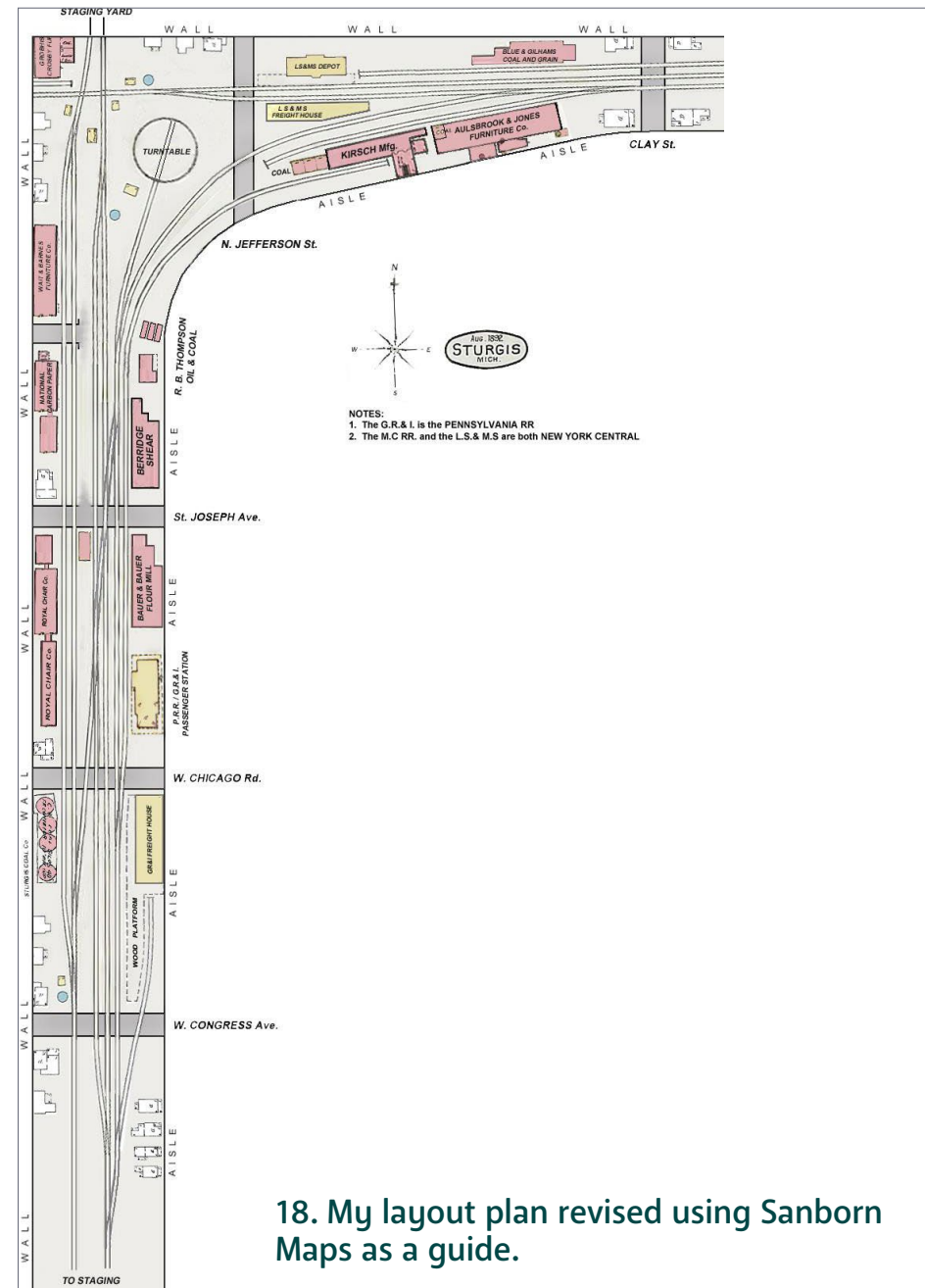
And let's not overlook the Pennsylvania RR (former Grand Rapids and Indiana RR) running north/south parallel to and just to the right of the Michigan Central. This is a lot of railroading packed into the 8-ft. by 24-ft. space, yet it is not crowded.

The sidings are long, making them feel more realistic. They will take some time to maneuver around when switching the layout. If you like ops, more switching means the fun lasts longer!

How did I create this plan map? Simple. I used Photoshop Express to edit a copy of four sections of Sanborn maps.

Yes, I modified building footprints in some cases to get them to fit the available space. I also re-aligned some track, but retained the basic track configuration. I also retained the turntable from the 1892 Sanborn map. It was gone from the 1922 map, but I decided to keep it, as my crews will find it very useful.

There will be a staging yard in the adjoining room at the upper-left. There are five roads that disappear into the backdrop walls. I will use the same techniques and methods Tom Johnson and I



18. My layout plan revised using Sanborn Maps as a guide.

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developed over the past several years to blend these roads into the backdrop [19].

I have to believe what I have shown in this month's "Limited Modeler" should be interesting to more than a few readers.

After all, we each have limitations, and few of us have a lot of space for a layout. I believe making use of Sanborn maps will help us to get the most out of our limited space.



19. Example of blending roads realistically into a photo backdrop on my layout.

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Better yet, we do not need to invent a track plan out of thin air. Simply start with the prototype and adjust it to fit your layout and your needs. ✓



IMAGINEERING

column



MRH Running Extra | March 2019

RAY DUNAKIN DESIGNS A STRUCTURE TO FIT AN ODDLY SHAPED SPACE ...



IN THE “FULL SCALE” WORLD, REAL ESTATE is almost always at a premium. This is especially true in towns and cities, where residents and businesses all compete for the best locations.

Once these have been taken, many less-desirable locations get pressed into use, including some that can't physically accommodate traditionally shaped structures.

These “leftover” sites require creative solutions. Some are relatively simple, such as wedge-shaped buildings. The most famous example of this is the Flatiron Building in New York City.

In mountain towns and desert mining camps, rugged terrain sometimes leads to extreme measures, resulting in structures that would not be considered acceptable anywhere else.

Over the years I've seen many peculiar buildings, including a cottage built over a stream, houses utilizing existing boulders as walls, mining structures wedged into tight places, and a variety of oddly shaped commercial buildings.

► **EXPLORING THE CREATIVE SIDE OF THE HOBBY**

IMAGINEERING | 2

This is good news for model railroaders, for two reasons.

One, we are usually pressed for space on our layouts and must resort to squeezing a building into a tight or oddly shaped space.

And two, such structures can add a lot of charm and character to our scenes. So even if our layout is completely freelanced, it's still nice to know that there is some prototypical justification for these kinds of buildings.

The Grizzly Bar

The town of Mineral Ridge on my 1:24 scale In-ko-pah Railroad features a row of buildings going up a steep slope.

The first three buildings are typical structures on rectangular foundations. The fourth foundation is roughly L-shaped with an irregular, curved cliff along the rear, and an angled retaining wall along the west side.

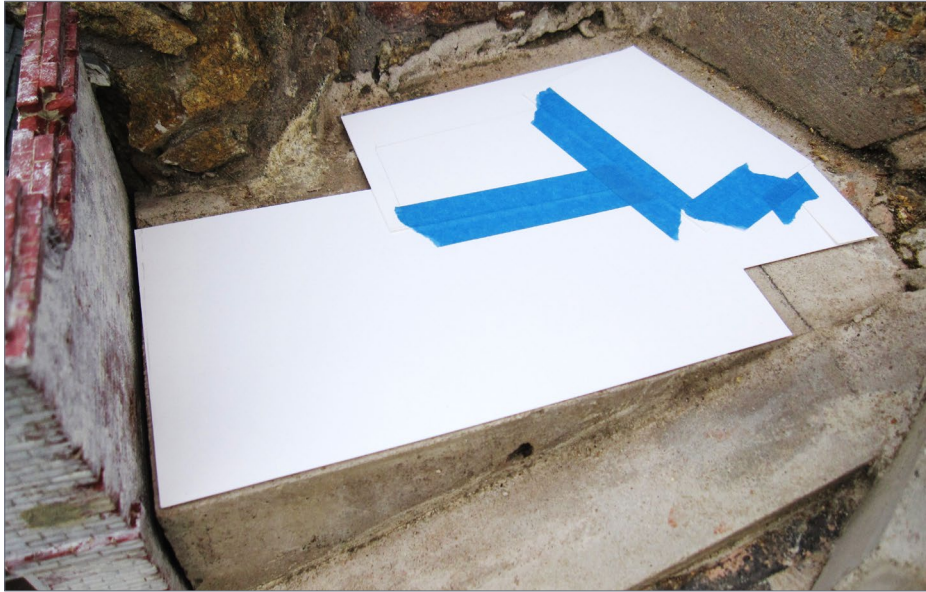
Complicating things further is the steeply sloped sidewalk, which will require a setback slab for the building's entrance.

I could have ignored the irregular shape, and just stuck a small, rectangular building on the front end of the foundation. But it would have been a very shallow structure with a lot of wasted space behind it.

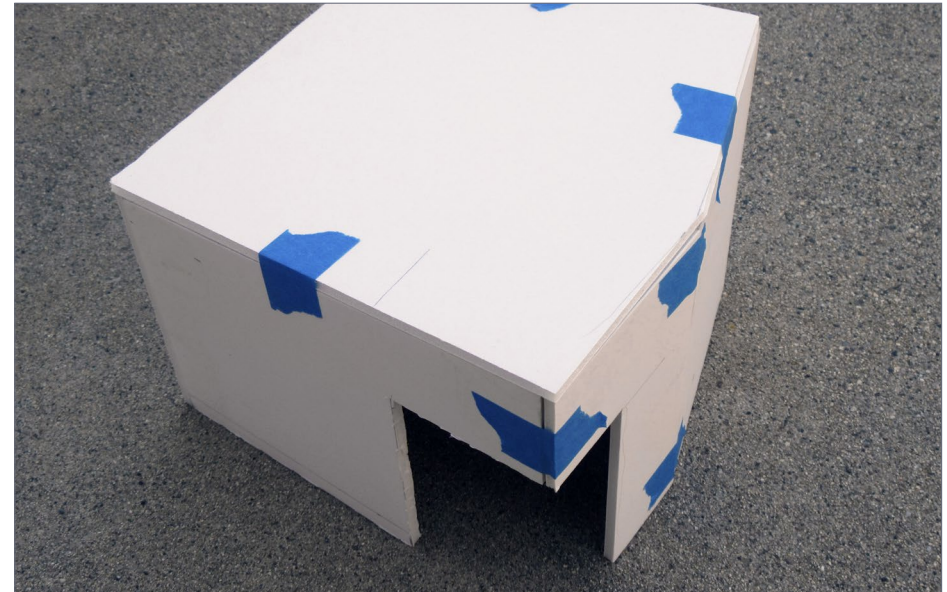
I was also hoping to improve the depth of the interior detailing visible through the windows.

On top of everything else, there is a mine tram bridge crossing over the site, so the building would also be limited vertically.

What follows are some of the steps I went through to design and scratchbuild a structure to fit this space. I hope this project will provide inspiration for filling some unique space on your own layout, regardless of scale.



1. First I needed to figure out a footprint for the building that would make maximum use of the space. Because the foundation is hemmed-in on three sides, I couldn't just lay a piece of paper over it, trace the outline, and then draw the building's footprint. Instead, I cut pieces of paper into various shapes as needed, laid them on the foundation, and moved them around until I was satisfied with the shape. I then taped the pieces together and used this as a template to create the structure.

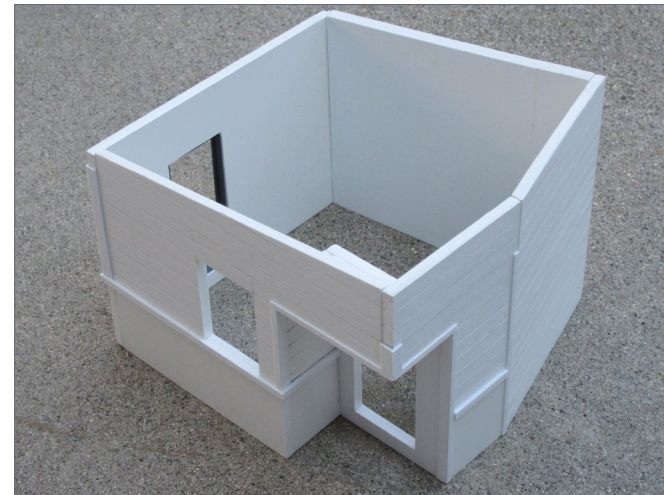
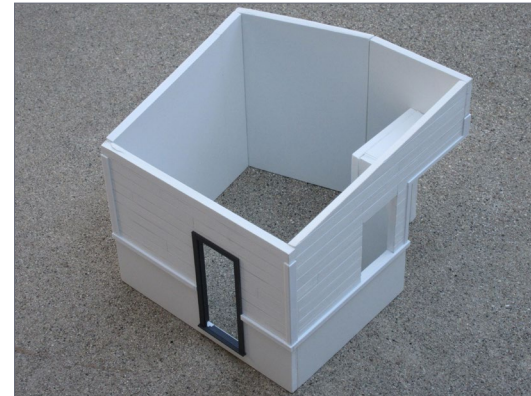


2. For ease of construction, I decided to build the structure in two sections – the larger, five-sided main room and a smaller addition. Because of the height limitation, I chose to go with a sloped flat roof rather than a peaked roof.

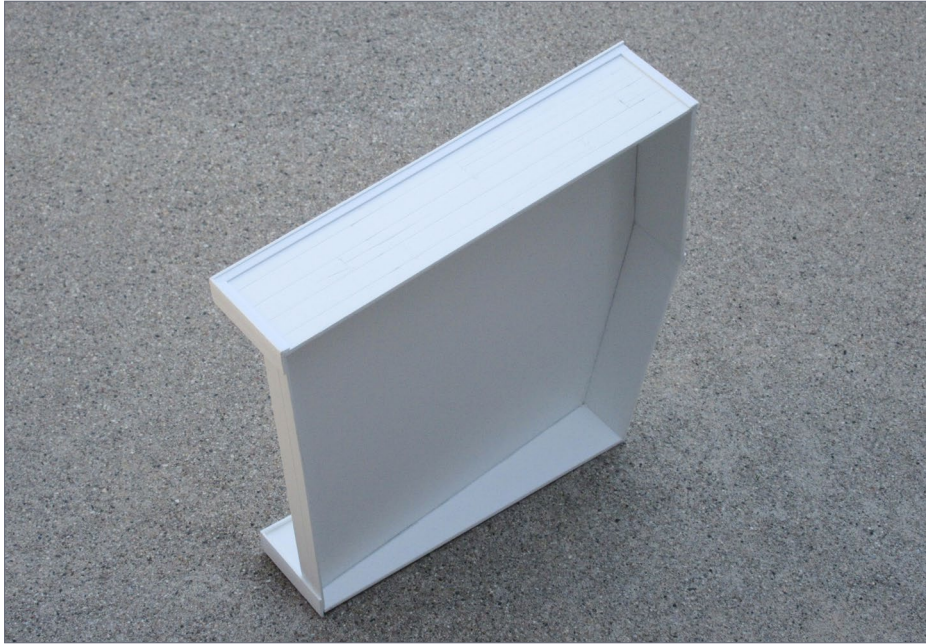
I built a foam-core mockup of the main room first. This allowed me to work out all the angles and make sure that the walls and roof all fit together properly, prior to cutting plastic. I didn't bother mocking up the floor or the entry-way. The mockup was completed by simply taping together the five walls and a roof. Then I placed the mockup on the foundation to see how it looked and make sure there would be no interference with the tram bridge.



3. It was at this point that I decided the addition would be a covered deck or patio area, rather than an enclosed room. I felt this would make the building much more visually interesting – especially with a couple of customers seated there, sipping drinks.



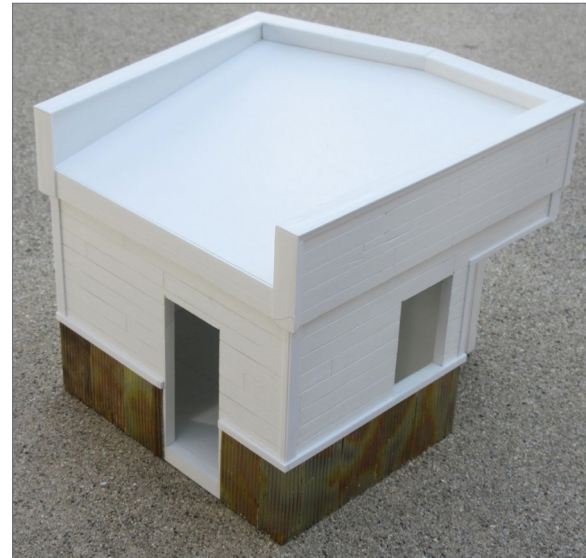
4, 5. I used the foam-core mockup to work out the sizes and positions of the doors and window. I would need to scratch-build the main door and the window. The door providing access to the patio area would be a Grandt Line part. Once I had everything finalized, I disassembled the mockup and used the pieces as templates for cutting the walls. These were made from a sheet of 6mm Sintra PVC board. I carefully scribed the PVC to simulate the look of weathered wood boards, and used styrene strips for the trim. I didn't bother detailing the two sides that would be hidden against the cliff and retaining wall.



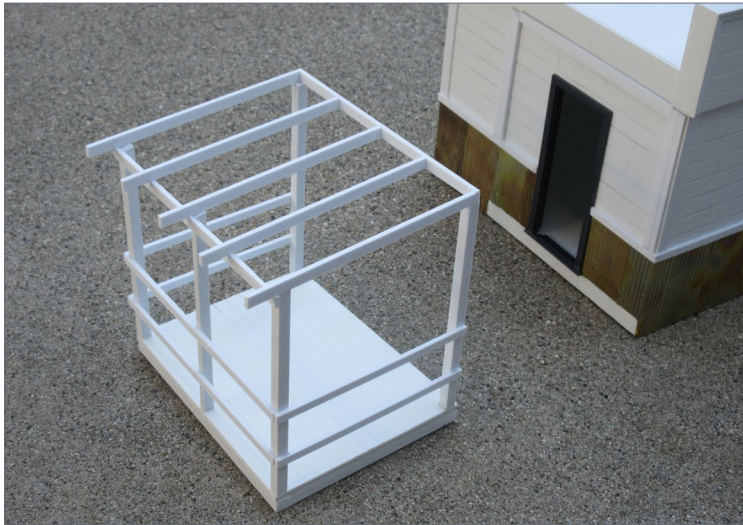
6. I also cut the roof from 6mm Sintra. It had to be removable for access to the interior. It also had to be built in such a way as to prevent rain from getting into the structure, since it would be installed outdoors. So I added a parapet around the roof that fits over the outside of the walls. This design is not something you'd commonly see in real life but isn't entirely implausible either. It also gives the building a sort of false front that could be used for a traditional "Old West" saloon sign.



7. With the roof in place, I set the building on the foundation to check the fit and see how it will look in its surroundings.



8. To make the building even more appealing, I added a wainscot of corrugated metal. I made the corrugations by hand from shim brass, and will eventually paint it to look like rusted steel.



9, 10. I made the deck from strips of styrene, scribed to simulate wood grain. The floor of the deck is 2mm Sintra on which I scribed planks and wood grain. I painted the floor and posts to resemble weathered unpainted wood. Then I added corrugated roofing, painted with a two-part "rust" solution sold under the Sophisticated Finishes brand.



MAKING STYRENE LOOK LIKE WOOD

Notice how Ray made the styrene look like wood – a process that works in any scale.

1. Add grain with coarse sandpaper or the edge of a razor saw. You can also use the tip of a knife blade to add knots or to scribe more prominent grain.
2. Paint the wood first a buff color (newer wood) or a light gray color (older wood).
3. Streak on a brown stain to highlight the wood grain and knots.
4. Optionally, dry-brush a bit of light buff or lighter gray to highlight some of the grain. For an extra special touch on weathered wood, dry-brush just a tiny hint of silver metallic paint to add the silvery sheen sometimes seen on well-weathered wood.

Tell your friends about Running Extra!

We depend on word-of-mouth to grow ... if you don't share us, we don't grow





11. I built up the main door and window using various strips of styrene. Next, I painted and weathered the windows and the Grandt Line doors and frames, then glazed the window openings with real glass.

Do ALL your model railroading friends know about MRH?

WE CONTINUE TO BE SURPRISED BY HOW MANY MODELERS STILL HAVE NEVER HEARD OF US – SO SPREAD THE GOOD WORD ABOUT MRH!



12. I added security bars made from styrene to the Grandt Line door. The doors and window were not installed until after I had painted and weathered the rest of the building.





13. The finished structure blends beautifully into its surroundings, and greatly enhances the town of Mineral Ridge.



14. Another view, from farther back, to show more context. I still need to add lighting, interior details, and figures. ☑

**Please include a phone number
when emailing MRH**
(in case your spam filters eat our
email response)





my finished model. Consider this article to be an addendum to the kit instructions. I don't repeat information here if it's already in the instructions.

Although not as expensive as a brass model of the same quality, this premium kit does cost a bit more. I worked slowly and carefully to avoid mistakes which might damage the looks of the model or render it useless.

I describe the build process as if I am looking over your shoulder and giving you guidance on how you too can build this kit and get the same results I achieved. I also call out problems you might encounter, saving you from making those mistakes.

By following along here, you can build either the as-built or rebuilt versions of the Southern cab. If you see a step number by itself, this means the instructions pertain to both models.

If you see a step number followed by "as-built" or "rebuilt", it pertains only to that particular version.

Even if you don't build this specific kit, I think you will find useful tips and tricks here you can use on most any other resin caboose kit, too.



Running Extra | March 2019

BOB HARPE builds a Wright Trak caboose kit ...

Compiled by Steve Smith, Allen Cain, and JC Paschal

All photos by author

ONCE I RECEIVED MY WRIGHT TRAK SOUTHERN CABOOSE

kit, I was thrilled. Gary Wright has produced a very fine kit – I felt the end results to be worth every minute I spent building, detailing, painting, and decaling this fine model.

While the kit comes with instructions, I did additional steps to get

DETAIL PARTS AND TOOLS

DETAIL PARTS AND PART NUMBERS:

ALL VERSIONS

- 0.012" brass wire
- #78 Kadee couplers
- Modelflex CB&Q Chinese Red, 16-153
- Modelflex Reefer Yellow, 16-10
- Modelflex Engine Black, 16-01
- Modelflex Milwaukee Brown, 16-45 (Brown scheme cabs)
- Scalecoat II Bright Caboose Red, 2073 (if you don't like the Chinese Red color)
- Detail Associates lift rings, 2206
- Detail Associates coupler lift bars, 6215
- Tichy AB brake set, 3013 (for extra brake details)
- Decal setting solution, your choice

AS-BUILT VERSION ONLY

- Atlas 50-ton Bettendorf trucks, 185000 (as-built version)

REBUILT VERSION ONLY

- Atlas caboose trucks, 190000 (rebuilt version)
- Microscale decals, MC-4084 (rebuilt version)

TOOLS NEEDED:

- Cyanopoxy (or your favorite CA adhesive – see note)
- #11 X-Acto blades (several)
- #80 drill bits
- #77 drill bits

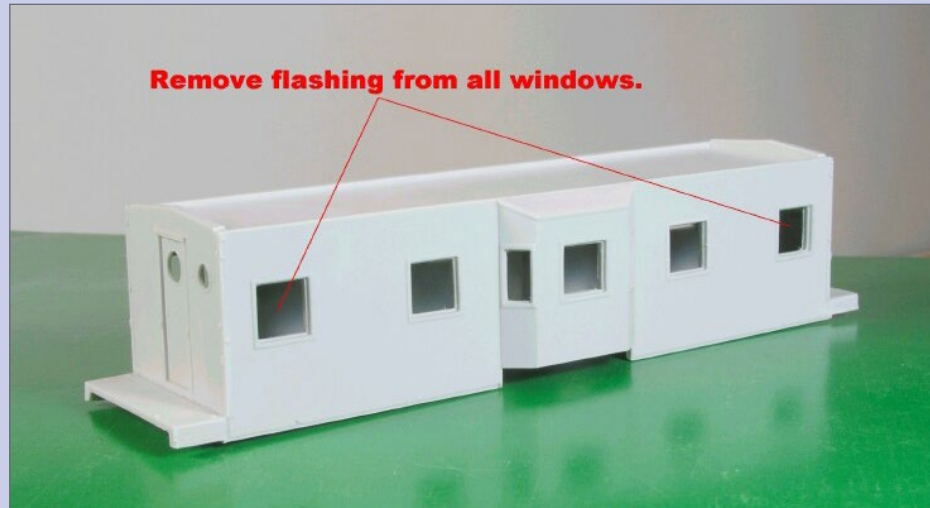
- 0.015" steel piano wire (file a sharp angle on one end for use as a drill bit. If you can find long-shank 0.012" bits, I suggest using them instead.)
- 1/8-inch drill bit (to drill hole for smoke jack)
- Two good quality needle nose pliers
- Small screw driver
- one pair of Xuron "orange handle" flush-cut nippers
- Dremel or equivalent rotary tool w/small emery wheel

NOTE: I highly recommend using Cyanopoxy to build this caboose. It does an excellent job of bonding the detail parts together. The Cyanopoxy kit also contains a "de-bonder" so if you make a mistake, you can unglue part and then relocate it to its correct place. You can find Cyanopoxy at cypox.com. ■



STEP 1: REMOVE FLASH

Begin by carefully removing all flash from the cab windows and other areas of the model. I suggest using a sharp new #11 X-Acto blade to prevent damage resulting from the use of extra pressure to these areas.



1. Remove flash from cab windows and body edges.



STEP 2: PREPARE END SILLS

Carefully remove the two end sills from the casting web and attach to the caboose walkways. Be careful removing these end sills – they are delicate toward the center, and will break if pressure is applied to them.

There are 21 different holes to be drilled in both ends of the caboose. Mark each hole with a sharp pin and then drill with a #80 or #77 bit as listed here.

- 4 x #80 holes on the end sills
- 6 x #80 holes for the curved platform handrails
- 5 x #77 holes on the edge of the platform for the end railings
- 4 x #80 holes for the two grabs at the top of the rear wall and
- 4 x #80 holes for the flag holders
- 2 x #80 holes in each upper corner for the flag holders supplied in the Wright Trak kit. See the photo for these holes.

Note 1: The two holes – one each for the grab iron supports – need to be moved six scale inches from their marked location toward the door. The location on the model is difficult to work with when you add grab iron support, so move these holes inward to make future work easier.

Note 2: There are five holes to be drilled on the platform floor. Mark these holes with a sharp pin, and drill with a #77 bit. They will hold the stainless steel end railings, which are slightly larger than the 0.012" brass wire.

Note 3: There are two holes near the cab wall that are difficult to drill vertically if you don't use a long drill bit. Use long-shank 0.012" bits if you can find them. Also see the Homemade drill bit sidebar.

STEP 2: PREPARE END SILLS *CONTINUED ...*

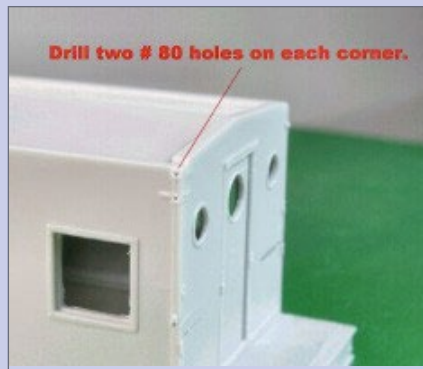
B. Harpe

HOMEMADE DRILL BIT

I found 0.015" steel piano wire makes a good drill. This can be especially useful in cases where you need a longer-than-normal bit.

Cut a piece of 0.015" piano wire and file a sharp angle on one end to make a drill bit. This length of wire should be just long enough to be held in a pin vise and drill to the needed depth.

This has worked well on all of my Wright Trak Models.



2a and 2b. Holes to be drilled in cab body ends (for grabs) and on each corner (for marker lamps).

STEP 3: MOUNTING THE COUPLER

The Kadee #178 scale coupler is perfect for this new Wright Trak caboose. It can be used with only a minor modification. I highly recommend it.



To install the Kadee #178 coupler box, carefully remove a sliver of resin from both sides of the coupler slot. Test-fit as you go to not remove more material than needed. The coupler box should mount right to the end sills when properly fitted.

3a. Making room for the Kadee #178 coupler box.

AS-BUILT: The "projection" on the lower left corner of the body seen in [3a, 3b] is the

coupler lift bar support. During the construction of models for this project, I examined photos and noticed that some of the as-built cabs had a different setup for this lift bar than the rebuilt units [3b].

The as-built cabs had their coupler lift bars mounted just above the rear deck, and are mounted in two round supports. Later, on the as-built cabs, we will add lift rings to support the lift bars, and we'll bend our own lift.

For the as-built version, carefully remove this projection from both ends of the body prior to painting. For the rebuilt cab version, no modifications to the body are necessary.

STEP 3: MOUNTING THE COUPLER *CONTINUED* ...

3b. Compare the lower left corners of the rebuilt (left) and as-built cabs. Remove coupler lift bar support for as-built version prior to painting body.



STEP 4: INSTALL END GRABS

Bend and install the four grab irons seen in the photo. Cement in place and allow to dry.



4. Install the end grab irons.

I find it easier to install all the wire grab irons first, then paint the model. Doing so prevents the paint from getting scratched while test-fitting the wire grabs. The yellow paint will cover the red on these grab irons with no problem.

STEP 5 (As-BUILT): INSTALL SMOKE JACK

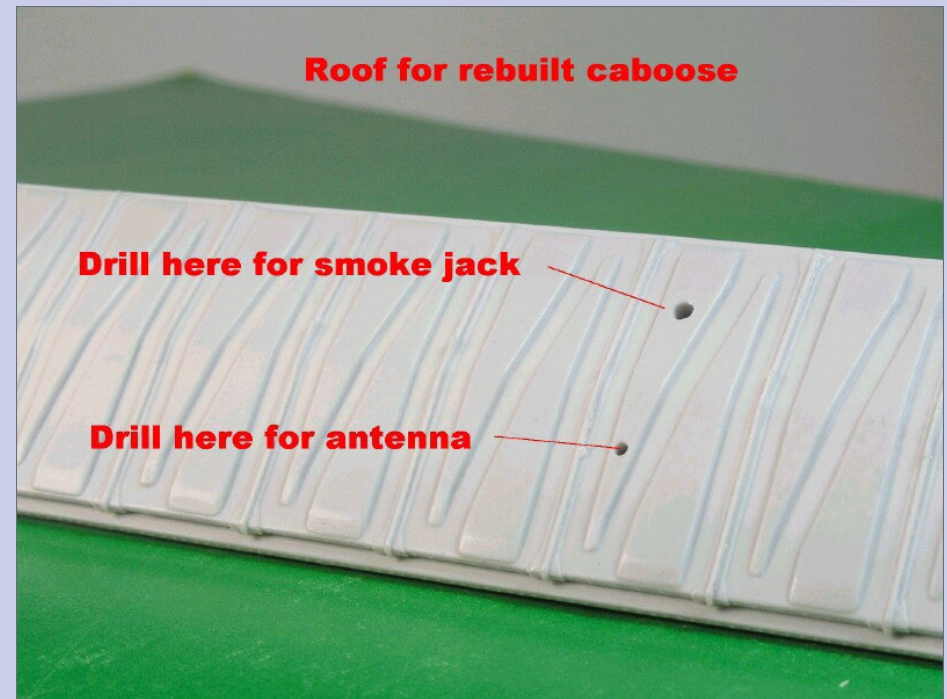
Drill a hole for the smoke jack. Do not glue it in place yet.



5a. Drill hole for smoke jack.

**STEP 5 (REBUILT): SMOKE JACK + ANTENNA**

Drill a hole for the smoke jack. Also drill a hole for the antenna [5b]. This hole should be on the same roof panel as the smoke jack and located approximately halfway between the roof peak and the roof edge. Do not glue the parts in place yet.



5b. Drill holes for smoke jack and antenna.

STEP 6A: ATTACH THE ROOF

Remove the flash from the cab roof and smooth any defects you see. Now is a good time to wash these parts before joining them together. Wash the roof, body, and other resin detail parts in 70% alcohol. Take your time and don't rush things – we want to thoroughly remove the release agent used on these kits.

After this, wash the body and parts in warm water and a mild dishwashing liquid. Use a hair dryer to remove the excess water and dry the parts more quickly (not too close, so you don't warp the parts from the heat).

Set the roof on the body, and very carefully make sure the distance A-B equals the distance C-D [6a].



6a. Attach the roof to the body after careful measurement.

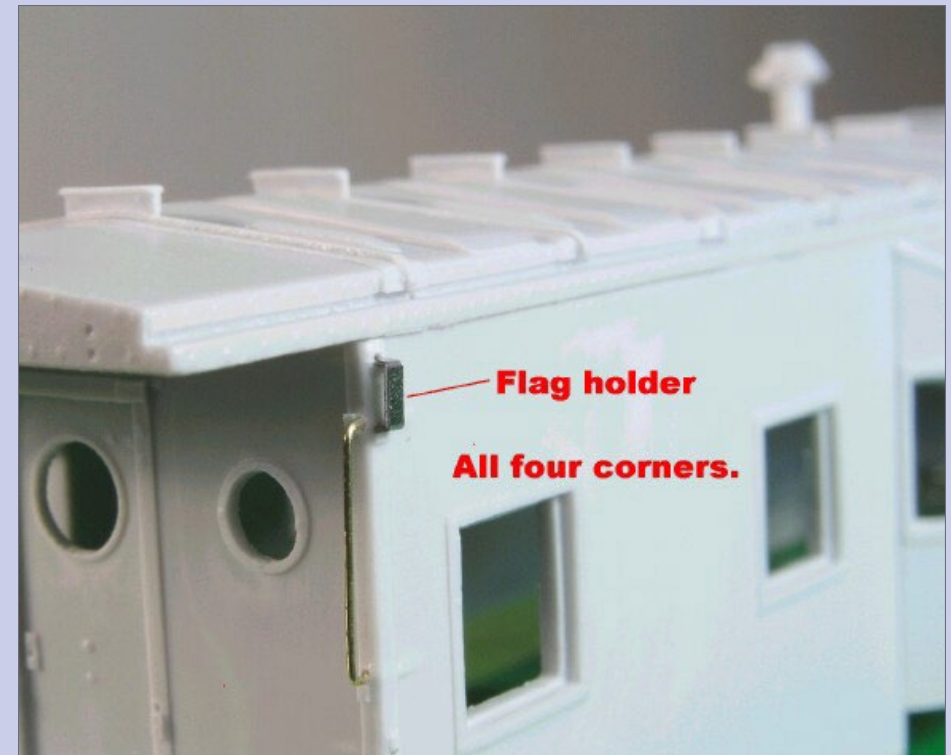
Correct distances insure the end railings sit in a true vertical position when they are added. The smoke jack should go toward the end of the cab with two portholes.

Cement the smoke jack into the hole in the roof and then cement the roof to the body. Allow to dry.

STEP 6B: ADD FLAG HOLDERS

Add the flag holders to the four corners with Cyanopoxy.

The flag holders are the parts on the far-left of the stainless steel parts sheet, directly above the window visors. There are 10 of them: they look like very small hot dogs with a stick thru the middle.

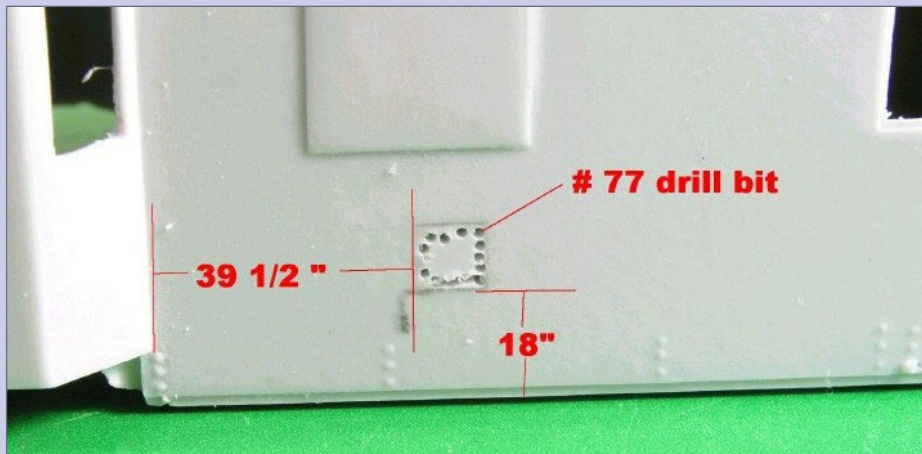


6b. Add flag holders to the four corners.

STEP 7 (REBUILT): INSTALL TOILET WATER FILL

The toilet water fill is located 39½ scale inches from the bay and is 18 scale inches above the bottom of the cab side. This part is installed on the same side as the generator grill.

Measure the distances shown [7a] and then draw a square box the size of the water fill cover. Now drill several #77 holes within this square and connect them with a sharp #11 blade. Square the hole for a tight fit.



7a. Drill and cut hole for water cover (rebuilt cabs only).

Glue the water fill cover in place and allow to dry. Be sure you orient this part with the deeper side on top [7b]. It slopes inward from bottom.



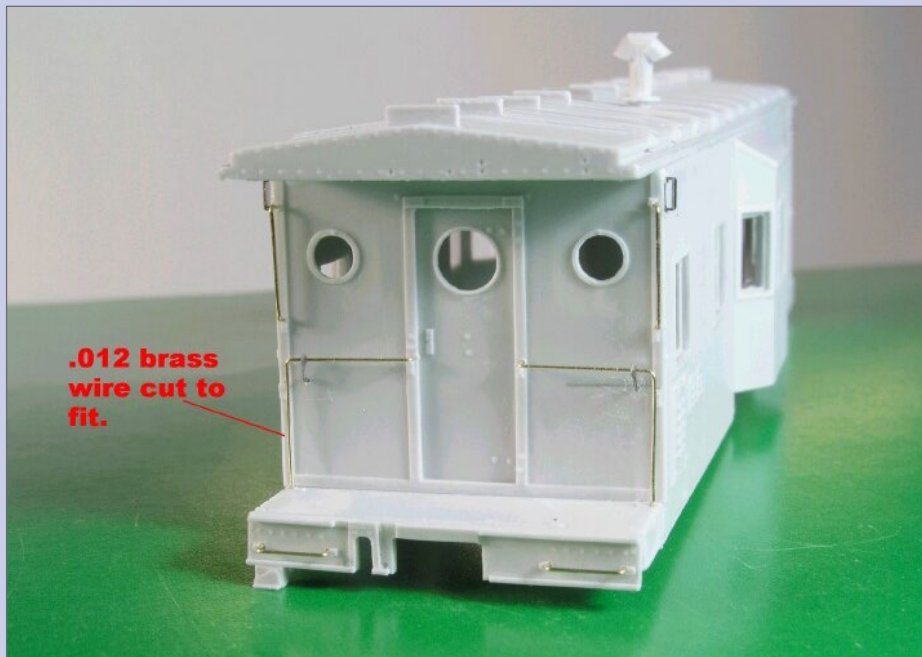
7b. Position toilet water fill cover correctly and glue in place.



STEP 8: END CORNER GRABS

Note 4: The corner grabs included in the caboose kit are too short to look correct, so make a set of your own with the following steps.

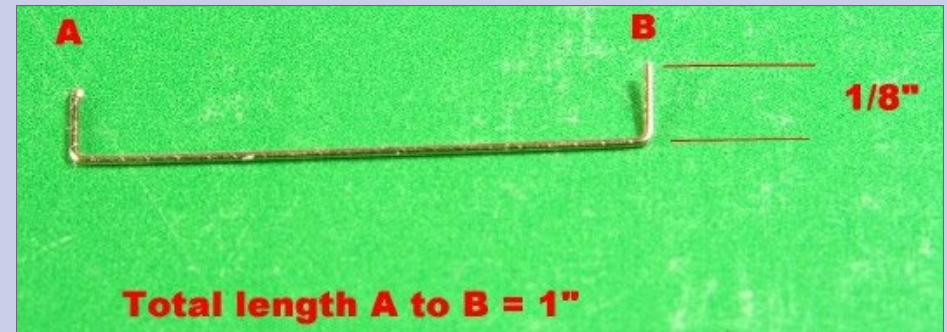
Cut four pieces of 0.012" brass wire, and bend to form the two corner grabs found on each end. Thread each wire through the brace and cement in place.



8. Install end corner grabs.

STEP 9: INSTALL SIDE CORNER GRABS

Cut four pieces of 0.012" brass wire 1" long. Make 90-degree bends at the ends of this wire, 1/8" long. Carefully bend this formed wire around the tip of your finger to create a semicircular grab iron.



9a. Creating semicircular grab irons for body sides.

Carefully install the four semicircular grabs into the appropriate holes, being careful not to kink any portion [9b]. Glue in place and allow to dry completely.



9b. Install semicircular grab irons on body sides.

STEP 10: INSTALL RUNNING BOARD

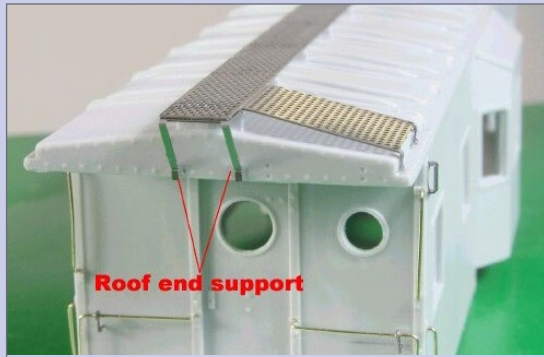


B. Harpe

PREPARING STAINLESS STEEL PARTS

The best way to prepare the stainless steel parts and make them easier to glue and paint later is to lay them on a sheet of 400 grit wet/dry sandpaper and sand in a circular motion to give some "tooth" to the smooth metal surface.

Fragile parts, such as the end railings, should be left on the stainless steel fret and sanded while still attached. This will prevent unwanted bending of these parts. Other, larger, flat parts may be removed from the fret to do the sanding.



10a. Install running board.

Cut the running board from the stainless steel fret with flush-cutters, and remove any rough edges. Carefully bend the angles on the roof platforms and test for the proper fit. Also bend down the two supports on each platform and check for proper fit.



10b. Attaching the running board.

After obtaining the proper fit for the supports and platforms, glue the running board in place. Allow to dry completely.



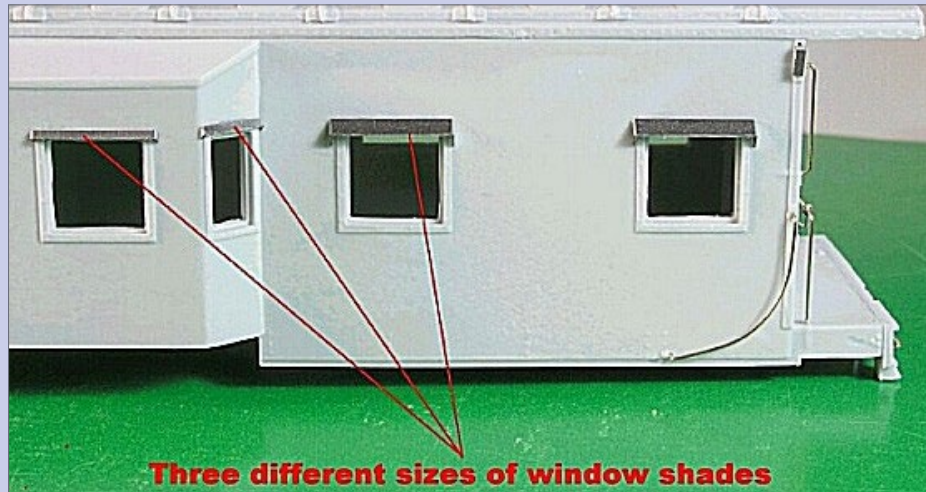
Please tell your buddies about us!

WE RELY ON WORD-OF-MOUTH TO GROW AND A BIGGER CIRCULATION MEANS WE'RE MORE LIKELY TO STICK AROUND FOR A LONG TIME TO COME!

STEP 11: ADD THE WINDOW SHADES

Carefully cut the window shades from the stainless steel fret and remove any rough edges. Very carefully make a perfect 90-degree bend on both ends of each window shade.

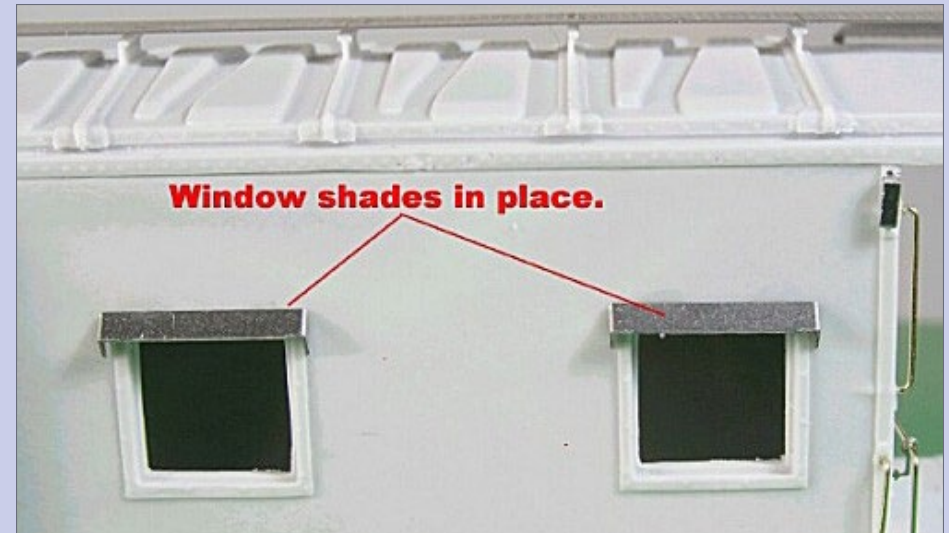
Note 5: There are three different sizes for the shades, so pay close attention to where each size goes [11a].



11a. Window shades come in three sizes.

Carefully glue the shades to their proper locations. I suggest using the tops of each window as a guide to attach the shades straight.

First, use only one or two very small drops of adhesive to attach each shade. Then go back and add more adhesive to the underside to make sure it is securely attached.



11b. Attach shades using window opening as guide.



When talking to hobby vendors, please remember to mention MRH ads.

STEP 12: PAINT THE BODY

The Wright Trak resin model needs to be primed and painted with Modelflex or another water-based paint for the paint to remain on the model while it is being handled. I used Scalecoat II on one of these models. and found it will not adhere to the resin as well as I would have liked.

Note 6: I have discussed the colors of Southern cabs with a couple of close friends and modelers, and have come to believe that there was a color difference between the early, as-built cabs and the later, rebuilt cabs. The as-built cabs seemed to be a reddish-orange color, while the rebuilt cabs seemed to be a darker, deeper red.

I painted this early-version as-built cab model with Modelflex CB&Q Chinese Red [12a]. I feel the “orangish-red” color to be a good choice for this version.



**As built version painted with Modelflex
CB&Q Chinese Red.**

12a. As-built cab painted with Modelflex CB&Q Chinese Red.

In [12b] I show the later, rebuilt version of the Wright Trak cab kit. I painted this model with Modelflex CB&Q Chinese Red and then over sprayed it with Scalecoat II Bright Caboose Red. This Scalecoat color is my favorite red color and I painted my other cabs with this color.

With handling, you're naturally going to leave an oily spot or two while building your model. I've found if I spend a couple of hours working on my models, I need to stop and go wash my hands to minimize greasy prints. And of course, it's always a good idea to wash and dry your models before painting them.



**The re-built version primed with Modelflex
CB&Q Chinese red then covered with Scalecoat
Bright Caboose Red.**

12b. Rebuilt cab primed with Modelflex CB&Q Chinese Red and over sprayed with Scalecoat II Bright Caboose Red.

STEP 12: PAINT THE BODY *CONTINUED ...*

Note 7: I have painted several of these resin kits with Modelflex and then repainted them with Scalecoat II. I have seen no harmful side effects to the cabs from layering on these two brands of paint in this way. I would suggest undercoating first with Modelflex or another acrylic paint if you choose to use any of the Scalecoat colors to paint your models.



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STEP 13: APPLY DECALS



13a. Decals applied to the as-built version.

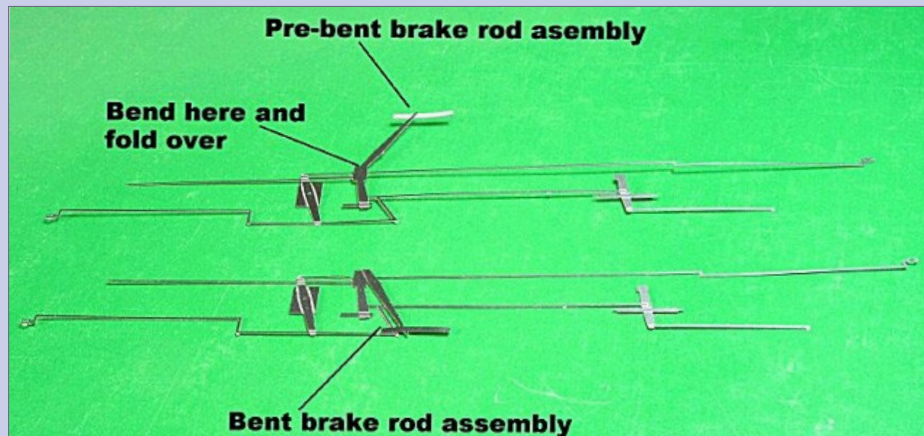


13b. Decals applied to the rebuilt version.

STEP 14: ADD THE UNDERFRAME DETAILS

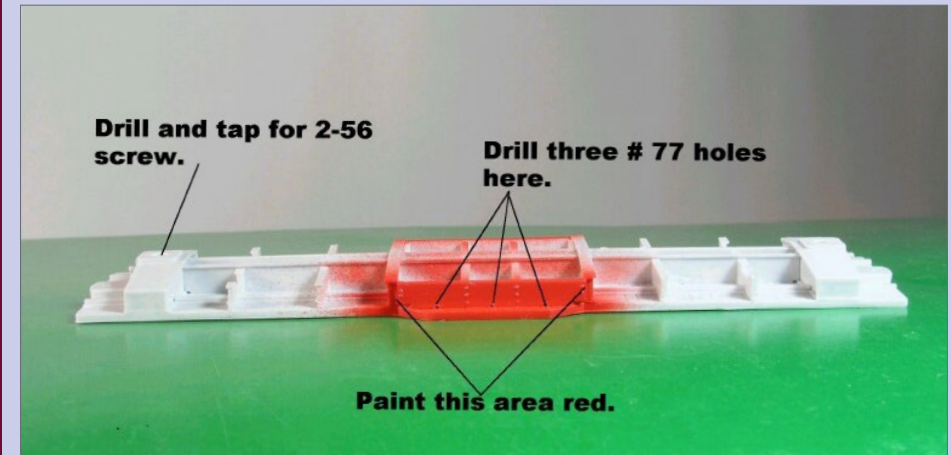
In [14a] the top assembly shows how it comes in the kit prior to being bent, while the bottom assembly shows how it should appear after the bend. Using long-nose pliers, carefully bend the slack adjuster over the assembly until it sits flat in the position shown at the bottom of [14a].

Note 8: The slack adjuster lacks a scribed bend line, so work slowly to avoid breaking this part or bending it incorrectly.



14a. Bending a brake rod assembly.

Drill and tap the bolsters for 2-56 screws. Work carefully to drill these holes straight and in the middle of the bolster holes. Drill the other six holes shown with a #77 drill bit [14b]. Also paint the underframe area shown in red.



14b. Drill and tap holes for underframe.



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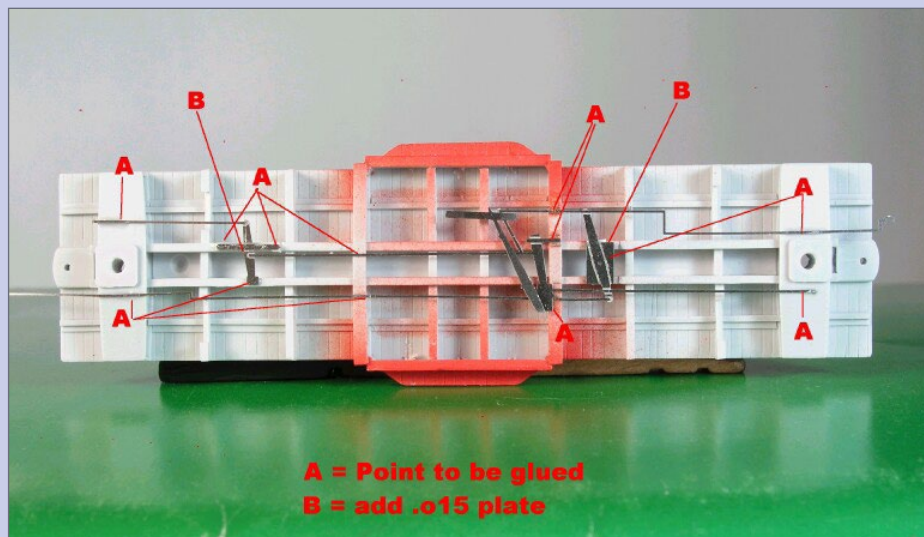
**We depend on word-of-mouth to grow
... if you don't share us, we don't grow**

STEP 14: ADD THE UNDERFRAME DETAILS *CONTINUED ...*

Lay the brake rod assembly on the underframe and mark the two areas that need the 0.015"-thick styrene pads [14c].

The reason for these pads is to allow the entire brake assembly to sit parallel with the underframe. If they are not used, these two locations will sit lower than the rods and will look strange.

Cut one plate to the size of the rectangle on the clevis and glue it in place under that spot. Next, cut a thin piece of 0.015" and glue it under the other location. Then glue the assembly to the underframe, and allow it to dry.



14c. Place and glue support pads, and then glue assembly to underframe.

Mask the area shown in red and paint the remainder of the underframe flat black [14d].



14d. Mask and paint the underframe flat black.

I did not spend a lot of effort on detailing the underframe. These parts are seldom seen, plus I do not have a much information on their placement.

I do know that the detail parts you see in [14e] are painted red, so I painted these parts with Modelflex CB&Q Chinese Red, and installed them using 0.015" brass wire to peg them to the floor.

(If anyone has drawings of the underframe and/or prototype details on these parts, please let us know on the comment thread to this article!)



14e. These details are painted with Modelflex CB&Q Chinese Red and attached to the underframe.

STEP 15: INSTALL BRAKE WHEEL STAND

Note 9. The remaining detail parts significantly affect the looks of your finished Southern caboose. Although not overly complicated or tricky, these steps require precise measuring, bending, and painting. Please do not rush these steps! Taking extra care now will give you a finished model you can be proud of.

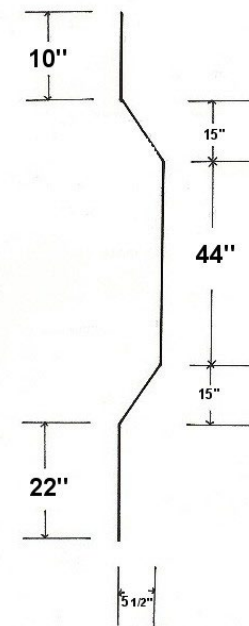
[15a] is a bending diagram for the brake wheel support. Cut each support from the stainless steel etching. Remove any flash left from these cuts.

Lay the supports on a flat surface with the smooth side up. Very carefully, using the measurements in [15a], measure for each bend. I suggest using a semi-dull #11 blade to scratch the measurement marks onto the stainless steel parts.

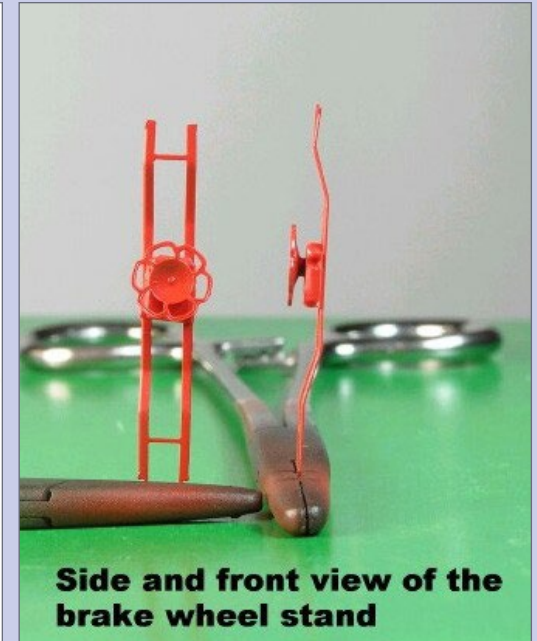
Be sure to mark *both* legs of the supports, as you will need to bend both sides at the same places and at the same time. Measure the first two bends from the top down, and then measure the two bottom bends from the bottom up.

This will leave you with the 44 scale inches shown in the drawing. Do not include the mounting pins in your measurements – instead measure from the bottom of the support legs.

Hold your pliers across both bends at the same time and maintain even pressure until the bend has been made. If your support moves, it will more than likely be crooked. If you cannot see both marks when applying the pliers, *stop*. Re-mark for the bend and try again.



New Brakewheel Support



Side and front view of the brake wheel stand

15a and 15b. Brake wheel support dimensions and photograph.

[15b] shows the brake wheel support and the brake wheel housing after painting. The brake wheel housing should be centered on the flat area of the support, and the bottom even with the bottom opening of the support.



STEP 16: INSTALL END RAILINGS

Note 10: Do not attempt the following steps without studying the photos and instructions carefully until you feel you completely understand what you need to do. Do not glue any parts in place yet, as they are very difficult to remove and reposition without damaging the brake wheel support.

This step is not difficult, but do work slowly when bending the stainless steel parts and pay close attention to where the bends need to be made.

Please do not attempt this step without the aid of two sets of quality pliers. The stainless steel parts, as small as they may seem, are very strong, and some smaller parts will distort if not held tightly and bent slowly.

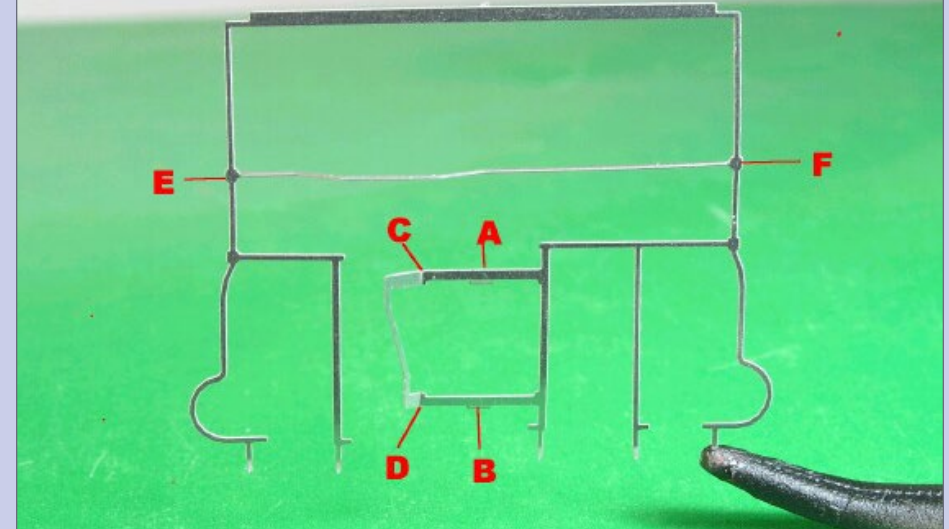
Notice three sets of letters in [16a]: A-B, C-D, and E-F. Holding the frame above A, bend the small square inward until it is 90 degrees to the frame. Do the same for letter B. These squares will support the round drum and handle when completed.

Now, slowly bend positions C and D outward to the angle shown. Do not over-bend but do make an angle here.

You may have to adjust this bend when the brake support gets added, as the two pieces are supposed to mate where they meet. (Let's hope they do!).



End railings, SR cab, both versions



16. End railings with support and bending points labeled. Also study [24b] to see the result.

Next, holding the end railing at position E, *carefully* bend the cross support with your other pliers. Bend only a few degrees out at a time and then move to position F and bend a few degrees out.

Return to position E and bend a few more degrees and so on and so on. *Do not* attempt to make the 90-degree bend at one time, as you will distort the entire railing frame. *Trust me!*

After you have made these bends in the end railings, paint them and allow to dry.

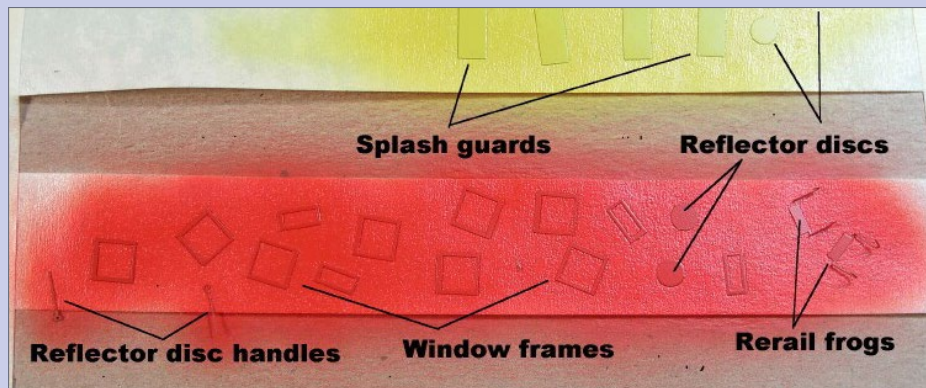
STEP 17: PREPARE AND PAINT REMAINING PARTS

Remove the four splash guards, four reflector disks, eight window frames, two reflector disk handles, and two rerail frog hooks from the stainless steel fret. Carefully remove any spurs or jagged edges on these parts, especially the window frames, as these will be a tight fit when applied.

Paint the window frames, two disks, and rerail frog hooks the same red you used for the caboose body. Paint the splash guards and two disks Reefer Yellow and allow to dry. The splash guards will need to be painted on both sides, but the window frames and rerail frog hooks can be painted on one side.

Now would be a good time to paint the end railings Reefer Yellow if you haven't already done so. Allow to dry.

Wipe the parts clean with 70% isopropyl alcohol. Since you're painting with a light color – Reefer Yellow – spray a light coat of primer or light gray first on each surface. Darker colors don't require a primer, as they will cover well themselves.

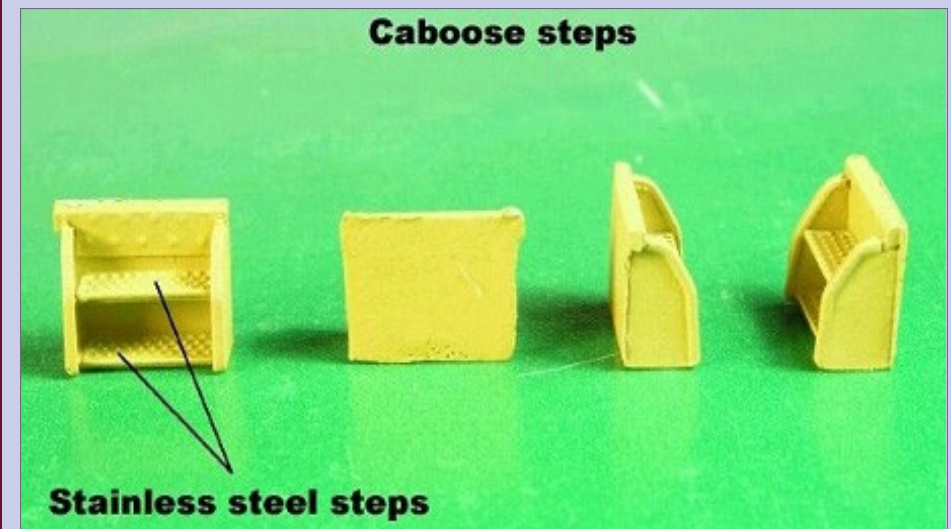


17. Stainless steel detail parts in appropriate colors (Reefer Yellow and CB&Q Chinese Red) after priming.

STEP 18: DOING THE CORNER STEPS

AS-BUILT CAB: Paint Reefer Yellow and allow to dry. No stainless steel steps are needed in the as-built version. The as-delivered cabooses only had a diamond tread pattern like the end platforms. The kit does not include the diamond pattern on the masters because the stainless steel step insert, which follows the prototype pattern for the rebuilt cabooses, would not fit flat on the step with cast-in tread.

REBUILT CAB: Assemble the four corner steps by gluing the two stainless steel steps into each step housing. Paint Reefer Yellow and allow to dry.



18. Corner steps painted Reefer Yellow after priming. Stainless steel step inserts are for the rebuilt cab only.

STEP 19: PAINT END WINDOW FRAMES AND GRABS

Paint all the grab irons and railings with Reefer Yellow. Notice the round window portholes on the as-built cabs are also painted yellow. Install the stainless steel window frames on the rebuilt version of this cab [19].

NOT SHOWN: Glue the marker light to the roof of the rebuilt cab.



19. Porthole window frames and grabs painted appropriately for rebuilt (left) and as-built (right).



STEP 20: INSTALL CORNER STEPS

Install and glue the completed corner steps and allow to dry. Note the position of the corner step and make sure it is set inward and flush to the inside of the shell housing.



20. Caboose step installation position.

STEP 21 (As-BUILT): INSTALLING THE WINDOWS

I deviated from the kit instructions with this step, and I think it makes a tremendous difference in the appearance of the cab. The kit instructions say to add the window frames *before* you paint the model, and glue the windows from the inside of the shell afterwards, but in this case I painted the model and window frames separately.

When I received my model, I noticed how deep the window cutouts appeared and wondered if the glass and frame would fit on the outside instead of adding it on the inside. Adding the glass and frame from the outside prevents a gap the width of the shell – and looks great! There is no gap.

If you're careful with the glue, you can have some very nice-looking windows on your model.

Carefully measure and cut 10 square windows and four rectangular windows from clear 0.010" plastic.



21. Clear windows installed from outside, counter to kit instructions.

Using Microscale's Micro Kristal Klear diluted with water (or your favorite product for installing clear window material), apply it carefully and sparingly to the window to be installed.



B. Harpe

KRISTAL KLEAR

Pour a small mound of Kristal Klear on a piece of plastic. Now dip a very small brush (e.g., 10/0) in a bowl of water and then stick it in the Kristal Clear. If you have enough water on the brush, the Kristal Klear will appear thin and milky. Very carefully apply the mixture to the cab window ledges. It should go on smooth if there is enough water in your brush. You won't need to coat the entire ledge, but try to get at least a 1/4" of the mix on each side of the window ledge.

The Kristal Klear will dry clear in about 30 to 40 minutes. If you've been careful applying it, you'll never know it's there.

Now, install the clear window and press the edges with a toothpick, the handle of a small paint brush, or similar tool. Move to the next window, allowing the first one to dry. Install all windows, including those on both ends.

Next, apply Cyanopoxy (see Note 11) with the tip end of a short section of 0.010" brass wire, by placing a very small drop in the four corners of the window frame to be installed. Now, slide the window frame into place using a sharp toothpick.

Next carefully press the window frame into place making sure all four sides are seated evenly. Install all window frames in place at this time. Allow to dry completely.

If you have worked carefully and slowly, you should have a cab full of very nice looking windows that would please any conductor having to spend his day watching his train.

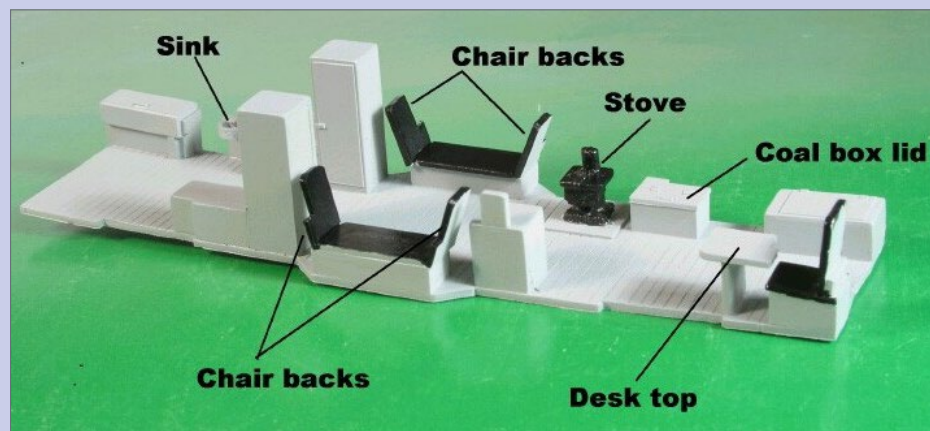
Note 11: I suggest using cyanopoxy here simply because it will not fog the clear plastic windows as some CA types can. Apply sparingly.

STEP 22: FINISH THE INTERIOR

Thoroughly wash the interior and its detail parts in 90% alcohol, and then with warm water mixed with a mild dish washing liquid. Dry with a hair dryer.

Install the stove, sink, coal box lid, conductor's desk, and the four chair backs. I tilted the chair backs at a 60-degree angle to resemble the seats found in Southern Railway cabs.

The interior of the Southern cabs was light gray. I used Modelflex SP Lark Light Gray (product #16-35). Paint the chair backs, conductor's seat, and stove flat black [22]. Set aside and allow to dry.



22. Stove, sink, coal box lid, conductor's desk and the four chair backs installed and painted.



STEP 23 (REBUILT): INSTALLING WINDOWS

Like with the as-built version, I recommend deviating from the kit instructions and inserting windows cut from 0.010" clear plastic. Measure the four square windows and cut to fit.

There are two ways to do this installation. The way I chose is to cut the windows to fit into the recess on the outside of the cab. This method requires you to be more accurate in making your measurements, but I think the results are well worth the time and effort.

The second method (per original kit instructions) is to cut the windows and fit them on the inside of the body shell. In either case, I suggest using Cyanopoxy or the equivalent to secure the windows to not fog the clear plastic.

After the windows are in place, carefully glue the stainless steel window frames in place. Be sure you test-fit each frame, and



know how and where each frame will be positioned.

Be careful to avoid getting glue on the body shell. Install all window frames and allow to dry.

23. Rebuilt version cab with windows and frames installed from outside body.

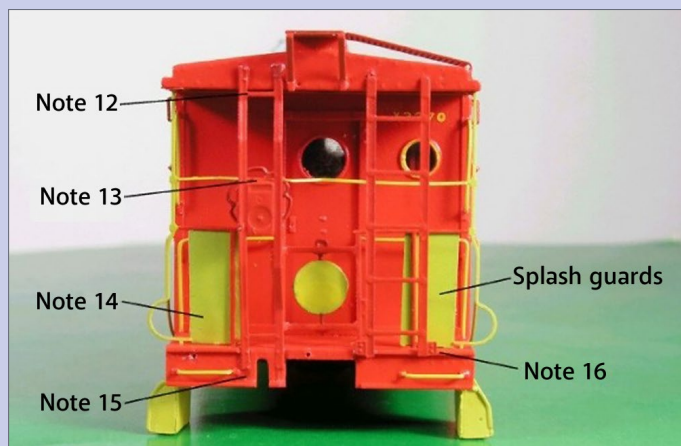
STEP 24 (As-BUILT): INSTALL THE END DETAILS

Carefully line up the slits in the end reflectors and glue the two sides together making sure no cement gets in the slit. There should be one yellow side and one red side. When completely dry, place the handle in the top hole in the support and slide the end reflector onto the handle.

Now position the tip of the handle into the bottom hole. I suggest securing the tip of the handle with a drop of glue to prevent it from coming loose. The reflector should spin on the handle if it has been installed correctly. Install the end railings, but do not glue in place.

Now, carefully place the brake wheel support onto the rear of the cab by sliding the brake wheel under the horizontal brace. Do not bend or remove the two locating tabs at the bottom of the brake wheel stand, as we will use these as locators to position the brake wheel stand.

Note 12: Position of the brake wheel stand upper rung.



24a. End details, with the positioning of each as noted below.

Note 13: The horizontal brace should rest on top of the brake wheel assembly.

Note 14: Position of the two splash guards.

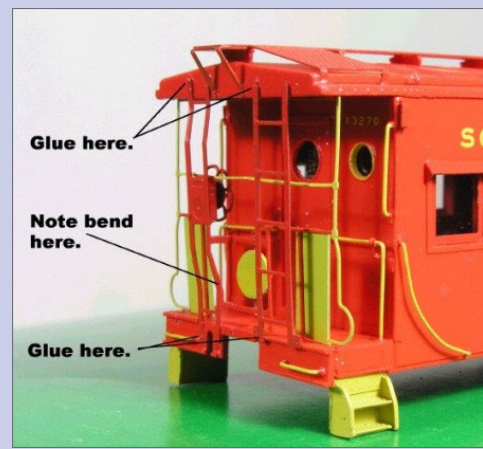
Note 15: Do not bend or remove the two locator tabs found at the bottom of the brake wheel stand. The two tabs should rest on the bottom ridge of the end sill when glued in place.

Note 16: Position of the bottom and top of the ladder.

Test-fit the angle of the brake wheel stand and the bend in the end railings [24b]. You may have to remove the end railings and re-bend to achieve a good, close joint between these two parts, but be sure to do so before you cement any parts in place.

If you are satisfied with the fit between these parts, glue the end railings in place making sure the two outer posts are in a 90-degree position (straight up and down in both directions).

Next, slide the brake wheel stand in place and glue it to the fascia plate and to the bottom of the end sill. Next, glue the ladder in place and allow to dry. Once the ladder is dry, glue the two splash guards to the end railings as shown [24a, 24b].



Finally, glue the brake wheel stand to the end railing and set aside to dry. Now, turn the caboose around and repeat the last two steps to the other end of your caboose.

24b. End details, with the positioning of each as noted below.

STEP 25A (As-BUILT): INSTALL INTERIOR, UNDERFRAME AND COUPLERS

Carefully insert the painted interior into the body shell and make sure it fits without distorting the shell.

Next, slide the underframe into place and make sure it fits correctly. You may have to notch the four truck bolsters where the semicircular grab irons fit into the shell and the coupler pad ends might need to be filed to fit flush into the shell floor.

When satisfied with the fit of these parts, carefully glue the underframe to the shell in no more than four places and use the glue sparingly in case you ever need to re-enter the shell some reason.

If you choose to use the Kadee #178 coupler and coupler pocket, you should have carefully removed a tiny sliver of resin from both sides of the coupler pocket to allow for the width of the coupler housing – look back at [3a].



Do not force the coupler in place, as the resin will split in this area. Next, while holding the coupler pocket in place, drill a hole for the longest screw included in the #178 kit. Now install both couplers.

25a. As-built end details.

Next, install the trucks of your choice. The trucks included in the kit are correct for the as-built version of the Southern cab. They are nicely done and operate well.

Install the brake wheel bell crank of your choice in the end sills of the cab. I used the one found on the Tichy brake set supplied in the caboose kit, as it appeared to be more accurate and because it's plastic [25a].

Carefully drill a #66 hole into the bottom center of the brake wheel housing and insert (*do not glue*) the plastic chain found on the Tichy parts. Then glue the connecting rod to the bell crank, and allow to dry. Next, pull the chain down to meet the rod and glue together as shown in the scan. Allow to dry completely.

Bend the coupler cut lever as shown and install in place using two eyebolts as supports.

Paint the chain with Modelflex Railroad Tie Brown and then paint the connecting rod, bell crank and cut lever with CB&Q Red.

Flip the caboose around and complete the other end.

Glue the six bay window supports and re-railers in place and paint with Modelflex CB&Q Red. Allow to dry.



STEP 25B (REBUILT): INSTALL INTERIOR, UNDERFRAME AND COUPLERS

Glue the end railings and brake wheel support in place, making sure the railings are in a 90-degree position. Make sure you have sliced a "sliver" from both sides of the coupler pockets so the KD #178 couplers will fit in the pocket – look back at [3a].

Install the cab interior or weights in place. Install the under-frame, and tack in place making sure the coupler pads are level with the bottom of the caboose floor.

Add the three bay window triangular supports on both sides of the cab. Carefully remove the inside bearing from the truck and install the generator, making sure it is lined up with the axle.

Add the brake chain and connecting rod as shown. Allow glue to dry. And then paint as shown in [25b]. Install the KD #178 couplers with the hardware included with them. Install the cut

levers, and paint as shown.

That's it! Enjoy your finished Southern Railway steel bay window caboose! ☒



25b. Rebuilt end details.

PHOTOS OF FINISHED MODELS



26. As-built prior to weathering.



27. As-built with weathering.



28. Rebuilt prior to weathering.



29. Rebuilt with weathering.

BOB HARPE



Bob (73 years old) and his wife Phyllis live in Savannah, Georgia. Bob retired from BellSouth Telephone Co. with 34-1/2 years service. He became interested in train modeling in 1980, and developed

interests in the Southern Railway, Norfolk and Western, and the Clinchfield Railroad. Bob founded the Savannah RPM meet in 1999, and continues to stir interest and provide information about model railroading and model building. Bob has also conducted several online clinics for model building on a variety of railroad subjects. ■



WRIGHT TRAK: USE CAUTION!

Wright Trak *appears* to have an active website that allows ordering this kit.

However, when we emailed Wright Trak asking about this kit, we never got a response. Before ordering, make sure you email them and get a response first!

You can also find these kits on eBay or at some swap meets. Looking back a few months, eBay shows listings for a half-dozen different Wright Trak kits. ■



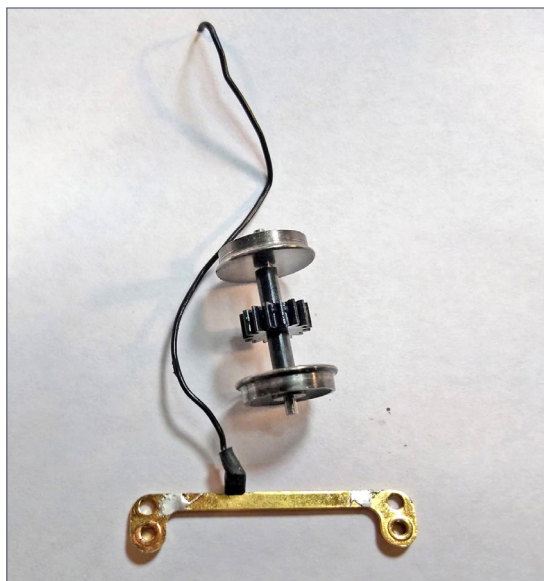
Running Extra | March 2019

NELSON BEAUDRY shows how to easily improve electrical pickup ...

★★★★★
RATE THIS ARTICLE

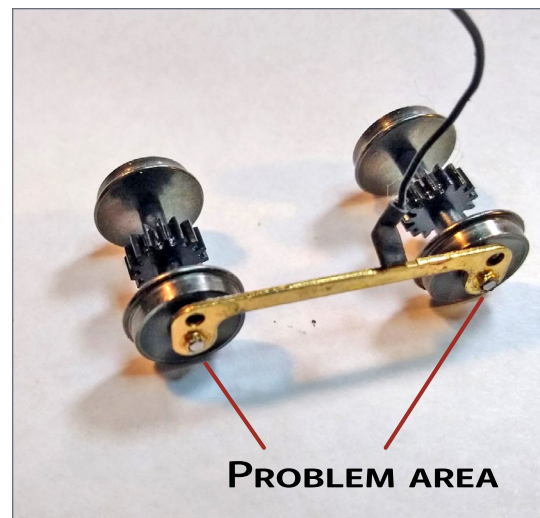
I'VE BEEN DOING A SIMPLE UPGRADE TO MY ATHEARN Genesis locos that really helps improve performance. It also works well for Proto2000, Atlas, and Kato locos that use this type of side-frame bar power pickup in the trucks.

Follow along in the photos to see how it's done. It's not hard to do and it really helps!



1. Stock sideframe bar: This is the stock metal sideframe bar found on Athearn, Atlas, Kato, and other Chinese-made locomotives. By adding some contact wipers to this bar, loco electrical pickup can be greatly improved.

IMPROVING ELECTRICAL PICKUP | 2



2. Problem area: The problem comes from where the axle tip fits into the metal sideframe bar. It seems like this should provide robust electrical contact. But these "bearings" can wear and collect fuzz, hair, dirt, and debris making contact intermittent – and therein lies the problem. Let's add some contacts and fix it!



3. Clamp in vise: I clamp the sideframe bar into a small hand vise to make soldering easier. You can get a nice hand vise from Amazon for \$10 here: [amzn.com/B000RB1KX8](https://www.amazon.com/B000RB1KX8)



4. Wire: For HO, I prefer 0.010" phosphor bronze wire. Amazon sells 0.010" in 12 packs here for \$8: [amzn.com/B0755J8MPH](https://www.amazon.com/B0755J8MPH)
NOTE: Use 0.008" for N.

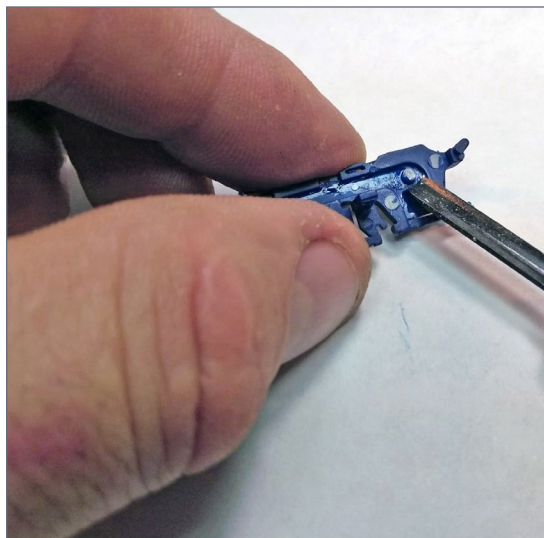
IMPROVING ELECTRICAL PICKUP | 3



5. Solder on wire: Solder the phosphor bronze wire to the tab on the sideframe plate as shown here.



6. Trim wire: Trim off the excess wire and then bend as shown. Repeat for the other three sideframe plates.



7. Remove nubs: Using a chisel blade in an X-Acto knife (or using a sharp small wood chisel as I'm doing), trim off the nubs on the sideframes. These nubs make it difficult to press the sideframe plates back on, so I just cut them off. *Unlike what I show here, make sure your fingers are well out of the way of the blade in case you slip!*

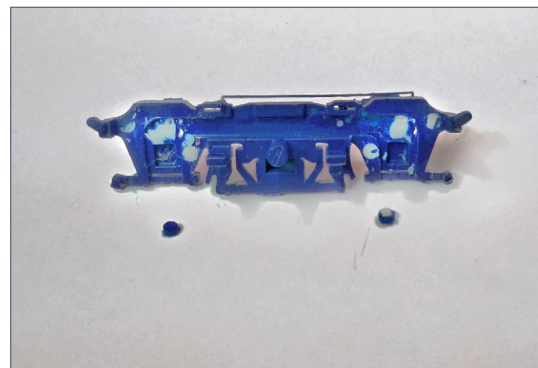
IMPROVING ELECTRICAL PICKUP | 4



J. Fugate

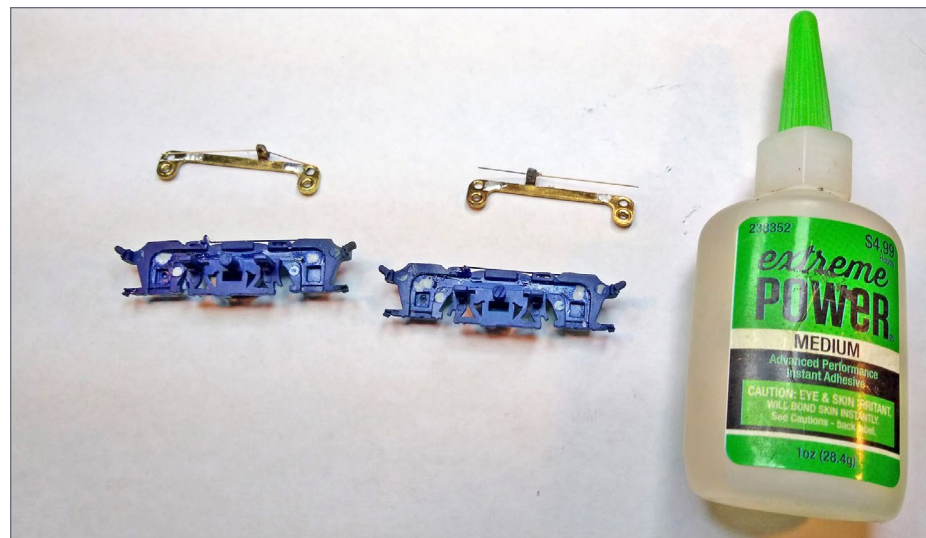
WORKS IN OTHER SCALES TOO!

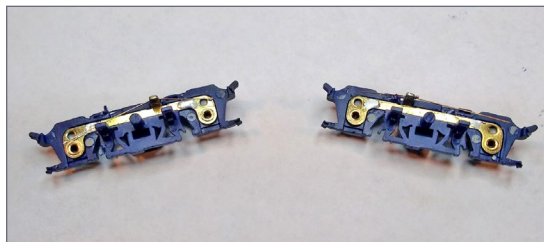
The method Nelson shows here for adding wire wipers works in other scales too. N and Z scale locomotives often also use this sideframe plate method of power pickup, so just use a bit lighter wire (more like 0.008" instead of 0.010") in N and Z.



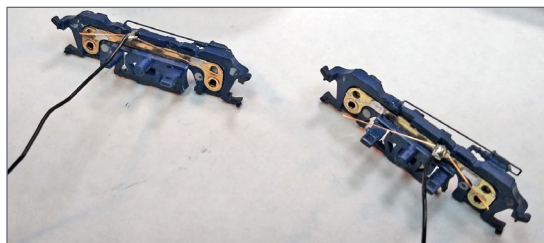
8. Nubs removed: Sideframe with the nubs removed. Repeat for the other three sideframes.

↓9. CA plates back on: I used medium CA glue to reattach the sideframe plates.

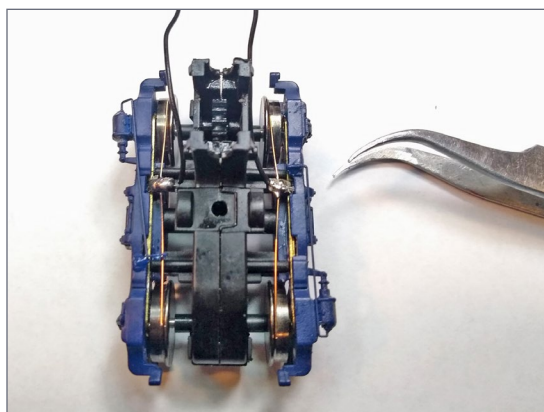




10. Plates reattached:
After gluing the side-frame plates in place, set aside to cure.



11. Resolder pickup wire:
Solder the pickup wire back on.



12. Reassemble truck:
Reassemble the truck and reinstall back into your locomotive. Repeat for the remaining truck.

That's it. Enjoy your more sure-footed loco! ✓



J. Fugate

MORE ON SOLVING CONTACT WOES

For in-depth insight into solving locomotive electrical pickup issues, see the DCC Impulses column in the July 2018 issue of Model Railroad Hobbyist:

WEB: mrhmag.com/magazine/mrh2018-07/dcc-impulses

NELSON BEAUDRY



At about age 8, Nelson received an HO train set for Christmas and with his dad's help built a 4x8 layout. He built a few more small layouts as a teen, but all were just Plywood Pacifics.

Nelson didn't model much after that until about 2006 when he revived his old 2x8 switching module. This switching module evolved into his 24'x24' layout that today runs along two walls of his basement.

Nelson is currently involved with a local school using old club modules as a teaching tool for middle school students. They're using modern day technology such as Wi-Fi on smartphones as well as traditional DC control.

Nelson's other passion is touring New England on his Harley with his wife. ■

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Painting scale figures

Running Extra | March 2019

GREG BAKER paints unique figures to enhance his scenes ...

I HAVE RECENTLY BEEN PAINTING A LARGE NUMBER OF figures and I thought I would share my technique. I know a lot of people are happy with the various factory painted figures out there, but I find that unique figures specifically tailored to a scene really add to the story I am trying to tell.

Let me show you how I add life to my scenes.

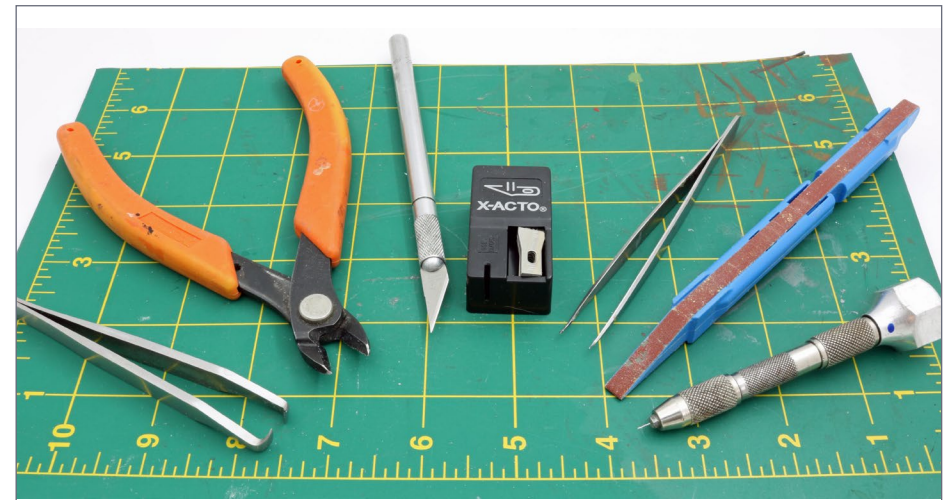
I work almost exclusively with Preiser figures, as they are the most detailed figures I have found. They only cost about 29 cents a figure when you buy the large 120 packs of unpainted figures.

I also like working with the Preiser figures because they are easy to modify. With a little cutting and shaping with a sharp knife and some gluing with Plastruct glue, I can make unique figures that fit the story I want to tell.

I use a small group of tools to get the job done. The main tools are sprue cutters, a sharp X-Acto with #11 blades, tweezers, sanding stick, pin vise and drill bit. Two vital keys to my success are: 1) very good lighting, and 2) magnification such as an Optivisor.

My first step is to find the figure or figures needed to achieve the scene I want to populate.

When I buy my figures, I cut them off the sprue and sort them into containers by type, such as standing, working, walking etc.



1. With tools in position I am ready to start making some unique figures for the layout.

PAINTING SCALE FIGURES | 3

Sometimes it is easy to find a figure close to what I want. Other times it requires “surgery” to get the pieces to fit the scene.

Once I have selected the figure(s), I decide what modifications to make.

Using a pair of smooth jaw needle-nose pliers, I am usually able to move arms, legs, heads, and sometime bodies to change their overall position, or limb positions.

If parts break, I just glue them back together using Plastruct Plastic Weld (orange label) glue.

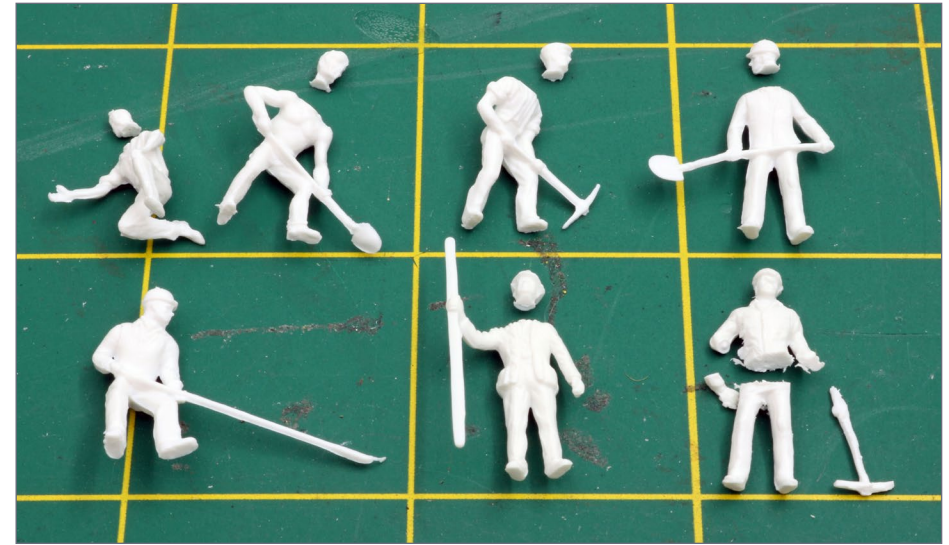
If I need to do more dramatic alterations, I use a sharp blade and start slicing. Once I have separated the parts, I then file them and test the fit to make sure they will work. Next, I use the Plastruct glue to fasten the pieces together, putting them into them into position as I go.

I have also used various styrene sheets and shapes to modify figures by adding clothing, space between parts, or make other modifications.



2. A selection of Preiser figures fresh off the sprue.

PAINTING SCALE FIGURES | 4



3. With a sharp hobby knife, the figures can easily be cut apart to make more unique figures.

Look at [4] and [5] on the next page to see how I modify figures. On the first figure (on the left) I moved and tilted the head slightly. On the second figure, I gave it a new head, repositioned arms, and stretched out the legs. On figure three, I removed the coat to make coveralls and modified the tool he is carrying. On figure four, at the far right, I cleaned up the tool to make it more accurate.

With all the moving, shaping, and modifications completed, I glue a piece of 0.020" styrene rod to the part of the figure contacts the ground.

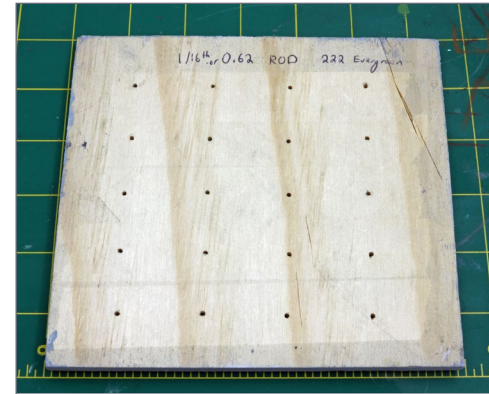
Then I place the figure in a holding fixture made from a scrap piece of ¼" plywood [6]. I drill holes through this plywood at regular intervals to hold the plastic rod in place. On the bottom I place masking tape [7] so the rods do not fall through. If a rod gets stuck or broken, I peel back the tape and push the piece out from the bottom.

PAINTING SCALE FIGURES | 5

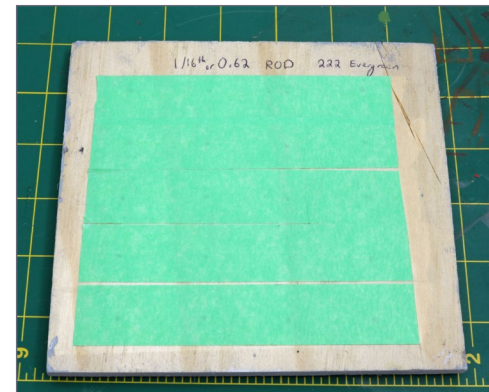


4, 5. The top photo [4] shows the figures as they appear right out of the packaging. The bottom photo [5] shows same figures with the flash removed, the injector pin markings removed (round circular indents usually in the back), and the figures altered in various ways.

PAINTING SCALE FIGURES | 6



6. The underside of my painting fixture. The note on the top helps me remember the size of rod to use.



7. With the bottom covered in tape, I am ready to flip the fixture over and load it full of figures.



8. With the figures secured to the rods and placed in the fixture, they are ready to be primed.

PAINTING SCALE FIGURES | 7

Now that the figures are secured to their perches, it is time for priming.

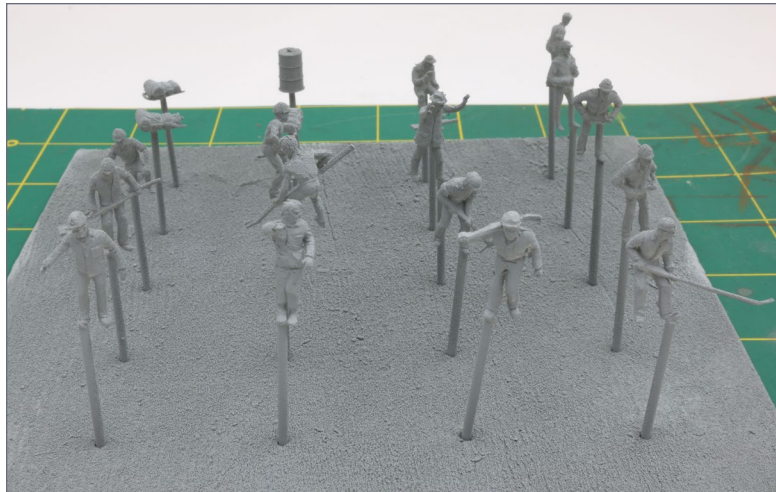
I use Rustoleum gray primer from a rattle can and am very happy with the results. I make sure to use it in a very well-ventilated area and allow it enough time to fully dry.

The primer I use fills in small gaps and has some texture to it. I think this adds to the figures' overall appearance. I am careful not to add too much paint as it will obscure the fine details found on these figures.



PRIMER ALTERNATIVE

If you don't want the extra build-up, Tamiya Fine Surface Primer sprays on very thin and covers very well. However, it does cost more and can be harder to find.



9. The figures are primed and ready for the next step of painting.

PAINTING SCALE FIGURES | 8

Once the primer has dried, I take them back to the workbench for painting.

I have collected an assortment of very small brushes from various hobby shops and craft stores. The brushes range in size from 20/0 to 5/0. I also use a few larger brushes for washes.

I purchased a few cheap brushes from China, but I found that you get what you pay for, so now I stick with the higher quality brushes.

Like a lot of model railroaders I know, I do not throw out much, and this includes brushes! Once they start to fall apart or become worn, I cut them down with a sharp knife and keep using them.

I have made a few specialty brushes [10] and my favorite small brush is a micro-applicator that I carved down to a fine point to add details like buttons, facial hair, or other tiny details [11].



10. A variety of brushes; some were trimmed as they started to fray.



11. An original micro applicator brush on the left, and a modified brush on the right.



12. The Vallejo paints I use are Dark Red, Flat Yellow, Flat Blue, Flat Green, Flat Earth, Flat Brown, Black, and White.

I have switched to using Vallejo brand acrylic paints. I find they apply in a smooth and consistent manner. They dry quickly, which speeds up the painting process, and Vallejo clean up with water.

Vallejo has a wide variety of colors, but I keep it simple with my selection of colors [12].

My other must-have color is Vallejo Flat Flesh [13]. It has the right tone and color to accurately represent Caucasian skin tones. For other skin tones I use Flat Flesh color and mix in varying amounts of brown to darken the skin tone

When the primer is dry and my paint palette is ready, my first step is to paint all the areas of the figure that may have exposed skin. I sometimes paint areas that I may cover up later, but I find it easier just to paint more skin tone than I need instead of going back and adding it.

I am careful to almost dry-brush the paint on, making sure not to fill in the details on the figures. *Too much paint* will cause the figures to look like blobs and it is hard to bring out the detail using highlights later [14].



13. Vallejo Flat Flesh, my go-to skin color.

PAINTING SCALE FIGURES | 11

Once the flesh color is dry, I pick a base color such as blue, and I go through painting all the parts of the various figures that one color [15].

Once the basic colors are on all of the figures [16], I move on to adding details. The small brushes come in handy as I add small details and paint small bits of the already painted parts of the figure [17].

If the figure needs some weathering (such as dirt from the job) or just needs a bit more depth, I do a little dry brushing with various colors.

With the details and weathering complete, I make a wash from flat earth and a small bit of black paint mixed with water.



14. The figures with a base coat of flesh. Note that some have been painted with Flat Earth along with the Flat Flesh colors to vary skin tones.

PAINTING SCALE FIGURES | 12



15. I usually start with whatever color I am going to need the most of. In this case, with the majority wearing jeans, I started with blue.



16. Working through the colors, I add them one at a time until the base coats are complete.

PAINTING SCALE FIGURES | 13

Using a brush, I apply the wash over the figure, keeping it light so it doesn't wash out the details or overly darken the figure. I keep a dry rag nearby to blot off any extra water. When it looks right, I set the figure aside to dry [18].

After the wash is dry, I spray the board of figures with clear flat spray from Rustoleum, to seal the paint so the figures can be handled later.

When the clear coat is dry, I remove the plastic rod from their feet and – depending on where they will be placed – drill a #79 hole and insert a small piece of 0.008" brass rod. I secure the brass rod to the plastic figure with cyanoacrylate adhesive (CA).

I usually secure the figure to the scene with white glue, in the event I want to move the figure later.



17. Those little details really add to the look of the figures. Note the "Carhartt brown" jacket at left.

PAINTING SCALE FIGURES | 14



18. I do a final review of the figures before sealing them with clear finish. I sometimes find something I want to change or add. Before proceeding, I let them dry completely.



19. With 0.008" brass pins in place, these figures are ready to be placed on the layout.

PAINTING SCALE FIGURES | 15

Finally, I place them in a realistic position in a scene. I have seen layouts where the figures appear to have just “fallen out of the package” and been “dropped onto the layout.”

This can be avoided by planning, and you help avoid this look by making sure the people are firmly planted into their surroundings. The shoes should not be covered up in most cases, but they should also not appear to be hovering. I also make sure they have realistic body position – they shouldn’t be leaning over, unless they are supposed to be.

In closing: I encourage you to give painting your own figures a try. This may be what you need to top off that scene or just attempt a new skill. Either way it will be worth your effort! ☒



20-22. A finished scene from three angles. These figures now feel at home on their piece of the railroad, working to make track repairs so trains can run again.

PAINTING SCALE FIGURES | 16



23-26. More examples of scenes with hand-modified and painted figures. Notice how the figures fit into their scene and tell a story. The figure choices and placement are not random.





27-30. More examples.



GREG BAKER



Greg has been “seriously” model railroading since 2000, but he has been fascinated with trains as long as he can remember. He considers himself a prototype modeler focusing on the railroads along the Oregon Trunk in the 1960s. His interests include the modeling the SP&S, GN, UP, and the City of Prineville Railway in HO scale. He is currently working on a shelf layout

using the TOMA method.

He lives in Lewiston, Idaho, with his wife and two children. He continues to work for the railroad in the Safety and Compliance department, which has allowed him to travel all over the United States. Other activities include spending time with his family, photography, and working on projects around the house. ■



THE AH-HAH MOMENT

column



MRH Running Extra | March 2019

JOE FUGATE: SOLDERING TO ATLAS FROGS AND ZAMAK METAL CASTINGS ...



Here is a common question I keep running across on model railroading forums:

“Both the Atlas Customline and SuperSwitches have cast frogs that do not take solder. What a pain in the neck. Any suggestions are appreciated.”

I’ve talked to some very experienced modelers in the hobby and they often give me what I would call “fiddily workarounds” that they’ve used such as putting a brass screw into the tab on the side of the frog. While this works, it’s unsightly.

I’ve found a very simple solution: Pot metal soldering paste. I’ve got some and tried it, and works. *Ah-hah!*

In fact this soldering paste works on more than just the Atlas turnout frogs – it works on any zamak metal castings. Imagine being able to solder parts to that old metal loco kit you have in your stash!

Amazon sells this paste in a 1/4 oz syringe applicator for \$15:

[amzn.com/B000BUUTPU](https://www.amazon.com/B000BUUTPU)

One thing to keep in mind about soldering paste – it’s perishable. Once you open it, it will last 2-3 months at the most before

THE AH-HAH MOMENT | 2

it goes bad. You can tell the paste has gone bad because when you heat it, it doesn’t flow nicely - some of it melts and some of it remains a paste, making for a pretty much worthless joint.

To extend the life of the soldering paste to 6-8 months, store it in the refrigerator. Do not freeze it, just use the normal fridge. Take it out about two hours before you intend to use it so it can warm up to room temperature first.

Soldering paste like this is very handy, but because of its perishable nature, it’s not one of those products you just buy and then store away in case you ever need it. No, with soldering paste, you buy it for specific projects just in time for when you need it.

If you prefer something that’s not perishable, then check out Muggy Weld Super Alloy 1. It’s also available on Amazon, but it’s not cheap: \$72 (with shipping) for five 18" x 1/8" diameter rods plus flux: [amzn.com/B016SU00AA](https://www.amazon.com/B016SU00AA)

One big caution with the Muggy Weld Super Alloy 1: it contains cadmium, which is quite toxic if you happen to ingest any filings. Inhaling the fumes is not so good for you either. So be careful!

The pot metal soldering paste costs less and is a lot safer, so that’s what I recommend. Just remember to store it in the fridge if you want it to keep. ☑

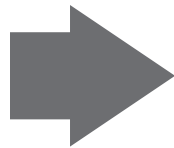


1. Pot metal soldering paste, that’s the secret to soldering to Atlas frogs and other zamak metal castings.



2. Muggy Weld Super Alloy 1 pot metal solder keeps better than soldering paste (pricey, however).

Here are all the pages
from the March issue
of
*Model Railroad
Hobbyist* magazine
as well!



ALSO:

- How to build home made jigs
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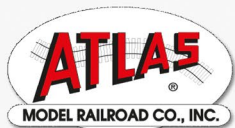


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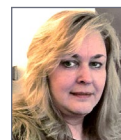
Model Railroad Hobbyist March 2019 | #109

(Updated 03/03/19)

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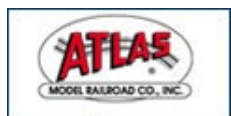
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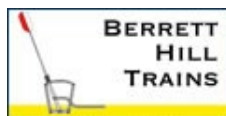
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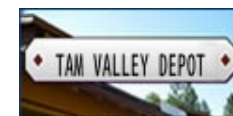
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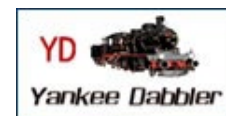
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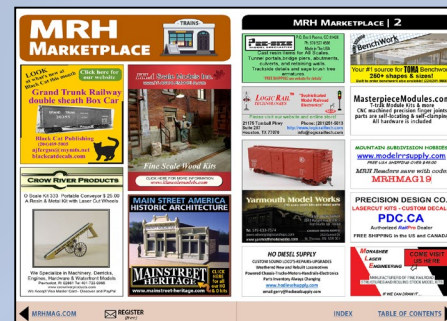


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PUBLISHER'S MUSINGS



Model Railroad Hobbyist | March 2019 | #109

JOE FUGATE: UPDATE ON THE *Run like a Dream* SERIES, PLUS
FEEDBACK FROM A NOTABLE CUSTOMER
ON WHAT THEY THINK ...



RATE THIS ARTICLE

IN LATE 2015, I LAUNCHED A NEW BOOK SERIES I CALLED *Make it run like a Dream*. Much of the hobby publishing business tends to be about making the trains look superb, but with this new series I wanted to delve deeply into how to *make the trains run superbly*.

It's actually been rather self-serving of us hobby publishers to focus so much on models that *look better*. Great-looking models in our pages pull in more modelers, so why not focus on that?

In my travels in the hobby, I have seen a lot of layouts. I've seen some fabulous looking layouts. But more often than not, those great looking layouts don't run so well. If the operation gets frustrating enough, people leave the hobby.

I don't recall hearing about people leaving the hobby because the trains don't look nicer. But I've heard of several people leaving the hobby because the trains don't run better!

I organized the *Run like a Dream* series into three volumes: 1) Trackwork; 2) Rolling Stock, and 3) Locomotives. These three subject areas form a kind of operations "holy triad."

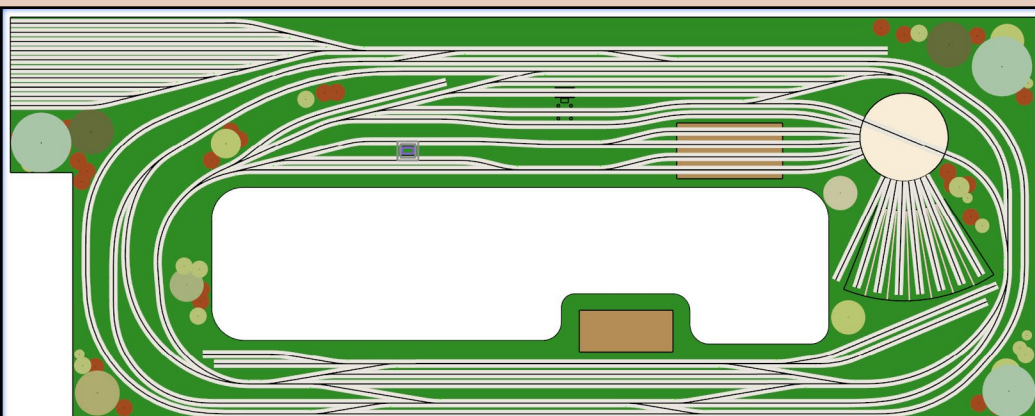
Run like a Dream series goal

In this series, I go over what I've learned from trying to get my HO Siskiyou Line to run as flawlessly as possible. I cover real life issues I've encountered and show solutions that have solved these issues. But even better is preventing issues from ever happening, so I spend a lot of pages on preventive measures.

I also include the best recommendations from other hobby books and past magazine articles, as well as the best advice from online sources. Finally, it's all in one place!

Even though I model the 1980s SP in HO, I try to cover all eras and all scales as much as possible, as well as discussing methods I don't personally use much but still come highly recommended. Admittedly,

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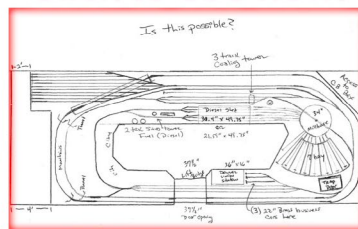
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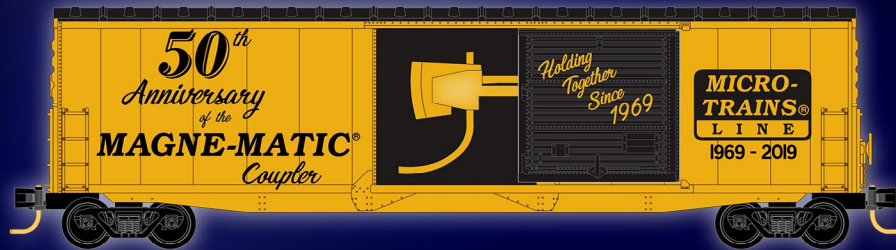
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SCALE 1:160**PUBLISHER'S MUSINGS | 3**

some of the insights I give might be a bit HO-centric. Because my grandson models in N scale, I do have some first hand experience with N scale equipment as well, and I bring that into the discussion.

In short, I'm very aware of the other eras, scales, and gauges throughout this book series, and I do my best to make the tips/techniques as broadly applicable as possible.

At this point, the *Trackwork* and the *Rolling Stock* books are done and I'm starting on the final volume on *Locomotives*.

Run like a Dream customer feedback

So is this series meeting its goal – is this information helpful and eye-opening, even for seasoned modelers?

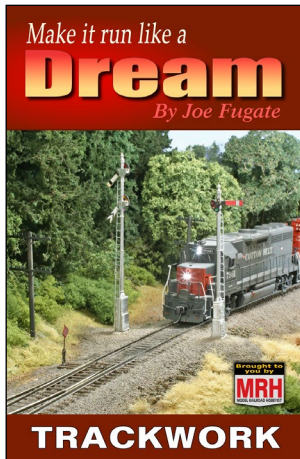
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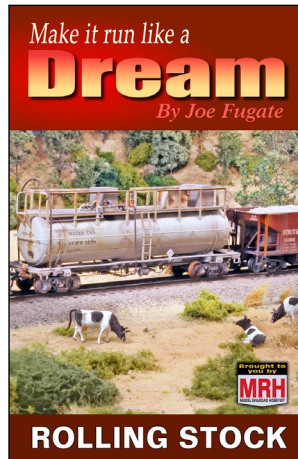
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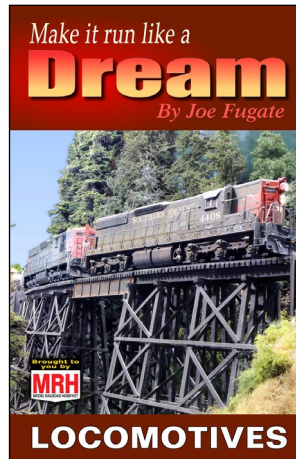
PUBLISHER'S MUSINGS | 4



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Expected Jan/Feb 2020 ...

1. The three volumes of the Run like a Dream book series. *Trackwork* and *Rolling Stock* books are out, the *Locomotives* book is expected next winter.

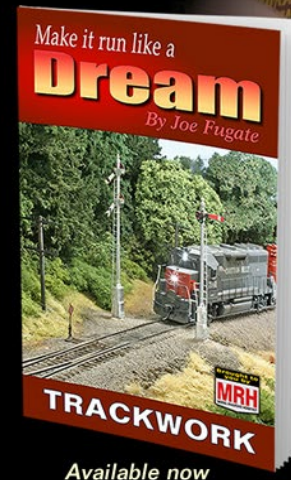
There is perhaps no better way to answer this question than to look at customer feedback. Recently, I got this email from J. Mark Juett, the *Pulse of DCC* columnist for NMRA magazine (quoted below with Mark's permission):

"This is fantastic! A couple of years ago I ordered and read your book on trackwork. It was excellent and I picked up several things that I implemented. I recommended that book to several friends who purchased and read it. I looked forward to the book on rolling stock and it exceeded my high expectations."

"I am an engineer by training – mechanical and electrical systems truly fascinate me. My childhood train hobby is what directed me towards engineering school. I am also a student of Deming and was involved heavily in the company's Total Quality Management process."

"Like you, I enjoy many aspects of the hobby, but the pinnacle is operations. We do much to improve the experience and increase the satisfaction and quality of the run. Nothing betters this more than reliability

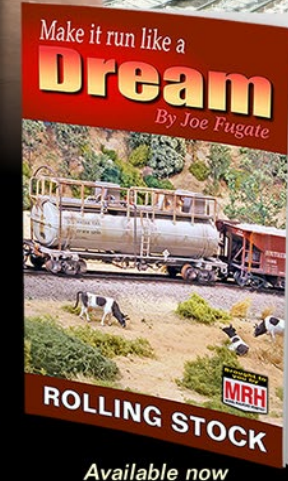
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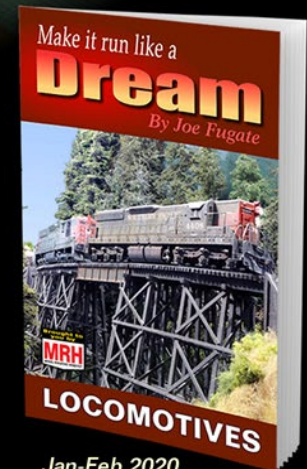
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PUBLISHER'S MUSINGS | 5

or destroys it more than frequent derailments, unexpected uncoupling or stalled equipment.

"Your section on wheels and trucks was particularly informative. Long ago I started using Kadee couplers and wheels. My Kadee wheels are being replaced by Intermountain as cars are in for service and inspection. I'm making my own resistor wheel sets and airbrush painting and weathering wheels in a painting jig. Occasionally some paint gets on the tread: I found that polishing the tread and axle point after painting with a wine cork brings them to a bright luster without scratching."

"This old dog learned new tricks from your book. You truly assembled a wealth of information in one place on the subject."

And Mark was kind enough to forward me a copy of this email he sent to his friends:

"I have a book recommendation. Several weeks ago I ordered *Make it Run Like a Dream: Rolling Stock*. Although I've been a model railroader many years, there were new tips and techniques making it well worth the time. Joe Fugate has assembled a lot of good info in one place. It is as good or better than his *Run Like a Dream: Trackwork* book that I know many of you have. You can find it at: store.mrhmag.com ..."

Thanks for the kind words, Mark!

So two of the planned three books are out. What is the status of the final volume on locomotives?



2. J. Mark Juett, the *Pulse of DCC* columnist for NMRA magazine, recently commented on my *Run like a Dream* series: see the text for what he said.



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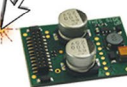


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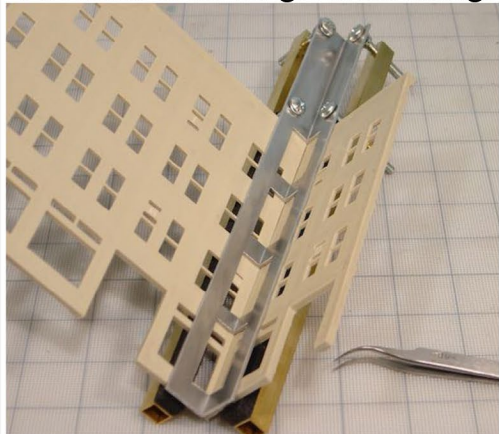
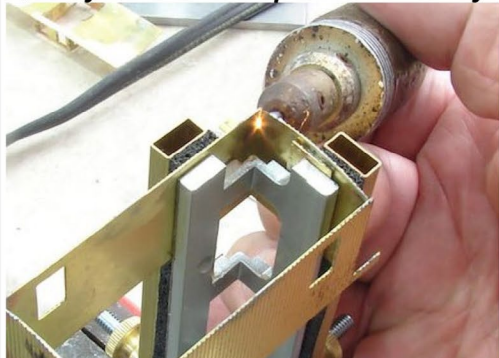
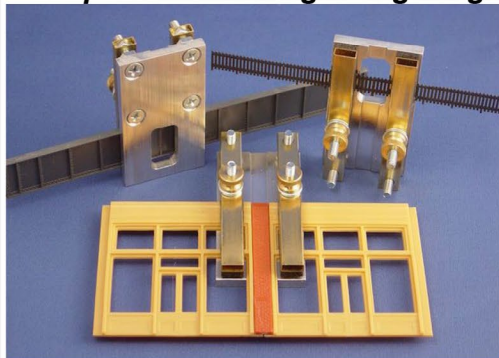
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www.coffmaneng.com**PUBLISHER'S MUSINGS | 6****Locomotives book**

I'm starting on the Run like a Dream: Locomotives volume as of this writing.

I have an outline I made when I started the series and I keep adding to it, and now I'm wading into the actual writing process. This process includes not only digging up everything I've ever learned and putting it down, I'm also researching what many others have recommended and capturing that too.

All along in this series, pre-order customers have gotten what I call "sneak peeks" of the draft book while it's being written. Not only does that give you, the customer, a chance to see constant progress while you wait, it also give me a chance to take your feedback and topic requests and work them into each book.

I'm expecting the first sneak peek of the Locomotives book to be out sometime in April. And I'm targeting Jan-Feb 2020 for

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Joe D. Fugate Sr., CEO and Publisher; Patricia C. Fugate, Co-owner

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² Computed by Google Analytics and AWStats and can be independently verified as third-party provided values.

PUBLISHER'S MUSINGS | 7

the delivery of the final Locomotives book. Like the other volumes, I intend to cover multiple scales and eras. Even though I model diesels, I'm going to include a chapter specifically on steam locomotives.

If you've not yet seen the books in this series, do [check them out on the MRH Store](#). Anyone I introduce to this series comes back to me thrilled to finally have all this info at their fingertips. ☑



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- 4.8 Modeling water on the 8th Sub
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- 4.2 Passenger car lighting enhancements

Issue overall: **3.6**

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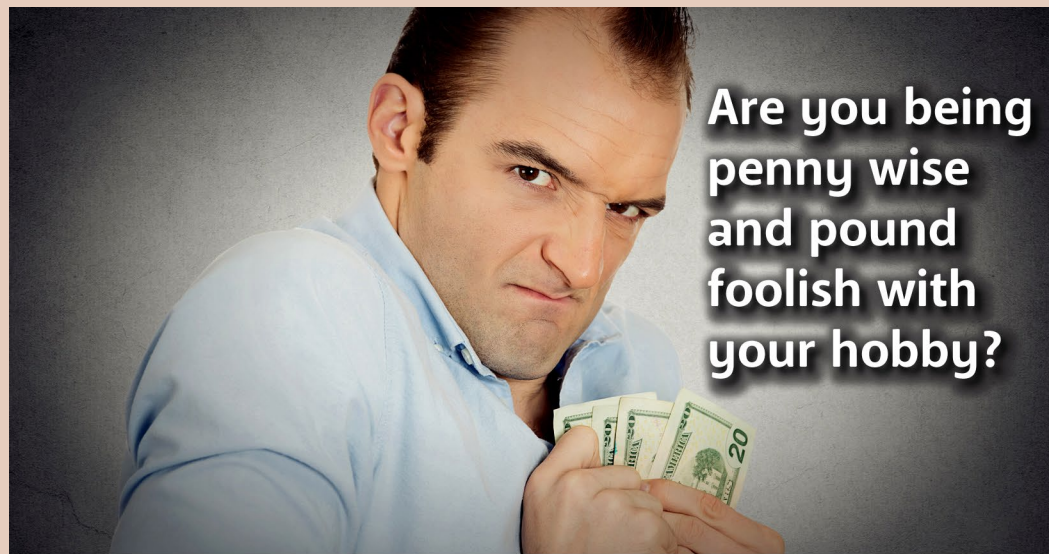
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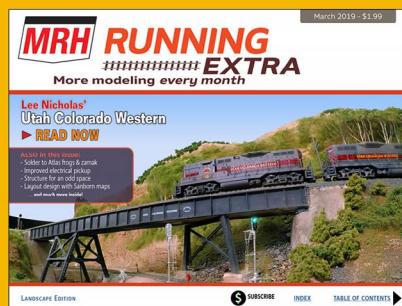
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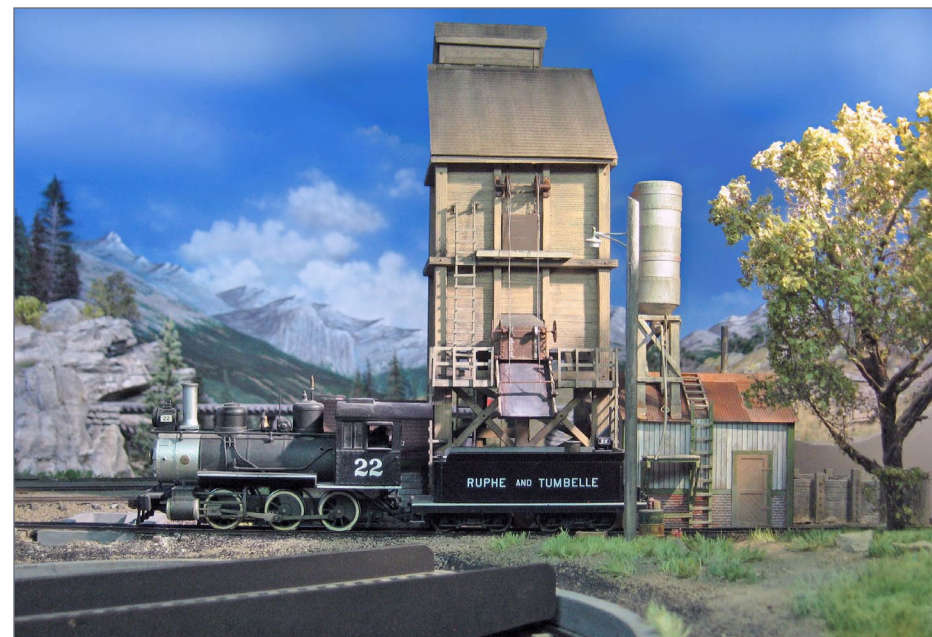
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Model Railroad Hobbyist | March 2019 | #109

compiled by **JOE FUGATE**

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1. This is a shot of the "new" coaling tower in Coronita Creek Rick Reimer started nine years ago! After recently getting an Anycubic Photon 3D printer, Rick decided to print detail parts and to finally finish the tower. Everything else in the photo is scratchbuilt except the loco, which is a modified Bachmann On30 Mogul.

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2. In early summer of 1985, a westbound Denver and Rio Grande Western freight crosses the headwaters of the Eagle River as it descends Tennessee Pass on Franz Martin's freelance HO Rio Grande layout.

Franz kitbashed the lead SD50 many years ago from an Athearn GP50 and a Rail Power Products SD60 shell, then powered it with a stretched Kato SD40 chassis. The trailing SD45 is a Rail Power Products body also on a Kato SD40 chassis.

Franz modeled the water with several layers of Woodland Scenics Realistic Water and ground cover from a combination of real dirt, patches of various Walther's static grass mats, and a Bachmann pull-apart static grass mat.

Franz took the photo with an iPad Mini.

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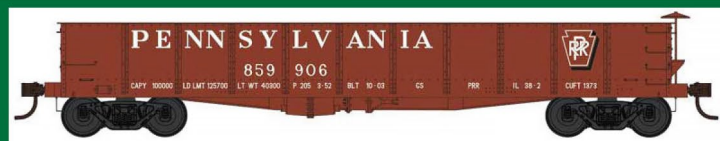
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TIPS: Make your own custom grab irons

If you need grab irons in a size that you don't have, particularly a straight one, here's an easy way to make them:

On a thin piece of material – I used a Popsicle stick – measure in from the edge the length of the grab iron. Draw a line from the hole to the edge. Drill a clearance hole for the grab iron wire at the mark. Take a piece of wire for the grab iron, bend a small right angle in one end, put the short piece into the hole and, holding the wire along the line, bend it over the edge of the material. Trim to length. Two or three minutes to make the jig, and seconds to make each grab iron.

How long will this softwood jig last? Generally, long enough for the car or cars I'm building. Normally that's maybe a dozen or more grab irons. Never really wore one out. It's such a simple tool, if I need one I just drill a hole in something and make a new

► **MRH QUESTIONS, ANSWERS, AND TIPS**

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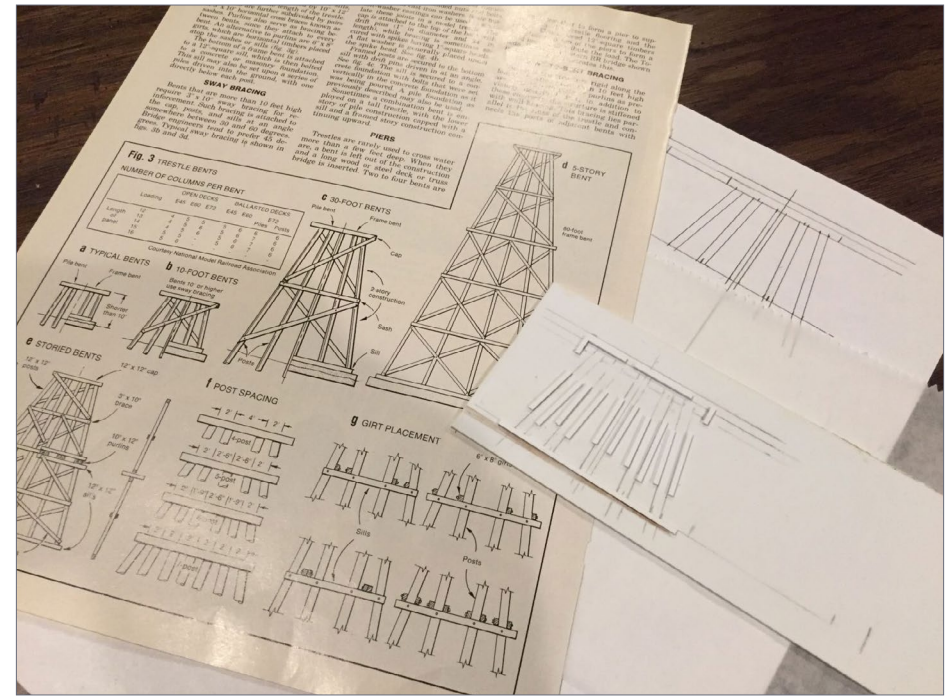
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jig. It can be a Popsicle stick, a scrap of 00.040" or 0.060" plastic, whatever. If it does wear out, drill a new hole down 1/4" or so. If you are installing wire grabs, you are drilling dozens of little holes in the model. What's one more in a scrap of wood? If I need custom grabs for a scratchbuilt car, it's just as easy.

—David Husman



1. Measure and drill. David Husman saves time and money by fabricating his own grab irons using a Popsicle stick and brass wire. *David Husman photo*



2. Here's a jig I made for bridge trestle bents, I needed six to start and will need three or four more at least.

Dave Branum: I've made similar tooling for drop grabs by sawing a slot in the edge of the jig and moving the hole over a bit. I use needle-nose pliers and clamp the wire at the spot along the jaws that gives the desired width. After bending the wire down, turn it 90 degrees and bend the drop grab with the edge of the pliers.

Patrick Flynn: I generally don't think of making jigs for things. I think the only jig/pattern I have made in the past 20 years was for drilling holes for pre-made grabs for the rear of an SD40-2! This is so easy ... This will be MADE!

David Husman: I am a bit of the opposite, I like jigs when I can use them, especially if I am going to make more than three or four of an item. Most of the time the jigs are simple and quick to make, so overall I save more time than I spend making the jig.

I also use jigs to cut the pieces for my switches when I hand-lay them. A simple wood jig guarantees all the pieces are the same length. One method I use involves making the frogs on the bench and then laying them much like the prototype does, using a "kit" of prefabricated pieces.

I had a real simple jig to make the #5 and #6 frogs. The wood block is used with virtually every switch to cut the pieces, so I have used it for almost 100 switches. It is also the most expensive jig I have since I spent about \$2 on a basswood strip to make the stops.

Find more about making and using jigs at mrhmag.com/node/34779.



3. Jigs for cutting rail allow all pieces to be cut to the same length and create a "kit" of prefabricated pieces.

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Do I need to solder all my track joints?

Q. If I have at least a pair of power feed wires soldered to each length of flex track on my N-scale layout, is it necessary that I solder the joints between the lengths? I am looking to have the sections butted next to each other firmly (not tight) with rail joiners, but I'm afraid that if I solder the joints, there is a greater risk of the track buckling. Thoughts?

A. Joe Fugate: Soldered joints will make your railroad and its control system more efficient. Copper wire has a much lower resistance than nickel silver rail.

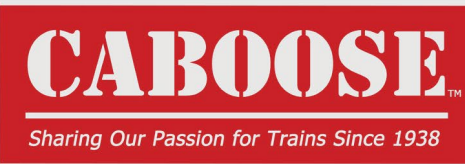
Mike D.: Solder pairs of flex track together for good electrical conductivity, but leave other joints unsoldered so the rails can expand or contract. Solder feeder wires near the soldered joint between two sections, or to EVERY section if you want absolute minimum voltage drop.

Graham L.: We leave a fingernail-thickness gap between sections of rail. That small gap is enough to accommodate rail expansion and movement under normal circumstances.

Nickel Silver Rail Resistance by Code, and AWG Equivalent Wire Gauge

Code		Resistance, Ohms per thousand feet	Equivalent Wire Size (AWG)
100	Atlas Shinohara	38	26
83	Walthers Shinohara	52	27
83	Atlas Micro Engineering	78	28
70	Shinohara	77	28
70	Micro Engineering	116	30

Table: Resistance of nickel silver rail and AWG wire equivalents.





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Applying glue to plastic

Q. I am in the process of putting together an old Red Caboose reefer kit. I have a bottle of Faller Expert plastic glue with a needle-like dispenser. A bit too much glue comes out. What else can I use? Tried toothpicks and have heard about using a 000 (3/0) paint brush. The brush seems like a good way to spend a lot of money for a one-time use. —Jack H

A. GregW: I use a brush to apply liquid plastic cement. It will make the brush hard but a quick spin between my fingers breaks up the residue and it's ready to use again. I replace brushes occasionally when one gets beat-up but otherwise they last a pretty long time.

Something I am interested in using is the Touch-N-Flow Applicator as seen at Micro Mark: www.micromark.com/Touch-N-Flow-Applicator.

Rick Sutton: I've used two brushes for glue over quite a few years. The first one just plain wore out. I only use a brush with Tenax 7R or the replacement Styrene Tack It. If the brush stiffens up from the melted styrene it picks up, put it in the glue bottle for maybe 30 seconds. Then wipe it on a paper towel and it's good to go again for another project.

Dave B.: I use Testors Model Master Liquid Cement for most things. It has a very thin tip so can be controlled quite well. For more delicate things I use a thinner liquid cement like Tenax or Plastruct and apply it with the point of a straight pin which holds less glue and is easier to control than a toothpick.

Don Mitchell: Here's a hack that may work for you. Try crushing the tip of the Faller needle flat with pliers. Then file or sand the flattened tip back towards the unflattened base of the needle

until the desired rate of flow is achieved. A motor tool with a cutoff disk works fine; a file needs a very fine cut to work the best. For less of a hack, search Google and/or Amazon for smaller needles to use as replacements.

GN-NP Nut: I am a big fan of the Micro-Mark Touch and Flow applicator. I found that only Tenax and Ambroid Pro-Weld will work with it. Plastruct cement clogs it after one use. Micro-Mark offers their Same Stuff plastic weld, which is methylene chloride like Pro-Weld, and according to the M-M site, Tenax. It's much easier to control the amount. I also drill the paint out of the mounting holes on painted Intermountain and Red Caboose kits to get better adhesion.

Jim Fitch: I use a toothpick, as it seems to be the most reliable way for me to apply a small amount of glue. Like the OP, I find it nearly impossible to control the amount of glue when squeezing from a bottle, even with a needle-like dispenser. In some cases, I have used small brushes for Tenax 7R, joining building walls together and applying from the inside so the finish won't be marred.

Shortliner: Take a sewing needle and fit the point into an old paintbrush or a BBQ skewer. Then take a Dremel cutting disk (the maroon ones) and cut horizontally across the eye – it will then hold a perfect small glue blob.

Tim Holmes: I use one of three kinds of Testors glue, depending on the application. The thick stuff in the tube, I just use as is – maybe with a scrap piece of wood or wire or styrene to spread it. The stuff in the funny-looking sort of triangular black bottle is a bit thinner and flows well. The stuff in the glass bottle – which is mostly MEK – I apply either with the included brush or use

a 31-gauge diabetic needle (Warning: Be careful. Those stupid things are sharp – saw a guy put one all the way through his thumb one day. Use at your own risk.) I was surprised that the plastic syringe stood up to the MEK just fine. It allows me to dispense with pinpoint accuracy.

Dark2Star: I'm quite happy with the Faller Expert glue and its needle applicator. I found that I can control the flow somewhat by tipping it less or more. Or by pressing harder. However, I've had several bottles clog the needle over time even with the bottle still half full. I'm still trying to re-open it. In the meantime, dipping a toothpick into the bottle and "painting" the glue on the surfaces works fine.

[Ed.: Faller uses a reverse-threaded cap. Instead of 'righty-tighty, lefty-loosey,' it's 'righty-loosey, lefty-tighty.']

DrJols: I hold the clogged needle so it is horizontal, and massage it with flame of a match. When a little flame appears at the tip, the needle is ready to use.

Jack Shall: I found a piece of wire in my stash that happens to fit inside the Faller needle. Simply sticking it into the needle



4. Fine-pointed tips allow greater control over fast-flowing solvents like MEK.

clears it. I cut a short length a bit longer than the needle and put a short 90-degree bend on one end (to keep it from falling into the bottle).

Ken K.: I have used brushes for many years, and find with proper care they will last for almost a lifetime. If you go the brush route purchase brushes that will handle the solvents used in the glue. I have used acetone to clean up Faller glue before it hardens.

I also use a bunch of dispensing needles (not sharpened) which are cheap and therefore essentially disposable. Just like the Touch-N-Flow, many solvent-based glues will be drawn into the needles by capillary action, and various sizes and lengths are available to handle glue, oil, flux, solder paste or other liquids. I use syringes as handles but for those areas where syringes are verboten you can easily taper a skewer to use as a handle.

If you want to stick with bottles you can also transfer your bulk glue to inexpensive needle dispenser bottles which can be purchased with fixed or replaceable (Luer Lock) needles. Again, you need to make sure that the plastic bottles are compatible with any solvents used.

I tend to buy in bulk (100+) and resell those I do not need to friends and club members.

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Jack H.: I made it to the local hobby shop which happened to have a set of three paint brushes, of which one is a 5/0. That turns out to be pretty good at dispensing glue. All the ideas posted were helpful. As for plugged-up dispensers, I had the same problem and dug through my scrap boxes looking for any bits of wire that would fit. Found one about an inch long and put a bend in it about 1/4-inch from one end. Works like a charm whenever it clogs up.

Read the whole thread at mrhmag.com/node/33892.



5. Dispensing bottles and tips are available in hobby craft stores and online in a variety of materials and sizes. Check the bottle material for compatibility with the solvent you plan to use.

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KEN PATTERSON DEMONSTRATES A SAW
SLED, VISITS STEPHEN PRIEST'S ATSF
RAILROAD, CHECKS OUT A KENTUCKY
MUSEUM, AND MUCH MORE ...



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THIS MONTH, I SHOW YOU A SAW SLED – A TOOL to hold your work piece steady as you cut. We look at Stephen Priest's wonderful ATSF layout in HO scale. Michelle Kempema takes us to the Historic Rail Park and Train Museum in Bowling Green, KY. We look at Bachmann Trains' new K4 streamlined locomotive in HO scale and a photo shoot for the Bachmann Trains 2019 catalog cover. ✓



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COMMENTS**



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▶ **PHOTOS AND VIDEO OF SUPERB MODELING**

Railroading with Stephen Priest



1. (Above) Stephen Priest and his son Joel open up this month's video with a tour of their very large Santa Fe layout in HO scale. This is a double-deck layout built for serious operation. The scenery is equally impressive. Stephen says "I am not really a model railroader as much as I am a railroad modeler." Every detail is based on prototype standards.

2. (Top right) The layout is six years old and took six months to design before construction ever began. The layout era is 1978 and has a cohesive theme of mainline railroading through Kansas. The scenery flows from prairie to towns to large yards and on to even bigger cities. The night time lighting is a remarkable sight as every structure and street is lit with LEDs. The intermodal yard, a representation of Argentine yard, is amazing with straddle cranes and acres of intermodal vehicles.



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3. (Above) The CTC dispatchers panel is fully functional, with a TV monitor representing the view looking out of the tower and over the tracks. Joel enjoys working with the DCC systems. JMRI with the NCE DCC system controls the layout. He also loves scratchbuilding and kitbashing structures. Stephen has built 16 layouts over his years of modeling and plans to build #17 very soon. He and his wonderful wife Cinthia are moving to a new home and a new basement in the coming months. In this month's video, Stephen shows us his model-building work space along with specific areas on the layout that represent prototype locations.

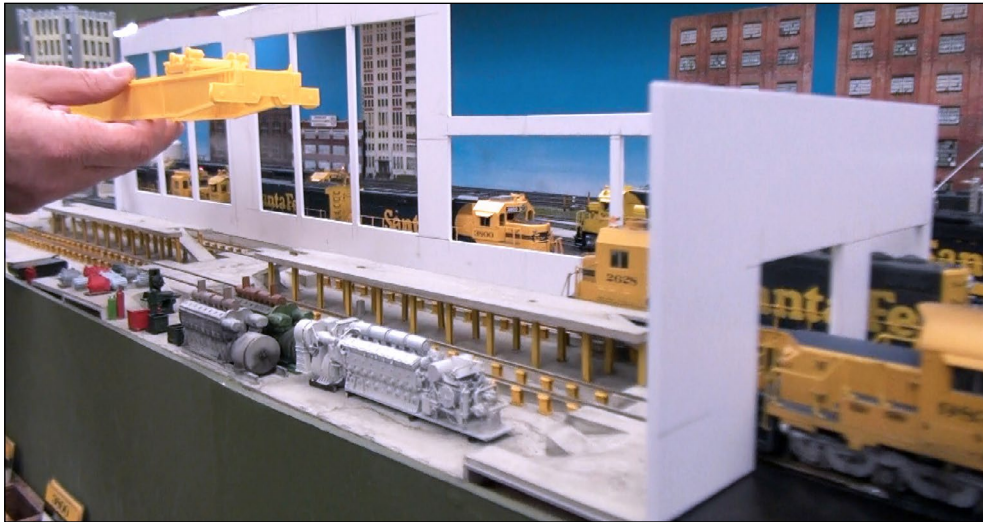
4. (Top right) As I got a high five at the end of the interview, Cinthia said, "If you stay still too long you can miss out on life's adventures."

5. (Bottom right) Stephen runs a train in a local yard. LED strips supply 3500K lighting.



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6. (Top) This building represents a locomotive rebuild shop. The crane and prototype details are amazing. Stephen may use many of these buildings on the new layout he is planning.

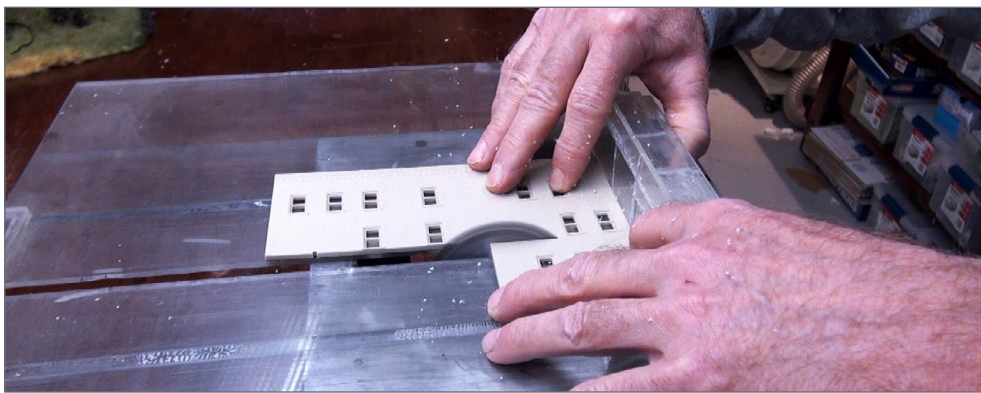
7. (Bottom) Joel Priest kitbashed this building, lit it with LEDs, and covered it with realistic details.



8. (Top) This view looks up one of the many aisles of the Priests' double deck layout. it's amazing that this much layout can be built in only six years.

9. (Bottom) One of Stephen's favorite scenes is the locomotive service area. It is alive with sound and lighting in every locomotive. The layout height is perfect for easy reach. The sanding towers have beautiful lights that light the entire yard at night.

Saw sled



10, 11. A saw sled is a movable table that slides atop your table saw. I made one to fit my 4-inch Micro-Mark table saw. It holds the work in place as you slide it through the blade. With this simple sled, you can cut off a single row of bricks during a kitbashing project. The sled has a square end that acts as a handle to keep your fingers away from the spinning saw blade. I built this device out of Plexiglas but you can make one from plywood. They can be built for this small saw, or a full-size table saw.

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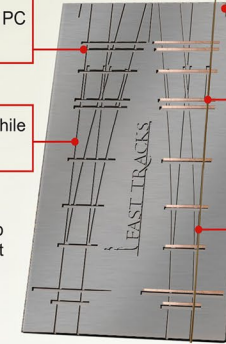


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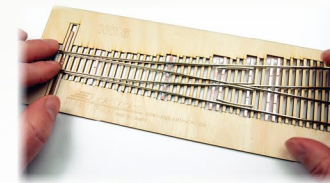


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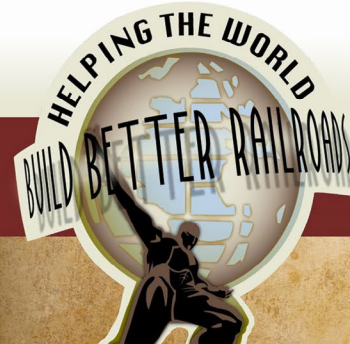
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Bachmann K4 shoot



12-14. This month I present the new streamlined Bachmann K4 locomotive in HO scale and talk about the scene that I built to produce the Bachmann Trains 2019 catalog cover shot. The locomotive is a work of art and one of the most beautiful HO scale models Bachmann has produced. The Pennsylvania green on the streamlined boiler and the main



drivers is stunning in sunlight, with the Pennsy stripes running the length of the model. I built a tunnel scene from 2-inch thick sheets of foam and carved the tunnel portal with a saw. I used Micro Engineering code 83 flex track with Woodland Scenics ballast and green ground foam. The trees are sagebrush forms covered with Bachmann polyfiber.

What's Neat on the Road with Michelle Kempema



15-19. This month, Michelle Kempema starts a new segment in the What's Neat Video called "What's Neat on the Road with Michelle Kempema." As Michelle travels across the United States, she will visit rail attractions with her video equipment documenting, sharing, and conducting interviews exposing great places we can visit.



This month, Michelle interviews Jamie Johnson, the executive director of the Historic Rail Park and Train Museum. The museum is in Bowling Green, KY and is about 12 years old. It's in a two-story train depot built in 1925 which has been restored to its original condition. The museum has eight passenger cars on hand and five have been fully restored to show the Golden Age of rail travel.

Volunteers and club members spend countless hours detailing and maintaining a model railroad layout in the depot. Jamie says folks see the model railroad, and then tend to go home and start building something for themselves. That's a great way to promote the hobby of model railroading. The museum is full of railroad history, stories, and artifacts.

Visit online at www.historicrailpark.com.

The museum is at: 401 Kentucky St., Bowling Green, KY 42101.

See the final photos on the following page ...

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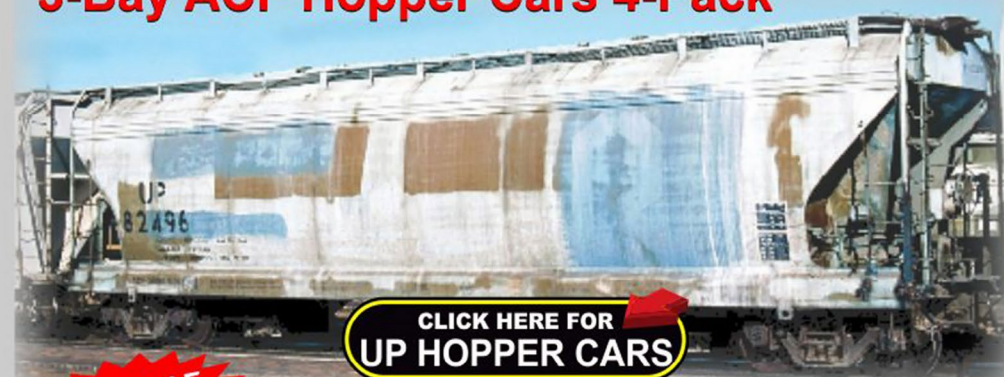
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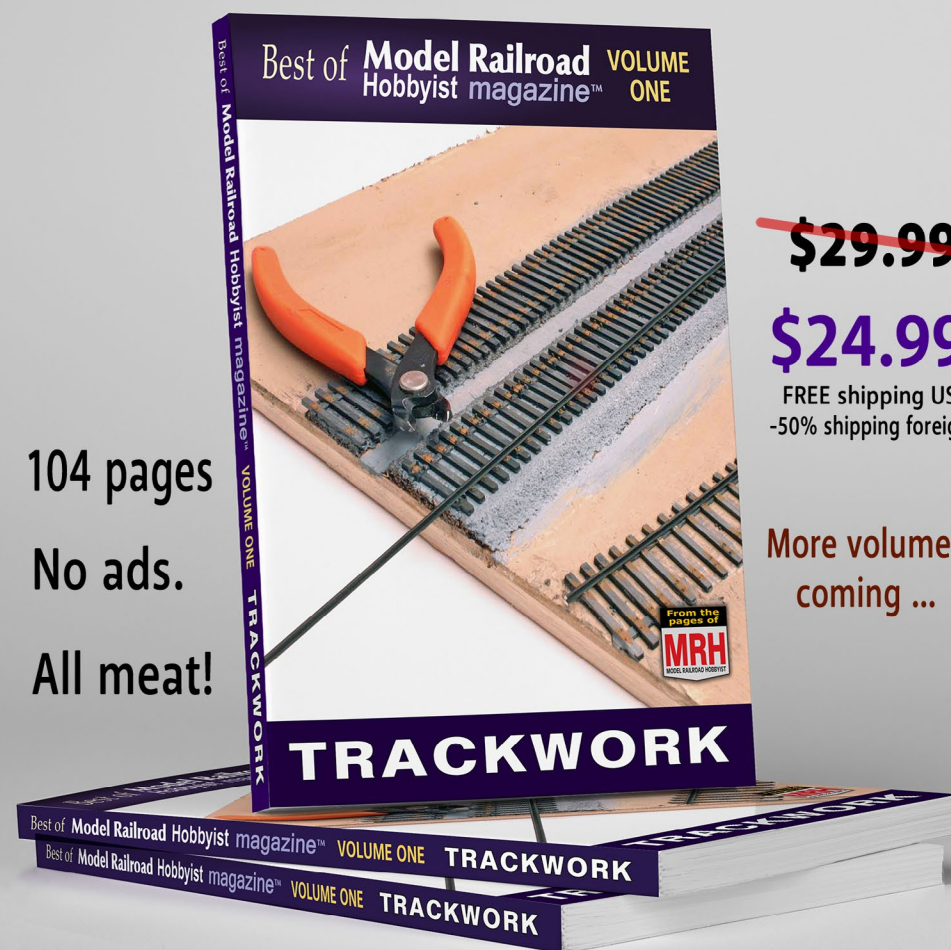
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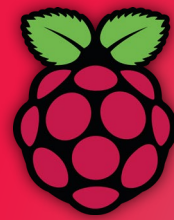


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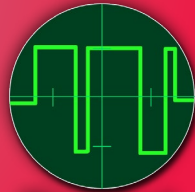
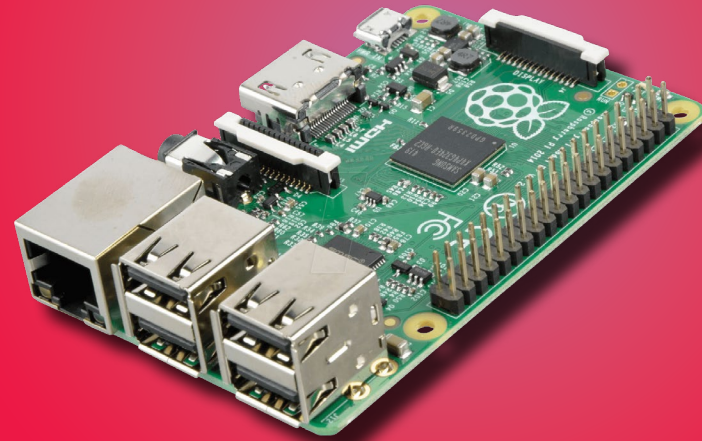
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Raspberry Pi

for model railroaders



**Electrical
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Model Railroad Hobbyist | March 2019 | #109

DR. GEOFF BUNZA shows how to put this new highly affordable tiny computer to good use on your layout ...

MODEL RAILROADERS USE COMPUTERS MORE AND MORE in their hobby to research topics, view magazines, program their DCC decoders, schedule operations, and control their layouts. Often modelers may use an older, hand-me-down PC or laptop for such activities.

A new, low-cost, tiny computer that's starting to gain ground as an attractive option is the "Raspberry Pi" or "RPi" for short.

Just a bit larger than a credit card, the RPi consumes little power, and often exceeds the capabilities of personal computers from several years back. The RPi also offers some additional capabilities which open new possibilities for modelers.



There are several things a Raspberry Pi offers modelers that make it a winner:

- It can run the full JMRI configuration including its DCC command station interfaces
- It can power up managing its own, independent, WiFi network supporting wireless throttles
- It is low-cost (\$39), small-sized (3.35"x2.2"), and uses little power
- It can run with or *without* a monitor, keyboard, and mouse
- You don't need to program it!

Unlike the small Arduino controllers I have discussed before (MRH December 2016 and MRH March 2017), the RPi offers much more capability. Like your laptop, it runs an operating system (OS). Its



1. Arduino Uno (left) and Raspberry Pi 3B (right).



G. Bunza

LEARNING MORE ABOUT JMRI

The Java Model Railroad Interface (JMRI) is free, widely used, and growing in support. JMRI has free software applications that run on Windows, Linux, or a Mac that can perform a multitude of useful model railroading functions.

JMRI makes programming complex DCC decoders much easier. It can also be used for dispatching, signaling, switching, route control, train control, and more.

If you need more info about JMRI, just visit the web link below.

WEB: jmri.sourceforge.net/help/en/webtoc.shtml

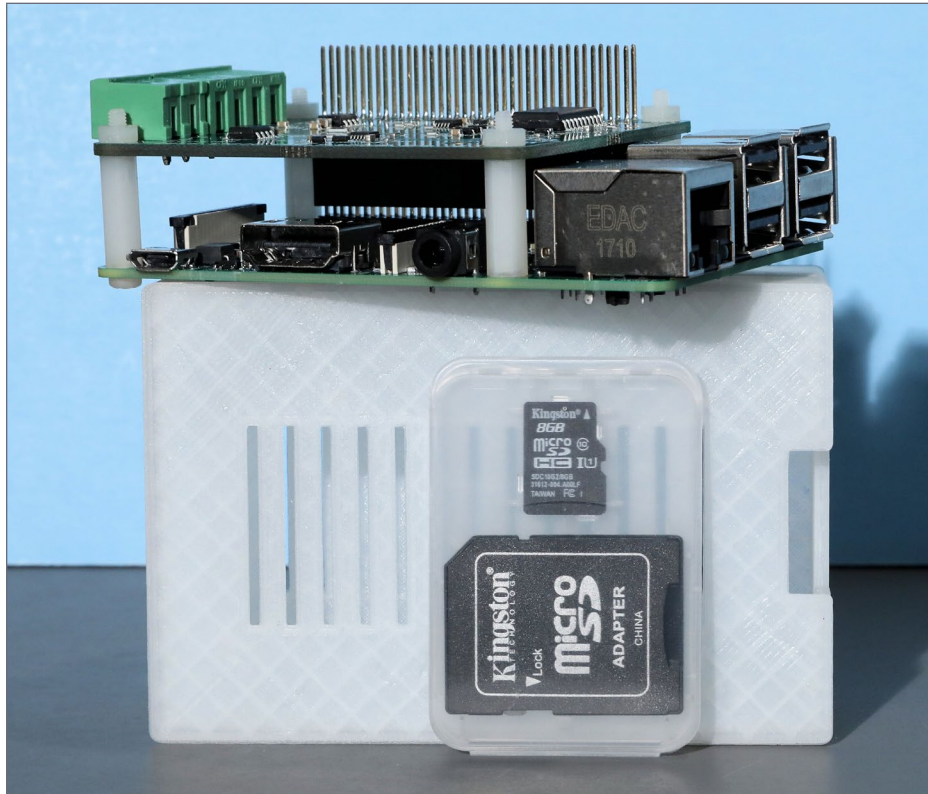
OS, called "Linux," supports displays, keyboards, mice, USB interfaces, SD memory cards, and best of all: the Java Model Railroad Interface (JMRI).

I will assume the reader has a basic acquaintance with JMRI. If not, see my side note on where to learn more about JMRI.

This article is not focused on the technical intricacies of the RPi or JMRI. Instead it provides a step-by-step process for a modeler to set up an RPi and get it going nearly instantly. I provide some different variations, including one with its own WiFi network for wireless throttles.

Later, I'll suggest some additional customization modelers might like to consider.

RASPBERRY PI FOR MODELERS | 4



2. Pi-SPROG components.

From off-the-shelf to do-it-yourself solutions

A year or two ago, I saw a demonstration at our local NMRA divisional meet of a new product called the Pi-SPROG given by Bill Chown of the BBM Group (sprog@bbmgroup.com). I was impressed with its compact size and performance.

When I later needed a compact solution for a JMRI operating demo, Bill was incredibly helpful answering questions, and I quickly got up and running. The Pi-SPROG is a complete, commercial package consisting of an RPi Model B, a special SPROG



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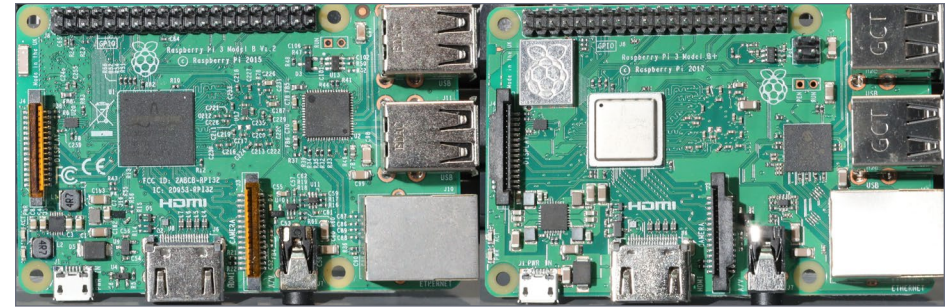
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4. Raspberry Pi 3B (left) and Raspberry Pi 3B+ (right).

plug-in board, a pre-configured and pre-loaded micro SD memory card (like the ones used in some cameras), a power supply, and a small enclosure for the boards.

The micro SD card acts as the hard disk drive found in your laptop or personal computer. I think it took me longer to read the documentation than it did for me to connect everything and get a train running for my demo!

Later, I will step through creating your own RPi setup from scratch.

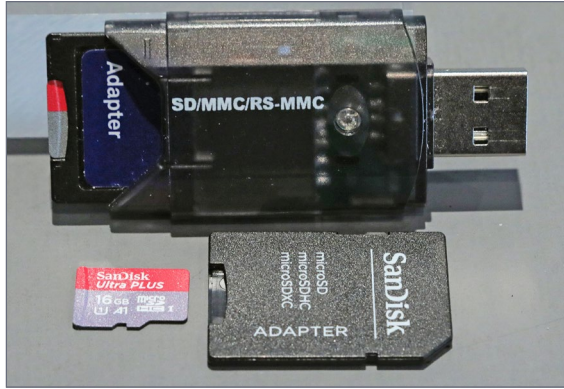
The Pi-SPROG memory card comes pre-loaded with the correct version of Linux and JMRI, and default configuration setup for the Pi-SPROG DCC board to form a complete DCC command station.

The SPROG board that easily plugs into the RPi is the equivalent of a separate SPROG DCC interface with which you may already be familiar. The RPi runs JMRI, just as it would run on your PC or laptop.

The very best part is that the Model 3 B (and 3 B+) of RPi can also act as a self-contained WiFi network. The RPi has the WiFi hardware, and JMRI provides the wireless throttle protocol. So after a quick setup of my cell phone and its WiThrottle (or Engine Driver) app, I was running a loco via wireless control.



5. R5V Power Adapter with micro USB plug.



6. Micro SD memory card [top] plugged into an adapter that goes into a USB socket on the computer. Below is a 16 GB MicroSD memory card adapter that plugs into a larger SD card socket.

If you want an off-the-shelf solution for using an RPi, the Pi-SPROG is a solid solution.

WiFi throttles need locos defined in JMRI with their respective decoders before use. Once I added a USB keyboard, a USB mouse,



7. USB Keyboard and USB Mouse.

and a small computer display with an HDMI interface to the RPi, I could use JMRI directly to add the appropriate roster information in JMRI.

These devices can be left disconnected once everything is setup. I also have an alternative to adding these, which I will cover later.



8. Displays with HDMI Interface (24-Inch & two 7-inch).



9. VGA to HDMI Adapter & HDMI Cable.

More slices of Raspberry Pi – Variations on a great application

As an electronics-centric modeler, once I realized the capabilities of the RPi-SPROG, I now wanted build an RPi setup from the ground up.

The component parts can be obtained from a multitude of sources worldwide including: adafruit.com, amazon.com, frys.com, and sparkfun.com.

Unlike many of my other projects, I am not recommending the cheapest or smallest components. Instead, go for quality parts.

Since the RPi is so powerful, these may well become the backbone of your DCC system.

The essential components include:

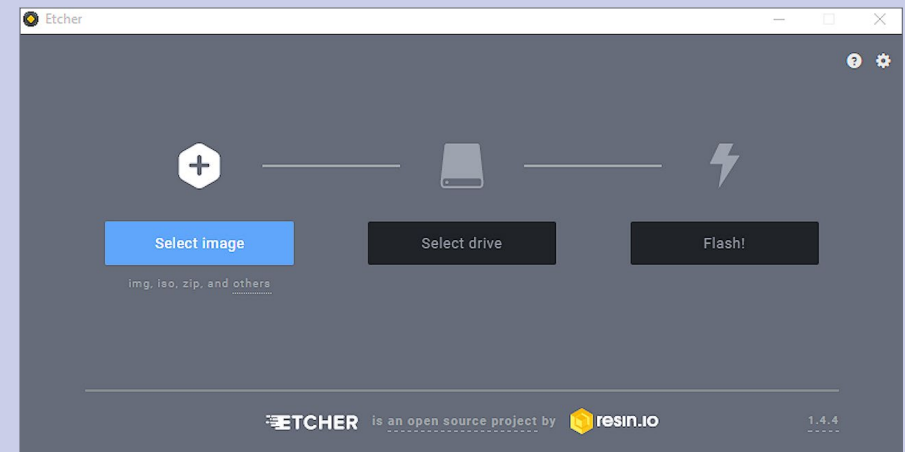
1. A Raspberry pi 3B or Raspberry Pi 3B+ module (stick to these, they are the newer and more capable models)
2. Wall adapter power supply 5.0 volts DC, 2 amps (with USB Micro-B connector)
3. An 8 GB (8 GB-32GB will work) micro SD memory card (I recommend the faster “HC” versions)
4. And (temporarily, which means you do not have to dedicate these to your RPi system after setup is completed):
 - USB keyboard
 - USB mouse
 - Display (HDMI or VGA display with VGA-to-HDMI adapter)

STEP 1: ALL THE SOFTWARE YOU WILL NEED

Next I wanted to see if I could build a new RPi SD card image with multiple configurations and applications. There is some early documentation showing difficulties creating the SD image for the RPi.

Indeed, I did have some difficulties at first, but I have put everything you need to easily build a working SD card image in the additional materials accompanying this article [[bonus download link](#)].

You can download the entire disk image and put it on your own SD card, which is the main “disk” for the RPi. I recommend a 16 GB Micro HC Memory card, but an 8 GB card and/or slower speed card will do if necessary.



10. The Etcher program loads your micro SD card.

CONTINUED ... STEP 1: ALL THE SOFTWARE ...

Insert the micro SD memory card into your SD-USB adapter [6]. Download and extract **Etcher-Portable-1.4.4-x86.exe** and **rpisdcad.img** files from this article's bonus materials.

When you run **Etcher**, the window in [10] should appear. Select the **rpisdcad.img** file and your micro SD card, and hit Flash. This will take a while.

Once complete, your SD card will have the most current software, updated at the time of this writing, including JMRI, Java, and the current Arduino software too. This disk image is a derivative version I compiled based on the fine work of Steve Todd.

NOTE: If you're interested, Steve Todd offers his own RPi image and excellent information about customizing it for your needs: mstevetodd.com/jmri-raspberrypi-access-point – I highly recommend it for further reading.

Once the load is done, place the micro SD card into the socket on the back of your Raspberry Pi Board [11].



11. Micro SD memory card inserted into RPi socket.

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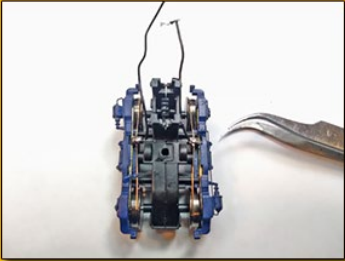
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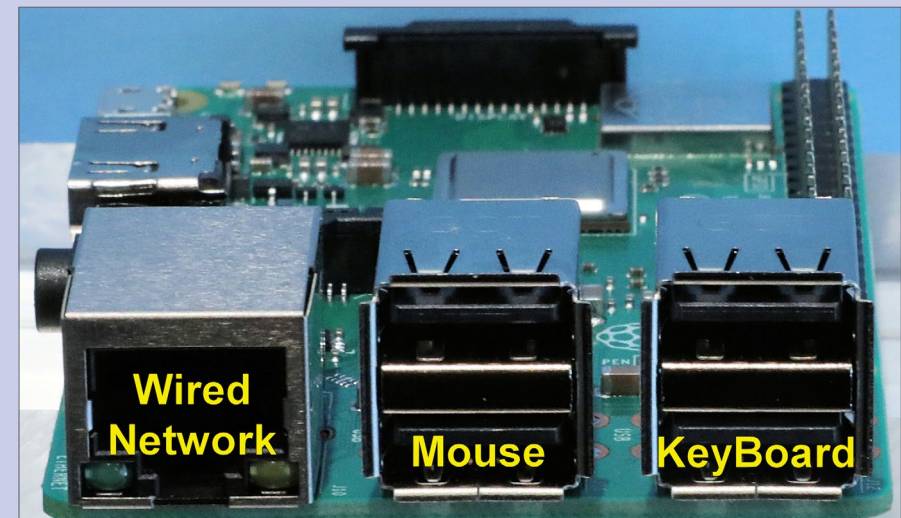
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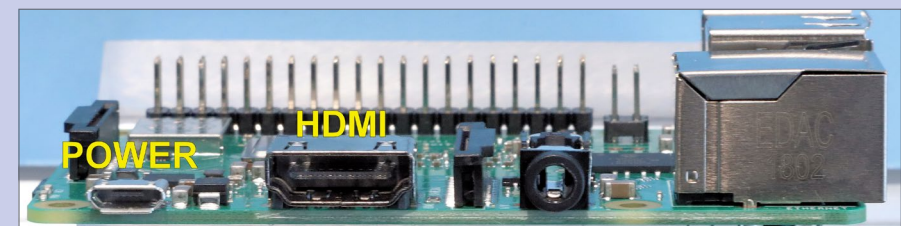
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RASPBERRY PI FOR MODELERS | 11

STEP 2: ASSEMBLE THE COMPONENTS



12. USB sockets and Wired Network (LAN) connectors.



13. Raspberry Pi power and HDMI connectors.

Plug your USB mouse and keyboard [7] into any two of the USB sockets on the end of the RPi card [12]. Leave the wired network connection alone for now.

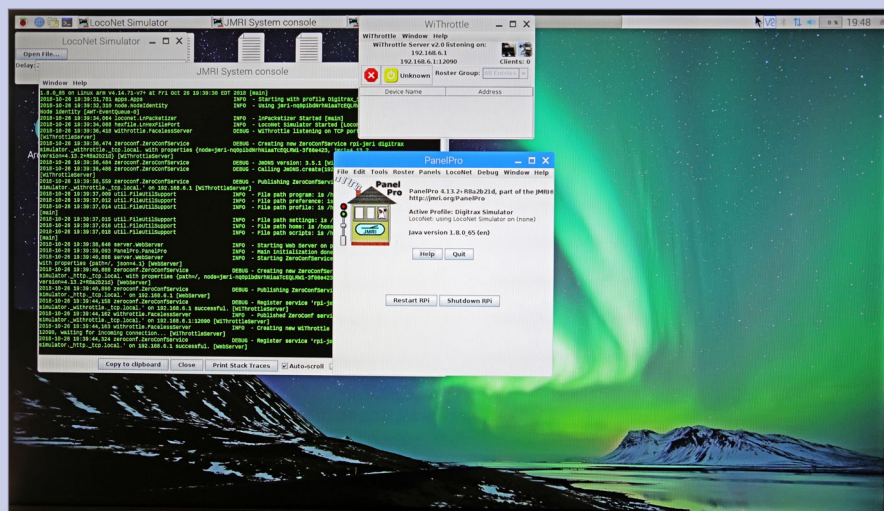
Now, set up your display. Connect the display's HDMI cable to the connector on the side of the Raspberry Pi card [13]. Turn on the display.

STEP 3: POWER ON

Lastly, connect your 5V power adapter's micro USB plug to the power connector on the side of the RPi [13]. Plug the power adapter into an AC socket. If it has a power switch in the cable, turn it on.

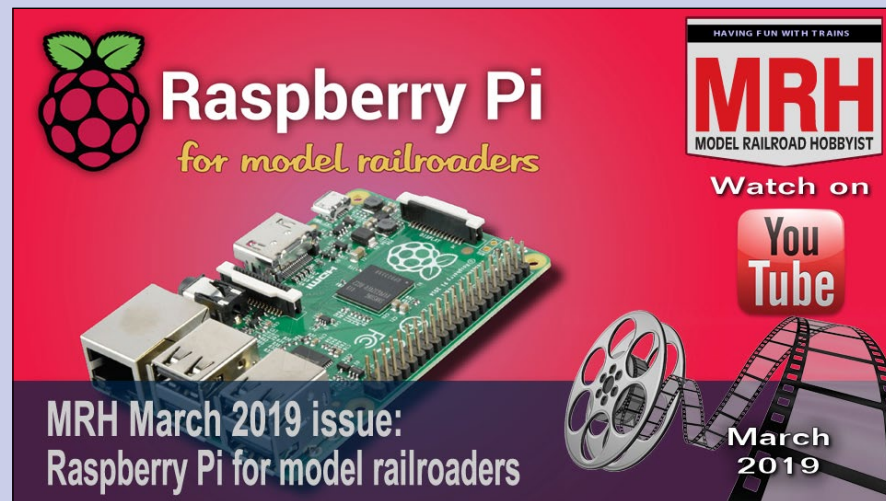
After a short time, your RPi should power up, and automatically run JMRI. Thanks to Steve Todd's work, if you plug in a computer interface to your DCC command station and it is one of the preconfigured interfaces Steve has set up, JMRI will recognize it, and automatically pre-configure itself for operations. The list of preconfigured interfaces is in Step 4.

For now, let it power up and display the startup screen [14].



14. RPi Power-on screen.

CONTINUED ... STEP 3: POWER ON ...



Video: The Raspberry Pi start up sequence video.

You can follow the power-on sequence in [Video], and familiarize yourself with the screen layout. This will give you a good orientation in the remaining steps.

Since we have not connected the DCC command station interface, JMRI is set to power up to the Digitrax Locomotive Simulator configuration, which we can use for testing later.



STEP 4: CONNECT DCC COMMAND STATION

Once you get to the screen in [14], you are almost done. Again, thanks to Steve Todd's work, the boot-up includes an auto-configure mechanism that's included in the disk image. It accounts for the following configurations:

DCC++ to an Arduino using the FTDI USB interface

DCC++ to an Arduino using the CH340G USB interface (newly added to this disk)

Digitrax Simulator

EasyDCC Serial

LENZ Simulator

LENZ USB

Locobuffer-USB to Digitrax

MERG USB

NCE Serial

NCE USB

PR3 to Digitrax

Pi-SPROG Nano

Pi-SPROG One

RPi

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CONTINUED ... STEP 4: CONNECT DCC ...

If your desired JMRI DCC command station configuration is not listed, don't worry. Simply open JMRI and set up the configuration for your command station, then re-start JMRI. You might contact Steve to ask if he can add it to the auto-configuration list.

Connect your DCC command station USB interface to one of the available ports and re-start the RPi. Once JMRI fully comes up, you should be able to select from the top Panel Pro menu Tools-> Power Control.

From the small window that opens, you should be able to turn your layout DCC power on and off.

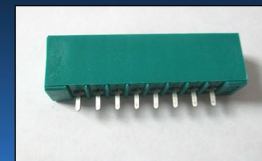
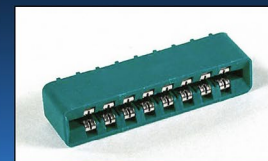
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STEP 5: ARDUINO AND DCC++ (OPTIONAL)

For those modelers using DCC++/Arduino USB connections, note that RPi does not use COM port designations. Instead, serial ports usually are designated by “tty..” (e.g., tty01, tty05) (teletype). In my installation, the Arduino Uno USB port shows up as “ttyUSB0.”

In the disk image you loaded, and on the RPi window that opens up when you start the RPi, you will find the Arduino IDE already loaded for your RPi.

If your Arduino or DCC++ command station is plugged into your RPi, you can open the IDE by double-clicking the icon. Go to the Tools menu, then pick the Port. On a Raspberry Pi 3B+ you should see a port list like: /dev/ttyAMA0, /dev/ttyS0, and /dev/ttyUSB0.

If you unplug your Arduino USB cable, you will see the /dev/ttyUSB0 disappear. But note well: if you plug it back in, the RPi will likely assign a new designation like: /dev/ttyUSB1, which may well mess up previous settings, so be careful. Plug and unplug your USB cables before powering up.

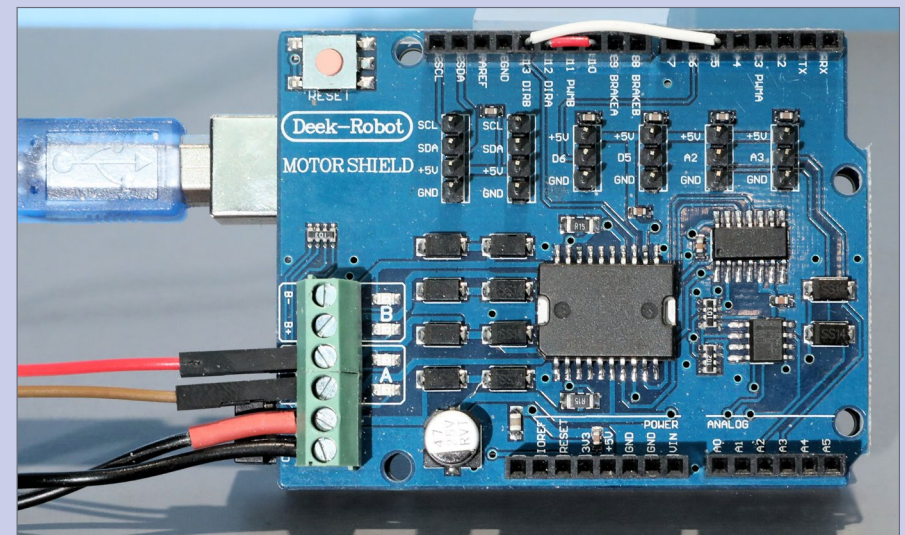
There has been some confusion using the RPi with DCC++ configurations, in part because vendors of Arduino Uno's and Mega2560's have substituted a cheaper USB interface chip, the CH340. I have added a DCC++ configuration using this interface to facilitate using this variation. The appropriate driver is included and is recognized by the Raspian version 9 operating system on your disk.

CONTINUED ... STEP 5: ARDUINO & DCC++ ...

I've written several times before about installing and loading Arduino software in MRH December 2016, “A modeler's introduction to the Arduino” [mrhpub.com/2016-12-dec/online] and in MRH March 2017, “DCC projects using the Arduino” ... [mrhpub.com/2017-03-mar/online/html5].

While we are discussing the Arduino setup, if you start the Arduino IDE and select **File->Open...** from the menu and select **Arduino** at the top-left of the open window, you will see all the Arduino sketches from my MRH Arduino articles.

This is everything from my December 2015 and March 2016 MRH articles, including the DCC++ and DCC decoders sketches. Yes, you can program your Arduino from your RPi!



15. Basic DCC++ setup – The USB cable connects directly to the RPi.

STEP 6: TURN CELL PHONE INTO DCC THROTTLE

I mentioned before that one of the great benefits of using the RPi with JMRI is the WiFi capability built into the RPi module. When Panel Pro opens on your RPi, you should also see a window at the top of your screen labeled “**WiThrottle**.” It should also show “**192.168.6.1:12090**”

This is the IP address (**192.168.6.1**) and port number (**12090**) for your RPi, running its own wireless network, identified (SSID) as “**model-rr**” with an access password of “**model-rr**” that I will show you how to change later. You will need this information.

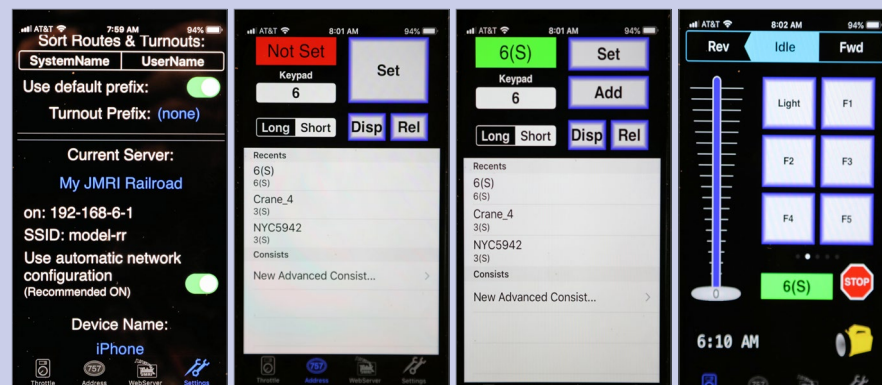
The easiest way to access and use the WiThrottle interface to run your layout is to load a free application (App) onto your cell phone or tablet that is WiFi-capable. On an iPhone the App is called “**WiThrottle**” – pretty clever, eh?

On an Android WiFi device it is called “**Engine Driver**.” These are free on the Apple App Store and the Google Play Store respectively. First go to settings and set your phone or tablet to access the WiFi for SSID: **model-rr**, and the password: **model-rr**.

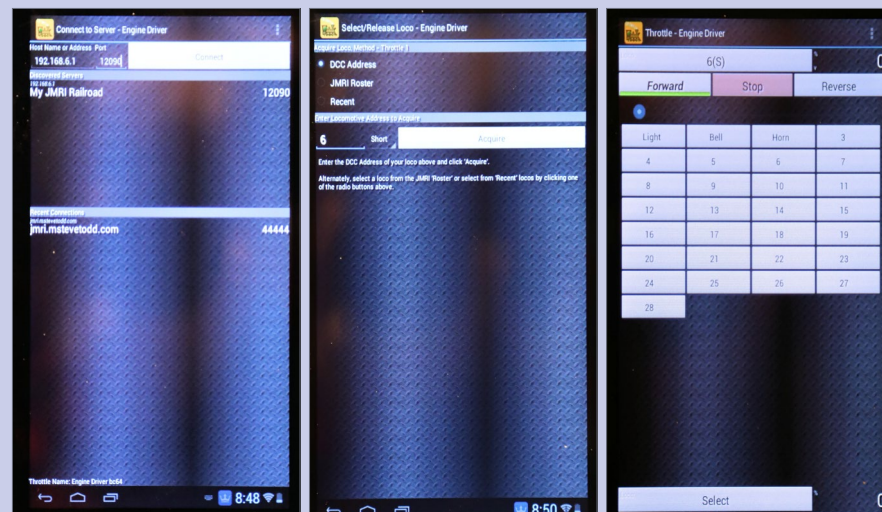
You will need to provide the IP address **192.168.6.1** and port: **12090** when you first set the server for your WiThrottle or Engine Driver App.



CONTINUED ... STEP 6: CELL PHONE THROTTLE ...



16-19. WiThrottle setup: server setup, enter loco address, set loco address, change to throttle and run!



20-22. Engine Driver Setup: server setup, set loco address, change to throttle and run!

CONTINUED ... STEP 6

Once you connect to the RPi's WiFi network, you can try controlling a loco. But first, let's test the connection:

Step A: On the Panel Pro Window on the RPi, select **Tools->Throttles->New Throttle** and in the **Address Panel** in the **Throttle** Window type an arbitrary address, like 6.

Hit **Set**, and see if you can toggle the Off (red) / On (green) power button at the top right of the Throttle window. If not, something is not set up correctly.

Step B: Assuming you got this far, go to your WiFi handheld throttle (your cell phone or tablet), and enter the same loco address (6) and hit **Set**.

Step C: Now go change the speed setting for this imaginary loco (6) on your handheld throttle and watch the throttle speed indicator move on your RPi! You are now capable of running your trains on your own private network.

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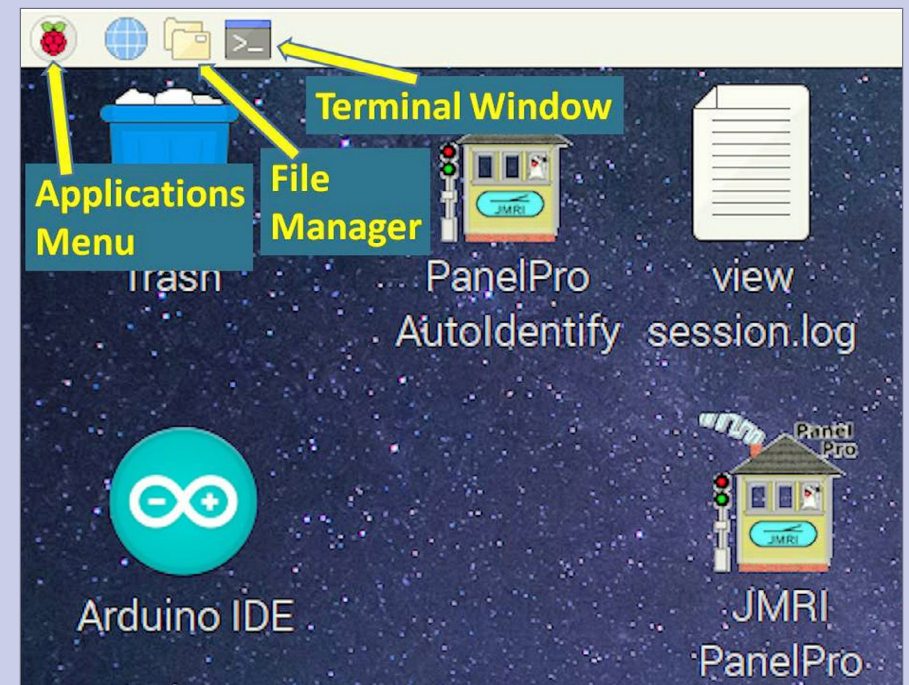
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STEP 6: CUSTOMIZING YOUR RPi (OPTIONAL)

There may be some things you would like to change on your RPi. You will find a wealth of information on the web, including Steve Todd's website: : mstevetodd.com/jmri-raspberrypi-access-point.

Let me add some quick notes which may be of help if you would like to make some changes. Most of these need to be typed in a "terminal window" which you can open by clicking on the black terminal window icon in the upper left menu bar [23].



23. RPi Main menu bar icons (top-left).

CONTINUED ... STEP 6: CUSTOMIZING ...

Here are some additional useful notes for modelers:

1. If you already have a JMRI loco roster entered on another computer, you can open the JMRI on your other computer and from the top menu bar click **Roster->Export Complete Roster...**, enter a file name, and save it to a USB drive which you can insert into your RPi and then from the JMRI top menu bar click **Roster->Import Exported Roster...**, enter a file name, and save the entries you want in the RPi JMRI installation.

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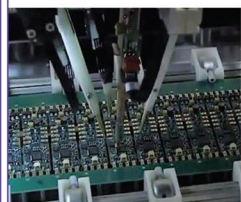
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CONTINUED ... STEP 6: CUSTOMIZING ...

2. In the terminal window, type **lsblk** to see which devices are currently connected to your machine. You will likely find **mmcblk0** as the main RPi disk, and if you inserted a separate USB drive, it may be listed as **sda** or **sda1**.
3. When you insert a USB drive into a running RPi, it will ask you if you want to look at the new drive with the File Manager (also accessible on the main RPi menu bar, the top-left). This tool is very similar to the MS Windows file explorer and will let you move, copy, and delete files and folders.
4. To change your WiFi SSID and password, click File Manager from the top menu bar, and instead of /home/pi in the entry bar, type /etc/hostapd and hit enter. Right click hostapd.conf, and select **Open With... -> +Accessories -> Text Editor**, then OK. Then edit the lines **SSID=model-rr** and **wpa_passphrase=model-rr** to whatever you want to name your network and its associated password, like: **SSID=my_WiFi** and **wpa_passphrase=supersecret**. Then save and quit the editor. Re-booting your RPi should follow.
5. To safely unload and eject a USB drive that you plugged into your RPi (for file transfers), click the up arrow on the far upper-right of the main menu bar. A list of devices should appear. Select the one you want to eject, and a message should appear saying that it is now safe to remove the device.

CONTINUED ... STEP 6: CUSTOMIZING ...

6. To change the screen resolution on your display, click the **raspberry icon** (the Applications menu icon labeled in [23]), then **Preferences -> Raspberry Pi Configuration** and the Raspberry Pi Configuration window should open. Next click **Set Resolution...** -> then **down arrow**, and select the new screen resolution you want.
7. To shut down your RPi in an orderly fashion, click the **raspberry icon** (the Applications menu icon labeled in [23]), then **Shutdown...** and in the new small window that opens click **Shutdown** again. Wait for the small indicator light on your RPi to stop blinking, then turn off the power. *Caution here – see our note below.*
8. There is another alternative to equipping your RPi with its own mouse, keyboard, and display – VNC Viewer. If you have a WiFi-equipped laptop or PC, you can load, run, and configure VNC Viewer to open a window on your PC that will behave as if it were the display on the RPi. The mouse and keyboard on your laptop will act as if they were



M. Dodd

RPI POWERING DOWN BEST PRACTICES

The web is full of warnings to never power down an RPi by just killing the power. Always do the orderly shutdown recommended by Geoff in #7, above. If you have a “headless” RPi, you can add an orderly shutdown power button using one of these aftermarket kits: mausberrycircuits.com. Or if you’re more adventurous, here is a do-it-yourself video: youtu.be/W5YTm0xkCb8

CONTINUED ... STEP 6: CUSTOMIZING ...

directly connected to the RPi as well. Sometimes called a “virtual or remote desktop,” it will give you full access to set up and configure your RPi and its applications, like JMRI. You can find the documentation and the software here: www.realvnc.com/en/products/viewerplus/

Download a copy for free, personal use. VNC will need to be configured on both your laptop or PC and on your RPi. It is already installed on your RPi, with a general access password of “model-rr” which can be changed to suit your needs.

9. You can plug your RPi into your home network (your LAN) via an Ethernet cable to the “Wired Network” jack in [12]. If your home router is set to automatically assign IP addresses (via DHCP), the RPi will auto-connect and give your RPi the same capabilities as if you connected your laptop to your net, including web access if it has it. Click the blue globe icon on the upper left main menu bar on the RPi screen to open a web browser.
10. When using VNC, remember to shut down the RPi as instructed per #7 in this list.

There are many more things that a modeler can do with an RPi. This article should get you started on a whole series of new adventures in model railroading, quickly, and for relatively low cost! Have fun! ☑



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DR. GEOFF BUNZA



Geoff Bunza started as a model railroader when he received a Mantua train set for Christmas, at age 6. He fed his interests through college, becoming a member of the Tech Model Railroad Club (TMRC) at MIT while getting his doctorate and three other degrees in electrical engineering. He has collected Lionel HO trains for many years, which spawned his interest in realistic model animation and control. Primarily, he models the New York Central Railroad.

Geoff is a member of the New York Central System Historical Society, a life member of the NMRA, and holds an Extra Class amateur radio license. ■

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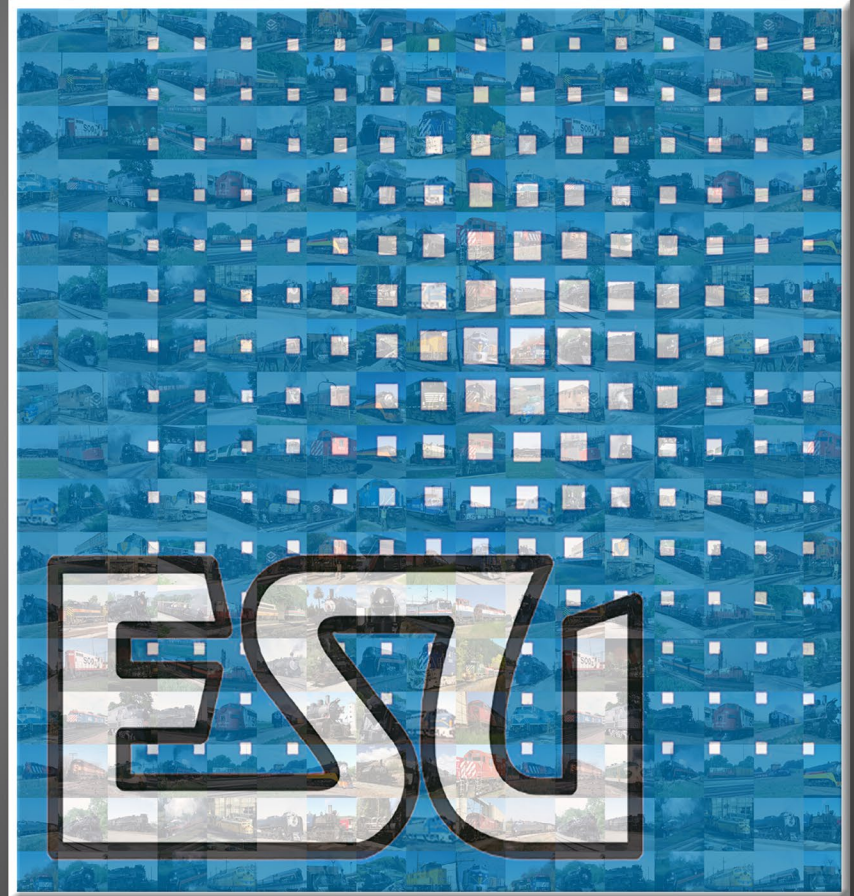
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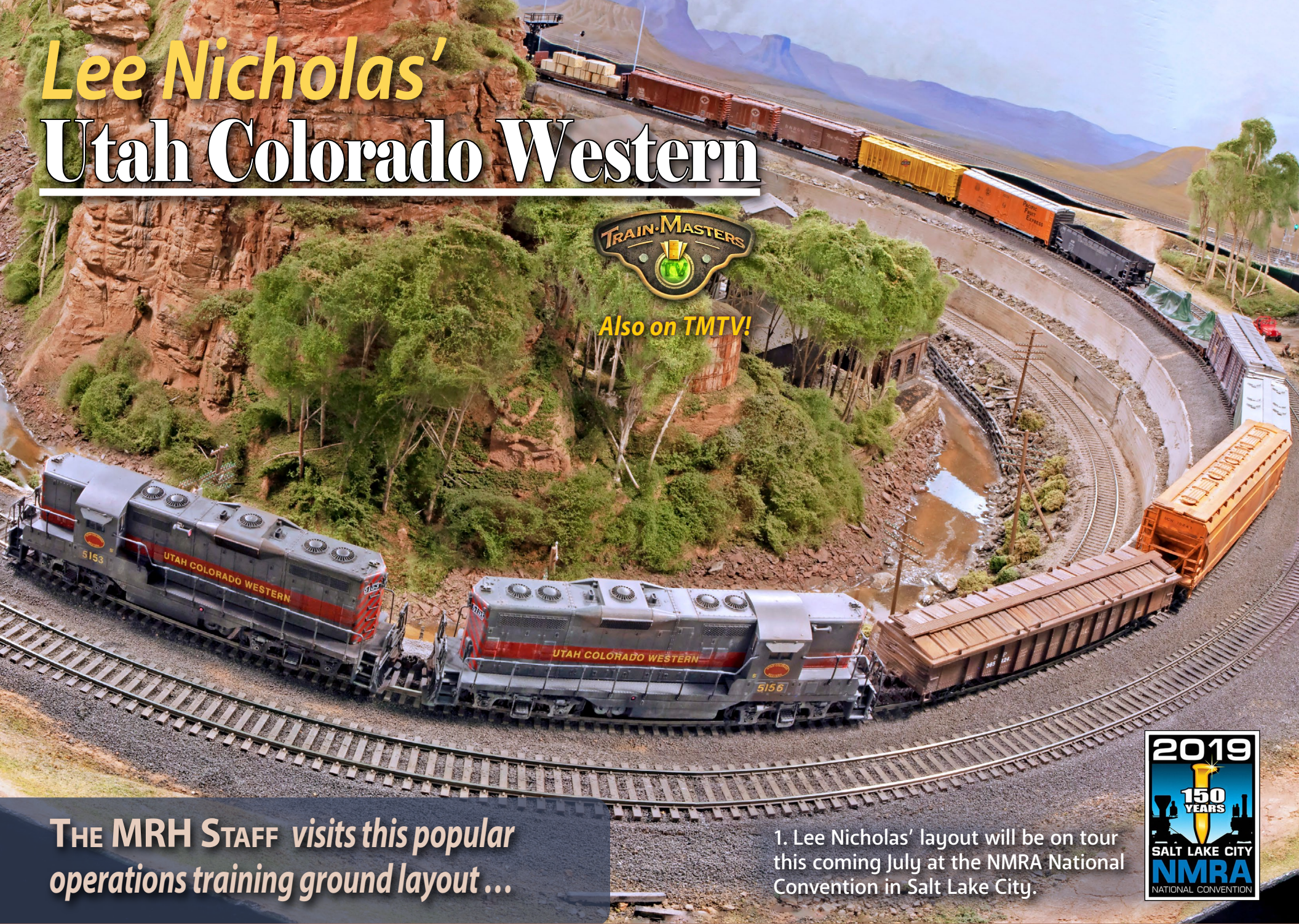
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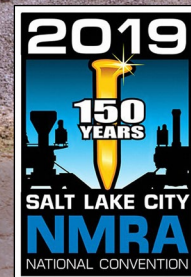


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MRH: HELLO, LEE! HOW DID YOU END UP A model railroader?

Lee Nicholas: It goes back to my early childhood and living in Corinne, Utah, the last town established before the Golden Spike site.

My great-grandfather and his brothers lived and homesteaded in Promontory, so Promontory's been like a second home to me my entire life. The original transcontinental grade runs through our farm to this day.

That got me excited about trains. My dream was always to have a model railroad of sorts – it started out with me being able to build in this basement. This is the home where I grew up. So I've had trains in here literally my entire life.

MRH: The Utah Colorado Western. Why are you modeling that?

Lee: I started out in prototype railroading. My dad worked for the SP, and I spent time out in Promontory, especially at the point where the causeway was built in the early '50s. So, the SP was part of my journey.

Then I discovered the Denver and Rio Grande Western. And then I discovered the Utah Railway. Of course, the UP runs through Corinne, and I was always around that – but these other railroads just fascinated me. I was heavily into the Rio Grande for



2. When you first enter the layout room, you see the stub-end engine terminal here at the east end of East Yard. To the left (west) out of the picture is East Yard proper [3].

a long time. I couldn't decide on a specific prototype. So rather than have all kinds of power on here, I decided to freelance.

My paint scheme incorporates my three favorite railroads. My overall color is SP Dark Lark gray. The red stripe around the body is from the Utah Railway. And the red tiger stripes on the front I modeled after the Denver & Rio Grande. So, I combined my three railroads to get my freelance paint scheme.

MRH: That's cool. Why this era and location?

Lee: I wanted to model Utah, between here and Colorado. That let me include my love for the Rio Grande. The old Denver & Salt

Lake line was going to come to Salt Lake but never made it, so I kind of extended that. Utah is my home state, so I wanted to honor that in my modeling, too.

MRH: That explains the location. Why the particular era?

Lee: I chose 1967 for a couple of reasons. First, that's the year we got married, so I can always remember that! And the late '60s is also the transition between first and second generation diesels, so I could have both. I could enjoy first generation diesels, and my newly-acquired love of second generation diesels.

Occasionally a car will creep in that I just must have that doesn't quite fit that era, but you know, freelance modeling lets me cheat a little, too.



3. Here you can see the rest of East Yard and the town of Shasta with its station in the foreground. East Yard is the main yard on Lee's layout.



4. Coal traffic makes up one of the more common consists you see on the Utah Colorado Western. You can see how the UCW paint scheme uses elements of the SP, DRGW, and the Utah Railway.

MRH: How did you develop the track plan? Did it take many iterations?

Lee: I have built several railroads in this basement. Each one has been a learning as to what works and what doesn't work. The present track plan started as a doodle I made on a piece of paper, influenced by Allen McClelland and his V&O, plus Dave Barrow and the Cat Mountain & Santa Fe. I used their concepts of linear aisles, turnbacks, and those kinds of things to come up with the present track plan.

One effort that took work was avoiding a duck-under. To do that, the track along the outside walls doubles back on itself and then enters staging.

The track plan evolved as we went along and as we rebuilt parts of the layout. The track plan is actually a kind of rough sketch. Once you start building, you keep what works, and what doesn't work, you change.

MRH: When did you start construction?

Lee: Which time?

MRH: Tell us, briefly, about the various iterations of this layout.

Lee: The first layout down here was when I was a young child. My dad built a bench for my trains but that was soon forgotten.



5. This new sugar beet plant at Jiggs has become one of Lee's favorite scenes on the layout. When Lee expanded the basement a few years ago and moved the active staging area (aka, the mole) to the new basement space, it allowed adding this scene. Lee couldn't be more pleased with it!

I built my first HO layout in the late '60s, and I followed a track plan that was in one of the hobby magazines. "Six track plans you can build," it was called. I picked the last one and built it.

That lasted about eight months. I had bigger visions and more basement space, so I tore that one down. And I learned a lot – I learned mostly *what not to do*. Not so much *what to do*, but I knew what I didn't want to do!

I started in half of the basement and built a layout following a track plan in *Model Railroader*. That would have been about 1969. I added on to that layout over the years as I acquired more of the basement. It was a kind of a scab job, but I learned a lot.

One thing I learned was don't build it low to the ground. I had outsiders say "Oh, you need to build it so your kids can view it," so I built 30 inches off the floor. Today, I wouldn't recommend that to anybody unless you're doing a multi-deck layout and have no choice. Kids grow up, so having it that low was not a very good idea.

In the 1980s, I tore that layout down and built a new one, and it lasted into the 1990s. I started the current layout in 1995, and it has grown into the layout I still have today. The last modification I made was in 2013 when we dug out more basement to make room for the new mole. We dug out about 20 tons of dirt one bucket at a time! It took us about a month with the help of my crew.

But that's it. I'm not doing any more!

MRH: What iteration is this layout?

Lee: The iteration that I'm at now is something like four point five. Realize this layout has been added on to a number of times.

MRH: Okay, that makes sense. As you've gone through the process of building, rebuilding, and expanding, did it always go like you expected, and was it as fast as you would have liked?

Lee: I would say it went pretty much as expected. Of course, by layout four, I had perfected a lot of techniques so it went together pretty much how I had figured. Using spline roadbed, for example, went fairly quickly. It probably progressed *faster* than I expected. I had a lot of help.

To get the layout through its biggest rebuild when we tore two-thirds of the layout down, back to our next op session with no undone bench work or anything, took us exactly one year.



6. Local fellow modeler Rob Spangler painted the backdrops on Lee's layout. This example shows how Rob's backdrop nicely expands the layout and blends with it very well. Can you spot where the layout road ends and the backdrop road starts?



7. Lee's layout has an active interchange and secondary line with the CB&Q (Burlington Route). Here a CB&Q train rounds the bend between Lone Pine and Sage Hen.

MRH: That's impressive. Your benchwork seems somewhat unique – I don't see a lot of legs, for instance.

Lee: I knew about L-girder and what was popular at the time, but I wondered about using TGIs or laminated floor joists. So, I pursued that. I found some at a lumber store for a very good price, and we put them in.

They're basically four laminated floor joists 26 feet long. We brought them in through the window in the basement, laid them on the floor, cut the legs, and lifted them up, and screwed the legs on.

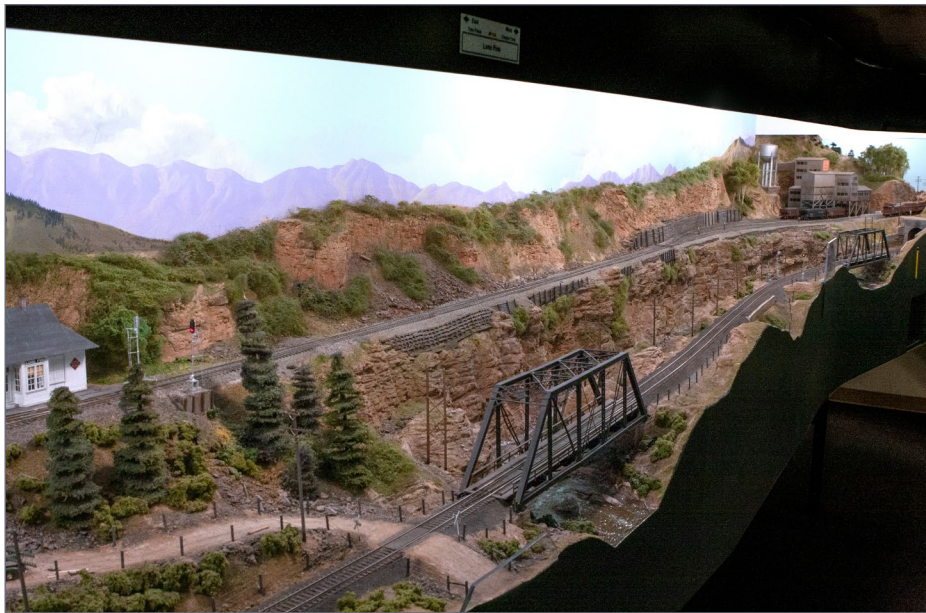
Within 20 minutes we had both peninsulas constructed, and then we just started putting in the cross members and the risers

wherever needed. All very quick and very easy to do. And absolutely indestructible for a model railroad. I mean they're built for a home. You can walk on them!

I like that there are only legs at one end. The other end ties into the basement wall, so only two legs. The whole railroad just floats in midair. That makes it very easy to get under it and work on the wiring. Works out great.

MRH: Yes, you don't see many legs.

Lee: There are more legs on the old part of the layout. I am considering putting some laminated joists there too. That's been in the back of my mind.



8. Going around the corner from [7] we see Lone Pine. The upper route is the CB&Q, while the lower route is the UCW main.

MRH: What have been your greatest challenges, and how well did you foresee them? Were there any nasty surprises?

Lee: A lot of the challenge early on was learning techniques. A lot of it is just learning as you go. It doesn't take much to mix plaster for instance – that's not exactly rocket science.

Most of the challenge has been the CTC panel and the signaling – and the electronics behind that, along with the software. That's been a daunting task for me. I'm not an electronics engineer nor am I a software programmer, so it's been hit-and-miss. Sometimes you hold your breath when you turn it on, wondering if it's actually going to keep working!

I've met some great people in the last ten years who have really helped me with the CTC panel and the signaling. I feel much more comfortable with it now than I ever have, and it works fairly well. We do have one little glitch we need to work on, and then we'll have it rock solid.

One of the frustrating things I've had to combat is water, because we live in an area where there's a high water table. I was flooded out a year ago in January – I had four inches of water down here. That's been a sore spot since I've lived in this house. I have a sump drain and it helps, but the sump has to be running for it to not flood, and that was the problem.

MRH: The sump pump?

Lee: The sump pump didn't fail, the breaker shut off. I've had to empty this basement out of water before so it's just something you have to deal with.

MRH: Any other surprises?

Lee: We did have some wonderful surprises.

For instance, when we started using laminated Masonite for doing our subroadbed, that was a wonderful surprise. We didn't know if it would work or not, but once we found the right glues to hold it together, it was great. Building a railroad using spline is marvelous. Easements get built in naturally, you can adjust the curvature as you go – it actually is very cool.

MRH: What do you like most about your layout, and what do you like least?

Lee: I really don't like the low ceilings. I don't have high ceilings in this basement. This basement was constructed probably 80 years ago and was dug out by hand, so they didn't go down far.



9. Tres Pinos Yard (right) marks the other end of the CB&Q line just before entering CB&Q staging at the far end of the shelf. This part of the layout is double-decked, with the UCW on the lower deck.



10. Across the aisle from Tres Pinos the UCW line approaches the town of Watercross. The elevated industrial park hosts Pioneer Meat Packing and Golden Valley canning.

I would like to have higher ceilings, but I don't know that I would go eight foot. I like a little lower ceiling because the lighting valance is easier to work with.

But do I like my layout? I love my layout. It's been years to getting it to where it is. I'm not saying it's perfect, but in my eyes it's almost perfect. It runs the way I want it to, it's fun to operate, and we have a great time on it. The guys keep coming back, so I guess we did something right.

MRH: What's your favorite part about the layout? If you pick one thing and say "This makes my day. This is a dream come true for me" what would that be?

Lee: The latest addition that we did at Clayton Yard and Jiggs with the sugar plant. That come out just how I envisioned it – it's exactly what I wanted. I love just going over and looking at it, because it's different than any other part of the layout.

I love that we have a live interchange there between the UCW and the CB&Q. It worked out how I had dreamed that area would be for many years. We finally pulled it off!

MRH: If you had anything to do over again, what would you do differently?

Lee: I would have exactly the same track plan, but I would build wider aisles. Other than that, I wouldn't change a thing.

MRH: It's pretty close then - quite satisfying.

Lee: Yes, I think we've nailed it.

MRH: Talk to me about layout height.

Lee: The low part is 42 inches. And that's the previous old layout there. It runs from 42 to 56 inches at the high point. I've set the main yard at 48, which I think is a desired level. Between 48 and 53 inches is perfect for a yard.

We climb from 42 all the way up to 53 inches. We would have lost that helper division if I would have raised the layout any higher.

We also have the CB&Q that goes all the way up to chest height, probably somewhere around 60 inches.

MRH: What's the ruling grade?

Lee: Grades on the UCW main are just a little under 2%. As for grades on the CB&Q, there's one point that's probably just over 2%, but for most of the railroad, it's right around 2%.



11. The UCW uses Centralized Track Control signaling and has this CTC machine adapted from real CTC machine parts salvaged by Rod Loder. Under the hood, Lee uses Bruce Chubb's CMRI to run the CTC panel and the associated signals on the layout.

MRH: What's your least favorite part of doing a layout, and how do you motivate yourself to do it anyway?

Lee: Probably wiring, that's the most monotonous to do but it has to be done. I know it must be done, so I just do it. I'm not as young as I used to be, so I don't really relish getting under the layout but I do it anyway.

So wiring is monotonous, but when it ends up like this [pointing at the CTC panel] and you see a working result, that does help you get motivated.

My other least favorite thing is maintenance. There's a certain amount of maintenance with this railroad, but I've got some

good help on that now. One gentleman, Daland Spiers, has been helping me, and he understands CMRI very well. That helps a lot.

I don't know, when you're doing plaster work too, with bags and bags of plaster, that can get old after a while. But when you start to see the end result appear, that inspires you, so there is that.

But really, there's a lot more *under* the layout than there is on top of the layout. That's the part of the layout nobody ever sees. They come, they expect the signals to work, the switches to



12. For car routing, Lee uses a custom program developed originally by Steve Karas called Flexbill. All the waybills stay in here in the freight agent office, while the road crews get switch lists to work with. Lee finds managing the waybills in the office here (instead of out on the railroad) allows him to spot bottlenecks early enough he can react and call extras as needed before the railroad gets clogged.



13. When you enter Lee's active staging area, you get greeted with this sign – we had to chuckle! Lee pioneered active staging – managing off-stage trains during the op session. It started out using staging buried under the layout 25 years ago, with a cramped position that got dubbed “the mole.” Over the years it has evolved to the point the mole and active staging moved into its own room (thanks to Lee expanding the basement a few years ago).

throw, and everything to work perfect. They have no idea what it took to get there.

Then when something goes wrong and they come help you fix it – they get underneath the layout and look around and go “holy cow!” Most don't realize what's under there and what it takes to keep these little trains running!

MRH: Speaking of what it takes to keep the layout running, can you comment on layout size? You have a pretty good size layout here.

Lee: The layout is 30 by 33 feet, plus the lounge area, the CTC area, and our mole area in the back. The main layout is 30 by 33. That's plenty big enough for me. I know some guys out there are building huge layouts today and bless them. But I don't know how they maintain them.

There's a lot of work to just keep this guy up. Sometimes if you get too big, I fear you start to cut corners, and it won't be as neat as you thought it would be.

For me, this is perfect size for me to take care of. Like I said, if I had a bigger basement, I'd have the same size layout, I would just have wider aisles. That's the only thing I would expand.



14. In this panoramic view, you can see the new active staging area, which is very nice indeed. The operator staffing this position, still dubbed "the mole," makes up and breaks down trains during the operating session. Note the drawers – they house the cars and paperwork for the premade trains to be going out onto the line.



15. The shelves house cars waiting to be reassigned to trains. The upper shelf with track is the staging for the CB&Q, while the UCW staging tracks are down below at the extreme lower left of this image [17].

I wouldn't try to put any more trackage in. I don't need any more track. What we have works just fine.

MRH: Yeah, too much layout can start to really complicate your life.

Lee: It depends on what you want out of your railroad, too. Now, you've noticed this layout is basically narrow benchwork. We do have a long distance between towns. We have a lot of what we call green space.

When you leave Watercress and run clear over to Jiggs, that's quite a distance of just open running. And then from Jiggs down to East Yard, we have more open running there, too. One design



16. Lee added a security camera TV system to monitor the hidden trackage to and from staging. This helps the mole keep an eye on inbound and outbound trains and make sure all is well.

goal of this layout is to have what we call green space, without a town every five feet.

I don't like it when you leave one town and your caboose is still in the other town. I tried to avoid that and I think we pulled that off fairly well.

There's enough switching and through running to keep a crew of 14 or 15 busy for five to six hours on a Saturday. There's plenty of work for everybody. You don't need a gymnasium-size layout to have fun. When it comes to operations, you can have fun on a little switching layout.

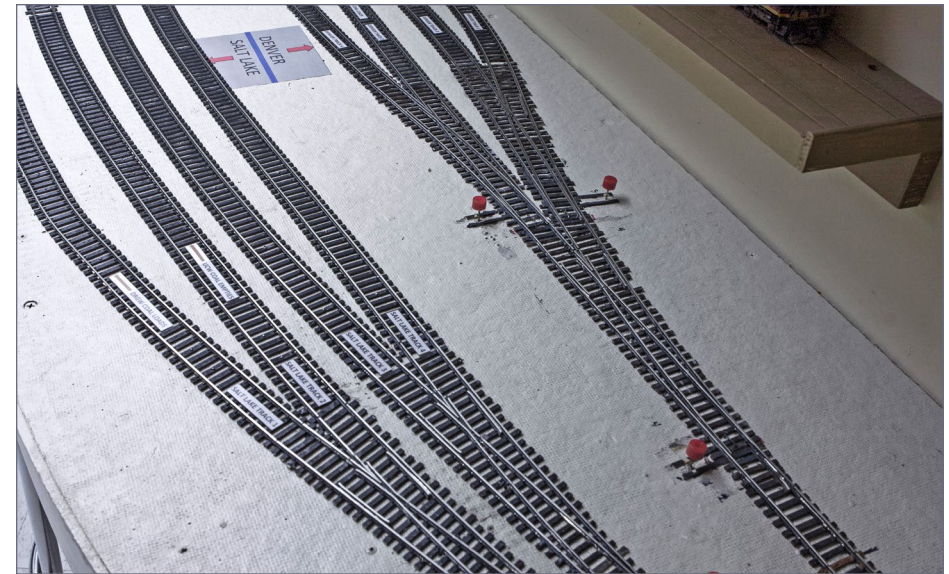
MRH: Do you have any interest in any other scales, or would you ever consider modeling in a different scale or gauge?

Lee: No, I love HO. We participate locally in some N scale layouts. To me, N is just too small. I get frustrated because at my age I don't see as well, and I can't read the numbers at all on N scale.

I get the ratio between the size of the engines and cars to the scenery. I understand that. But it's just too small for me.

If I was going to leave HO, I could go to Sn3 because I think that is the perfect scale. S is a wonderful scale to be in. But then you will need to deal with the steam era, and all of that.

But it would take a little bigger basement, I think. It would make the railroad seem smaller because the equipment's bigger, so I would think you'd have to have a little bigger room keep the same level of operating interest in S scale.



17. For the UCW staging on the lower shelf, one yard represents Salt Lake and the other yard represents Denver. While the yards are side-by-side, they represent opposite ends of the layout run.

But, I'm not going to change now. I've got too much invested in HO.

MRH: What's your philosophy on doing a layout well? For example, how do you narrow the focus?

Lee: I don't try to bite off the whole thing at once. Get the sub-roadbed in and get the fascia on. That's important, because when you catch one of those risers right here in the hip, it hurts! That also defines the boundaries of what you're doing.

Spline roadbed goes in quick. You can visualize things immediately, and if you don't like it, cut it out and splice in a new section.

Then I'll work on a scene until I have it roughed in. I coined a phrase: "layered scenery."

I made a goal with myself a long time ago that I would not have open sessions with open benchwork. It used to be I just put in a quick layer of plaster – but in this day and age I use spray foam insulation. It goes fast and I can fill in things quickly.

I finish that so it's not open bench work and it looks okay. Then I can come back later and add in details over time.

Get my roadbed in, get track laid, go through and put the scenery in overall, and then come back later and layer on details over time. Because, it's never finished, as you know.

One of my great friends, Kelly Newton (now deceased), was an N scaler but he used cheesecloth. He wanted to build the scenery before I put any track in or even wired.

This was going against my nature – it would be a lot harder to get the wiring in since you can't just reach underneath. But he convinced me to give it a try. We were able to put natural cuts and fills in by just laying the cheesecloth right over the roadbed. Then we'd come back and just cut a slot where the track would be and fold it down and get a natural cut.



18. Lee's layout includes very useful signs at each town. The sign includes the town name, mile post location, as well as identifying the next town to the west and the next town to the east. Nicely done, Lee!

It worked well. But I don't know that I'd do it that way again.

MRH: That's rather innovative. Any more hobby innovations?

Lee: This may not be exactly what you asked, but I think biggest innovation in the hobby has been glue.

MRH: Explain.

Lee: Early on, we had thick hobby cement. We had Elmer's white glue, Testor's thick tube cement, Ambroid glue – and that was pretty much it. And when we had CA – Krazy Glue – come on the market. In my opinion it revolutionized the hobby because now

you could glue parts together instantly. You could construct stuff so much faster.

Related has been the move to styrene and the availability of liquid cement you can brush on. To me, new methods of gluing have really revolutionized the hobby. You have a bottle of CA on your work bench, right? You're using it all the time. And if you had to give that up, what would you use if you didn't have that?

You're always using it. I need a quick bond. Zip, and it's done!

We couldn't do that 30 years ago. You always had to wait for the glue to dry, which made building things take many hours of time.

DCC, electronics, and all that, sure. But I've thought about this and glue has really been biggest innovation. If I had to give up anything, man, I would hate to have to give up my Krazy Glue!

MRH: Another one is LEDs.

Lee: LEDs, absolutely. Look at what they've done for the entire world, where we're headed with LEDs. Anyway, that's a side conversation.

MRH: When you operate, do you use car cards? How do you route the cars and make up the trains?

Lee: I'm not using car cards and waybills anymore. When we went to the active staging concept, my friend Steve Karas and I collaborated for a number of years on a piece of software that eliminates car cards and waybills.

We now use what we call a one-time use waybill. In other words, the mole active staging operator sends a car out, it makes its move, it comes back, then the mole puts it on the shelf and the waybill is discarded.



19. One of Lee's least favorite parts of his layout is the low ceiling in his basement. Here you see 6'-3" Joe Fugate's head brushing the ceiling in the crew lounge. Lee's house was built in the early 20th century and digging out a basement by hand in those days meant a low ceiling is just what you got.

So we came up with a program we call Flexbill. Steve passed away in 2012, and I've been using Flexbill since then.

I come up with a different concept than what he had. I wanted to introduce an agent into the process, and totally eliminate the crews having to handle a mitt full of waybills. So, I came up with this process in Flexbill where we have an agent now who can generate that paperwork.

MRH: You have a “freight agent” position, then?

Lee: Railroads run on paperwork, even to this day. A car has to get from A to B, and they use a waybill to generate the car movement. Of course, today it's computerized.

For model railroaders, the best way to do that has been cards and waybills. It's basically a little envelope that stays with the car, and then inside of that you insert a waybill. Sometimes they can have two spots on each side, that's four spots total, or one spot on one side, however you want to do it.

Those go with the car when the car's been delivered to, say, a shipper online. Then that waybill, when you pick it up, would be rotated to give it a new destination someplace else, offline, or whatever. It's still very popular today.

With the way we work with our mole staging, we wanted to generate a one-time use waybill that could be discarded after the car had completed its run, and then have a new waybill generated after that.

So Flexbill today has the one-time use generated waybill. When the car's completed its move, we simply throw that waybill away and generate a new car movement when we “waybill a new day” for our operation.

MRH: So, the Flexbill software is the heart of how you route cars, then.

Lee: Today I use Flexbill with the PC, with the agent process in real time during a session. I wanted to get the data in accurately and fast, so we barcoded everything. All our cars have barcodes on the bottom that we can scan to get the car number into the system, and then the waybills that we generate have barcodes on that I can scan. So, I scan that information into the computer. It's quick. It's accurate. And it works.

MRH: The desk here with the racks behind it; is this part of it?

Lee: This is the agent center right here. The envelopes represent the trains. The rows are for the tricks [shifts]. We have three tricks. I use these slots to stuff the waybills in, based what they're doing. This happens to be a spot, the next two would be a pull. I organize the waybills so I can keep track of them by train and stay organized.

This top row has all my customers on the railroad. There I keep the cars that have been delivered to the customers. For example, this car's been spotted at this customer here. When this car gets pulled, or picked up, then it moves off the railroad.

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When the cars terminate they go into the deleted box over here, and they're deleted out of the temporary table in Flexbill. The car gets put on the shelves awaiting its next assignment. I have the yard over here, and other industries up here.

With car cards and waybills, they're put out on the layout in little cubby boxes, probably on the fascia usually by industry, and kept there until that car is picked up and moved someplace else. And the car card and the waybill accompany that car to its next destination.

With this system here, all the waybills get kept in the office. The agent handles this just like the prototype would. The agent keeps track of all the information according to those customers. What goes out to the individual crews now is a switch list with a breakdown of all the cars in the train.

This list happens to be for a local, so this one shows the spots. The next page shows the pickups. If it's a road (through) train, it may stop and set out a block of cars and/or pick up a block of cars. We do setouts and pickups for those.

MRH: How has it worked out in practice?

Lee: It's been a lot of work to get here, but it's working out very well. I think my crews enjoy it. I certainly like it because I keep all that paperwork off the railroad.

As the agent, I can now see where I might have a bottleneck generated, because I'll get a group of excess waybills that'll show up over here. I'll go "Wow, I'd better call out an extra!"

I never really had that vision with car cards. Because they were always out on the layout, you never saw a problem happen until after the fact. Then it's too late. So, this is more real-time. You can see it as it develops.

For instance, in this area right here, Flanagan, we'll sometimes get a buildup of Denver cars. About every third session, I have to call an extra because we'll have a buildup there. Like I said, couldn't see that with car cards, because this position didn't exist.

MRH: Does this position get tedious?

Lee: I like it because I can come down here and play trains. It takes me maybe four hours max to waybill the railroad, but I do that over a month's period of time. As I do this, I get to see my whole railroad work. I see every car movement, I see which trains they go in.

I get to do all this without ever having to turn the layout on, or to boot up the computer. I can actually "run" my railroad via this paperwork by myself.

So, I get to run the whole railroad by myself – and it's a lot of fun.

MRH: You are a big fan of wireless loco control. Tell us about that.

Lee: My goal has been to get away from the signal in the rail. I'm not trying to create a flame war here with DCC.

I came from Dynatrol – signal in the rail – to Rail-Lynx, with no signal in the rail, and operated that way for 25 years. To me, there were all kinds of advantages.

Rail-Lynx was an infrared line-of-sight control from your hand-held controller direct to the locomotive. The drawback was the line-of-sight. We had to compensate by using repeaters to make it work. But we got used to it over the 25 years we had it.

MRH: So, you made Rail-Lynx's infrared signal work for you.

Lee: Yes, you can bounce the Rail-Lynx signal off the walls or off the ceiling and skip it around – and we learned how to do that over the years.

But when we put in this new active staging area for the mole, the line-of-sight issue became a real problem. We're now a cement wall away from the railroad, and it was getting to be a concern of how we'd get trains from here to there and control them.

So, when RailPro came out on the market a few years ago, I looked at it hard. Because it was radio frequency now, it had no line-of-sight limitations.

The RF repeaters are built in to the RailPro power supplies. There're four power supplies on the railroad, and they each act as a repeater, too. So, there's no dead spots in the basement anywhere. I was sold.

MRH: So, you've become a big fan of RailPro.

Lee: Yes, I like how it's totally upgradable. You plug the handheld controller into your layout's system server and you can download



20. A mixed freight just out of East Yard rolls westbound through Hamilton. In the background is a raised industrial area that Lee upgraded and reworked in 2007.

any changes to any module, to any power supply, to any accessory, and to any throttle.

Whatever changes you've downloaded to your central system, you simply upload those to the handheld controller. I can go in and if there's software changes on any module in any engine, and if there's a new sound that comes out – whatever it is, a prime mover, a bell, a whistle. I'll save it to the loco module and then you can assign that to a horn button or whatever and you got the latest sound. It's never obsolete.

Probably the thing that sold me most is there are no CV settings. It's all done through icons on the screen. Whatever you want to put in the buttons, it's your choice. You can configure them any way you want visually with buttons on a touch screen.

We also don't need to do any speed matching. When you put a module in an engine, you do a stall test as part of the process, which lasts approximately three seconds, and that registers the milliamp draw for that loco.

When you want to link up locos in an MU, the lead unit talks to the following units in a consist, and it will tell the follower units to speed up or slow down based on what it sees in as the milliamp draw. Super simple to set up. Just a couple steps and you're there.

MRH: So, you don't mind the touch screen part?

Lee: I like how you can do anything you want simply by touching the screen. You can jump around from engine to engine, you can go back to the main page, you can get to all various functions on here.

It's a great system. I really like it. And it's got full sound capability. I highly recommend it.

MRH: What happens if someone brings a DCC loco over here, or what about taking your RailPro locos to other layouts?

Lee: This last year, Tim (Tim Ring, the man behind Ring Engineering and RailPro) created the capability for RailPro's modules to be controlled by DCC throttles.

You go to a screen and you enable the DCC option. I can take my engine to a DCC layout and run it with their NCE throttle, or Digitrax throttle, or whatever.

So, you could buy a RailPro loco module and use it on your DCC layout and control it with a DCC throttle. But I can't control DCC locos with the RailPro throttle.



But you don't really need to enable DCC if you're running it with RailPro on another layout that's DCC. I can take my engine and controller to a DCC layout and run my loco with a RailPro module inside using my RailPro throttle.

All I need is power in the rails to run. I don't need any signal on the rails, the RailPro control signal goes straight from the throttle to the loco. If you're short on throttles, and I take my RailPro throttle and locos, that becomes an extra throttle.

I can run my RailPro engines on their layout without any problems whatsoever.

MRH: Okay, last question.

Lee: Your last question: how fast will the trains go? No, that's not it?

21. In the final analysis, Lee says he loves his UCW layout. While he admits it's not perfect, it's plenty perfect enough for him. Lee's layout remains extremely popular among modelers who like to operate, so he must be doing something right!

MRH: No, that's not it! What advice would you give someone just starting out in the hobby?

Lee: That's an interesting question. What advice would I give to somebody starting out in the hobby? Don't give up your dream. Today, different to when many of us started, kits weren't that expensive. Rolling stock today is expensive. It takes a lot of money to be in this hobby. And I think it's like any hobby.

For young kids to start out and to have something like we have here, don't give up if this is something you want to pursue. I didn't give up. I kept at it. There were times I'd get discouraged. There are times even to this day when I come down here and I say, "I'm sick of this stuff."

So, I just stop, I turn the lights off, go upstairs and I don't come down here for two or three days. You've got to let your batteries draw down, and then get them recharged again so you can come down.

My philosophy to get things done is an hour a day. If you do an hour a day, you'll get things done on your railroad.

Now that doesn't mean you have to work an hour every day.

Sometimes that can be four hours on Saturday, for example. But an hour a day is my philosophy. You can get up early before you go to work, or an hour when you first come home, and you'll make great progress.

This is what keeps you going along. Set that as a goal, average working on the layout an hour a day.

Don't get discouraged. Don't be shy to come up and ask somebody for help, or to ask "Can I run on your layout? Can I join your crew? I'd like to learn about operation." Those types of things.

I was talking to somebody the other day about operation, and he paid me a compliment and said I was well known in the

operations circle. And he says, "People out there are nervous to do that because of who you are."

I said "Yeah, I know that, because that's exactly how I was in the hobby, years ago." I had my mentors, and over time, because you stuck with it, you were able to meet those people.

One of my heroes was Allen McClelland, and I actually got to meet him. He came out here for a convention we had in 1986 and was one of the keynote speakers for our NMRA convention. He came early and I got to spend three days with him.

What a friendly guy – and most helpful to give you ideas and suggestions.

People today, they're nervous because they think you will talk down to them. You'll find out that most guys are willing to give and share information. We're just waiting for people to ask us. So, don't be afraid to talk to people. Ask those that have been at it a long time for ideas.

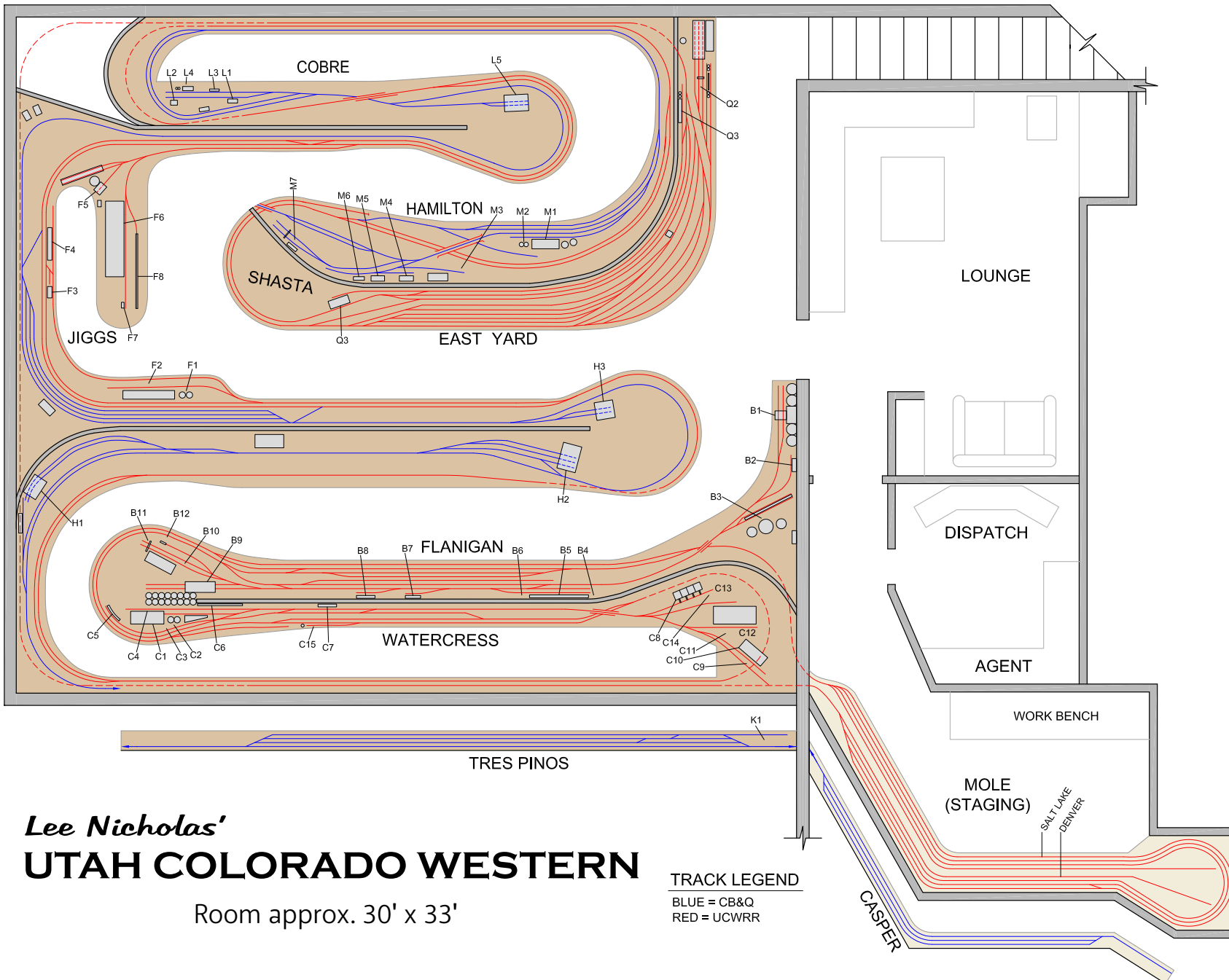
If you're interested in operation, don't be shy about asking somebody to come and operate on their layout. What's the worst that could happen? They will tell you no.

But 99% of the time they will say "Absolutely, how about next session? This session is already full, but I'll invite you next month." And you bring them in, and since they're new, you give them a mentor here on the railroad and let them run.

And just remember one thing, the most important: it's just a hobby. Okay? It's just a hobby. Don't get way over the top. ☑



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Lee Nicholas'
UTAH COLORADO WESTERN

Room approx. 30' x 33'



SALT MINE switching problem

Model Railroad Hobbyist | March 2019 | #108



RATE THIS ARTICLE

GREG BAKER: How would you switch this salt mine?

ONE OF THE MORE INTERESTING AND COMPLICATED places I have had to switch was a salt mine. The main reason for the complication was that it was originally served by three different railroads; now only served by one, and as a result it has some odd track arrangements.

With only one railroad switching the facility, connections to the other lines are all cut back and stub-ended, making it important to know how many cars will fit before you run out of track.

To reduce confusion, for this problem I have simplified the track arrangement a bit by removing tracks that are not needed for this problem.

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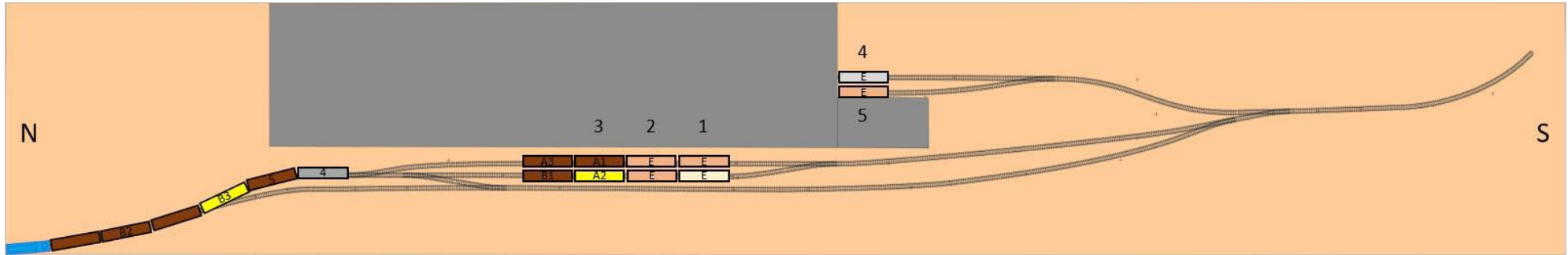
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SALT MINE SWITCHING PROBLEM | 2

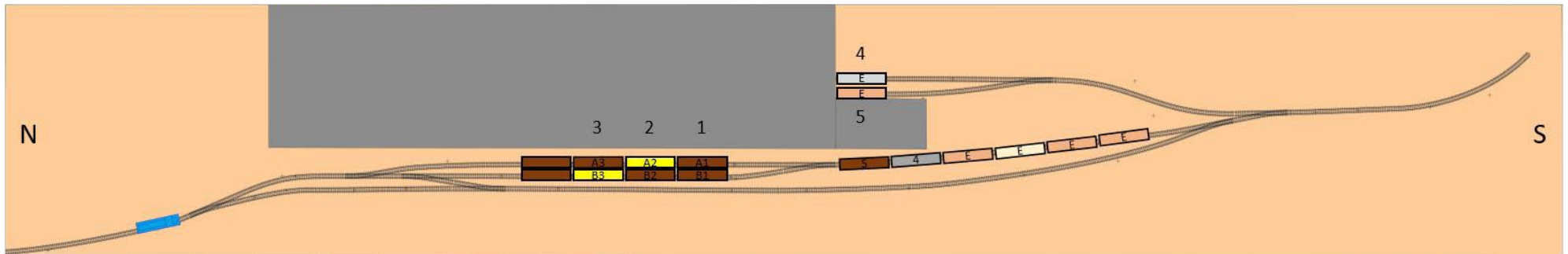
What made the operation interesting? We would start by shoving into the facility, heading south to spot the facility. The first task was to pick out the empties and shove them south.

Next, we grabbed the cars to spot on the south end of the building and placed those on top of the empties. We then



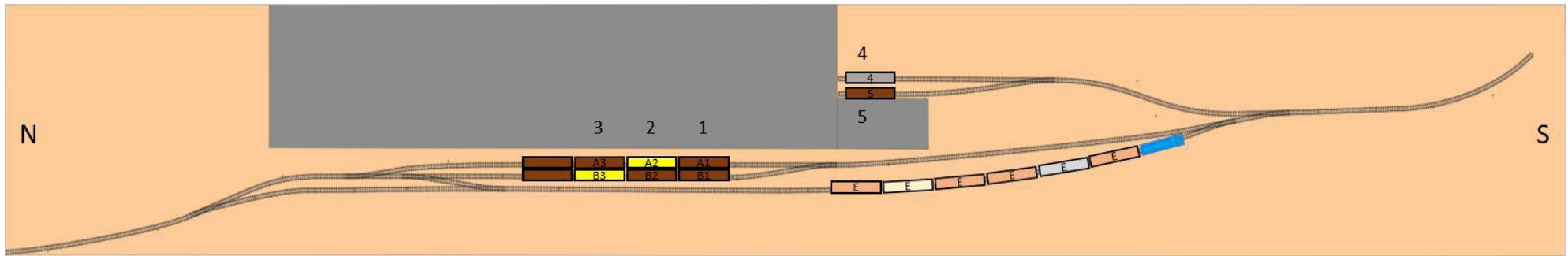
1. Start: Here is a typical start to the day the locomotive (blue) on the North end with some of the cars to spot in the train. The first order of business is to gather the empties (E), place all the cars for the backside south of spot 1, and get the front side spotted.

Answer in the bonus
extras >> [CLICK HERE!](#)



2. Middle: With the front side complete it is time to run the engine to the back side to take care of the remaining spots and get the train ready to depart. (This took me 27 moves to get the power light with 4 cars spotted and both tracks).





3. End: With all the work complete it is finally time to gather the empties and shove out to the mainline. (In total, taking care of the front and back spots and gathering the empties took me 45 moves.)

using a single door on a building to load two cars instead of just one car.

We then would place any extra cars on the front end, between the tracks, as the customer would sometimes roll cars down to load. With the front end taken care of, we then would head to the south end of the facility and take care of the back side of the building.

Another thing we had to deal with was having only enough room for four cars and a locomotive between the last switch and the end of track.

With the empties pulled and loads spotted we would then grab all the empties and shove north out of the facility. This would allow us to head south out of the facility with all the empties.

At the salt mine we handled boxcars and hopper cars. The front side of the building (spots 1-4 on both tracks) were designed to handle 50-foot boxcars.

Answer in the bonus extras >> [CLICK HERE!](#)



The boxcars were either RBOX sliding door boxcars or a group of privately owned plug-door boxcars. The back side had a spot for hoppers (spot 4). We got one or two a night.

The customer also received food grade salt in bulk in hi-cube boxcars that were unloaded and then reloaded with packaged salt on the back side of the building (spot 5).

This facility made a large variety of salt products including road salt, bagged salt for water softeners, products for animals, and products you would find in your grocery store.

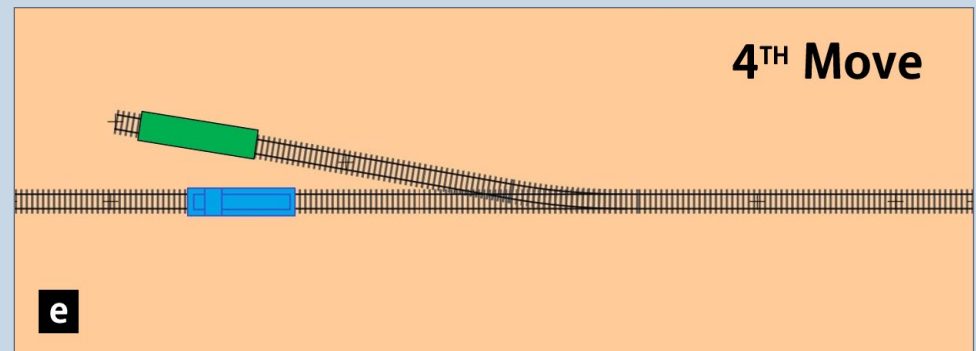
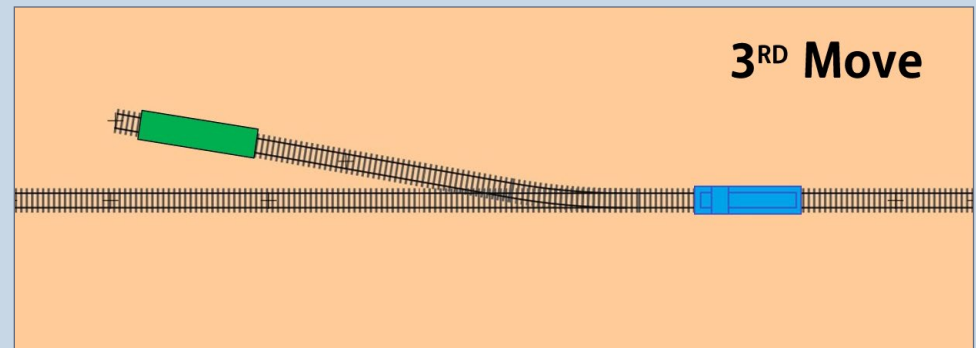
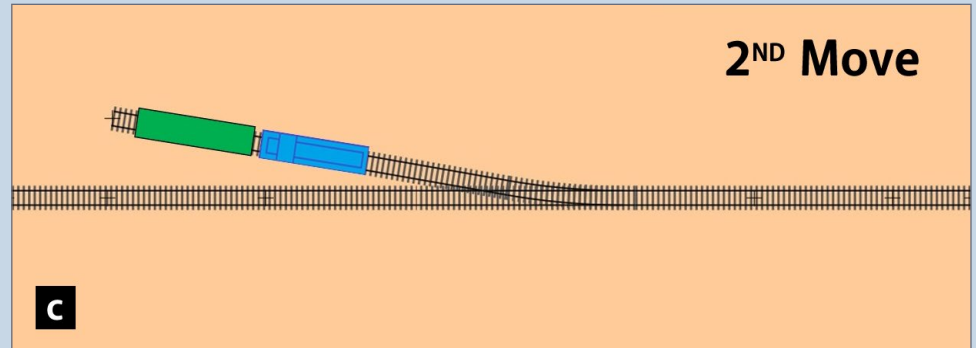
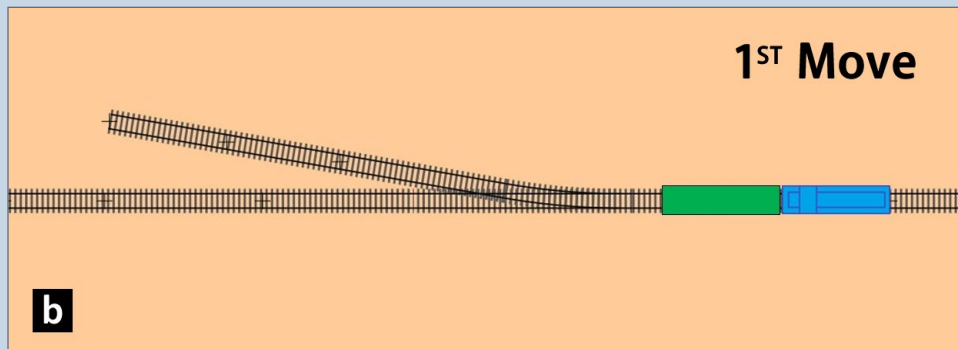
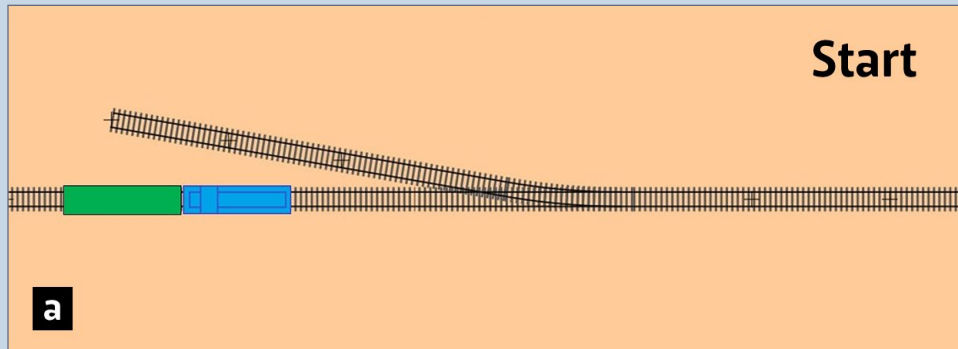
Remember a “move” is any time a car or locomotive moves in either direction.

You can find my step-by-step answer in [this month's bonus downloads here.](#) ✓



WHAT CONSTITUTES A MOVE?

One “move” is any time cars or the locomotive move in either direction. See the example images here, which show the starting position and four moves.



SALT MINE SWITCHING PROBLEM | 8

GREG BAKER



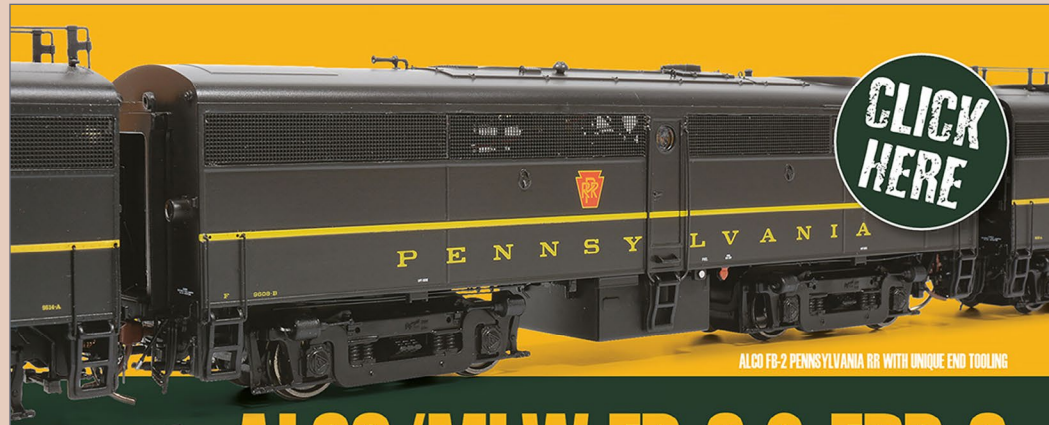
Greg Baker has been serious about model railroading since 2000, but as long as he can remember he has been fascinated by trains.

Greg's main interests are the railroads of Central Oregon in 1968, with the focus on the Spokane Portland & Seattle, Great Northern, and the

Union Pacific along the Oregon Trunk. He is also interested in the City of Prineville Railway and its connection to the Oregon Trunk.

He currently resides in Lewiston, Idaho, with his wife and two children as he continues his career in railroading. He is actively involved in promoting Free-mo and has created an Idaho Free-mo group. ■

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BUILDING AN Animated Rollup Door

Model Railroad Hobbyist | March 2019 | #109

RICK WADE adds a detail element that impacts operation ...

MODELERS ASK, "WHY ANIMATE A DOOR?" I HAVE A small layout and I'm always looking for interesting details. Opening and closing an overhead door adds an interesting step

to a switching operation. I'm inspired by Lance Mindheim's modeling and may add his idea of using a key lock or locking cover to operate the door.

I certainly didn't come up with the idea of animating an overhead door. Other modelers have done this. I've seen an example where a CD-ROM gear drive powered the animation.

My project challenge was twofold:

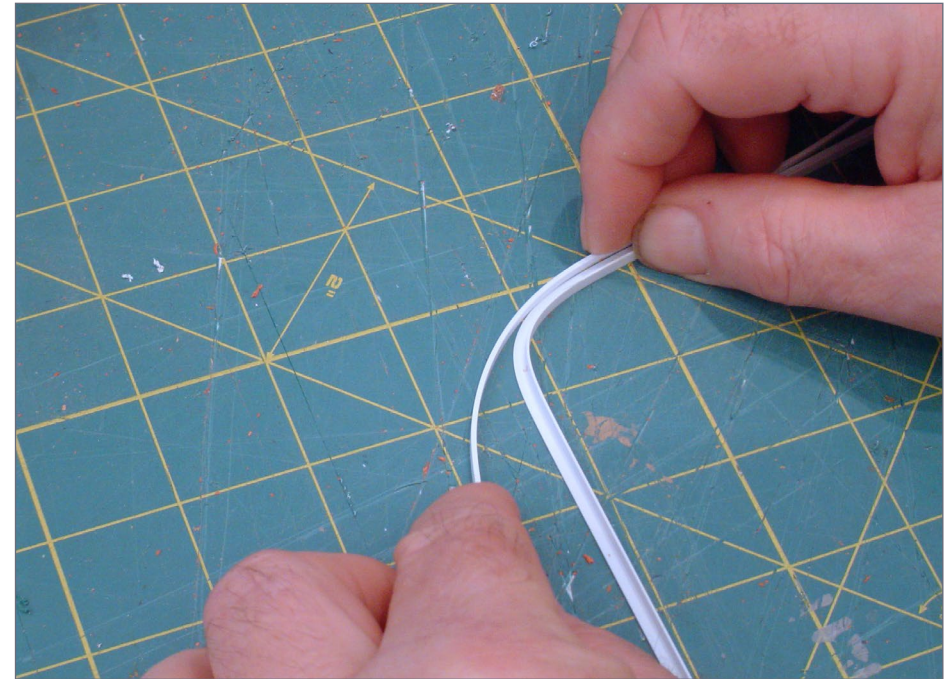
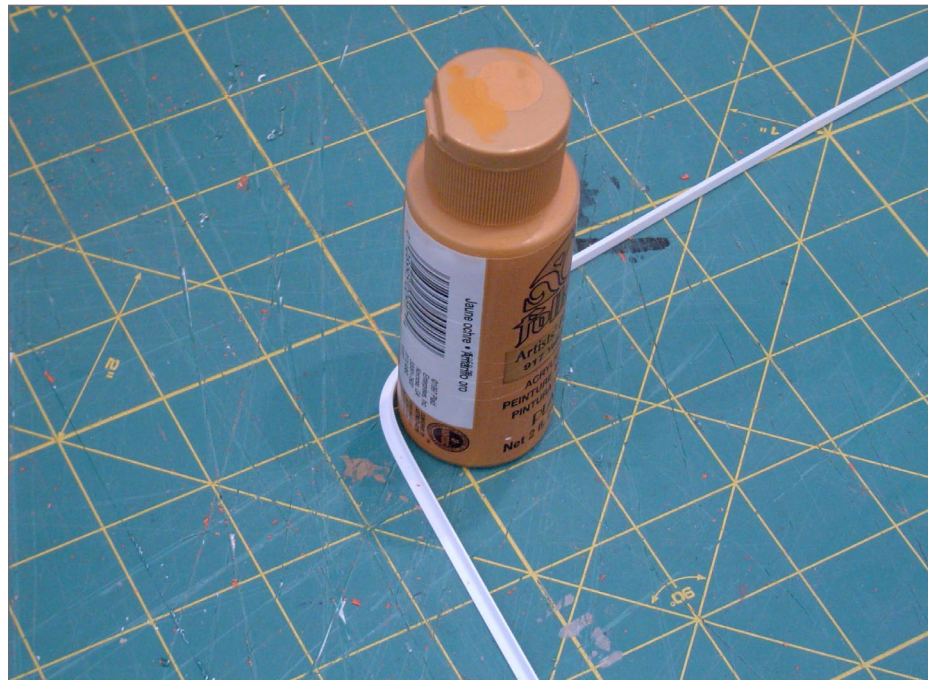
- 1.) Design a rolling-style door that follows a curved track as opposed to a door that goes up and down
- 2.) Find a drive mechanism compact enough to fit the structure

My structure is single-story, so a curved track door was key. I want the door to raise then retract parallel to the roof, like an overhead garage door. I thought I could curve C-channel styrene to use as the door track, but that did not work. Every attempted method resulted in kinking and deformation.

Door track solution

My solution was a simple one: I created the curved channel using two pieces. First, I heated a piece of Evergreen #295 angle (.156 x .156 x .023) in boiling water to soften it. Once softened, I bent the angle around a small paint bottle of the diameter I wanted, and held it in place until the plastic cooled.

I painted the lower portion of the channel with a neutral-gray acrylic paint. This part would be seen with the door open, and it was easiest to paint before installing. I used a 0.060"-thick piece



1. (Top left) A small bottle of paint was used to curve the angle iron.
2. (Bottom left) After the angle cooled, it was not holding an exact 90-degree bend. I didn't think this would be a problem, as the angle could be set when installed.
3. (Above) A flat strip of styrene was glued in place to form the other side of the channel. This thin, flexible material did not need the heat treatment, and easily bent around the formed angle. I used styrene cement to attach the pieces, and clamped them while the cement set. I repeated the bending and assembling process for the second curved channel.



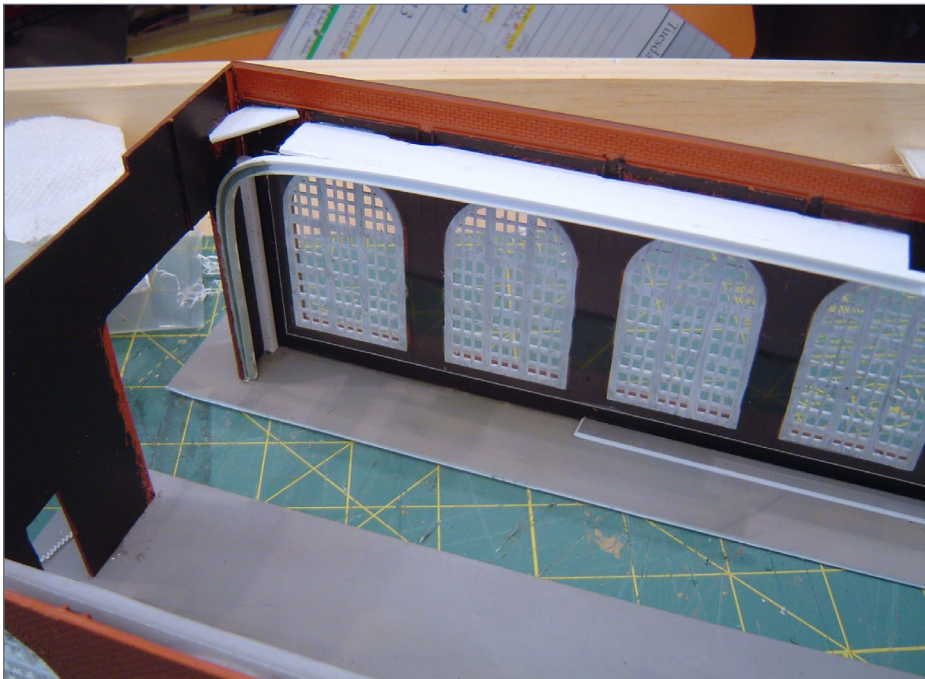
AUTOMATED ROLLUP DOOR | 5

of styrene to mount the channel to the interior wall. I made sure the channel was positioned properly to the door opening in the structure.

The second door channel presented a challenge, as there wasn't anything to mount it. I solved this problem by installing a piece of Plastruct OWTS-16 Warren Open Web Truss that I reinforced with a piece of 0.060"-thick styrene.

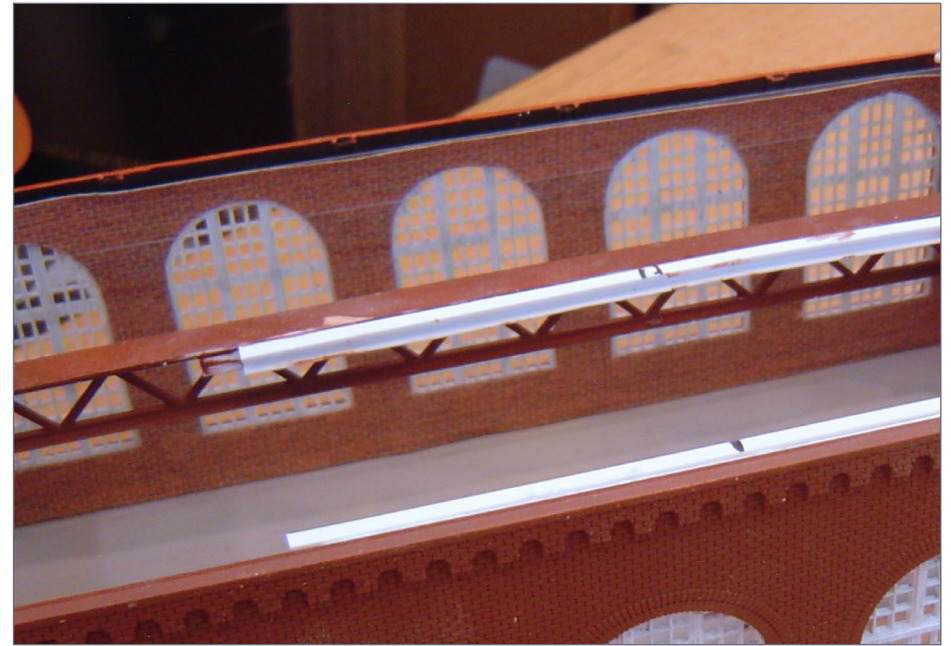
Making the door

My next challenge was to create a realistic-looking door flexible enough to follow the curved channel. I used Plastruct PS-11 corrugated siding for the door material. The material was much too



4. The first door track channel is installed.

AUTOMATED ROLLUP DOOR | 6



5. The other door track channel is supported with a styrene web truss.

rigid, so I carefully sanded it with 120-grit sandpaper. I frequently checked my progress by holding the siding up to a strong light and gently flexing it. I worked the material until it was almost sanded through, to make it as thin as possible without coming apart. I applied a piece of clear packing tape to the back side to reinforce the door.

Next, I slid the door into the channels from the end opposite the door opening. When I did this, I felt resistance in sliding the door. I became concerned that the servo wouldn't have enough power to move it. Lithium grease came to the rescue! I applied a small amount to the channels and the door slid up and down with very little effort. I used a marker to indicate the open and

closed position locations of the door. These reference marks will be helpful in determining the servo mounting position.

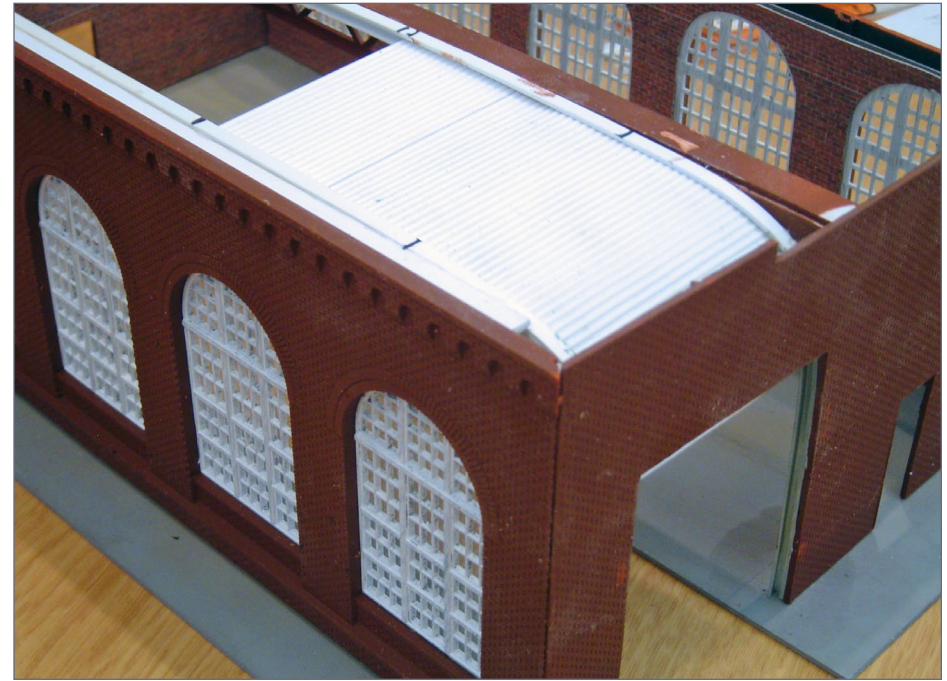
Powering the door

I chose to use the Singlet servo and circuit board set from Tam Valley Depot for the drive mechanism. I use them on my turn-outs, and am familiar with their functions, plus I happened to have an extra unit on hand. I like these units for a few reasons:

- A. The end points and speed are adjustable electronically using the control board
- B. I like the small size



6. The door material needs to be sanded extra-thin to flex through the curving door track channel.



7. The door installed on the door track channel.

- C. The units can be controlled through my DCC throttle
- D. Replacement servos are inexpensive

I added an extension wire to the servo, and routed it down through the structure to the control board. The servo was mounted to the roof truss using a piece of 0.060" styrene and the reference points I had marked previously. Then I needed a mounting point for the servo linkage where it attaches to the door. I reinforced the top of the door with a piece of 0.060" styrene and used scrap styrene to create the pad.

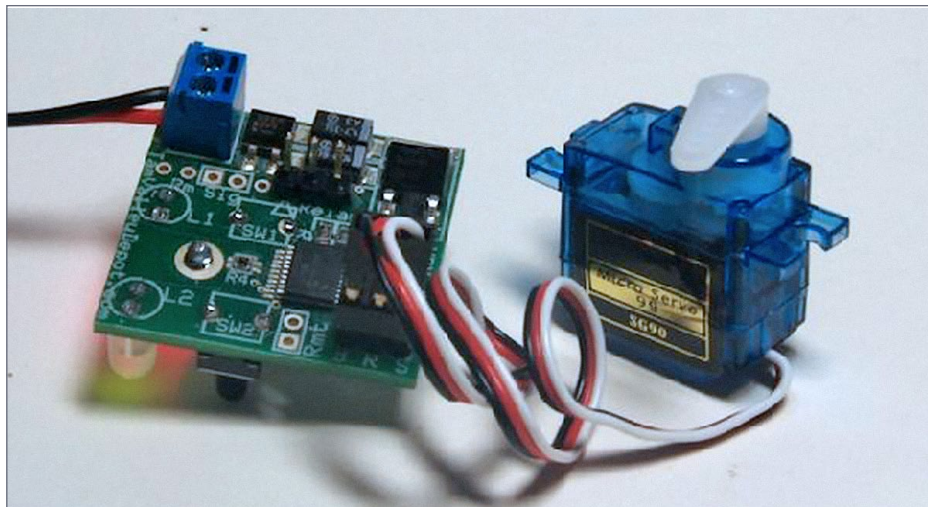
I mounted the servo to the side of the roof truss and fabricated linkage, which took some trial and error. Two screws were used

AUTOMATED ROLLUP DOOR | 9

for the pivot points. One of the screws can be seen in the picture. The other screw (not visible) attaches the linkage to the mount on underside of the door.

I painted the visible part of the door with a very light tan acrylic paint. A light dusting of weathering chalks gave it some texture.

With everything completed and working great, it was time to button-up the installation. I realized a problem while fitting the roof into place. The servo protruded above the roof line! I solved this problem by taking careful measurements and cutting an opening in the roof where the servo would show. I covered the servo opening with a rooftop air conditioner unit. I kept the roof as a press-fit (no glue) just in case I need to service the servo or linkage.



8. The Singlet control board and servo mechanism that powers the door. *Photo compliments of Tam Valley Depot*

AUTOMATED ROLLUP DOOR | 10



9. The servo, linkage, and door in the open position.



10. The servo, linkage, and door in the closed position.

AUTOMATED ROLLUP DOOR | 11



11. The linkage arms and attachment to the underside of the door. You can see some of the patchwork linkage arms where adjustments were made for smooth operation.



12. The handy rooftop AC unit covers an opening for the protruding servo.

AUTOMATED ROLLUP DOOR | 12

The animation of the Palmer overhead door was a fun and challenging project. I really enjoy using the animation when switching the industry. Visitors to my layout are surprised and pleased to see the door magically open at a touch of a button, or when I open it with my Digitrax handheld throttle. I hope modelers will be inspired to add animation to their layouts, as it can add interest and increase modeling fun! ☒

RICK WADE



Rick Wade grew up in the east end of Louisville, Kentucky, giving him lots of opportunity to watch the Louisville & Nashville trains pass behind his home. His first layout was an HO scale layout that he and his Father put together when he was eight years old.

He built his first adult HO layout in a Georgia basement. The Richlawn Railroad was named after his childhood neighborhood. A 2012 move to Florida to be near family meant starting over. Rick's current Richlawn Railroad is based on the Heart of Georgia (HOG) track plan – an around-the-walls design in his 10'x12' layout room. It is sectional should he have to move again.

His favorite part of model railroading is building structures, with scenery a close second. He enjoys operating the layout and watching the L&N trains rumbling through landscape set in the 60s and 70s. Besides model railroading, Rick enjoys riding on Amtrak and the Florida Sunrail trains. ■

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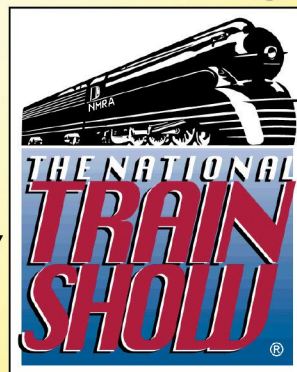
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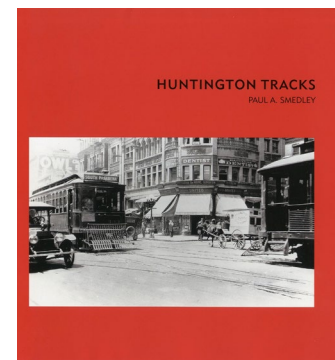


Model Railroad Hobbyist | March 2019 | #109

RICHARD BALE and
JEFF SHULTZ report the
latest hobby industry news

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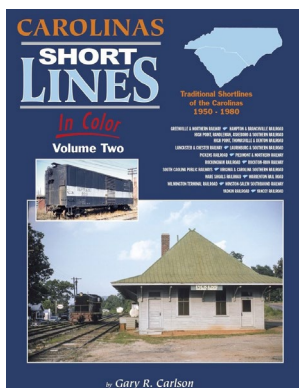
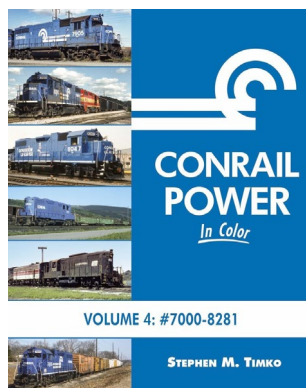
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New hardcover releases from **Morning Sun Books** include *Conrail Power in Color Volume 4*. Author Stephen M. Timko focuses on Big Blue's medium horsepower road switchers from

GP7s through GP38-2s. Coverage includes units from Penn Central, Erie Lackawanna, Lehigh Valley, and Pennsylvania-Reading Seashore Lines, as well as newly acquired Conrail GP38-2s.

Morning Sun has also released *Carolinas Shortlines In Color Volume 2*, by Gary R. Carlson. The book explores several little-known small southeastern steam-era lines that operated until 1950, as well as some healthier roads that survived into the diesel era. For additional information contact a dealer or visit morning-sunbooks.com.

O SCALE PRODUCT NEWS



Berkshire Valley Models has added three new REO high-wheel trucks to its selection of vintage O scale vehicles. The new

kits include a delivery truck (left), box delivery truck (right), and a canopy express truck. The kits include laser-cut wood, metal detail parts, and decals for the REO logo. For additional information visit berkshirevalleymodels.com.



Portland Locomotive Works is selling On3 body kits for 28-foot Southern Pacific narrow gauge boxcars. The models are available unpainted or pre-painted and lettered. Parts are laser-cut and laser-etched. Trucks, couplers and

detail parts are not included. For additional information visit portlandlocomotiveworks.com.



Right On Track Models has announced a new O scale kit, "Mason Grain Company." Representing a farm supply co-op structure, the kit includes precision cut MDF, printed parts, "Real Scale Wood Shingles," and

styrene windows and doors. Also included are step-by-step color instructions. The finished model has a footprint of 18 x 22 inches. For more information visit rightontrackmodels.com.



New detail castings available from **Rusty Rail** include a five-piece kit that assembles into this dual steam engine. The engine parts are 3D printed while the base, pulley, and flywheel are cast in resin.



Also new is a pile of old steam equipment, motors, and other assorted junk. For additional information visit rustyrail.com.

San Juan Models displayed several new narrow gauge items in their booth at the Amherst Railroad Hobby Show held in West Springfield, MA in late January. San Juan Models is a relatively new narrow gauge supplier formed by merging several companies including San Juan Car Co., San Juan Decals, San Juan Details, American Limited, Grandt Line, and Leadville Shops. In accordance with the family's wishes, the Grandt Line name will not be continued, but its products will be.



Options for this D&RGW 30-foot 3000 series boxcar will be expanded with several door and detail configurations. It will also be

available in gray MOW paint. The model will be available for both On3 and On30 operation.



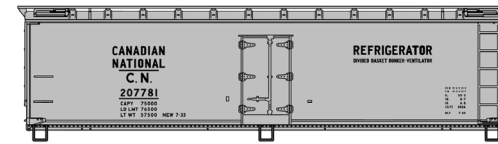
A group of HO scale Santa Fe tank cars decorated for company service was on display in the SJM booth. The colorful markings indicate the different products each car was assigned to haul.



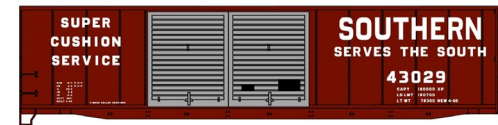
Future releases include this On3/On30 four-wheel bobber caboose. It will be available with either the 1883 or 1890 D&RG lettering styles. There will also be detail variations available. Like this sample, the production caboose will be 3D printed. Coupler pads and wheelsets for both On3 and On30 coupler (different

heights) will be provided. It's expected to be available this summer. For additional information visit sanjuanmodelco.com.

HO SCALE PRODUCT NEWS

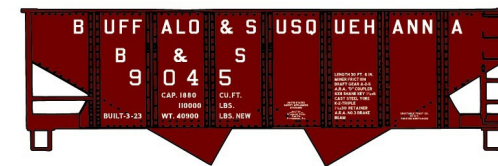


Accurail has released a kit for a Canadian National 40-foot wood refrigerator car. The HO scale model is based on a prototype built in July 1933.



Also new from Accurail is a kit for a 50-foot riveted steel boxcar with double Youngstown sliding doors.

The HO scale model is decorated for Southern Railway's Super Cushion Service.



A three-pack of Buffalo & Susquehanna USRA twin-bay hopper cars with different road numbers has been released to dealers by

Accurail. Additional new HO scale kits include a 40-foot wood refrigerator car decorated for Northern Refrigerator Banana Distributing Company, a 36-foot Fowler boxcar decorated for Chicago, South Shore & South Bend; a Toledo & Ohio Central 36-foot double-sheathed wood boxcar with a straight steel underframe, and a Southern Pacific/GARX 50-foot plug-door riveted steel boxcar. All Accurail kits include appropriate trucks and Accumate knuckle couplers. For additional information contact a dealer or visit accurail.com.

Arrowhead Models introduced HO scale Apex 1955 and Miner 1942 handbrake and brake appliance sets at the Amherst Show.



According to Arrowhead owner Blaine Hadfield, the date of the Miner kit may be re-labeled to clarify that it is a 1960s-era appliance kit for the Miner 1942-era design handbrake. For additional information visit arrowheadmodels.com.



Athearn has announced plans to produce a new run of ES44DC diesel locomotives. The Genesis HO scale model represents prototypes built by General Electric in 2005-2006. Spotting features from that era include the nose door on the left side, two widely-spaced dynamic brake vents, X-panels on the electrical cabinet, side grab irons on the long hood, and flush-mounted top radiator grilles and radiator compartment doors.



Road names will be BNSF (Primed-for-Grime, Hi Adhesion trucks, and cab side windows), CSX (low mounted front headlight, cab side windows, and MU receptacles molded into the anti-climber), and NS (headlight mounted high in the nose, rear ditch lights, NS handrails, and a tall snowplow).



All versions have LED lighting, illuminated ditch lights, tinted see-through cab windows, see-through dynamic brake intakes, MU and trainline

hoses, lift rings, wire grab irons, truck sander lines, and 5,000 gallon fuel tanks with fuel fillers and gauges.



Athearn has scheduled the release of a 50-foot PS 5344 cu. ft. boxcar next January. The HO

scale model is based on a prototype built in 1970 with outside posts, sliding doors, and non-terminating corrugated ends. Athearn's Ready-to-Roll model features wire grab irons, etched metal end platforms, and appropriate trucks with 33-inch machined nickel-silver wheels.



Union Pacific. A Bangor & Aroostook version will be available in Athearn's Primed-for-Grime weathered paint scheme.

Road names will be Lamoille Valley, Montreal, Maine & Atlantic; Saint Marys Railroad, and



Athearn showed several intermodal items at the Amherst Show including new HO scale 45-foot International Containers

that are scheduled for release next January.



Overseas Line, NYK, American President Lines, CMA-CGM, OOCL, and Sealand.

Container company names will be Mitsui



The containers will be sold in 3-packs with each can having a different number. In some cases the logos and decoration may vary within the 3-pack.



Additional intermodal equipment coming in January 2020 includes a 45-foot rubber-tired chassis specifically designed to fit Athearn's 45-foot containers.



Road names for the chassis will be China Shipping, Maersk Line, Wan Hai, Trans Pacific, K-Line, and Yang Ming.

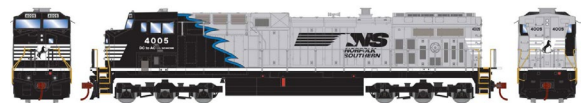


Athearn's early 2020 production schedule includes an intercity bus. Decorating schemes will be Santa Fe Trailways, Union Pacific, Rock Island, Capitol Bus Company, Glacier National Park, Pioneer Tours, and Unified School District. Additionally, a Department of Corrections bus with simulated bars printed on side windows, and an RV conversion with curtains on the inside of windows and a plated-over side door window will be available.



The model is based on a Visicoach design built by The Flexible Company between 1950 and 1956. Features of Athearn's HO scale version include interior details, windshield wipers, and rubber tires.

The lineup of **Roundhouse Brand** models coming next January includes a GE AC4400CW locomotive with LED lighting and numerous factory applied details including wire grab irons.

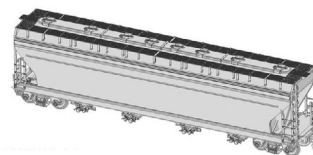


Road names include three variations of Norfolk Southern, CSX with a choice of SCL, L&N, or Chessie nose emblems; BNSF

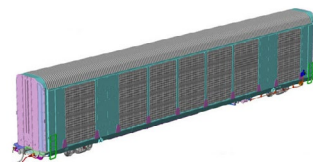
in two Primed-for-Grime schemes, Union Pacific, and Canadian Pacific in the northern road's new Beaver scheme.



The HO scale ready-to-run AC4400CW will be DCC-ready with Athearn's Quick Plug technology with a 21-pin NEM plug. For additional information on Athearn and Roundhouse products contact a dealer or visit athearn.com.



Atlas has released a computer rendering of an ACF 5250 cu. ft. four-bay covered hopper it is preparing for release late this year. The HO scale Master series model is based on a prototype introduced by ACF in 1964. According to Atlas an estimated 20,000 ACF 5250s may still be in service today. When new most of the cars were equipped with pneumatic outlets and eight 20-inch round hatches for use in transporting plastic pellets. In addition to the plastics cars, several have been converted with gravity outlets and elongated hatches for grain products. As with most cars that have long production spans, the design has evolved with changes in both the physical features of the body and the fixtures. Atlas's commitment to tool this car in all its variations is significant since it will involve four distinct body types, four different roofs, and six different hatch combinations.



In addition to the 5250 covered hopper, Atlas is cutting new tooling for an HO scale 89-foot Greenbrier Multi-Max auto rack. The prototype design allows adding or removing

decks to convert the auto carrier to a bi-level or tri-level configuration. For additional information contact a dealer or visit atlasrr.com.



To mark the 150th anniversary of the Golden Spike ceremony at Promontory Point, UT, on May 10, 1869, **Bachmann** has introduced Transcontinental, a limited edition HO scale train set with two DCC locomotives equipped with digital sound. Bachmann's

Transcontinental includes Central Pacific 4-4-0 locomotive No. 60 Jupiter, Union Pacific 4-4-0 No. 119, two open-platform coaches, a DCC and digital sound control center, and an oval of Bachmann E-Z track. Additional accessories include a terminal railer, one manual turnout, and a Hayes-style end-of-track bumper. This is a limited edition train set with only 1,000 being produced. For more information contact a dealer, or visit bachmanntrains.com.



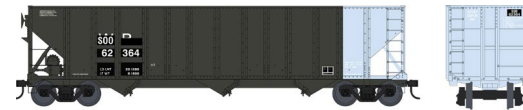
CLASS H-11 COAL HOPPER

Developed in 1960 by the N&W, the H-11 class hopper was essentially an enlarged PRR H-39 70-ton hopper. In 1964, the height was increased to 12-feet 3-inches, capacity increased to 3433 cu. ft., and weight capacity increased to 90-100 tons. Over 130,000 H-11 hoppers have been built. Three distinctive characteristics highlight the H-11 class of hopper: roping eye with integral end buffers; end slope sheets at a steeper angle than the hopper sheets; and 13 riveted side posts with the middle two panels wider than the others. Details include Wine door locks, and full height side ladder stiles. The cars were assembled in the shops of the PRR, B&O, C&O, N&W and RDG. Bethlehem Steel and ACF supplied prefabricated kits to other railroads.



Bowser is accepting reservations for a 100-ton class H-11 triple-bay coal hopper planned for release

in December. Road names will be B&LE, Conrail, Conrail Quality, D&H (ex-Reading), N&W, N&W (wood chip), PRR (yellow ball), PPL, Rock Island, Soo Line (ex-WP, blue end, below), Soo Line (white end), Southern, Union Pacific, and Western Maryland.



Bowser's HO scale model features interior detail and slope sheet braces.

The ready-to-run model comes with roller-bearing trucks with 36-inch metal wheelsets.



After mentioning Bowser's new tender trucks last month we later obtained photos to illustrate the new items. The four-wheel Kiesel rigid tender trucks include a one-piece cast frame with 36-inch wheels and a brass retainer.



The kit for the six-wheel Buckeye tender truck also comes with 36-inch wheels. The retainer plate has two center clearance holes that allow

optional positions for the truck's bolster mounting. For additional information contact a dealer or visit bowser-trains.com.

City Classics has released its popular plastic Company House in turquoise. Homes of this type were often built in company



towns or communities where a factory employed large numbers of workers. This latest version of the City Classics kit represents a company home that has been purchased by a private owner who repainted it. The assembled model has a footprint of 2.25 x 5 inches.



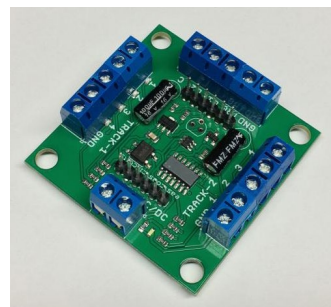
Also new from City Classics is an HO scale kit for a custom decorated 40-foot box car that celebrates the company's 30th anniversary. The kit was produced by Accurail

and comes with trucks and Accumate knuckle couplers. For additional information visit cityclassics.biz.



Digitrax displayed a wide range of electronic items in their Amherst booth including their DCS 52 Zephyr Express, a 3.0 amp LocoNet command station, booster, and throttle. This latest version features a backlit 3D

keypad, a 2.4-inch LCD color display screen, and an integrated USB computer interface. For additional information contact a dealer or visit digitrax.com.



East Coast Circuits has expanded its selection of specialized control circuits for model railroaders. The latest item, introduced at the Amherst Show, is a crossing light system that will handle trains approaching in either direction on two separate tracks. All of the sensors needed are included. The

system will integrate with ECC's street traffic signal circuit and override it. Crossing gates and LED equipped crossbucks are not included. For additional information visit eastcoastcircuits.com.



ExactRail showed pre-production samples of its new Berwick 7440 cu. ft. appliance boxcar at the Amherst Show. The HO scale models replicate a prototype built by the

Berwick Forge and Fabricating Corporation in the former AC&F plant in Berwick, PA. ExactRail ready-to-run models decorated for Penn Central, Illinois Central Gulf, and Rock Island will be available in their 1973 as-delivered paint schemes. Conrail cars will be available in two distinct schemes representing 1980 and 1985 repaints. An undecorated kit will also be available. Depending on the practice of the prototype railroad, the models will have either 100-ton or 70-ton Barber S-2 trucks with 33-inch machined metal wheelsets, and Kadee No. 58 knuckle couplers. Availability is planned for spring 2019. For additional information visit exactrail.com.



Fos Scale Models

introduced its newest HO kit, Jensen Tower, at the Amherst Show. The craftsman style kit combines Hydrocal cast brick and laser-cut wood clapboard for this traditional lineside railroad structure. A clapboard annex with

laser-cut walls and roof is included. Components include laser-cut support brackets and a ceiling panel for the large overhang, gable detail, a cast metal coal bin, plastic windows and doors, color signage, and assembly instructions. For additional information visit fosscalemodels.com.



InterMountain Railway

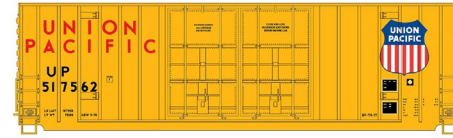
released a long list of new products at the Amherst Show including seven new

HO scale products -- 71 if you count all of the decorating schemes. At the top of the list is a newly tooled GP16 diesel. In addition to the Seaboard System scheme shown here, road names will be Genesee & Wyoming-York, Family Lines System, Pee Dee River, RJ Corman Railroad, Louisville & Indiana, The Indiana Railroad, Everett Railroad Co., CSX, and United States Army.



The GP16 will be available with an ESU LokSound Select sound decoder or an ESU LokPilot non-sound DCC

decoder. An optional DC-only plug will be available on request.



InterMountain showed pre-production samples of Gunderson 50-foot High Cube boxcars with double plug-

doors. Road names for the HO scale ready-to-run Value Line model will be Union Pacific, Burlington Northern, Santa Fe (two schemes), Milwaukee Road, CP Rail (ex-Milwaukee Road), Golden West Service, two BNSF schemes, and Minnesota, Dakota & Western.



InterMountain's Amherst display included several preproduction samples of HO scale ACF twin-bay covered hopper cars. The ready-to-run

production versions will have round roof hatches, etched-metal roof walks, machined metal wheelsets, and Kadee couplers.



Road names will be Norfolk Southern, Southern Pacific, Union Pacific, Winchester & Western, Western Maryland, ACFX, Burlington Northern,

Montana Rail Link, and Chicago & North Western. A car painted gray will be decorated with data only.



InterMountain is working on a new production run of 40-foot 12-panel boxcars that will be available in ten decorating schemes including five for Great Northern. Additional road names for the HO scale ready-to-run model will be Southern



Pacific, T&NO-Southern Pacific, Santa Fe (Grand Canyon), SP&S, and Chicago & Eastern Illinois.



Pre-production samples shown by InterMountain include a 4650 cu. ft. covered hopper including this

decorated, but unassembled, BN car. In addition to Burlington Northern, the final selection of road names will be Cotton Belt, Southern Pacific, French's, Sclair, ATSF, ACFX-Sterling Salt, ACFX-American Borate, ACFX-Thiele, and ECC International.



R. Bale

PFE REEFER EMBLEMS

Before the arrival of steel PFE reefers, the Southern Pacific and Union Pacific emblems were large enameled metal plates screwed to the side of wood cars. On steel cars the emblems were painted on the sides, however, the Union Pacific emblem was no long painted in black and white. Instead, they were rendered in red, white, and blue.



InterMountain is working on four classes of PFE wood refrigerator cars for release later this year. PFE class R-30-18 cars will be available decorated with a single herald (above), with double heralds, and with a black stripe at the top of the side.



PFE R-40-19 reefers with a single herald, an R-30-12-18 car with a stripe, and class R-30-21 reefers with a choice of single herald or double heralds (above) will complete the run.



InterMountain's impressive list of new products announced at the Amherst Show included a PS2-CD 4785 cu. ft. covered hopper with triple discharge bays. The newly tooled model replicates Pullman-Standard's late end frame design. Features on the HO scale ready-to-run model include an etched metal roofwalk, machined metal wheelsets, and knuckle couplers.



Road names will be Penn Central, CSX, Milwaukee Road, Central Soya, M-K-T, Norfolk Southern, Lauhoff Grain, and three Conrail schemes. For additional information contact a dealer or visit intermountain-railway.com.



Ipswich Hobbies is selling an HO scale craftsman structure kit based upon the Boston & Maine Railroad freight house in Union, NH. The laser-cut kit depicts the Union Freight House as it appeared in 1909. For additional information visit ipswichhobbies.com.



Kadee has scheduled the release of this Tidewater & Southern 50-foot PS-1 boxcar in April. The HO scale fully-assembled model is based on a prototype built in 1955 with 8-foot six-panel Superior sliding doors.

Also due from Kadee next month is an ACF 11,000 gallon insulated tank car decorated for TGCX-Tank Gas Corporation. The HO scale



model replicates the prototype as built in 1948 with a full loading platform. All Kadee ready-to-run models come with Kadee body-mounted couplers and two-piece self-centering trucks. For additional information contact a dealer or visit kadee.com.



Mine Mount Models has added two new textures to its line of HO scale textured sheets. Both the Rectangular Stacked Stone and the Cobblestone are engraved on 1/16-inch basswood, with 1/32-inch plywood announced as coming soon. For more information visit minemountmodels.com.



Mini Metals has several new 1:87 scale vehicles including a GMC city transit bus, decorated for Pacific Electric and New York City.



This HO scale version of a 1959 Ford Fairlane sedan is available in four color schemes including green, red, metallic silver, and tan.



A 1941-46 Chevrolet tractor with a tarp covered trailer is available from Mini Metals decorated for USS and U.S. Mail.



A 1941-46 Chevrolet tractor-trailer rig is available decorated for Associated Truck Lines, Strickland Trucking, MasonDixon Line, and Lee Way. For additional information contact a dealer or visit round2corp.com.



Moloco is selling an HO scale 50-foot RBL boxcar in eight paint schemes for five railroads. Prototypically accurate details on

the ready-to-run model include an overhanging Stanray roof, Stanray T3-4 welded ends with separate roofwalk end brackets, Morton running board and crossover platforms, rubber air hoses, FGE riveted sides, cushioned draft gear coupler boxes, and Moloco 70-ton Ride Control roller bearing trucks.

Road names are Burlington Northern, Great Northern, TP&W, and Southern. Two variations in decorating are available for SAL, and ACL.



Moloco sells an HO scale version of a Morton metal roofwalk for a 50-foot car. The edges on the etched parts are pre-fold, just like the prototype. The kit includes a high brake wheel platform and two bottom crossover walkways suitable for cushioned cars. One of the walkways has a cutout for the brake

linkage. A pair of corner grab irons and eyebolts are included. For additional information visit www.molocotrains.com.



Motrak Models is selling kits that assemble into specialized boxes for storing strip wood, styrene shapes, or long-handled tools. The boxes are pre-cut from Masonite hardboard and mat board. The assembled boxes measure 10 x 10 x 2.25-inches, and have 10 individual compartments. For additional

information visit motrakmodelsusa.com.



Pacific Western Rail Systems – North American Railcar, showed several undecorated samples of a new NSC 5092 cu. ft. 50-foot combo door boxcar. There will be several variations of the scale model due to different doors, door stops, vents, and sills.



The Pacific Great Eastern / British Columbia Railway received 1,785 of these boxcars from National Steel Car between

1971 and 1973. The cars were routed all across Canada and the United States primarily in forest product service. Beginning in 1989 some were re-built for pulp service. North American Railcar plans to offer both HO and N scale models representing the cars built in 1971 and 1972, and those re-built for pulp and forest product service. For additional information visit pwrs.ca.

At the Amherst Show, **Rapido** displayed a hand-painted pre-production sample of their upcoming EP-5 Jet electric



locomotive. In keeping with the Northeastern location of the show, Rapido selected New Haven's red, white and black McGinnis scheme to show off their new HO scale model. In addition to this scheme, the production version will be

available decorated for Penn Central as well as in New Haven's one-off yellow scheme. Jeff Shultz reports that the sample was indeed red, however lighting in Rapido's display booth forced the color shift to orange. See the color samples following.



Rapido has extended the order deadline for the EP-5 to June 24 with delivery scheduled at the end of the year.



Rapido also showed pre-production samples of its General Electric B36-7 four-axle diesel, the company's first modern US freight locomotive. The HO scale model is

scheduled for release in December. Road names will be Conrail, CSX, NS, Southern, Transkentucky Transportation, Minnesota

Commercial Railway, Seaboard System, Southern Pacific, Santa Fe, and BC Rail.



Future models on display in Rapido's Amherst booth included this sample of their recently announced EMD SW1200 switch engine. The HO scale model will be available decorated for

Baltimore & Ohio, Burlington Northern (ex-GN), Chicago, Burlington & Quincy; Chicago, Rock Island & Pacific; Conrail (ex-PRR), Denver & Rio Grande Western, Grand Trunk Western, Great Northern, Milwaukee Road, Missouri Pacific, New Haven, Northern Pacific, Pennsylvania Railroad, Penn Central (ex-NH0), Soo Line, and Southern Pacific. Reservations are being accepted through June with availability set for late December 2019. For more information on Rapido products contact a dealer or visit rapidotrains.com.



Resin Car Works is selling HO scale resin kits for a 40-foot Chicago, Burlington & Quincy XM-32 class steel boxcar. Between 1940 and 1958 CB&Q operated more than 16,000 XM-32 cars. RCW's HO scale model replicates some 4,000 early XM-32s built during World

War II. The cars have 10 side panels and an inside height of 10-feet 6-inches. Accurate decals are included in the kit along

with a pair of Tahoe double-truss truck side frames. Wheelsets and couplers are not included. For additional details visit resincarworks.com.

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One of the most innovative new products introduced at the Amherst Show was **Roomettes**, a simple method of adding realistic interiors to scale structures.

Developed by Barry Silverthorn, Roomettes offers a wide range of residential and commercial interiors designed to fit DPM and other popular structure kits.



In addition to realistic interior scenes, Roomettes include an LED lighting system that is compatible with Woodland Scenics Just-Plug and NCE Corporation electronic components.

For additional information visit www.facebook.com/Roomettes or roometteslighting.com.

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ScaleTrains.com is on scheduled to release a Rivet Counter version of a GE C44-9W diesel unit this summer. This all new model features 26 individually applied etched-metal see-through grilles, and LED walkway lights, ditch lights,



lighted number boards, and headlights. Road names for the HO scale ready-to-run model will be Santa Fe (Warbonnet with three

cab side windows), BNSF (Heritage-II scheme, with four cab side windows), Norfolk Southern (Horsehead scheme, high mounted headlight), and Union Pacific. One road number each of the BNSF and NS Rivet Counter versions was released at the Amherst Show, with the available units selling out quickly.

The release will include a less-detailed Operator Series version decorated for BNSF, Chicago & North Western, Norfolk Southern, and Union Pacific. The modeler can upgrade the Operator model using detail kit (#SXT811047) that includes MU and trainline hoses, uncoupling levers, grab irons, lift rings, windshield wipers, sanding lines and traction motor cabling. Units will be available with either an ESU-LokSound Essential Sound unit with PowerPack (Operator), ESU-LokSound v5.0 DCC sound decoder with "Full Throttle" and PowerPack (Rivet Counter), or DCC ready with a 21-pin connector.



A spring release date is being quoted for ScaleTrains.com's new HO scale EMD SD40-2 six-axle road unit. Features of the Rivet Counter model include operating LED

number boards and headlight. Road names will be Burlington Northern, CSX (YN3 boxcar logo), Milwaukee Road, Milwaukee Road Bicentennial, and Norfolk Southern. The spring release date will include Operator Series locomotives decorated for

Santa Fe (blue and yellow), Burlington Northern, Conrail, and Union Pacific.



The third new HO scale locomotive ScaleTrains.com has scheduled for release during the first half of this year is a Rivet Counter GE

C39-8. Road names will be Conrail, CSX (ex-Conrail), CSX (YN2 repaint), Norfolk Southern, Savage (ex-CSXT YN3), and Savage repaint. All ScaleTrains.com locomotives mentioned here will be available for DC only with a DCC-ready 21-pin socket, or with ESU LokSound v5.0 DCC and sound decoder. For additional information visit scaletrains.com.



Showcase Miniatures has entered the HO scale vehicle field with a kit for a 1929 Six-Speed Delivery Van. The kit includes a resin body and chassis, a lead-free pewter roof, wheels, window

glazing, and custom waterslide decals. Added details include a stainless steel photoetched fret with the windshield frame, mirrors, and steering wheel.



Showcase Miniatures has updated its HO scale US&S and GRS searchlight signal base cabinets to allow for variations in signal height. For additional information visit

showcaseminatures.com.



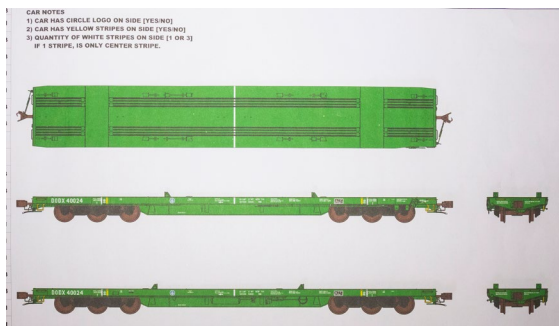
Speedwitch Media is selling a resin kit for an HO scale Chicago, Burlington & Quincy XM-25/-26 single-sheathed boxcar.

The model is also prototypically accurate for C&S and FW&D. Decals for all three roads are included.



Also available from Speedwitch Media is a resin kit for an Ann Arbor 41000-series single-sheathed automobile car. The kits include one-piece cast resin bodies that replicate 'board-by-board' construction, a fully detailed underframe, styrene details, wire, and etched metal parts along with detailed prototype

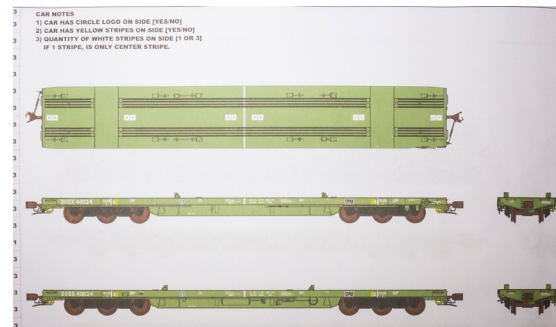
information and assembly instructions. For additional information visit speedwitchmedia.com.



at Amherst. Multiple versions of a DODX six-axe flat car, suitable for hauling Abrams tanks and other heavy military equipment, are planned, including one version of this car on which the

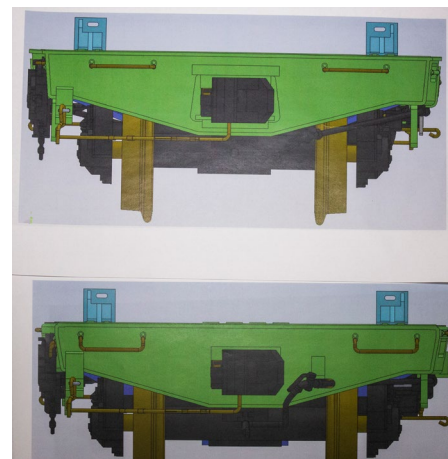
Spring Mills Depot, like many model railroad manufacturers, lost its Chinese manufacturing partner last summer, so a model they hoped to have in production now was displayed in paper form

container pedestals can be folded down or otherwise stored flush with the deck. Spring Mills Depot intends to model that feature.



As an example of the level of detail that Spring Mills intends to incorporate in the model, two different bodies will be tooled, reflecting the differences in two different

manufacturers' versions – one manufacturer built the deck two inches wider, with squared-off edges, and the other had a narrower rounded edge deck.



Along with several prototypical DODX paint schemes, the flatcar will be available in a Spring Mills Depot scheme... and a couple of others that you'll need to see in person when the cars are produced. For additional information visit springmillsdepot.com.

Summit USA has introduced an HO scale kit that builds into a Modern Strip Mall Building. The buildings have a variety of textures including bricks and Plastruct Random Stone.



Components in the kit include laser-cut white and clear acrylic, milled black styrene plastic, awnings, and signage. The completed model has a footprint of 21.5 x 7.5 inches. For

additional information contact a dealer or visit summit-customcuts.com.



Sylvan Scale Models showed a wide variety of cast resin vehicles at the Amherst Show. Jeff Shultz

photographed three versions of an HO scale 1956-66 Mack B-81 heavy duty truck in Sylvan's booth. From the left is a single-axle tractor, a tandem-axle tractor, and a tandem-axle dump truck. Also on display were numerous body styles and paint schemes of 1956 Chevys. Other new items include a re-run of a Canadian National wood caboose in both the as-built and modernized versions. For additional information contact a dealer or visit sylvanscalemodels.com.



Tangent Scale Models has completed another production run of 52-foot 6-inch 70-ton gondolas. The HO scale version is based on

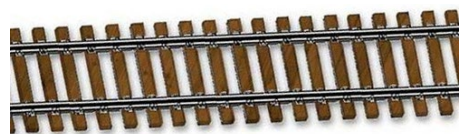
a standard design built by Bethlehem Steel Company between

1937 and 1957. The ready-to-run model displays Tangent's usual attention to authenticity including drop ends, interior detail, wire grab irons, and appropriate trucks with machined metal wheelsets.



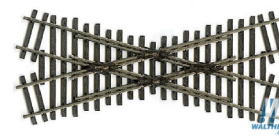
Road names include Baltimore & Ohio (Capitol dome herald), Reading (riveted steel floors, corrugated ends, Ajax brake wheels, two paint schemes);

Lehigh Valley (oxide red, wood floor, and Dreadnaught ends); and Lehigh Valley (green scheme, etched-metal Wine tie-downs, stand-off ACI plates). For additional information visit tangentscalemodels.com.



Walthers has completely retooled its line of HO scale code 83 and code 100 nickel silver track and accessories.

The first items available in the new line will be 36-inch FlexTrack sections with dark brown simulated wood thin-profile ties. Each tie will have molded spike and tie plate detail. Spike mounting holes for securing the track are located next to the rail. Both code 83 and code 100 FlexTrack are scheduled for release in April.



Walthers reports that track accessories coming this fall

include FlexTrack sections with concrete ties, bridge track with guard rails; 45, 60, and 90 degree crossings; and code 83 to code 100 transition track sections. Insulated rail joiners, metal rail

joiners, and metal joiners presoldered with black #22 gauge feeder wire are also planned.



DCC-friendly turnouts will feature snap-action solid-rail points, isolated frogs with built-in jumpers for powering as desired, and an insulated tie bar. The selection will include No. 4, 5, 6, and 8 turnouts, wyes, curved turnouts, three-way turnouts, double crossovers, and double slip switches.



Walthers is quoting a late June release date for a new HO scale International extended wide-vision caboose. The Mainline series model will have an

X-panel roof (without running boards or end ladders), a detailed underbody with wide-mounted brake gear, and Barber Swingmaster roller-bearing trucks with 33-inch machined metal wheelsets. The styrene body has molded drill starter points for grab irons, that can be installed by the modeler using caboose Detail Kit No. 910-201 sold separately.



Road names will be Santa Fe, Burlington Northern, Canadian Pacific, Chessie C&O, Conrail, Soo Line, and Duluth, Missabe & Iron Range.

Walthers has also announced a GP7 in the WalthersProto line for delivery in late 2019. Road names in this release include Belt Railway of Chicago, CB&Q, Chessie System-C&O, Erie Lackawanna, Great Northern, and Reading. These will be

limited editions, with only one run of these road numbers. Equipped with improved hood contours, road specific details, 14:1 helical gears, and Proto MAX metal knuckle couplers, the units will also be available with ESU LokSound Select DCC and sound decoders or a 21-pin DCC plug.



Also new from Walthers is a 39-foot Trinity 3281 cu. ft. twin-bay covered hopper. The HO scale model is based on a short prototype built in the 1990s to handle dense,

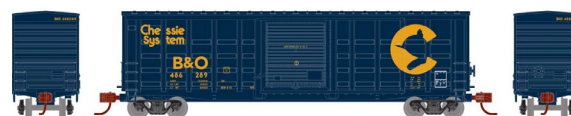
heavy commodities. Separately applied details on Walthers ready-to-run Mainline series model include brake gear, roof walks, discharge gates, inlet hatches, and end ladder cages. The 3281 model comes with roller-bearing trucks with 36-inch machined metal wheelsets.



Decorating schemes will be NRLX-NorRail Ciment Quebec, BCAX-Blue Circle Cement, CITX-Cit Group, CRDX-Chicago Freight Car Leasing, HWCX-Halliburton, Norfolk Southern, Union Pacific,

and CSX Transportation. For additional information contact a dealer or visit walthers.com.

N SCALE PRODUCT NEWS



Athearn's production schedule for January 2020 includes an N

scale 50-foot waffle side boxcar. The ready-to-run model is based on a prototype built by Pullman Standard in the mid-1970s. In addition to the distinctive indentations on the body of the waffle car, spotting features include outside posts, non-terminating corrugated ends, and a slightly peaked roof.

Road names will be Baltimore & Ohio-Chessie System, Chicago & North Western, Rio Grande, Green Bay & Western, Louisville & Nashville, and Rock Island.



Athearn has scheduled N scale 45-foot International

Containers for release next January.



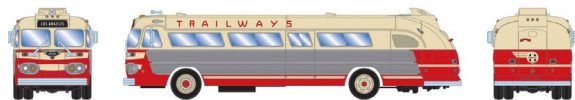
Container company names will be Evergreen, K-Line,

Maersk, Hapag-Lloyd, Hyundai, Hanjin, Mitsui Overseas Line, NYK, American President Lines, OOCL, CMA-CGM, and Sealand.



The containers will be sold in 3-packs with each can having a

different number. In some cases the logos and decoration may vary within the 3-pack.



Athearn's early 2020 production schedule includes an N scale

1950s-era intercity bus. Decorating schemes will be Santa Fe Trailways, Union Pacific, Rock Island, Capitol Bus Company, Glacier National Park, Pioneer Tours, and Unified School District. Additionally, a Department of Corrections bus with simulated

bars printed on side windows and an RV conversion with curtains on the inside of windows and a plated-over side door window will be available.



The model is based on a Visicoach design built by The Flxible

Company between 1950 and 1956. Features of Athearn's N scale version include windshield wipers, and rubber tires. For additional information contact a dealer or visit athearn.com.



Broadway Limited has released an N scale version of the Pennsylvania Railroad's famous 4-4-

4-4 class T1 duplex steam locomotive. The model has a heavy diecast chassis and superstructure with numerous separately applied details. The locomotive will negotiate a minimum radius of 9.75-inches, however, the broader the curve the smoother the operation and the better the appearance. Operating features include Paragon3 Sound with Rolling Thunder in both DC and DCC environments. For additional information contact a dealer or visit broadway-limited.com.



SOUTHERN CABOOSE

Bob Harpe step-by-step tips on assembling a resin kit caboose (two different versions)

Buy Issue: \$1.99 >>

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R. Bale

PENNSYLVANIA'S 4-4-4-4 DUPLEX LOCOMOTIVES

The pair of 4-4-4-4 class T1 duplex steam engines Baldwin Locomotive delivered to the PRR in 1942 were esthetic beauties and engineering failures. The T1s tended to be slippery engines and their poppet valves required constant attention. The grate area and boiler capacity was insufficient to meet the needs of the four cylinders, and the long, rigid wheelbase could not negotiate the curve at the west end of PRR's Pittsburgh station. Ironically, Raymond Loewy's streamlined design kept them dirty with smoke tending to swirl around the cab and head end cars. Despite their many problems PRR doubled-down, ordering 25 more T1s from Baldwin in 1946 and erecting a like number in their Altoona shops. Despite constant tinkering, things did not improve and by 1949 PRR had removed their T1s from service. All were scrapped by the end of 1953.



ExactRail has an all-new Johnstown America AutoFlood II five-bay hopper car.

Road names on the N scale ready-to-run model include CSXT, BNSF (brown and green schemes), KGLX, NRLX, UCEX, UCEX (pink), and UCEX (red, white and blue patriotic scheme). For additional information visit exactrail.com.

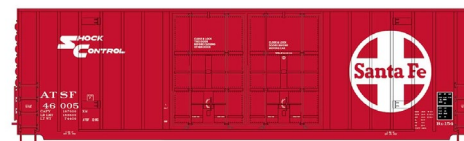
.....



Fox Valley Models displayed samples of their new Pullman-Standard coal gondola at Amherst. FVM's N scale

model is based on a series of prototypes built by PS during the mid to late 1970s. In addition to the Burlington Northern sample car photographed at the Amherst Show, road names will be CEPX-Cajon Electric Power, and FPPX-Fayette Power. The schemes portray prototypes equipped for single rotary operation. They are sold in 6-packs with each car having a different road number. The release will include one double rotary car decorated for FPPX-Fayette Power. For additional information visit foxvalleymodels.com.

.....



InterMountain Railway released an impressive list of new products at the Amherst Show including six new N scale models in multiple

decorating schemes. Among the new items is a Gunderson 50-foot High Cube boxcar with double plug-doors. Road names for the ready-to-run model will be Santa Fe (two schemes), Union Pacific, Burlington Northern, Milwaukee Road, CP Rail (ex-Milw Rd), Golden West Service, Minnesota, Dakota & Western, and two BNSF schemes.



Additional N scale models announced by InterMountain at the Amherst Show included a Cylindrical covered hopper car with

trough hatches and four discharge outlets. Road names will be

Ferrocarriles Nacionales de Mexico, Santa Fe (ex-Koppel), and two schemes each for Canada, Alberta, and Canadian Wheat Board.



InterMountain displayed several preproduction samples of N scale ACF twin-bay covered hopper cars. The ready-to-run production versions will have round roof hatches, etched metal roof walks, machined metal wheelsets, and Kadee couplers.



Road names will be Norfolk Southern, Southern Pacific, Union Pacific, Winchester & Western, Western Maryland, ACFX, Burlington Northern, Montana

Rail Link, and Chicago & North Western.



InterMountain is working on a new production run of 40-foot 12-panel boxcars that will be available in ten decorating schemes including five for Great Northern.



Additional road names for the N scale ready-to-run model will be Southern Pacific, T&NO-Southern Pacific, Santa Fe (Grand Canyon), SP&S, and Chicago & Eastern Illinois.



InterMountain also showed several pre-production samples of a 4650 cu. ft. covered hopper including this decorated but unassembled BN car. In addition

to Burlington Northern, the final selection of road names for the N scale model will be Cotton Belt, Southern Pacific, French's, Sclair, ATSF, ACFX-Sterling Salt, ACFX-American Borate, ACFX-Thiele, and ECC International. For additional information contact a dealer or visit intermountain-railway.com.



Kato USA has made another production run of its N scale Santa Fe Super Chief. EMD F7A and F7B Warbonnet diesels will be available separately with three

operational choices: DC only, DCC (no sound), and ESU LokSound DCC with decoder.



An eight-car set of Super Chief cars will include a baggage car (No. 3456), RPO (No.87), ACF 10-6 sleeper (Palm Stream), pleasure dome (No.501), Diner (No. 603),

dormitory lounge (No. 1341), ACF 4-4-2 sleeper (Regal Crest), and a sleeper-lounge-observation (Vista Canyon) with an illuminated Super Chief drum head sign).

A four-car add-on set will be available with two ACF 10-6 sleepers (Palm Haven and Palm Top); and two ACF 4-4-2 sleepers (Regal Gate and Regal Hunt). An optional interior LED lighting kit is available. For additional information contact a dealer or visit



katousa.com. A video of the Santa Fe Super Chief and combined El Capitan using Kato USA equipment can be viewed at www.youtube.com/watch?v=6di4waS4Wtk&feature=youtu.be.



duty trucks and includes the load.

Among the new N scale models from **Micro-Trains Line** is this Rock Island depressed-center flat car. It comes with six-wheel heavy-



This N scale 40-foot double-sheathed wood boxcar was inspired by a prototype built in 1917 by Ralston Steel Car Company. Spotting features

include a heavy steel underframe and the 1-1/2 sliding doors to ease loading of automobiles.



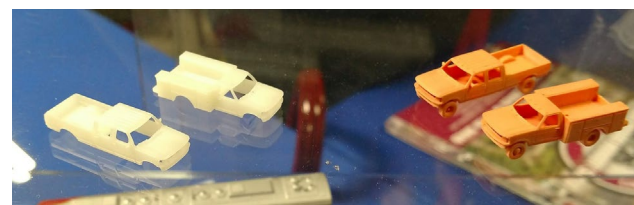
Also new from Micro-Trains is a 40-foot steel boxcar with a seven-panel Superior sliding door. The SL designation indicates the car is equipped with specialized

fixtures for securing appliances.



Completing our report on new Micro-Trains Line models is this 60-foot excess height boxcar with riveted sides and a pair of plug doors on each side. The

N scale car follows a prototype built by Thrall for the Norfolk & Western in 1969. The car was later absorbed into the Norfolk Southern System and repainted. For additional information contact a Micro-Trains dealer.



River Point Station has been releasing a steady stream of HO scale Ford F-series pickup-based

vehicles over the past few years. At the Amherst Show RPS showed pre-production samples of N scale 1992 Ford F-series utility and crew cab trucks. Spring 2019 delivery is expected. For additional information visit riverpointstation.com.



New N scale locomotives coming this spring from **ScaleTrains.com** include a GE C44-9W diesel. Road names for

the Rivet Counter model will be Santa Fe (Warbonnet scheme), BNSF, Norfolk Southern (Horsehead), and Union Pacific. ScaleTrains.com will also be offering the C44-9W in their Operator line for the first time in N scale for BNSF, Norfolk Southern

(Horsehead), Union Pacific, and Chicago & Northwestern. The C44-9W is scheduled for release this summer. Locomotives will be available in DCC Ready with a Next18 connector, DCC (non-sound) with an ESU Next 18 Micro DCC decoder, and DCC & Sound with an ESU-LokSound Next18 Select Micro DCC sound decoder with "Full Throttle".



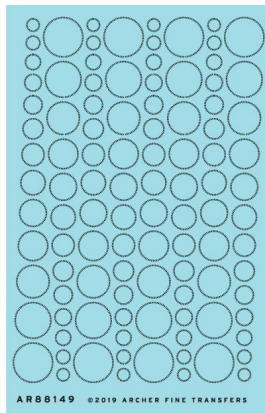
A springtime release has been announced by ScaleTrains.com for an N scale GE Tier 4 GEVO diesel locomotive.

Road names for the

Rivet Counter model will include Navajo Mining, BNSF (Wedge scheme), Canadian National, CSX, CSX (Spirit of Ravenna), GE Demonstrator, Norfolk Southern, and Union Pacific.

The locomotive models will be available for DC only with a DCC-ready plug, with DCC only, and with DCC and sound. For additional information visit scaletrains.com.

NEW DECALS, SIGNS AND FINISHING PRODUCTS

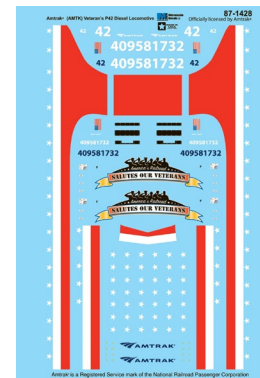


Archer Transfers has expanded its selection of textured decals to include circular patterns of weld beads. Four different bead widths are available. They are packaged as HO, S, O, and G scale with the corresponding weld beads being .015, .025, .030, and .040-inches in width. The widths of the new circular patterns are compatible with straight weld bead patterns previously issued by Archer. For more information contact a dealer or visit archertransfer.com.

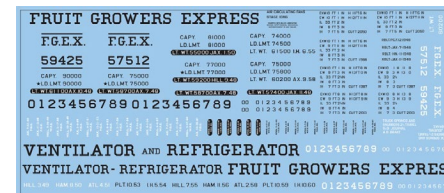


Microscale Industries has HO and N scale decals for Amtrak Veterans Locomotive No. 42. In June 2013, Amtrak P42DC No. 42 was painted in a red, white, black, and dark blue scheme with a large logo on

the side proclaiming "America's Railroad Salutes Our Veterans". A dark blue band near the sill contains 50 white stars.



Microscale's new water slide decal includes material to correctly letter one locomotive. For additional information contact a dealer or visit microscale.com.



Speedwitch Media has released three carefully researched HO scale water-slide decal sets of interest to prototype model builders. Set D119.2 will letter two

refrigerator cars as rebuilt in late 1947 by Fruit Growers Express and Western Fruit Express. The set is intended for the Intermountain kit but is well-suited to other applications.



This Bangor & Aroostook lettering set is correct for clone R-40-26 refrigerator cars

including Accurail and Sunshine HO scale models. In 1951 Bangor & Aroostook purchased 500 refrigerator cars from Pacific Car & Foundry that were virtually identical to Pacific Fruit Express class R-40-26 refrigerator cars. The cars were given orange sides, and black roofs and ends. The side sill support sections, underframe, and trucks were also black.



Material included in this Speedwitch Media decal set will correctly letter an HO scale

Spokane, Portland & Seattle Railroad 52-foot straight side flat car as built by Pacific Car & Foundry in 1951. The SP&S cars were painted black and numbered 34000-34199. For additional information visit speedwitchmedia.com.

DISCLAIMER

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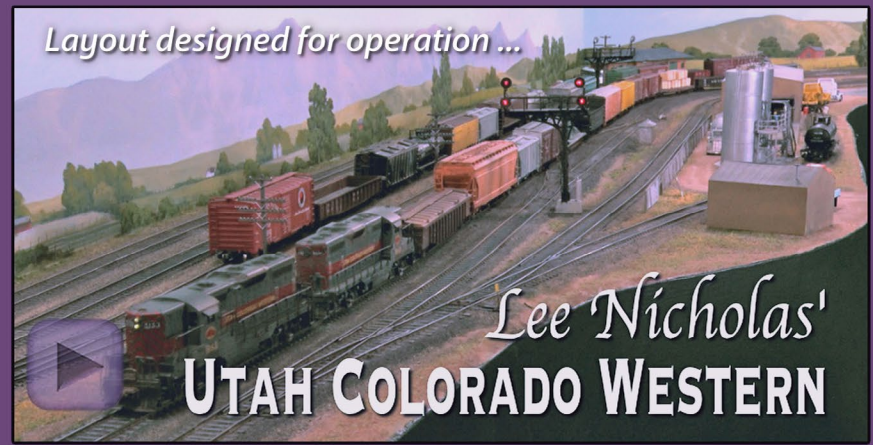


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UTAH COLORADO WESTERN



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Miles Hale demonstrates some of the exciting new features of SketchUp!



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! BRIEFLY NOTED AT PRESS TIME ...

Otto M. Vondrak has been named editor of *Railroad Model Craftsman* magazine. He fills the position left vacant when Stephen Priest left RMC in December to become marketing manager of ScaleTrains.com. Vondrak had previously been associate editor of *Railfan & Railroad* magazine...

Athearn is offering replacement handrails for Genesis GP38-2 or GP40-2 models that may have been damaged in shipment. Have your proof of purchase available and contact Horizon Hobby customer support at 1 (888) 959-2307 *Select #4 for Returns. Technically this isn't a return, however, this is the department handling the handrail replacements ...

Atlas reports that preproduction samples of its N scale AMT multilevel passenger cars were removed from their display booth at the Amherst Show. Atlas is asking that they be returned no questions asked. The missing models were the only samples in the US, so anyone seeing them will know where they came from ...

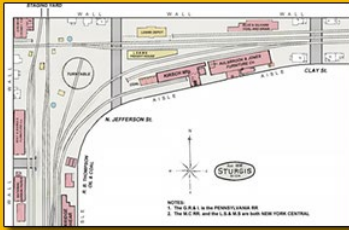
In happier news, **Atlas** says it's third-quarter production schedule will include two brand new N scale models: a 41-foot side-dumping ballast hopper, and a 50-foot Sieco pulpwood flat car. We'll have road names and details on Atlas's complete third quarter production schedule next month ...

Bowser has successfully qualified two new HO scale locomotive manufacturing partners in China. The following start dates involve a limited number of road names with additional selections coming as the new factories gain experience. The first DS 4-4-1000s will be released in May; SD40-2F in July; C628, C630, and C630M in August; SD40-2

in September, M630 in November, and F units starting in December 2019 ...

KatoUSA has released its N scale Union Pacific 4-8-4 FEF steam locomotive to dealers with optional TCS DCC or ESU LokSound DCC ...





THE LIMITED MODELER

Jim Six: Layout design with Sandborn Maps

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SELECTED EVENTS



Model Railroad Hobbyist | March 2019 | #109

MARCH 2019

(Many events charge a fee. Check individual info website for details.)

AUSTRALIA, CANBERRA, KALEEN, March 30-31, 31st Annual CMRCI Model Railway Expo, sponsored by Canberra Model Railway Club, at UC High School, Baldwin Drive. For details phone Anthony Hunt at +61 0414 730 824.

CANADA, ONTARIO, KINGSTON, March 10, 30th Annual Rail O Rama Model Train Show, sponsored by Canadian Railroad Historical Association, at Ambassador Hotel, 1550 Princess Street. Request info from Graham Oberst at graham.oberst@bell.net.

CANADA, ONTARIO, TORONTO, March 16, Railway Prototype Modellers Meet, at Humber College, 205 Humber College Blvd, North Campus, Building B, Rooms B201 & B202. Info at torontoprototypemodellers.wordpress.com.

CALIFORNIA, BAKERSFIELD, March 9-10, 26th Annual Model Railroad Show & Sale, at Kern County Fairgrounds, 1142 South P Street. Info at gehams.club.

COLORADO, DENVER, March 2-3, Rocky Mountain Train Show, at Denver Mart, 451 E 58th Ave. Info at rockymountain-trainshow.com.

FLORIDA, PALMETTO, March 9-10, Sarasota/Bradenton RealRail 42nd Anniversary Train Show, Bradenton Area Convention Center, 1 Haben Blvd. Info at realrail.org.

SELECTED EVENTS | 2

GEORGIA, SAVANNAH, March 29-30, Savannah Prototype Modelers Meet, at White Bluff Presbyterian Church, 10710 White Bluff Road. Info at www.savannahrpm.com.

IDAHO, LEWISTON, March 24, 8th Annual Lewis-Clark Train Club and Collectables Swap Meet, Nez Perce County Fairgrounds, 1229 Burrell Ave. Info from wrails@cablone.net.

ILLINOIS, SPRINGFIELD, March 24, Train Fair at Illinois State Fair Grounds Orr Building, sponsored by the Springfield Railroad Society. Info at springfieldtrainfair.com.

INDIANA, INDIANAPOLIS, March 2, Naptown & White River Model Train Show, Emmerich Manual High School, 2405 S. Madison Ave. Info at www.naptownrr.org/shows.

KENTUCKY, LOUISVILLE, March 23, Annual Train Show & Sale, sponsored by NMRA Division 8 Mid Central Region, at Moose Lodge, 4615 Fegenbush Lane. Info at www.div8-mcr-nmra.org.

MINNESOTA, PLYMOUTH, March 15-16, Railroad Modeler's Retreat at Mount Olivet Lutheran Church. Request info from Ken Zieska at mhry19@gmail.com.

MISSOURI, SPRINGFIELD, March 23, 39th Annual Model Train/Swap Show, at Expo Center, 635 St. Louis Street. Info at omraspringfield.org.

NEW YORK, BATAVIA, March 31, Great Batavia Train Show, sponsored by Genesee Society of Model Engineers, at Richard C. Call Arena, Genesee Community College. Info at www.gsme.org.

NEW YORK, ROCHESTER, March 2-3, Rochester Model Railroad Club 80th Anniversary Open House, First Universalist Church, 150 Clinton Avenue South. Info at www.rocmrrc.com.

OHIO, GREENVILLE, March 3, 38th Annual Model Railroad Swap Meet, sponsored by the Darke County Model Railroad Club at Youth Building, County Fairgrounds, 800 Sweitzer Street. Request info from Joe Worz at josephbw@hughes.net.

SELECTED EVENTS | 3

OHIO, KIRTLAND, March 16-17, Railfest Train Show, sponsored by NMRA Western Reserve Division 5, at Lakeland Community College, 7700 Clocktower Drive. Info at railfest.org.

OREGON, ELSIE, March 2, 15th Annual Pacific Model Loggers' Congress, at Camp 18 Restaurant & Logging Museum, 42362 Highway 26. Info at www.pacificmodelloggerscongress.com.

OREGON, PORTLAND, March 9, 34th Annual Swap Meet sponsored by Willamette Model Railroad Club at WD Jackson Armory, 6255 Northeast Cornfoot Road. Info at facebook.com/events/1303189686489326.

PENNSYLVANIA, GREENSBURG (Metro Pittsburgh), March 22-23, 2019 RPM-East, sponsored by NMRA Division Two, at Ramada Greensburg Hotel and Conference Center, 100 Sheraton Drive. Info at hansmanns.org/rpm_east/index.htm.

VERMONT, ST. ALBANS, March 9, Vermont Rails Model Railroad Show, sponsored by Northwestern Vermont Model Railroad Association, at Collins Perley Sports & Fitness Center. Info at nwvrrailroad.org.

WISCONSIN, CEDARBURG, March 10, 24th Annual Model Train Show & Swap Meet, sponsored by METRO Model Railroad Club at Circle B Recreation Center. Info at www.metrorrclub.org.

April 2019, by location

AUSTRALIA, NEW SOUTH WALES, ERINA HEIGHTS, April 19-21, 14th Australian Narrow Gauge Convention, at Central Coast Grammar School. Info at www.austnarrowgaugeconvention.com.

ALABAMA, GADSDEN, April 21, 33rd Annual Train Show sponsored by Coosa Valley Model Railroad Club, at 210 At The Tracks, 210 Locust Street. Info at coosavalleymodelrailroad.com.

CALIFORNIA, SAN BERNARDINO, April 27, Western Prototype Modelers Meet, at San Bernardino Train Depot, 1170 West 3rd Street. Info at railroadprototypemodelers.com.

SELECTED EVENTS | 4

INDIANA, INDIANAPOLIS, April 13, Indianapolis Spring Train Show, sponsored by NMRA Central Indiana Division at Manual High School Gym, 2405 S. Madison Avenue. Info at cidnmra.org.

KENTUCKY, NEW HAVEN, April 6, Kentucky Railway Museum Annual Train Show & Sale, at St. Catherine Academy Gym, 413 North 1st Street. Info at kyrail.org.

MAINE, WESTBROOK (Metro Portland), April 6, Train Show at Westbrook Community Center, sponsored by Southern Maine Model Railroad Club. Info at southernmainemrc.wordpress.com.

MICHIGAN, WYOMING, April 13, Spring Train Show, sponsored by Grand River Valley Railroad Club at 5625 Burlingame Ave SW. Info at grvrrc.org.

OHIO, MARION, April 26-28, Central Ohio Railroad Prototype Modelers Meet. Request info from dblake7@columbus.rr.com.

Future 2019, by location

CANADA, BRITISH COLUMBIA, BURNABY, May 3-5, Railway Modelers Meet of BC, at Simon Fraser University, Burnaby Campus, West Mall Centre. Info at railwaymodellers-meetofbc.ca.

CALIFORNIA, RICHMOND, June 15, San Francisco Bay Area Prototype Modelers Meet, at St. David's School Hall, 871 Sonoma Street. Info at www.bayareaprototypemodelers.org.

CONNECTICUT, FARMINGTON, May 31-June 1, New England-Northeast Railroad Prototype Modelers Meet, at Farmington Marriott, 15 Farm Springs Road. Info at nerpm.org.

ILLINOIS, COLLINSVILLE (metro St Louis), July 26-27, St. Louis RPM Meet, at Gateway Convention Centre. Info at icg.home.mindspring.com/rpm/stlrpm.htm.

SELECTED EVENTS | 5

NEW YORK, LIVERPOOL, (Metro Syracuse), September 19-22, NMRA Northeastern Region Empire Junction 2019 Convention, at Holiday Inn, 441 Electronics Parkway. Info at empirejunction.org.

NORTH CAROLINA, DENVER, May 31-June 2, Modular Layout Display sponsored by the Sipping and Switching Society of North Carolina, at Salem United Methodist Church. Request info from Glen Frix at gafrix@charter.net.

OREGON, PORTLAND, August 27-31, 35th National Garden Railway Convention, hosted by Rose City Garden Railway Society, at DoubleTree by Hilton Hotel, 1000 NE Multnomah Street. Info at www.ngrc2019.org.

TENNESSEE, JOHNSON CITY, May 31-June 1, Scale Model Train Show & Sale, sponsored by Mountain Empire Model Railroaders, at George L. Carter Railroad Museum, East Tennessee State University. Info at memrr.org.

TEXAS, FRISCO, June 27-30, 2019 Texas Special NMRA Lone Star Region Convention, at Drury Inn & Suites, 2880 Dallas Parkway. Info at www.2019TexasSpecial.com.

TEXAS, TAYLOR, May 4-5, Austin Train Show, at Williamson County Expo Center, sponsored by Austin Model Railway Society. Info at austinrailway.org/trainshow.html.

UTAH, SALT LAKE CITY, July 7-13, 2019 NMRA National Convention and National Train Show. HQ at Little America Hotel. Info at nmra2019slc.org.

Beyond 2019, by date

ENGLAND, BIRMINGHAM, 2022, NMRA National Convention and National Train Show.

CALIFORNIA, SANTA CLARA, 2021, NMRA National Convention and National Train Show.

SELECTED EVENTS | 6

MISSOURI, ST. LOUIS, July 12-18, 2020, NMRA National Convention and National Train Show. HQ at Hilton St. Louis at the Ballpark. Info at gateway2020.org. ■



STRUCTURE IN AN ODD SPACE

Ray Dunakin on building a structure to fit an odd space - plus styrene finishing tips!

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Archer Fine Transfers	MRH Store (3)
Athearn	Mt. Albert Scale Lumber
Atlas Model Railroad Co.	National Train Show (Salt Lake City)
Bachmann	NCE (2 page spread)
Backdrop Junction	Norfolk & Western Historical Society
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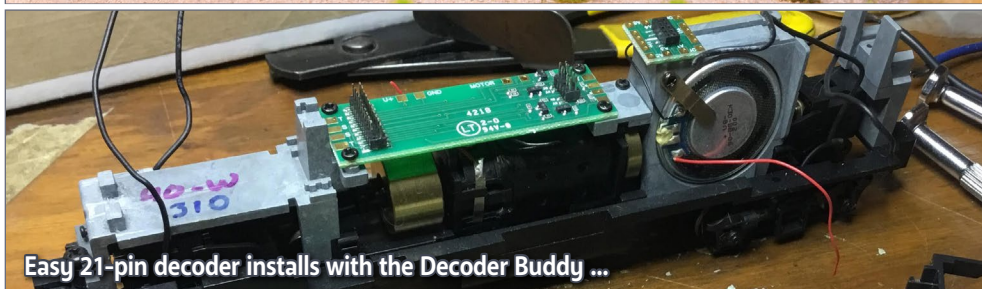
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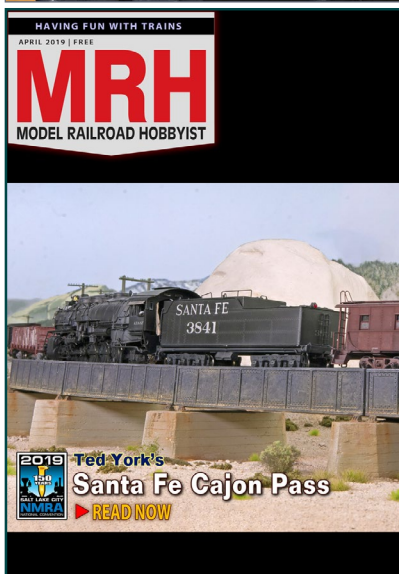
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