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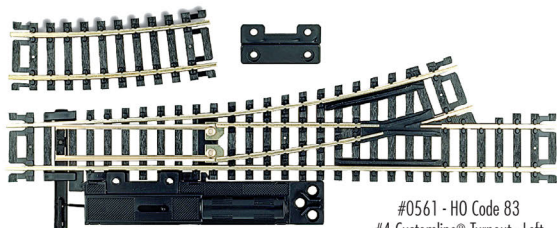
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INDEX

TABLE OF CONTENTS

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HAVING FUN WITH TRAINS

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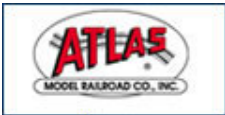
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[INDEX](#)

[TABLE OF CONTENTS](#)



Publisher's Musings: Hyper-dense rolling stock weighting ...
LEWIS PHELPS (guest editorial)



MRH Website this month: Fickle granger lines ...
Compiled by JOE FUGATE



What's Neat: Garden railroading lessons learned
KEN PATTERSON



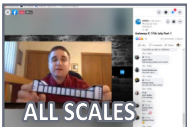
Creative structure lighting
STEVE JURANICS



Setting up realistic operations
MARK JUETT



Simple bi-color search light signals
PETER FRIEDRICH



Virtual hobby events
ERIC HANSMANN



Savvy Modeler online: Selective compression tricks
Compiled by the MRH STAFF



September 2020 news and events
RICHARD BALE and JEFF SHULTZ



TABLE OF CONTENTS | RUNNING EXTRA

September 2020



Publisher's Welcome: Better way to clean paint off rails
JOE FUGATE



ALL SCALES

Limited Modeler: Modeling a complete train

JIM SIX



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INDEX

TABLE OF CONTENTS

PUBLISHER'S MUSINGS



Guest editorial | Model Railroad Hobbyist | September 2020

LEWIS PHELPS EXPLORES HIGH DENSITY CAR WEIGHTING ...



RATE THIS ARTICLE

HOW WOULD YOU LIKE TO ADD TWICE AS MUCH WEIGHT to a model freight car in the available space, or add all the weight you need in less than half the space required for lead weights? If so, keep reading!

MRH's recent discussion regarding "lead rot" got me to thinking about alternatives to lead as weight for freight cars and locomotives.

I immediately thought of tungsten, which I had previously used for counterweights in a very different application, so I knew about the element's virtues. Tungsten has three distinct advantages over lead as a material for adding weight to railroad models:

- **It's dense:** The density of tungsten is 19.3 grams/cm³, or 11.13 ounces/in³. That is 1.7 times the density of lead, which is 11.3 grams/cm³, or 6.5 ounces/in³.
- **It's non-reactive:** Tungsten is non-reactive at room temperature, whereas lead reacts at room temperature with oxygen to form lead oxide or, if moisture is present, it can form compounds such as lead carbonates and lead silicates. These chemical reactions have become known overall as "lead rot" – they can damage models when the reaction causes lead to swell.

- **It's non-toxic:** Partly because it is non-reactive, tungsten is also non-toxic. Although I can't imagine why anyone would wish to do so, you could swallow tungsten powder or tungsten shot and not hurt yourself.

Swallowing lead powder or lead shot could be very dangerous. Lead poisoning kills 500,000+ people per year worldwide and causes brain damage to millions more.

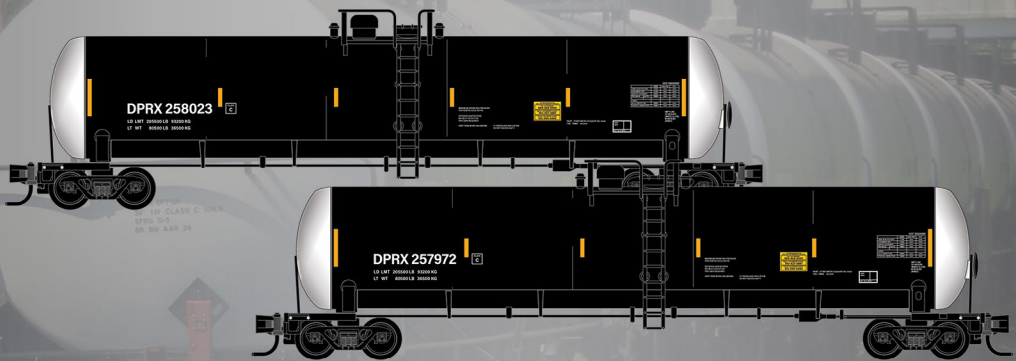
For modelers, tungsten comes in two forms:

- **Shot:** Often used for hunting birds, tungsten shot comes in pellet sizes from 1.78 mm (#10 shot) to 3.78 mm (#2 shot). These ammunition products actually use an alloy of Tungsten made by combing it with small amounts of iron, copper, and nickel. The density of the alloy used for bird shot is 18.0 grams/cm³, almost as dense as pure tungsten.

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[INDEX](#)

[TABLE OF CONTENTS](#)

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- **Powder:** Among other things, golfers use tungsten powder to fine-tune the weight and balance of high-end golf clubs. In powder form, packed tungsten powder has a density of 11.4 grams/cm³, about the same as solid lead.

I decided to explore using tungsten to weight my models and allow me to cram the most weight into the smallest space possible. I postulated the best approach would be some kind of moldable weight to allow fitting it into crevices, nooks, and crannies of freight cars.

Pouring molten tungsten into model cavities isn't practical. Using the smallest spherical metal shot possible, mixed with the heaviest "filler/binder" possible seemed like the way to go.

Note that choosing the most dense "filler/binder" material can have a significant impact on the total weight.



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[INDEX](#)

[TABLE OF CONTENTS](#)

Theoretical possibilities

Mathematical volume computations say that a tightly-packed random volume of spheres will fill 64% of the available space. That means I need to fill the remaining 36% of the air space with the most dense binding material possible.

I analyzed a number of options for the filler/binder:

- Epoxy glue (1.3 grams/cm³)
- Cyanoacrylate glue (1.1 grams/cm³)
- Plaster (Plaster of Paris/Durham's Putty, 2.3 grams/cm³)
- Portland cement (2.4 grams/cm³)
- Tungsten powder (11.4 grams/cm³)

From this, I looked at various binders for tungsten powder. I assumed 5-parts by volume of tungsten powder to 1-part binder/glue.

See [Table 1] for a summary of my computations.

High-density model weighting alternatives		
Material	Density Grams/CM ³	Density ratio compared with lead strips + epoxy
Cut lead strips + epoxy (50% volume each)	6.3	1.0
Lead shot + epoxy	7.7	1.2
Lead shot + plaster	8.4	1.3
Tungsten shot	11.5	1.8
Tungsten shot + epoxy	12.0	1.9
Tungsten shot + plaster	12.7	2.0
Tungsten shot + tungsten powder + ca glue	15.5	2.5
Tungsten shot + tungsten powder + epoxy	15.5	2.5
Tungsten shot + tungsten powder + plaster	15.6	2.5
Pure mercury (for theoretical comparison)	13.6	2.2
Molten lead (for theoretical comparison)	11.4	1.8

Table 1. Summary of Lew's density computations.



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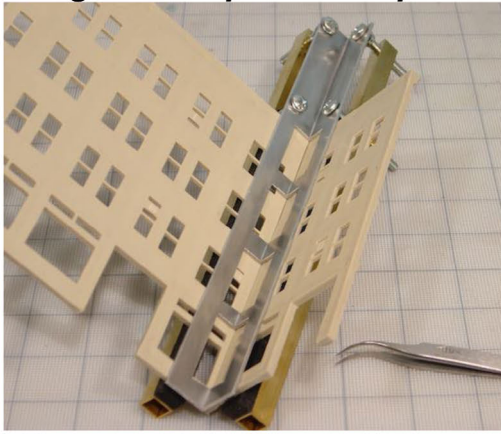
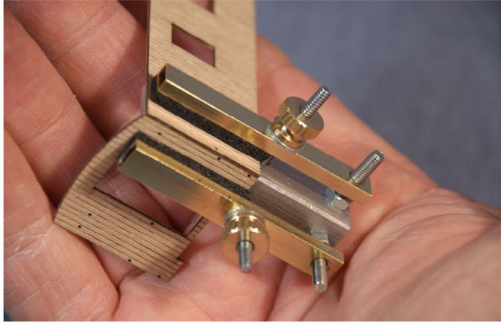
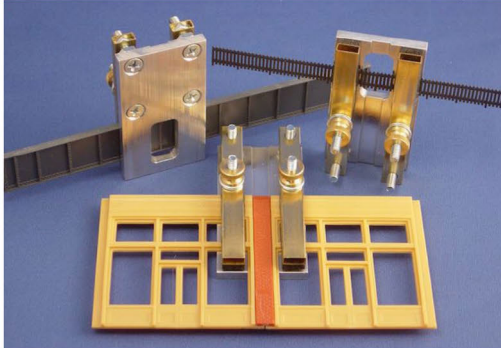


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My analysis shows the best alternative for adding weight to come from a mixture of #10 tungsten bird shot and tungsten powder, held together with any kind of glue.

We get this magic enhanced weight by combining tungsten shot with tungsten powder. The combination of the two produces something more dense than either material alone (due to the losses from air space).

My [Table 1] represents the theoretical maximum densities. In reality, it's not possible to pack tungsten balls and tungsten powder into a perfect mixture that will achieve quite the level of density as suggested in the calculations shown in [Table 1].

Actual results

I conducted an experiment using a 5 ml (1 tsp) measuring spoon and an accurate digital scale. I found that one spoonful of tungsten shot weighed 1.75 ounces, a spoonful of tungsten powder 1.01 ounces, and a spoonful of a mixture of the two weighed 2.02 ounces.

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In theory, a perfect dense mix of tungsten powder and tungsten shot would weigh 2.25 ounces.

But in any mixture, the combination of shot and powder will be more dense than either separately, due to replacing the air space with the more dense tungsten. The combination of tungsten balls and tungsten powder, plus a binder forms the most dense mixture that can reasonably be achieved by modelers.

The glue or binder that you choose, whether CA, epoxy, plaster – or something else, ends up being mostly immaterial.

I personally like Durham's Rock Hard Water Putty for my models, because it forms into a nice putty mixture that sets fairly slowly, giving me some working time.

Do note these materials can be tricky to work with. The tiny #10 shot spheres readily roll off a worktable if not contained, and the fine tungsten powder will disperse with even a puff of air, despite the high density of tungsten.

Since both materials don't come cheap, I recommend working with them on some sort of surface that captures spilled materials – such as a small impromptu tray made from paper with the edged folded up. That way, anything that escapes can be captured and returned to storage.

Do note: a magnet will not attract tungsten, so you can't use that method to "sweep up" spillage.

Tungsten shot and tungsten powder cost a lot more than lead, and you can only buy it in bulk, whether you need a lot or a little.

The ultimate weight kit

To help my fellow model railroaders, I am willing to make a high-volume purchase of the smallest diameter tungsten shot available (#10 shot, which is 0.070", or 1.75 mm diameter), as well as bulk tungsten powder. Then I will assemble these materials into "kits" with enough material to add up to three



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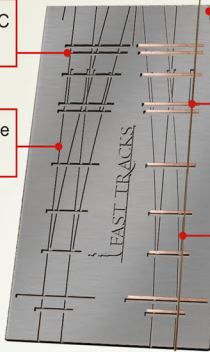


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[INDEX](#)

[TABLE OF CONTENTS](#)

ounces of weight to three typical HO scale freight cars by taking up as little space as possible.

Each kit contains six ounces of #10 tungsten shot (18 grams/cc alloy) and three ounces of tungsten powder.

I'm offering these kits for sale for \$45 including free shipping in the US and \$45 plus actual shipping cost to other countries.

The very lowest cost you will find to assemble this package on your own would be \$65 plus shipping, and at that price you'd be using larger balls made of less dense tungsten alloy than are included in my kit.

If you're interested in getting one of these high-density weighting kits from me, then fill out this form:

mrhmag.com/magazine/mrh2020-09/weight-kit-query

MRH will email you detailed instructions on how to order one of these kits from me, Lewis Phelps.

To summarize, using tungsten shot plus tungsten powder and a binder/glue gives us a weighting material that's over 200% more dense than lead sheet glued down with epoxy.

For open load cars like flats, gondolas, and hoppers, this allows getting twice the weight into the nooks and crannies of your car underside.

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[INDEX](#)

[TABLE OF CONTENTS](#)



LAST ISSUE'S RATINGS

The three top-rated articles in the [August 2020 issue](#) of *Model Railroad Hobbyist* are:

4.8 August 2020 news

4.7 Dick Elwell's Hoosac Valley

4.4 Upgrade the Badger paint stirrer

Issue overall: **4.6**

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[INDEX](#)

[TABLE OF CONTENTS](#)

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Compiled by **JOE FUGATE**



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The fickle fortunes of granger shortlines

MRH forum member **JD.Hill** (Jack Hill) reminds us that during the late 70's and early 80's, granger shortlines came and went with shifts in grain prices, closing of local elevators, and evaporating state subsidies. So it was with the Erie Western and its successor Chicago & Indiana. Blink and you missed them.

Jack shows a bit of the ebb and flow of paint schemes from this time with some of his models.

Read the full thread to get all the details.

[View the full thread on the MRH website](#)

▶ **MRH'S MONTHLY GREAT MODELER POSTS**

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[INDEX](#)

[TABLE OF CONTENTS](#)

2020 Layout Update



1. Tim Garland posted a video showing the latest updates to his Seaboard Central layout. Tim posts these updates every month or so, and it's great to see the progress!

Seaboard Central August 2020 layout update

MRH forum member **TimGarland** posted a video going over the latest updates to his layout, the Seaboard Central.

Among other things, Tim shows how he upgraded a new Walthers car to meet his rolling stock standards.

Another of Tim's projects including weathering a Scale Trains bulkhead flatcar. He added a nice worn look on the wood deck including freshly replaced boards on the bulkheads.

Tim also shows off a new dark blue SC paint scheme for his own road on two SD40-2 diesels.

Follow Tim's updates on the *MRH* website thread link below.

[View the full thread on the MRH website](#)



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[INDEX](#)

[TABLE OF CONTENTS](#)



2, 3. Rick Sutton uses this styrene mask he cut on his Cricut and a metal cookie sheet underneath with glue dots on it to make grass clumps for his scenery. The impressive result speaks for itself.

Making better static grass clumps

Forum member **Rick Sutton** posted these photos of his clever bunched static grass technique:

“A metal pan from the dollar store. A light coating of Armoral or vaseline petroleum jelly and cut a pattern from a styrene sheet and raise it off the pan. This really helped me. Alligator clip the static applicator to the pan, apply dots of tacky glue or matte medium with a q-tip and go for it.”

To read the complete post in context, use the button below.

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[INDEX](#)

[TABLE OF CONTENTS](#)

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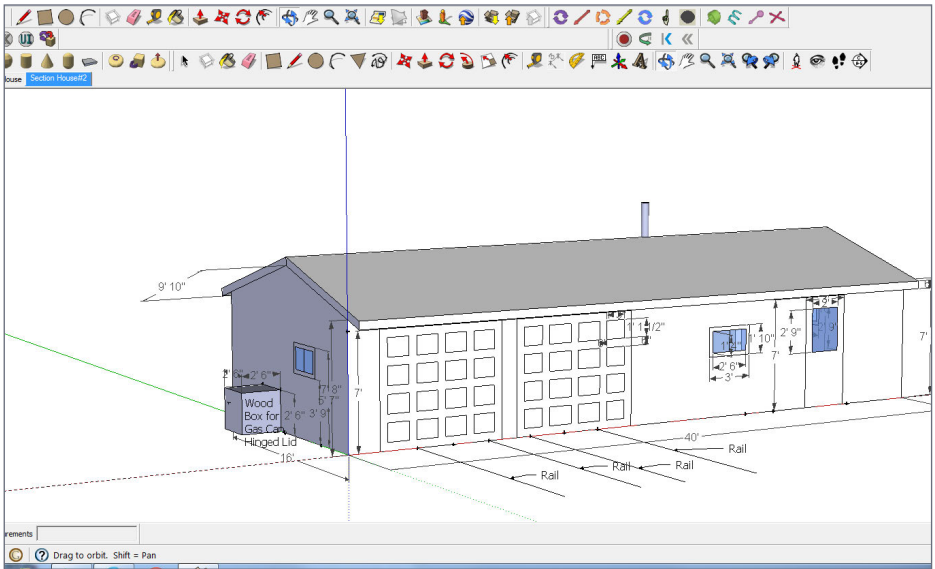
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4. Craig Townsend researched this maintenance-of-way shack and then drew up plans for it in Sketch-Up. With the plans in hand, Craig then built the structure in styrene.

Woodinville, WA MOW shack build

MRH forum member **Craig Townsend** takes us through the entire process of researching and building this MOW structure.

“One of the key buildings in Woodinville was and continues to be a small 40' x 16' MOW shack that was built by the NP. Since, I'm modeling one of the branchlines out of Woodinville (towards Redmond and Issaquah, (east)), I thought it would be fun to model the MOW shack. I ended up with a set of drawings that I could use to build the model.”

Visit the *MRH* website and participate in the conversation with Craig about his structure build.

[View the full thread on the MRH website](#)



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[TABLE OF CONTENTS](#)

Latest *MRH* “Weekly photo fun” thread

Every so often, some very unique photos show up on the *MRH* Weekly photo fun thread. Check it out!

[View the full thread on the *MRH* website](#)



5, 6. *MRH* forum member **Rick Sutton** posted these photos about an intriguing static loco project he’s doing for his layout. His post shows a few of his modeling secrets in making this loco.



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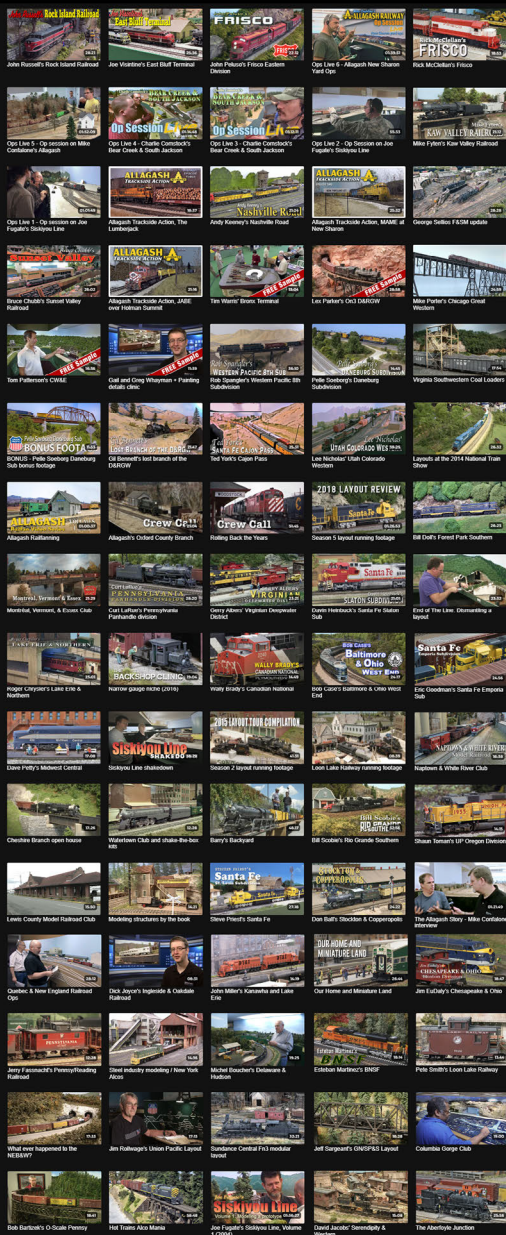
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WHAT'S NEAT

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KEN PATTERSON'S COLUMN THIS MONTH ...

- 19 years of garden railroading lessons learned
- How's and why's of a programming track
- Amtrak from above ...



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MODEL RAILROADING
Garden Railroading
Lessons Learned

MRH September 2020 show

PHOTOS AND VIDEO OF SUPERB MODELS

THIS MONTH KEN EXPLAINS SOME OF THE LESSONS LEARNED FROM his 19 years of maintaining a garden railroad in his back yard; George Bogatiuk demonstrates the use of a programming track to simplify programming DCC decoders; and Stephen M Conroy chases an Amtrak passenger train through the California hills from above.

Garden Railroading – Concrete roadbed



1. Ken started his garden railroad in October 2001, building a dogbone across his 200-foot wide back yard.



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[TABLE OF CONTENTS](#)



2. The layout was originally ballasted with two tons of “quarter-inch minus” crushed limestone rock. Quarter-inch minus, as the name suggests, consists of pieces of rock $\frac{1}{4}$ ” in size down to powder. Here he spreads it between his Micro Engineering track ties with a broom.

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3. Since the limestone ballast was subject to vegetation growing through it, moles displacing the ground under it, and the weather shifting it, Ken replaced it over a period of two years with concrete roadbed, using 120 bags of concrete to complete 350 feet of mainline. Concrete was not needed on the end loops since one is built on a wooden deck, and the other was a 35-foot long trestle.



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[TABLE OF CONTENTS](#)



4. Ken's 35-foot trestle was five feet tall at its highest point. While it is very scenic, the wind off the Mississippi River up the 200-foot bluff in the distance is nearly constant. When it blew over 12mph, it could knock entire trains off the trestle.

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5. The wind, combined with the wear and tear on the 14-year old cedar trestle, led Ken to decide to use the prototype practice of replacing it with a fill. Completing this over a two-year period, he waited six months for the fill to settle.

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6. Ken uses the existing concrete roadbed and an 8-foot level to pound wood stakes around the curve level to the height of the roadbed.

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7. Forms for the concrete roadbed are made from $\frac{1}{4}$ " lauan plywood ripped into strips from $2\frac{1}{2}$ " to 5" in width. The strips are stapled to the inside of the stakes with the tops of both even.



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8. The concrete forms for the 5" wide roadbed are in place. Note the differing heights of the forms to compensate for settling in the fill. The 10'-radius curve required 23 feet of forms for this pour.

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9. Ken mixed two 90lb bags of concrete at a time in a wheelbarrow, for a total of eight bags over a period of four hours. He filled the forms level with the tops of the stakes.

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10. The concrete is then leveled with a cement trowel. Since the stakes and the top of the forms are even, Ken can run the trowel straight across the top without catching on anything. He let the concrete cure for two days before removing the wood forms and replacing the track around the loop.

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11. A few days later Ken added 45-degree concrete shoulders to his roadbed, increasing the width of the roadbed by six to eight inches. This prevents weeds from encroaching on the track and keeps Ken from damaging his track with a string-type weed trimmer when cutting the grass along the mainline.

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12. The concrete shoulder also provides a more prototypical roadbed profile. While spray painting the cement helps it blend into the surrounding scenery, the paint usually weathers off within a season.

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Modeling ideas from above



13. Steven M Conroy chases a long-distance Amtrak passenger train through the California hills from above with his drone. Note the variety of color textures in the browns, greens and grays of the scenery.



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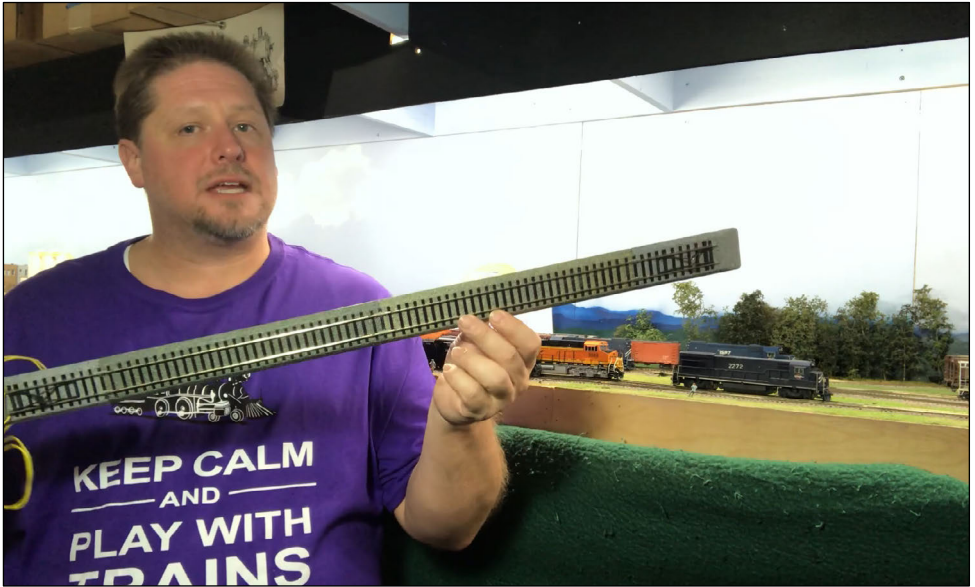


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[INDEX](#)

[TABLE OF CONTENTS](#)

Why and how to use a programming track



14. George Bogatiuk of SoundTraxx uses his home layout to explain how a programming track can simplify programming locomotives as well as how his NCE DCC command station uses it to determine what settings are already on a decoder. Watch the video to see how he does this as well as for other good reasons for using a programming track.



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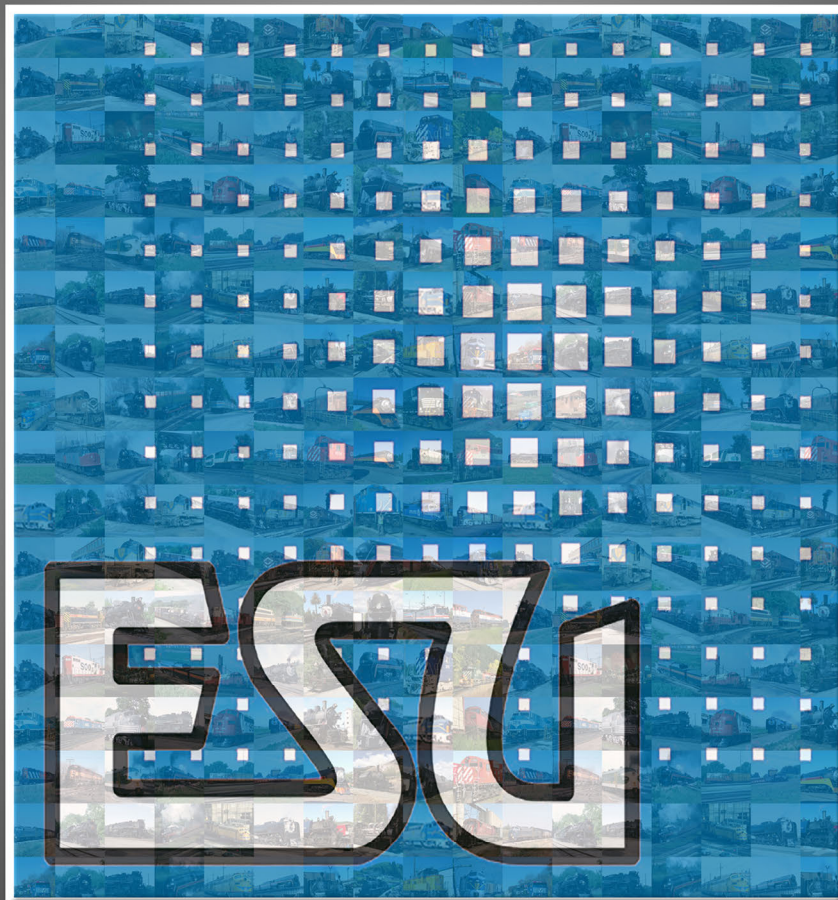
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Lighting effects using fiber optic strands



Electrical
Impulses

1. My industrial structure modeled using ITLA
[\[ITLAscaleModels.com\]](http://ITLAscaleModels.com) modular wall sections.

Model Railroad Hobbyist | September 2020

STEVE JURANICS EXPLORES USING FIBER OPTICS INSTEAD OF
LEDs TO LIGHT A STRUCTURE ...

**OVER THE LAST FEW MONTHS I'VE BEEN
WORKING ON AN** industrial structure [1]. The structure
uses ITLA industrial wall sections sold as individual four-story
sections – they're configurable in any way your imagination
can dream up.



I wanted something substantial (30" long) that fits the “worn industrial” feel of my early '80s-era layout.

I traveled to Trainfest in Milwaukee as part of the NMRA Niagara Frontier Region group – we do an annual pilgrimage to take part in the Modeler’s Corner. While there, I attended a clinic by Michael Groves from Dwarvin.com where he demonstrated his fiber optic lighting product, the Lamplighter 1, see [2].

Michael convinced me to try fiber optic strands instead of LEDs for my structure lighting after outlining the advantages:

- Cheaper: Can cost less than using commercial LED-based systems
- Faster: Add lighting to structures quickly
- Simpler: No rat’s nest wiring
- Safer: No heat is dissipated in or near the buildings being illuminated
- More flexible: Lighting effects limited only by your imagination

So I decided to try the Lamplighter 1 to add lighting to my structure with fiber optic strands.

The Lamplighter Starter kit cost just under \$100 CDN at the show. A single 12V wall wart powers the Lamplighter.

Below, I discuss the three different techniques I used on my structure:

- Over-door lights
- Interior section lighting
- Adding a lit sign.



OVER-DOOR LIGHTING

While Dwarvin provides industrial building lamps using optical fiber, they're designed for an older era. I prefer something more modern, so I custom-built some lights [3] using little sections of plastic C-channel to hide the ends of the 1mm fibers.

I used a #60 bit to drill 1mm (0.040") holes through the 3mm (1/8") wall sections and pushed the fibers through the holes until they barely protruded. The C-channel with a styrene end cap shields the end of the fiber.



2. The Lamplighter 1 has the capacity for numerous fiber strands to be inserted into a single port for distributing light to 20 - 30 points, depending on the size of the fibers.



3. I added lighting over the doors as shown here.



4. Here are the lighted doors, effectively representing these industrial lights in HO.



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[TABLE OF CONTENTS](#)

The width of each light is 4-5mm (0.15"-0.20"), representing a real-life 18"-wide industrial light in HO [4].

LIGHTING THE BUILDING

I used a mixture of end fiber light as well as nicks in the fiber. Nicking the fiber allows light to leak out of the side. While this never provides the same intensity of light as light from the end of an "end-glow fiber" it does allow a single fiber to light various objects along its way.

For this I used mainly 1.5mm (0.060") fiber. In order to obscure any unwanted light from the fibers, I sprayed Dullcote on the window interiors, and covered some strands with heat-shrink tubing. The shrink tubing hides the strands where I don't want any light - and it serves to bundle the fibers together for easier routing [5, 6].



5. I routed the fibers throughout the structure, adding shrink tubing in places to block unwanted light.



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[INDEX](#)

[TABLE OF CONTENTS](#)

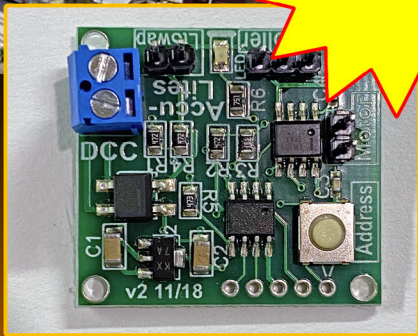
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LIGHTING THE SIGN

As a big experiment, I elected to light a sign on the front of the building. I am not sure how well this would have worked using traditional LEDs.

I used 1/8" clear Lexan, then printed the logo on basic printer paper and glued it to the front of the Lexan [7]. Next, I glued five strands of 1.5mm (0.060") fiber to the back of the Lexan, nicking the fibers in a number of places.

Finally, I put some black backing on the sign. The final effect was very acceptable and did a good job of replicating a sign with fluorescent tubes for illumination. I would have liked the printing on the sign to be more saturated. Also, I think if I had used a reflective foil backing, the illumination may have been more even.

When putting these techniques together, I found the final result to be quite satisfying.



6. By not covering and selectively “nicking” the fibers, I got the effect of several lights from a single fiber, as can be seen along the top floor illuminating the windows.

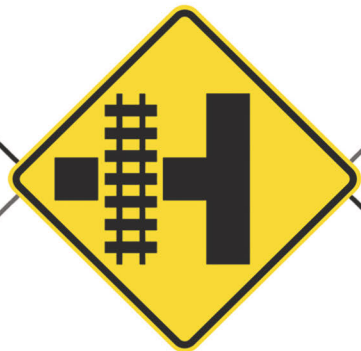


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7. I glued a paper sign to 1/8" clear Lexan, then ran five rows of fibers behind the sign to light it. Before gluing the fibers behind the Lexan, I nicked the fibers in several places to simulate florescent tubes behind the sign; also see [8].



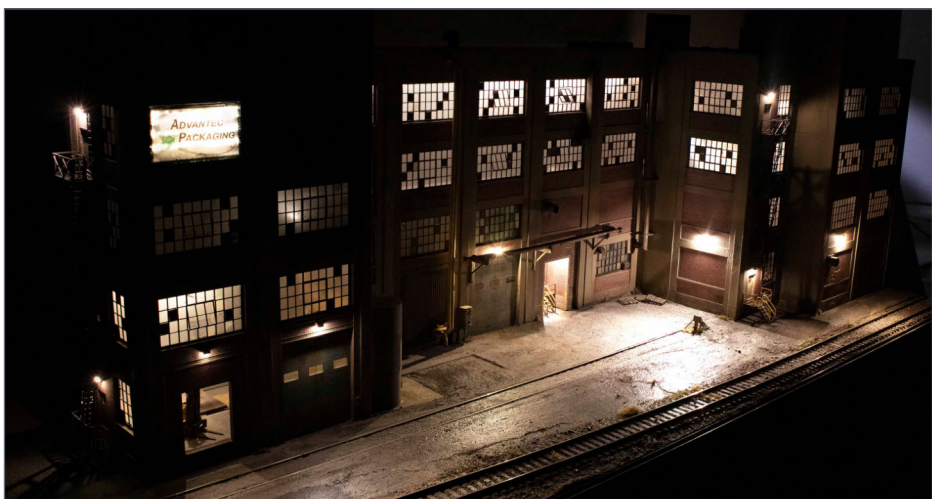
8. The lighted sign.



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[INDEX](#)

[TABLE OF CONTENTS](#)



9, 10. Here's how my fiber optics lighting project turned out. I'm quite happy with the results!

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CONCLUSION

I found the fibers quite easy to route, and very effective at distributing the light throughout the structure. I also could change the color of the light by dabbing a marker or paint on the end or along the fiber.

One caveat: watch out for the glow that comes from the fibers along their run, and mitigate that using black shrink tubing. It's also not a good idea to kink the fibers or try to bend them at a sharp angle.

I reached the system's capacity with the amount of fibers I inserted into the unit for this one structure. But the alternative would have been to use about 25 - 30 LEDs and route a whole lot of wiring. That's over \$300 worth of LEDs and hubs on something like a Just Plug lighting system.

I have found fiber optics to be an effective way to light my structure interiors.



S. Juranics

MORE MODELING TECHNIQUES

You can find more of my modeling techniques on my YouTube channel under "Muskoka Steve". Now that I'm getting back to the basement after a couple years of constructing my 1:1 scale residence, I hope to be posting some new videos soon.



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[INDEX](#)

[TABLE OF CONTENTS](#)

STEVE JURANICS



Steve started modeling at an early age, and after a 30-year hiatus to take care of life, he jumped back into the hobby in 2010.

He has published many videos as Muskoka Steve on YouTube and appeared on the pages of *MRH* three times in the “Yes, It’s a Model” feature.

Steve lives in Cambridge, Ontario and is about to embark on his third major layout in his recently completed house. ■

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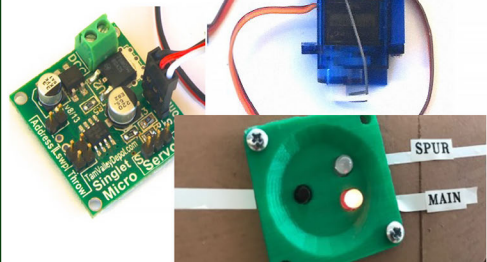
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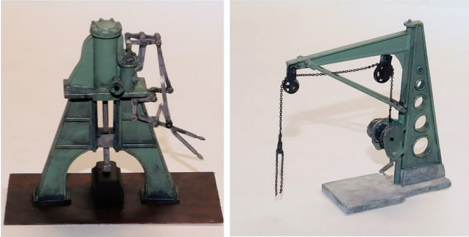


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[INDEX](#)

[TABLE OF CONTENTS](#)

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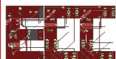


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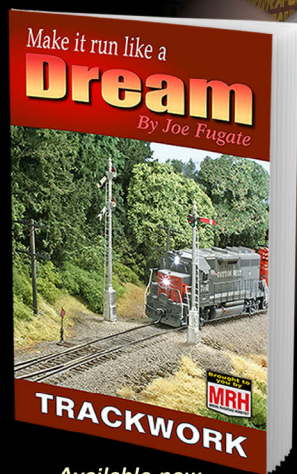


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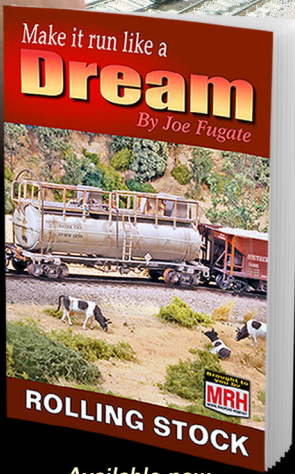
[INDEX](#)

[TABLE OF CONTENTS](#)

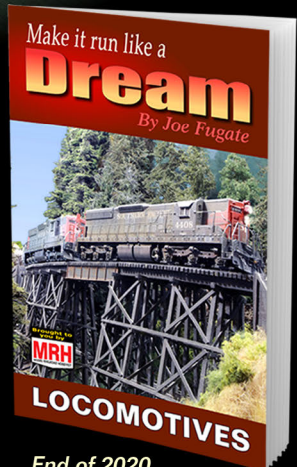
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[INDEX](#)

[TABLE OF CONTENTS](#)





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Model Railroad Hobbyist | September 2020

MARK JUETT DISCUSSES CONSIDERATIONS NEEDED TO GET REALISTIC OPERATING SESSIONS UNDERWAY ...

WHERE DO I BEGIN? WHAT DO I NEED TO CONSIDER? How do I build on what I have? Many have these frequently spoken or unspoken questions as they contemplate setting up and starting realistic operation on their railroad.

At the NMRA National Convention in Salt Lake City in 2019, Joe Fugate asked if I would write this article based on the clinic I gave there and the previous year at Kansas City. I am pleased to do so and honored to be asked.

GOAL 1: REALISTIC OPS

For me, the ultimate outcome in building a model railroad comes from it springing to life with a few of your friends in a realistic operating session [1].

I am thankful that Floyd Britton gave me the opportunity to learn about operations several years ago [2]. Several other owners have allowed me to operate on their railroads, and added to my experiences and enjoyment.

Hopefully you have designed your railroad in such a way that it works much like a full-size railroad. Modeling a specific prototype and reproducing towns or sections of the railroad on your layout takes you a long way towards realistic operation. Tony Koester coined the term Layout Design Elements (LDE) to describe this.



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)

By observing and copying the prototype, we have a great start in building a model railroad that operates realistically and can be quite satisfying to operate.

GOAL 2: RELIABLE PERFORMANCE

Second, nothing goes further towards enhancing your operations enjoyment than highly reliable performance. Detailed scenes can be nice, along with highly detailed equipment and structures – but if you constantly are plagued with derailments, accidental uncoupling, and other problems, that will greatly diminish the quality of the run.



2. The late Floyd Britton gave me my first opportunity at operations, and I will be forever grateful.

Take your time and do a proper job in laying out and installing the track. Likewise, be sure that your rolling stock has properly fitted wheels and trucks, properly adjusted couplers, and weighted to at least the NMRA RP20.1 standard. Many have weighted their cars above this RP, myself included.

I admit that my railroad suffered reliability issues in the rush to be ready for the NMRA National Convention – and even with a host of volunteers helping me, some things were not as they should have been.

My crew and I have gone back to many of these areas and made corrections, improving the reliability over time. Joe Fugate's "Make It Run Like a Dream" series is a great place for you to start. It is filled with a wealth of information to help you attain reliable operation.

To quote my friend Joe Casper, "Build it and they will come; build it well and they will come back."

FIRST THINGS FIRST

Assuming that you have finalized the design and track plan, and you've built at least a portion of the railroad, let's get into a few things that can enhance your op sessions and increase your enjoyment.

First, your railroad does not need to be completely finished with detailed scenery to start operations. You can begin before you have weathered and ballasted the track. You can even start to hold op sessions before all track has been laid. Just a couple of towns can be enough to start.

A regular schedule for your sessions is helpful to keep you building progress moving in the right direction. It also goes a long way to help keep enthusiasm up. With a set date, your operators keep the date open.



“Build it and they will come; build it *well* and they will come back.”



3. Keeping a regular date for your operation will help in your progress on the railroad and operators will keep the dates open. However, a landslide of plaster rock work or Covid-19 can impact the schedule.

Choose a day and keep the schedule – first Saturday of the month; second Friday; whatever it is. Until the call for social distancing this year, we operated the second Friday of every month with few exceptions.

One time when casting rocks near tunnel #4, my track became blocked when some castings fell loose, and we could not operate [3]. Yes, there will be family events, travel, and even construction on the railroad that may impinge on the schedule – but try to keep the schedule.

With a schedule, you will push to get projects completed by the next op session. You will also work towards having the railroad ready, with the construction mess picked up and cleaned up, track cleaned, and every aspect ready to operate.

FINDING OPERATORS

Where will you find operators? If you are fortunate enough to live in an area where there are several operating model railroads you can draw from that group [4]. Perhaps there are people that are helping you construct your railroad.

You may have to reach beyond the boundaries of your town, or you may have to generate the interest where none existed before. I am fortunate to have several operating railroads in my area, and several people helping me build.

I keep a seniority list on a spreadsheet. Those that are here more often and help build and operate gain a higher seniority on the crew list. Most hosts send out the crew call in a group email or group text. I use email.

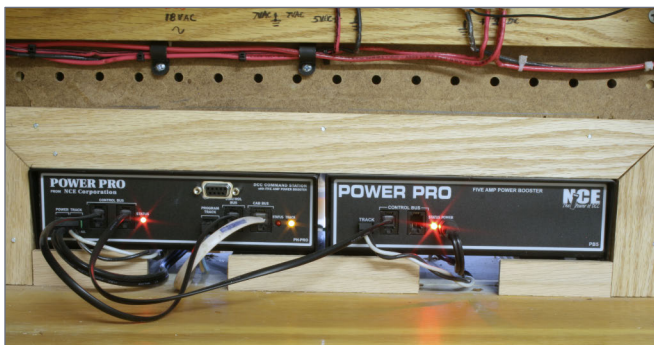
CONTROLLING THE TRAINS

Digital Command Control (DCC) goes further towards enhancing realistic operations than almost anything. I have a





4. If you are fortunate enough to live in an area with several operating railroads, finding a place to operate or crews to operate your railroad can be relatively easy. If not, you may have to get creative to find crews. Here the late Wes Rupe, late Paul Evans, and Larry Diehl operate on Floyd Britton's Midland RR.



5. I designed L&N as a DCC railroad from the beginning. Also as part of the original design, I included Dr. Bruce Chubb's Computer Model Railroad Interface

to control switches, yard ladders, signals, and a CTC machine (yet to be built) and more.

friend that has a DC railroad and holds op sessions, but it could be a lot better with DCC, in my opinion.

I designed my current railroad to use DCC from the very beginning [5]. DCC allows the crew to concentrate on running the engine and not flipping block toggle switches.

DCC loco lighting effects have become very realistic and enhance realism. Sound-equipped locos add even more to the enjoyment. Seeing trains meet with multiple lighting effects, dimming the headlights, and horn signals adds a great deal to the enjoyment and realism.

You do need to decide how you will control the traffic on the railroad. How will trains be dispatched? Installing a fully functional signaling system with a dispatcher's Centralized Traffic Control (CTC) board is not a trivial pursuit.

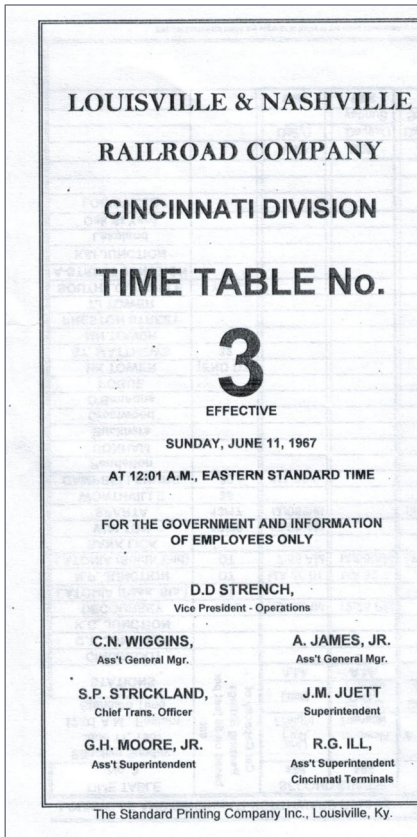
Full CTC control will take a lot of research, design, materials, and labor. Building a fully functional CTC signal system could take nearly as much time as building the rest of the railroad. However, some of us are dedicated to that idea.

In the interim one can implement any number of dispatching methods until a fully functional CTC system can be implemented. The most common options include: Timetable and Train Order (TT&TO), Track Warrant Control (TWC), and Direct Traffic Control (DTC).

Regardless of the method you select, you may find it useful to develop a timetable to schedule trains and manage the ebb and flow of traffic [7]. If more than one train will be on the line at any time, you should have a timetable.

If you model a specific prototype, you may be able to find a copy of a timetable for your railroad and modeled time period. Just look for it at a flea market, swap meet, railroad show, online (eBay), or through your railroad's historical society.





6. A timetable may very well be the first paper form for your railroad. Most word processors have typefaces (fonts) that can closely replicate the original. You can also name yourself as Superintendent on the form!

An old timetable can be a useful historical document. It can include things like a record of how many were trains scheduled to run on any given day, the number of first class, second class, and third class trains, the types of trains, and a hint of traffic density. Of course, unscheduled extras would not be shown.

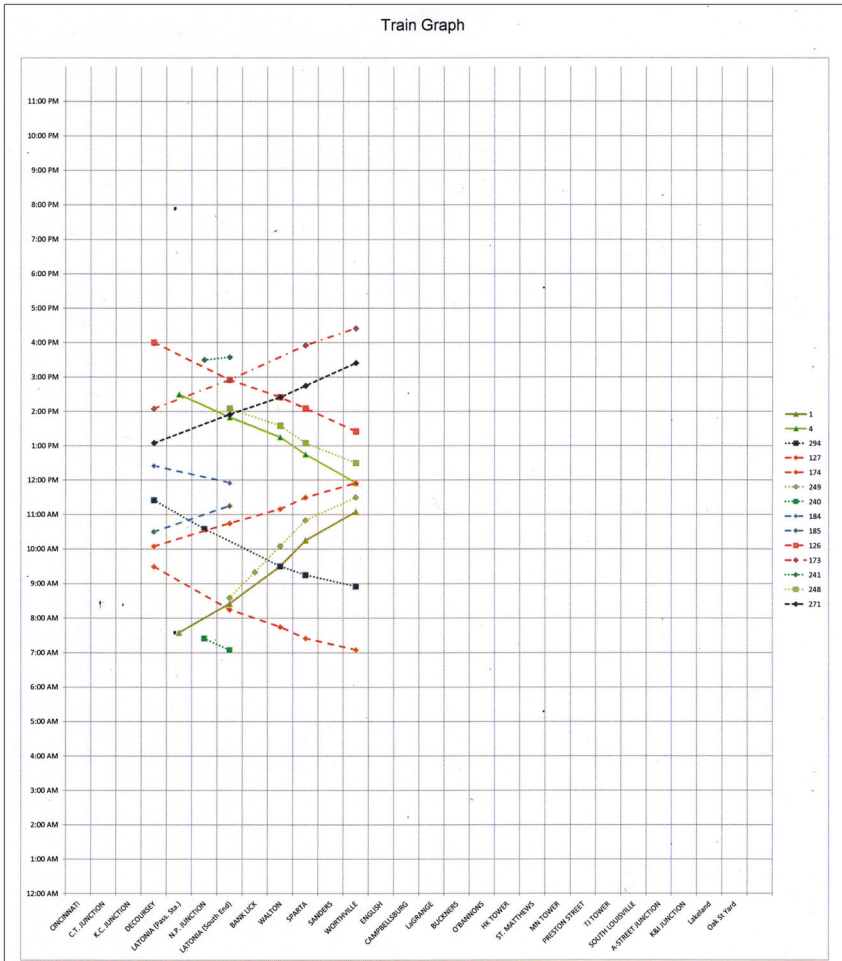
Because we do not have the same distance between stations as the prototype, reproducing the schedule exactly to match your prototype is not possible. You can make the schedule fit at some key location such as at a division point, and modify the arrival/departure times for the other stations. You will have to fiddle with it a bit.

A spreadsheet can be an excellent tool for this. Set up the rows and columns to develop the schedule, stations, mileage from the main terminal, length of passing sidings, and so on.

You can also easily modify the front and back outside pages of your timetable to match your favorite prototype. Most word

Last, add in the third-class trains using the same method. After you have held a few op sessions, take a look at the dispatcher's train sheet and you will know what adjustments you need to make to the train times.

Do not overlook creating a train graph [8] from the schedule to verify that the meets will take place at the desired locations.



8. From the spreadsheet, you can easily make a train graph to see where meets take place and to identify congestion points.

You want to ensure that traffic does not become too congested in some locations.

MATERIALS FOR THE TRAIN CREW

Create a description of the work each train will perform for your train crews. Many owners refer to this description as a train order (not to be confused with a Form 19 or 31 train order, more about that later).

Typically, this description runs about half a page, and can be laminated to protect it. giving the train number, the name of the train, station where it originates / terminates, and a brief description of the work it performs. This document guides the crew as to the work they need to do [9].

240 Newport Local

Originates 7:05 AM from Latonia

See yardmaster to pick up your train and switch list.

Couple to train. Lace up air hoses and connect air hoses to engine. Pressurize air lines. Inspect train. Test brakes.

Call Dispatcher, "At Latonia, Train 240 is ready to depart with ____ loads and ____ MTs. Crew is ____."

The dispatcher will align switches on south end of Latonia yard and signals will clear when you are cleared to depart. Back train onto passing siding. When clear of arrival/departure track Dispatcher will align switch to the passing siding and align the crossover. Proceed to N.P. Jct. Stop short of switch. Align switch to Newport. When clear of main, stop and return switch to normal. (You will complete this move before #174 arrives in Latonia.) Proceed with your work according to the switch list.

You will become train 241 for the return to Latonia.

Turn this card over for Train Order 241.

9. Laminated train orders give instruction to the crews about the work they will do and when and where they will start.



Many of us have found it useful to create engine cards, also laminated to protect them. The card gives the unit number, reporting marks, model number, DCC address and a map of what function buttons control what functions [10].

Try to maintain consistency. If F0 controls the headlight on one loco, it should be the same on all. Many people have remapped frequently used functions to lower buttons for easier access. Your functions might not be mapped the same as your friends, but you should be consistent within your fleet. Some of us have additional info on the back side for less-experienced operators, such as whistle signals and line side signals [11].

253 L&N	
RS-3	
DCC Address:	253
Function	Effect
0	Lights
1	Bell
2	Horn
3	Short Horn
4	
5	
6	Air Brake
7	Dim Headlight
8	Mute
9	Ground Lights
10	
11	Compressor
12	Fans+
Tonnage Rating	

I have sound car decoders in my cabooses. This adds a bit of animation, sound, and lighting effects. I have flashing end-of-train lighting on each end, plus interior lighting and stove, in addition to wheel and flange squeal. So the train crews need a bit of additional instruction to set up. For this, caboose cards fill the bill [12].

10. An engine card helps the crews know the DCC address of the loco if different than the unit number. It also tells them which function keys control which outputs (horn, bell, lights etc.)

Horn Signals

STOP	0
PROCEED FORWARD	--
BACK UP	000
GRADE CROSSING	-- 0 -
APPROACHING STATION, TUNNEL OR BRIDGE	-

Trackside Signals

G	CLEAR	PROCEED
G/R	CLEAR	PROCEED
R/G	DIVERGNG CLR	20MPH
Y/R	APPROACH	STOP NEXT
R/Y	DIV APPROCH	20MPH& STOP
R W/#	PERMISSIVE	STOP PROCEED
R/R	ABSOLUTE STOP	

11. The back side of the engine card has a few whistle signals on it and lineside signal aspects.

6197 L&N	
Caboose, Bay Window	
DCC Address:	6197
Function	Effect
0	Flashing EOT
1	
2	Whistle
3	Short Whistle
4	
5	Uncoupling
6	Brakes
7	Coupling
8	Mute
9	Interior Light
10	Stove Flicker
11	
12	
To change Flashing End Of Train Device and link this caboose to your loco; see instructions on reverse side of this card.	

12. A caboose card performs a similar function to the engine card. All our cabooses have sound car decoders for end-of-train flashing lights, interior lights, brake sounds, and wheel noise from the caboose.



You can make a loco or caboose card easily using word processing or spreadsheet software.

MOVING A TRAIN

Before a train may depart, the crew needs a clearance form from the dispatcher [13]. You can often find one for your prototype with an online search – download it and format a version in a word processing program.

Usually you can fit four clearance cards to a page, then cut them apart.

Your dispatcher will need to complete the card before handing it to the train crew. The dispatcher needs to note if there have been any train orders written that affect this train.

639-4-11-74

Louisville & Nashville Railroad Company

CLEARANCE FORM A

Station _____

Date _____ 19____

C&E _____

I have _____ orders for your train.

Nos. _____

On account of a preceding train do not leave this station until _____ M

1 To be used only when necessary to comply with Rule 91.1

Time _____ M _____ operator

If no orders write "No" in space provided for number of orders.

13. A clearance form must be issued before the crew may move onto the road. An online search for your prototype and “clearance form” will likely turn up an original you can model.



SETTING UP OPERATIONS | 16

The dispatcher can also note at what Station the crew should receive this clearance card, as well as the date and time the clearance becomes effective.

Once a train gets out on the railroad, it may be necessary to issue train orders to keep things moving, protecting extras, or giving rights to one train over another should the superior train become delayed for some reason.

Again, an online search for such a form for your prototype railroad will likely turn up an example. Then back to the word processor to create a Form 19 and Form 31.

These two forms look just alike except the 19 or 31 at the top [14]. The difference is a train crew must stop and sign for a Form 31, whereas a Form 19 may be passed up to the crew on an order hoop. Hooped-up, in other words.

FORM 19 LOUISVILLE & NASHVILLWE RAILROAD COMPANY FORM 19

TRAIN ORDER NO. _____ 19 _____

TO C. AND E. _____

TO C. AND E. _____

TO C. AND E. _____

TO C. AND E. _____ AT _____

X _____ OPR. _____ M. _____

EACH EMPLOYEE ADDRESSED MUST HAVE A COPY OF THIS ORDER

MADE _____ TIME _____ M. _____ OPR. _____

14. Form 19 (and 31 which looks identical except for the 31) will be needed if your dispatcher will issue train orders. Just lay out one in word-processing software based on your prototype's form.



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[INDEX](#)

[TABLE OF CONTENTS](#)



Bad Order Form

Reporting Marks: _____

Number: _____

Coupler Wheels

Trucks Weight

Broken or missing
appliances

Other describe

A end B end

Forward to RIP track Latonia

Date: ___ / ___ / ___ Initial ___

15. Some bad order Forms for your crews may help them report problems so you can correct them later.

Some of us create bad order forms [15] to encourage our operating crews to help identify problems in rolling stock, locos, track, or anything else that diminishes the operating pleasure.

For my first attempt, I just did a quick creation on the computer with no research online for a prototype form. My NW car knocker friend Jerry has not criticized the appearance of the form, so it has never been researched and upgraded for more prototype accuracy.

If you have a dispatcher (DS), he or she will need an office [16]. Jim EuDaly has an addition to his 50x80-foot Butler building for a dispatcher's office. Some have put the DS office under the stairs, inside a helix, in a spare bedroom, or as I did, in a closet [17].

The dispatcher needs a flat work surface (a table) to write train orders, log trains on the train sheet, and to complete other forms. They will need a comfortable chair, good lighting, and a

stack of forms, plus a writing instrument and some system to keep the blank forms organized [18]. A file folder organizer or a custom-built cabinet to hold the forms, take your pick.

The DS also needs a means to communicate with the train crews and yard crews. Many have installed a party line phone system [19]. Some have gone authentic with a telegraph, but most of us have forgotten Morse code or never knew it.

Those modeling modern periods use short-distance two-way radios. Several companies sell two-way radios. Model Railroad Control Systems sells components for a complete phone system. They also sell telegraph keys and sounders. You just need to choose between being accurate for the period versus the difficulty of installation and use.



16. A place away from the railroad for a dispatcher's office adds to the realism.



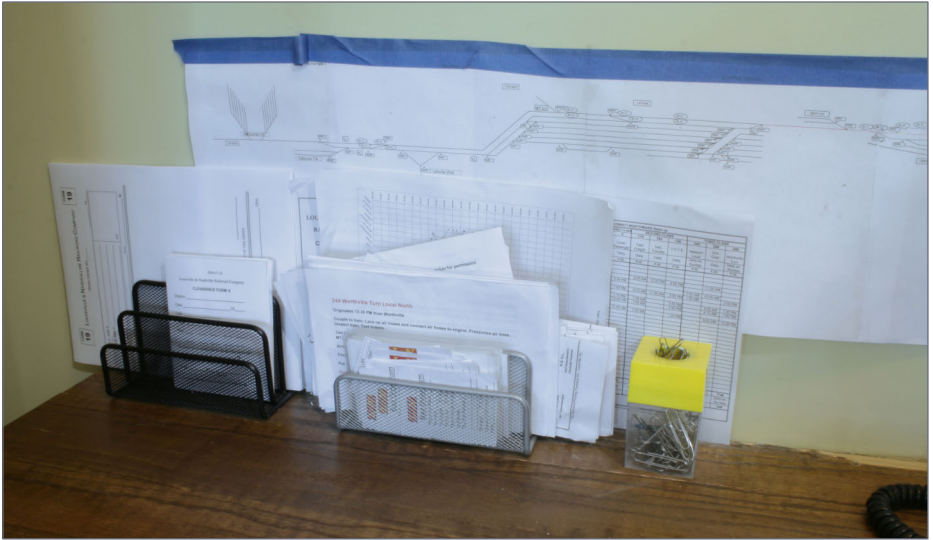
Keeping time with accurate clocks is important to railroad operations, particularly with timetable operations. You can find a number of options on the market for clocks: I use Logic Rail repeater clocks on the throttle bus [20].

Logic Rail makes models that work on NCE or Digitrax. I have one over the Dispatcher desk and another in the crew lounge. My crews use the clocks on the NCE Pro Cab throttles to watch the time.



17. I placed our dispatcher's office in a closet along one wall of my basement office.





18. A desk for writing, good lighting and the needed forms properly stored and organized increases the enjoyment.



19. A means to communicate between the dispatcher and operators or train crews will be needed. This vintage Western Electric 58 headset remains as uncomfortable as it was originally in 1967.



20. Clocks that keep time together will be needed for most operations (especially timetable operations). Several throttles have displays with fast clocks. I mounted this repeater clock in the DS office, with a larger clock in the crew lounge.

THE DISPATCHER

The dispatcher keeps track of the trains on the train sheet, protects extras, and issues orders as needed to keep things moving should a superior train be delayed significantly.

If you have CTC instead of train orders, the DS controls signals to get trains over the road.

The dispatcher can also hand out train packets, file returned paperwork, and/or generate a switch list for new trains. It depends on the density of traffic and how involved the operation gets. In short the DS controls the railroad.

OPERATIONAL AIDS

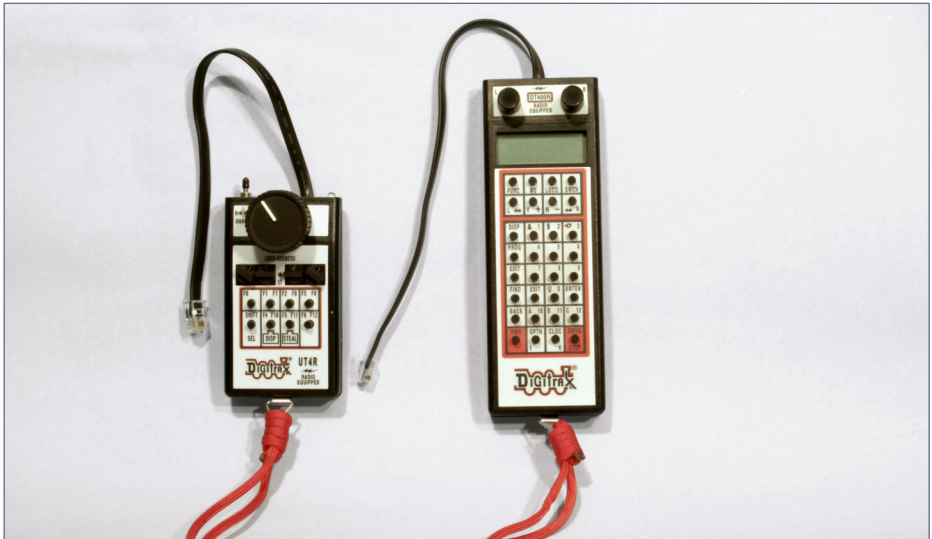
You might want to consider some additional operational aids. Many of us have found a lanyard attached to our throttles helps

safeguard against damage by being dropped to a concrete floor. The lanyard can really help when the operator tries to handle paperwork, uncoupling tools, and a throttle all at once [21].

Several of us have attached large paperclips to the back of the throttle [22] to hold loco cards, train orders, etc.

An idea that I picked up from Bill Scheerer is to hand everyone a nail apron [23] to store paperwork, uncoupling picks etc. They are available from home-improvement stores for under \$1. At the end of the session you can find lost forms and uncoupling tools there. The incidences of operators taking paperwork and uncoupling picks home is reduced.

Even with aprons, it can also help to have large spring clips attached to the fascia [24]. The crew can put the switch list there for easy referral without digging it out of the apron or a pocket.



21. Attaching a lanyard to your throttles prevents damage from drops to the concrete floor.



When selecting throttles, maybe you can get by with tethered throttles and have operators plug in. You will need a lot of throttle panels, sometimes more than one at each location. When there are too many in one area, the cords can become a tangled mess.

I equipped my entire railroad with radio throttles. Yes, they cost more, but they allow operators to remain free to move where they need, and not become entangled. With radio, you don't need as many throttle panels or throttle pockets – just a radio antenna.

With Digitrax, the throttle panel also acts as the radio receiver/transmitter. The NCE system has a radio antenna that plugs into the throttle bus. I mounted my radio antenna on the ceiling above everyone for better coverage [25].



24. Large spring clips attached to the fascia provide a convenient place to hold the switch list, making it easy to see and read.



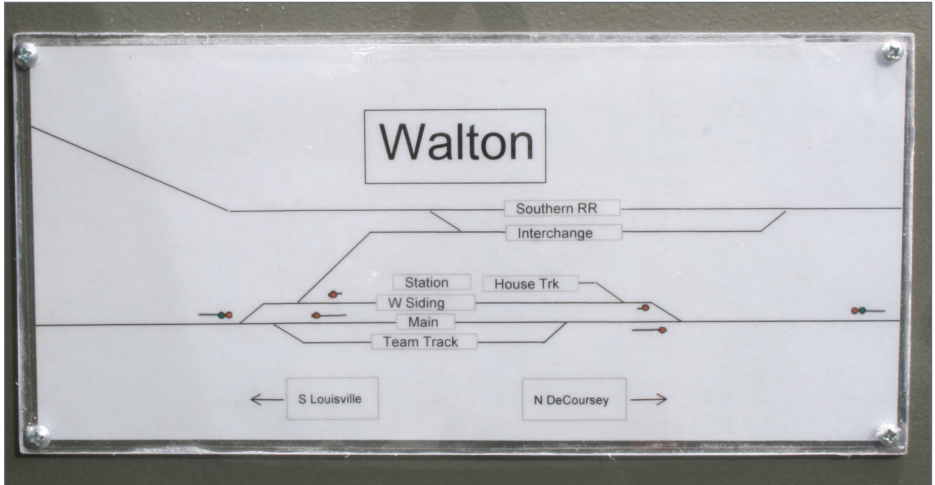
25. I mounted the NCE RB02 radio antenna on the ceiling for better coverage. I also installed a radio repeater to cover my zig-zag basement space.

LABEL EVERYTHING

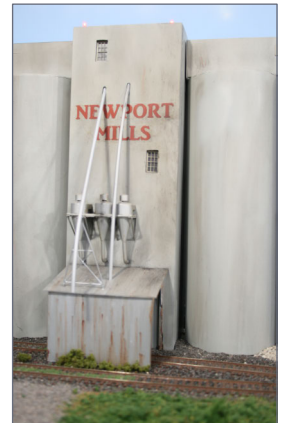
Everything and every place on a railroad should have a name. It eliminates confusion when referring to a place, a track, an industry, etc. A small track diagram with the name of the location and labels for each track [26] make it much clearer where Newport Mills track #2 is. Cars have a better probability to be in the right place at the end of the session. Also, having the names of businesses displayed where they are easy to read is helpful, and putting signs directly on the building makes it clear [27].

However, this scrap yard needs no sign [28]. It is very clear that this siding serves the scrap yard. If you don't have structures

and scenery in place, simply writing the name of the business nearby works as a temporary solution [29].



26. Maps on the fascia with all tracks names and identified helps crews navigate and place the right car in the proper location.



27a, b. Having the name of the business on the building makes it easy for a new crew member to identify the rail-served customer.



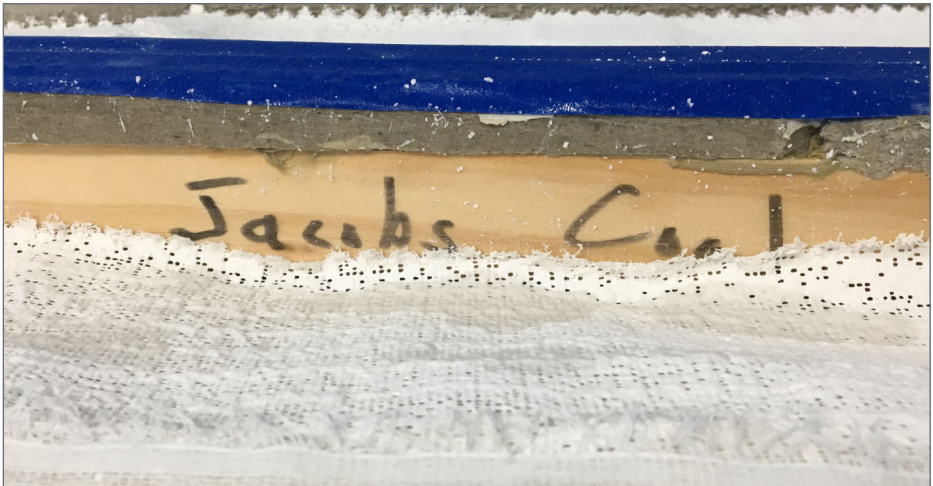
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[INDEX](#)

[TABLE OF CONTENTS](#)



28. Obviously, this is a scrap yard, even without signs.



29. If you have not built a structure yet, marking the location with a marker helps operators. *[Or just add a cardstock tent sign – ed.]*

TURNOUT CONTROL

Switch locks provide an additional opportunity to slow people and add operating interest. These were designed and fabricated from Lexan, and use decal paper printed backward on a laser printer [30].

A key switch and toggle switch are controlled by Computer/Model Railroad Interface (C/MRI). Detection circuits determine if the switch interlock is clear and safe to operate the switch. The software also checks that blocks leading to the switch are clear, and if not, delay opening the switch, allowing enough time for an approaching train to get close enough to be seen by this crew. Once the CTC machine is built, the Dispatcher will have control over this, and allow the local crew to put the switch in Hand mode.



30. Switch locks and software timers can add realism and extend the duration of the run for crews.





31. Grinding down the end of an inexpensive small screwdriver to a point makes a handy uncoupling tool. I glued a small rare-earth magnet on the handle to activate a caboose sound car decoder for coupling/uncoupling.

UNCOUPLING CARS

As you plan your railroad, you might consider what method you will use to uncouple cars. Many prefer magnets on or under the track. Some object to the appearance of a magnet between the rails, and go for a magnet below the ties.

They will then install a painted post or paint a spot on the rails to help locate the magnet now invisible under the ballast. I have had some issues with unintended uncoupling with magnets beneath the rails. Usually it is related to the slope at the point creating slack which allows cars to uncouple.

Using an uncoupling pick reduces unintended uncouplings. It allows you to uncouple any place that you can reach. Extended reach is a good reason to use a magnet.

I ground-down the point on some screwdrivers to make uncoupling tools [31]. A magnet on the other end is handy to trigger the reed switch in the sound car decoders in cabooses and refrigerator cars.

Others have used commercial products, bamboo skewers, and any number of homemade tools. If you are holding night operating sessions, consider providing a small flashlight so crews can read car numbers. A clever idea I once saw was the flashlight and uncoupling tool taped together to make one tool.

YARDS AND INTERCHANGES

Every railroad (model or prototype) will likely have a major classification yard where trains are made up and broken down. Latonia Yard [32] serves that purpose on our version of the L&N.

From there trains go in three directions. They will need destinations beyond the visible portion of the railroad. Interchanges to other roads give us the opportunity to move



32. Latonia yard bustles with activity. Many trains originate or terminate here. Several trains drop or pick up cars, and a few trains just pass through.





33. Interchanges with other railroads give the cars a place to go beyond your visible railroad to the outside world.



34. The Pennsylvania interchange at Newport extends into my office on a drawer with six tracks. An interchange with the CNO&TP goes beneath a large hill.

SETTING UP OPERATIONS | 32

cars off our railroad and receive cars from foreign roads. We don't get bored seeing the same cars at the same industries every session.



We have interchanges with the C&O, PRR and CNO&TP [33]. Two of these are in the Newport Covington area, and the third is at Walton. Two are interchanges where cars go away for three sessions before returning. The CNO&TP interchange at Walton is a three-track yard 42" long in a drawer. Cars are exchanged with each track in turn over the course of three sessions.

35. As Superintendent, you will decide if Rule G is enforced.



36. Regardless of the beverage, drink holders conveniently placed reduce the spills and add to the enjoyment.



37. You will decide what types of trains will run such as this Trailer On Train Express (TOTE), unit coal trains, auto carriers, auto parts, strings of refrigerator cars, manifest freight, and crack passenger trains.

OTHER CONSIDERATIONS

As the superintendent, you need to decide if you will enforce Rule G: no consumption of alcohol while operating. We model 1967 and we're pretty relaxed about having a beer or two during an Op Session or work session.

Regardless of your stance on Rule G [35], providing a nice crew lounge and places to hold beverages while operating will reduce spills and enhance the enjoyment [36].

As you decide on your operating plan, you will need to decide on the types of trains you are running, local switchers, out-and-back turns, unit coal trains, trailer-on-flat-car, manifest, mail trains, passenger trains etc.

Will you have a run-through by a foreign road with trackage rights or an emergency due to a track washout? As you design, you get to decide what to implement from the prototype and what adds interest [37].

CONCLUSION

This article covers my approach to realistic operation. There certainly can be more things to think about and other ways to do operation.

I hope this has given you useful things to consider when setting up operations on your model railroad.

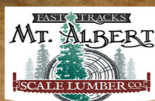


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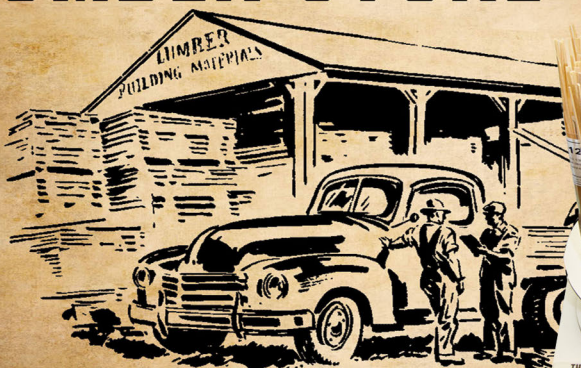
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[INDEX](#)

[TABLE OF CONTENTS](#)

MARK JUETT



Mark has been involved in model railroading for over 50 years. Like most, it started with a train set at Christmas.

Much of the intrigue of model trains for Mark came from the mechanical and electrical/electronic control aspects. This interest in things mechanical and electronic led to an Associate Degree in Electronic Engineering Technology, and later a BS in Ag Engineering. Seven years after college he returned to school and obtained an MBA from Rockhurst College in 1987.

Mark converted to DCC early on and writes the monthly column “The Pulse of DCC” in the NMRA Magazine. In addition, he is the manager of the NMRA DCC Working Group. Mark also became an early adopter of Dr. Bruce Chubb’s Computer/Model Railroad Interface.

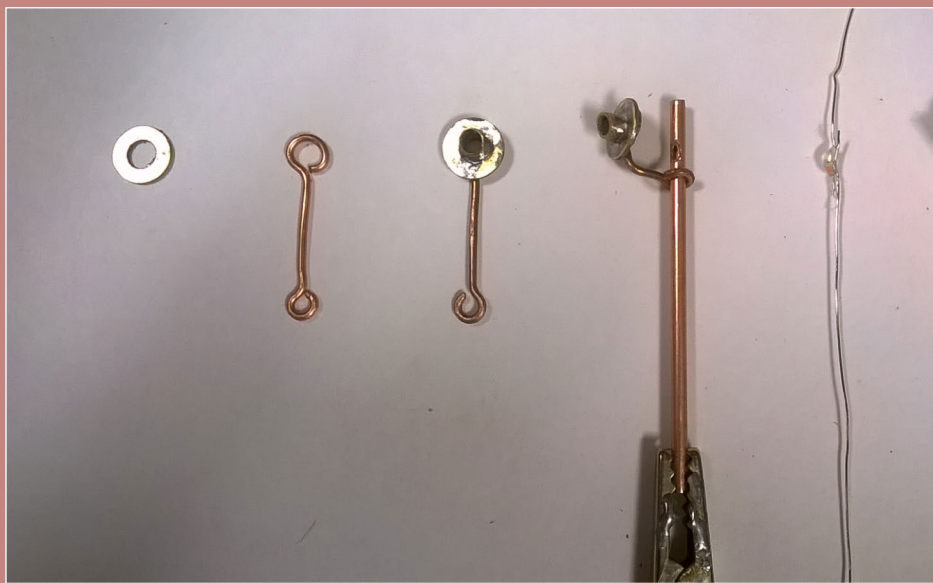
Mark has shared his experience with others through clinics and presentations at NMRA Division, Regional, and National Conventions. He served as Clinic Chairman for the NMRA 2018 National Convention in Kansas City.

After years in the corporate world, Mark now builds and maintains custom model railroads (he took over Miles and Fran Hale’s business), and does other custom model railroad work in addition.

Mark currently holds the following National Model Railroad Association Achievement Program certificates; Engineer Electrical, Engineer Civil, Model Railroad Author, Master Builder Scenery, Chief Dispatcher, Association Volunteer and Master Builder Structures. He is two scratchbuilt cars away from Master Builder Cars and Master Model Railroader. ■

Scratchbuild

simple bi-color signals



Model Railroad Hobbyist | September 2020



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**PETER FRIEDRICH ON MAKING SEARCH LIGHT SIGNALS
WITH AN UNUSUAL LED SOURCE ...**

AS SUMMER STARTS TO WANE, Christmas will be here before we know it, and thoughts turn to model trains around the tree.

Last Christmas I found a red-green light string [1] and immediately thought of signals!



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[INDEX](#)

[TABLE OF CONTENTS](#)

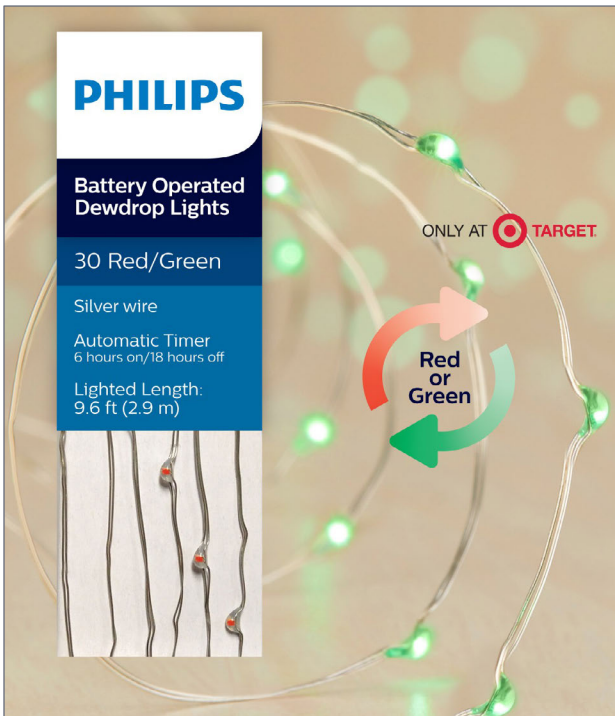
SIMPLE BI-COLOR SIGNALS | 2

Sometimes, as things go, a popular seasonal item like this sells out before the season reaches its zenith. I did not wait – I acted immediately and bought a string.

As I examined them closely, I found the “dewdrop” encased two LEDs wired to illuminate depending on polarity. When powered with DC current one direction, the string illuminates the green LEDs, and reversing the polarity illuminates the red LEDs. Simple enough.

Better still, it’s done with two wires, instead of the three used with common-anode bi-color LEDs. Yet another advantage to this string is these small LEDs are pre-wired and the wires are insulated.

Quite the bonus when handling miniature LEDs.



1. The red-green Christmas LEDs that inspired this project.

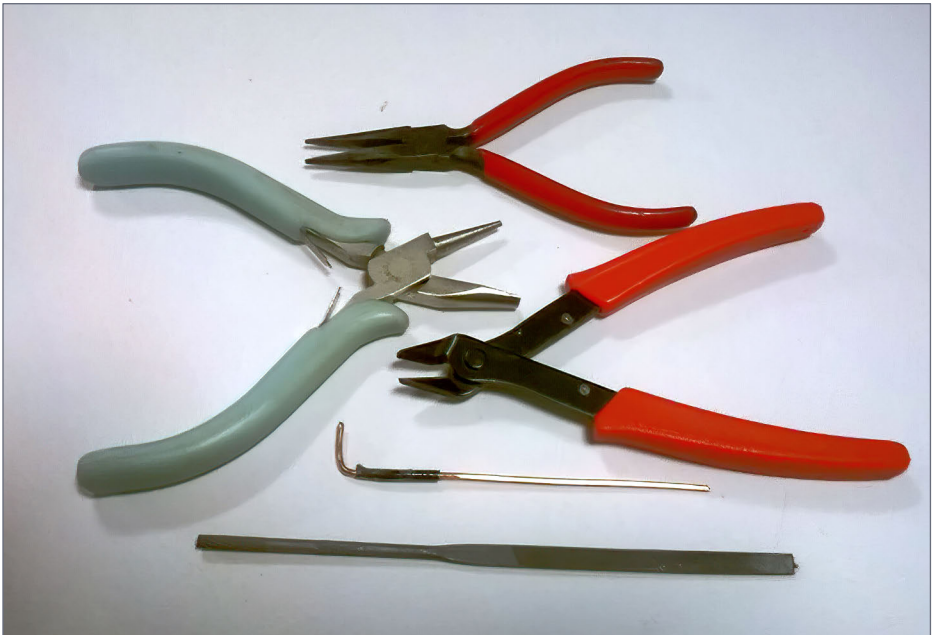
BUILDING THE SIGNALS

A photo of tools employed does not include a Dremel motor tool or soldering iron [2].

I carefully removed the light string from its packaging [3].

SCRATCHBUILDING THE SIGNAL MAST

I decided to scratchbuild a signal that looks like a single-head searchlight signal from Azatrax [6] [azatrax.com/ho-searchlight-block-signals.html]. I chose a robust and simple method for a basic solid HO signal mast that I could then detail.



2. Tools used in this project (top to bottom): Needle nose pliers, round-flat nose wire looping pliers, lightweight diagonal cutters, #16 tube support wire, and a flat needle file.

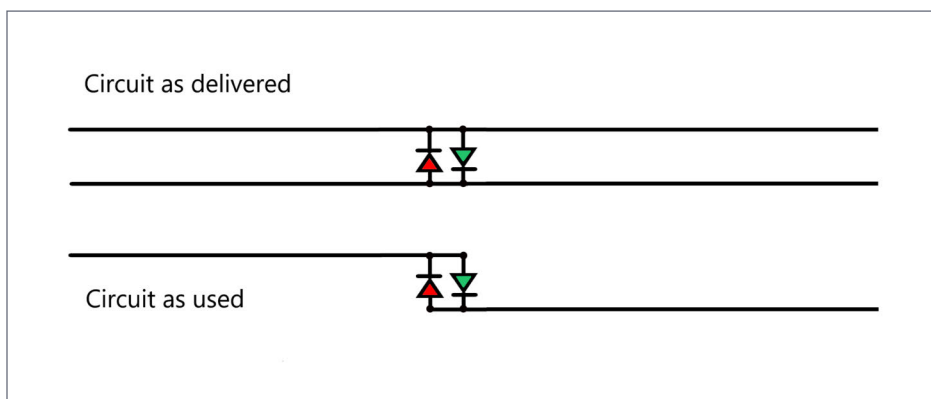


SIMPLE BI-COLOR SIGNALS | 4

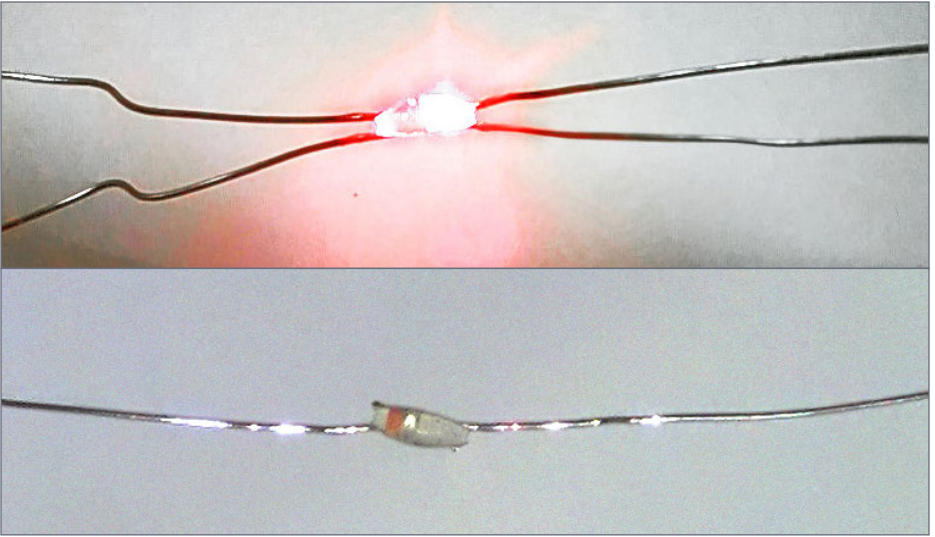
My goal here is to show you how to get the basic mast signal with working green-red LEDs using just two wires. I leave the final signal detailing and mounting to you.



3. Carefully unwrap the dewdrop lights from their packaging.



4. As delivered, there are four leads to each LED pair, but I cut off two to yield just two leads per red-green LED set.



5. As delivered (top) and leads trimmed (bottom) – just make sure you orient the red-green LED pair with the red on the left and then trim as shown. Also see [4].



6. My inspiration for a simple signal mast is this nice search-light signal from Azatrax.



I started with 3/32" brass tube for the main mast and cut it to a scale 15-foot length. Signal masts typically support the signal head at an elevation of 12 feet, but I chose to leave extra length to give me more mounting flexibility later.

To cut the tube quickly, I used diagonal cutters and supported the interior of the tube with solid wire – #14 or #16 depending on the inside diameter of your tube

After cutting the tube, I used a needle file to deburr and smooth the ends.

Next, I used the narrow edge of a needle file to open a small hole in the signal mast tube about 1/4" from one end. A motor tool will also work. Make sure to not leave any burrs, as one LED wire will pass through this opening [7].



For the signal head disk, I used a #8 brass washer and a 5/32" diameter brass tube cut on a bevel to form the signal lens hood. I soldered the tube in place onto the brass washer.

I bent one end of #14 wire to fit the signal mast using wire loop pliers. I bent the other end to fit the signal head and shade made from 5/32" tube [8]. I kept the loops on the same plane.

7. I used a needle file to file a hole in one end of the 3/32" brass tube 1/4" from the end.

While assembling, I cleaned up excess or out-of-place solder.

I assembled the signal head parts as shown in [9] with the support bracket behind the signal head shield. I chose not to cut the hood to size until the support was properly soldered. Once soldered, I cut the back of the lens hood tube flush with the back of the support arm holding the signal head.

Then I dry-fitted the finished signal head on the mast as shown in [10]. The cut in the mast must be behind the signal head. Once I was happy with the placement, I soldered the support arm to the mast.

Then I bent the support arm to point the signal head outward.



8. Forming the signal head support using #14 copper wire. The 3/32" mast and the 5/32" tubing for the lens hood are at the top.





9. Soldering the signal head to the support arm.



10. Dry-fitting the signal arm assembly onto the mast, making sure to align the back of the signal head with the notch in the mast.

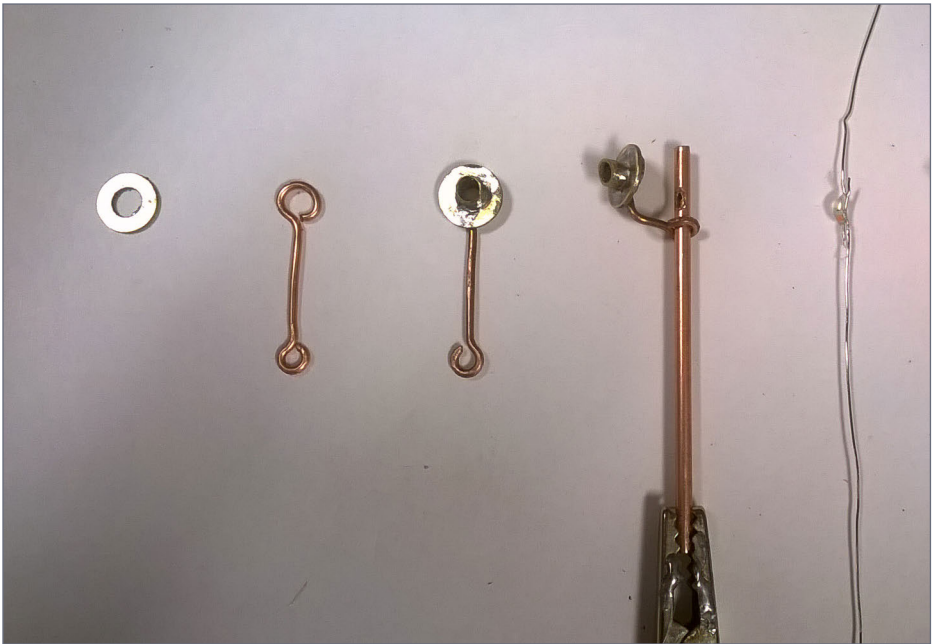


FITTING THE LED

To get the LED to fit, the “dewdrop” plastic covering needs to be trimmed with a sharp X-Acto knife.

Note where the green and red LEDs are so you consistently mount them the same into each signal. Otherwise, they will look slightly different. I mounted the green LED on the top in the signal head housing.

I fed the wire from the red side down the signal mast (remember, it's insulated). Once the wire was fully threaded through, I scraped insulation off its end.



11. After soldering the supporting arm assembly in place on the signal mast, I bent the signal head outward. This photo summarizes the entire assembly process.



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[INDEX](#)

[TABLE OF CONTENTS](#)

I scraped the insulation coating off the wire next to the green LED, and trimmed it to about 1/2" – then bent it at a right-angle 1/4" from the end. I inserted the LED into the lens hood from the back, and soldered the part of the lead closest to the green LED to the back of the signal head, using the other 1/4" of this short lead as a handle. Once I had completed this job, I trimmed the excess green lead flush with the back of the signal head.

To get the signal to operate, I just soldered a lead to the bottom of the mast. Then I connected power to the two leads – the one soldered to the mast and the one threaded through the mast shaft from the red side of the LED. But add the proper resistor before first applying power – more about that below.

Make sure your signals each have the same LED wiring – reversing these will reverse the color response when energized!

Reverse the polarity to change color as desired, red or green.

Remember that LEDs require a current-limiting resistor in series. The resistor value will vary depending on the brightness you want and the voltage supplied. For 12VDC I added a 470-ohm half-watt resistor. Pay attention to this wattage, as I found a quarter-watt resistor got hot and my first LEDs burned out. It does not matter which wire is attached to the resistor.

GOING ON FROM HERE

This gets the basic signal mast structure built and operational.

From here you can solder a brass ladder to the mast. The base can be shaped from styrene sheet and tubing, tapering the base sleeve and adding some bolt detail.

Styrene can also be used to fashion a proper box to cover the back of the signal head and to fashion a suitable mast cap. The one lead from the red side of the LED can be shaped to look a lot like the prototype signal head cable.

Then just apply some silver paint to the signal mast and black paint to the signal face, and mount the signal on the layout. Wire them up (see the following pages for details on some circuits to use to drive these signals) and enjoy these simple but virtually indestructible signals as you run your trains.

PETER FRIEDRICH



Peter Friedrich's railroad interests began as a child with the Erie Railroad across the street.

The hobby's many facets likely can be implicated in his choosing a career as an industrial designer. His modeling was interrupted for several decades, resuming again so he could pass down the fun and skills to his sons. He lives with his family in New Jersey. ■

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[INDEX](#)

[TABLE OF CONTENTS](#)

WIRING BACK-TO-BACK LEDs CONTINUED ...

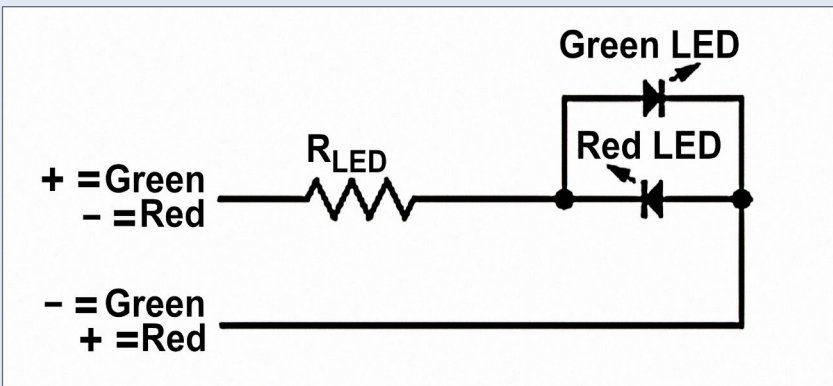
By Mike Dodd

“Back-to-back” wiring means connecting the anode of one LED to the cathode of the second, and then connecting the anode of the second to the cathode of the first [1]. The benefit of this is that only two wires are needed to the circuitry that “drives” (powers) two different colored LEDs. As with any LED circuit, a resistor is needed in series to limit the current. This is designated R_{LED} in the circuit drawings.

But wiring LEDs this way means you need to *reverse the polarity* of the voltage to control the color. Refer again to [1]. When the voltage across the two wires is $+/-$ the green LED lights. When the voltage is $-/+$ the red LED lights.

USE A TOGGLE SWITCH

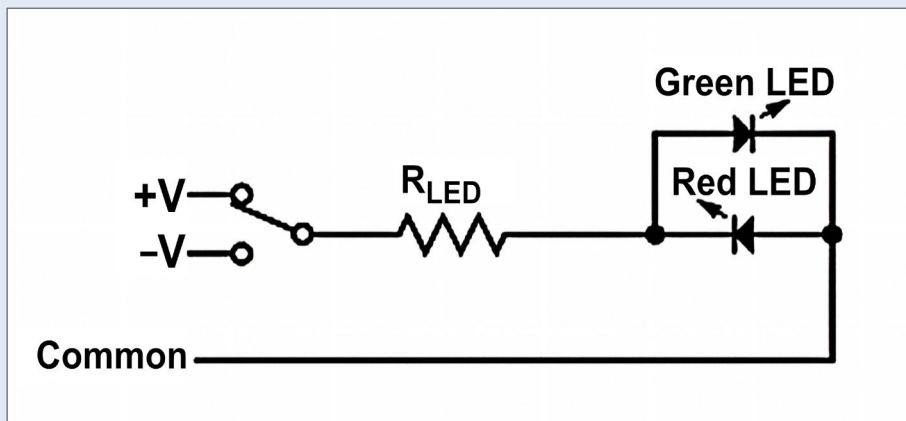
You can use a single-pole-double-throw (SPDT) switch and two DC power supplies to manually control the



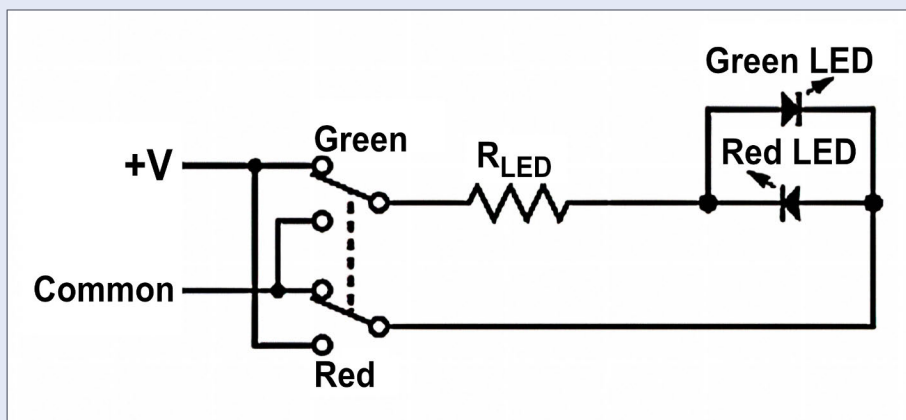
1. Basic bi-directional LED circuit.

WIRING BACK-TO-BACK LEDs

LEDs' color, as seen in [2]. But what if you have only one power supply? Then use a double-pole-double-throw (DPDT) switch, as [3] illustrates. This switch works just like the switches used in the "old days" (before DCC auto-



2. SPST switch, two power supplies.



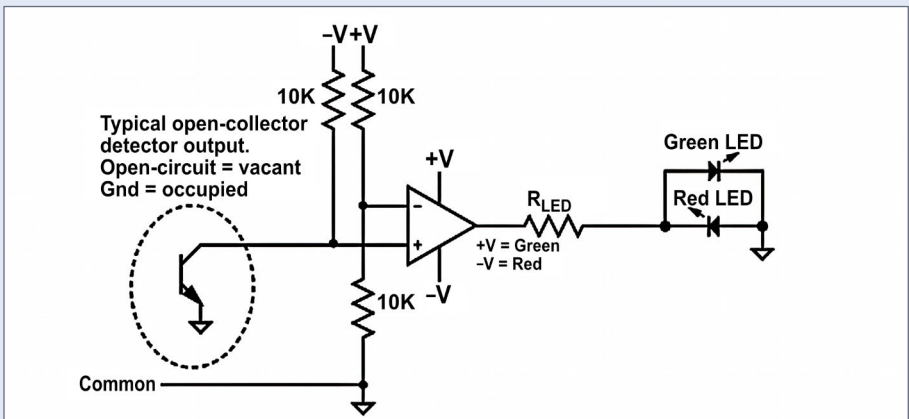
3. DPDT switch, single power supply.

reversers) to reverse track polarity when a locomotive runs around a reversing loop, or on a turntable bridge.

WHAT ABOUT OCCUPANCY DETECTORS?

Maybe it's OK for someone to manually throw a switch to change the LEDs' color. But what if you want electronic devices like an occupancy detector or an Arduino microcontroller to drive the LEDs? Then things become a bit more complicated.

Usually these devices have "open-collector" transistor outputs that are open-circuit in one state (e.g., unoccupied), and connected to ground (circuit common) in the opposite state (e.g., occupied). Only one of the LEDs will light with this type of output, so all you get is off/red or off/green. These outputs do not produce any voltage themselves, and they work only with positive voltages from external devices like signals.



4. Open-collector connection, two power supplies.

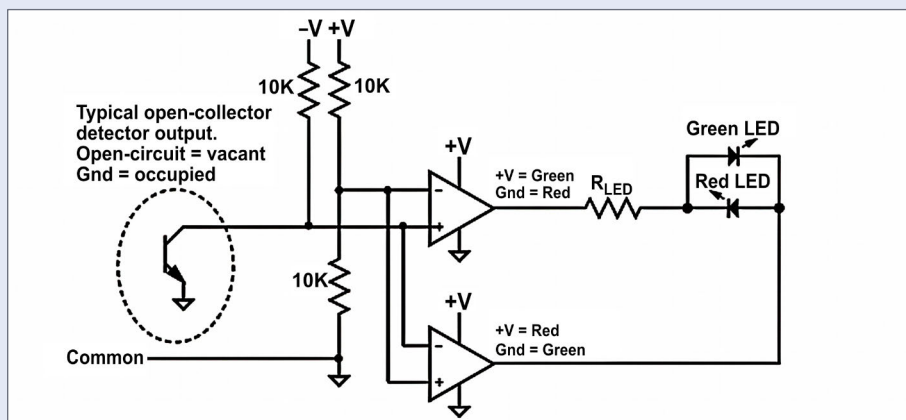
WIRING BACK-TO-BACK LEDs CONTINUED ...

OP-AMPS TO THE RESCUE

The solution is to use an operational amplifier (op-amp) to detect the detector's open/grounded signal, and then convert it to a positive or negative voltage to drive the LEDs. Again, you have two options: Use two power supplies [4] or use one power supply. [5]

Two power supplies: In [4] an op-amp powered by two supplies (+V and -V) is wired as a voltage comparator. The detector's output is connected to the op-amp's plus input and pulled up to +V with a 10K resistor. Two other 10K resistors form a voltage divider to apply half of +V to the op-amp's minus input to act as a reference. When the detector's output is grounded ("occupied"), the op-amp's plus input is less than the reference voltage, so its output produces -V to light the red LED.

Conversely, when the detector's output is pulled up to +V (vacant), the op-amp's output produces +V to light the green LED.



5. Open-collector connection, single power supply.

One power supply: This is the most straightforward way to connect an open-collector output to control back-to-back LEDs. It needs only a single power supply, but two op-amps, which is not a problem since you can buy a single DIP package that contains four op-amps. In [5], just like in [4], the detector's output is pulled up to +V and two 10K resistors produce a reference voltage.

But in this case the reference voltage is wired to the plus input of one op-amp, and the minus input of the other one. This causes one op-amp to produce +V on its output while the other grounds its output. Current flows through one LED. When the detector output changes, the op-amps reverse their states – the first grounds its output while the second produces +V, and current flows through the other LED. Read the notes in [5] and trace the circuit to see how this works.

BOTTOM LINE

Back-to-back diodes are great for making realistic two-color signals, but they require thought about how to drive them. Fortunately, it's easy to build a simple interface between them and common open-collector outputs from other signal circuitry. ■



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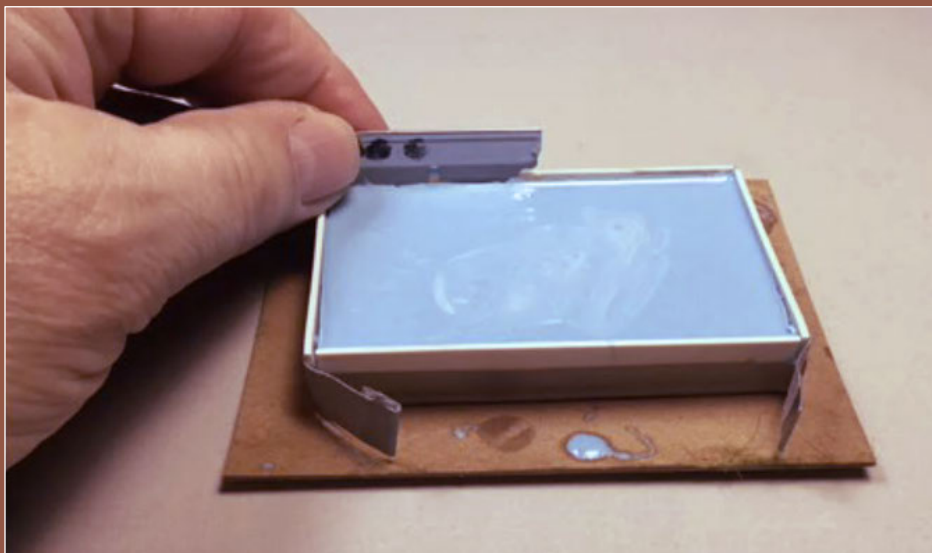


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[INDEX](#)

[TABLE OF CONTENTS](#)

Virtual hobby events



Model Railroad Hobbyist | September 2020



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ERIC HANSMANN HAS GONE ONLINE FOR INSPIRATION ...

2020 WILL BE REMEMBERED AS A YEAR TURNED UPSIDE-DOWN. Our hobby has experienced the cancellation of nearly all face-to-face events since March. These include train shows, NMRA division meetings, NMRA regional and national conventions, railroad historical society meets, and Railroad Prototype Modeler (RPM) meets.

VIRTUAL HOBBY EVENTS | 2

GatewayX Timetable

All times in EDT effective 00:01 July 12 2020 until 23:59 July 18 2020

07.12.2020

08:00	How to run a scenery clinic for kids	Gerry Hopkins, MMR®
09:00	N-scale Trees	Jonathan Small
10:00	The very first introduction to an Arduino	Michael Hill
11:00	Woodland Scenics Realistic Water	Don Fowler
12:00	Model Railroading 101 Clinic*	Clark Kooning, MMR®
13:00	That town at the end of the line - Coal Patch Communities	Edward Koehler
14:00	Ballasting	Eduardo Becherell
15:00	PVC Terminal Strips for Insulation Displacement Screws	Carl Blum
16:00	Model railroad photography	Dan Munson
17:00	Roundtable – Building your first layout	Gordy & Guests
18:00	Weathering, we don't know what yet it's a surprise!!!	Ralph Renzetti
19:00	Realistic base level scenery for your model railroad	Perry Lamb
20:00	San Antonio and Northern Railroad – Layout Tour	John Lowrance, MMR®
21:00	Touring the Michigan Interstate St. Clair Subdivision – Layout Tour	Greg McComas
22:00	Portland and Western, Free-Mo-N	Ed McNamara

07.13.2020

08:00	Track building with Fast Tracks*	Kevin Marks
09:00	Scratch Building in Wood	Peter Bowen
10:00	Drawing for 3d printing	David Hager
11:00	Getting a Pro Look with a Simple Camera	Bob Feuerstein
12:00	Modernization of Main St. and How It Affects Our Modeling	Jim Sacco
13:00	Building Rooftop details	Mike Corley
14:00	Photo Editing Programs and Efficient Workflow	Bob Feuerstein

5

1. NMRax produced a PDF event guide for the GatewayX virtual convention. This screenshot illustrates a portion of the multi-day event.



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[INDEX](#)

[TABLE OF CONTENTS](#)

A couple months after the pandemic kept many of us at home, tech-savvy modelers turned to software for online virtual meetings. Business conference options include Zoom, Google Meet, Google Hangouts, GoToMeeting, Skype, WebEx, Microsoft Team, and more. These options enable real-time discussion and presentations from your computer and comfy chair.

Other delivery avenues use YouTube and Facebook to focus on delivering presentations. The NMRAX Conventions Clinicians Group formed in April to organize online presentations for clinicians using Facebook live for NMRAX events. The international group has coordinated several day-long virtual conventions with full clinic schedules.

One of their major virtual achievements was held in July. GatewayX, a National Virtual Model Railroad Convention, featured a week of presentations [1, 2]. Many clinics featured in the NMRAX group events are available on the NMRA YouTube channel. www.youtube.com/channel/UCHw-7-1FWB5zQgTM0ZVY-Yw.

OTHER EVENTS

I participated in Hindsight 20/20 Virtual RPM in June. I had planned to attend several RPM events this year but all have been canceled. This Hindsight event stretched across eight hours with a wide variety of presentations.

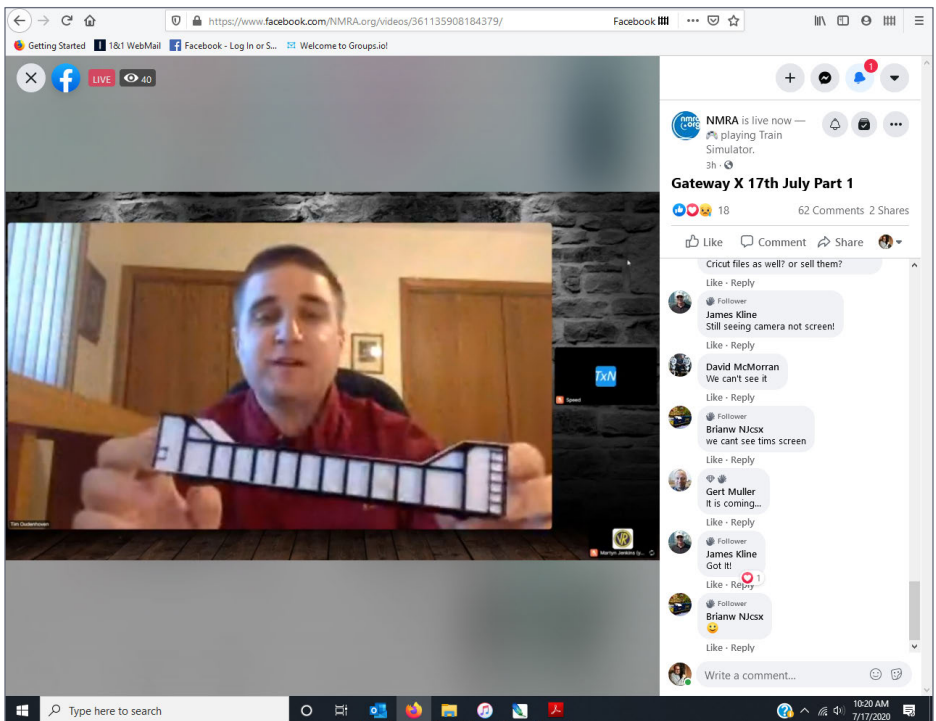
The organizers asked for shorter presentations than what I usually see at RPM meets. Rather than a 45-60-minute clinic, the time was shortened to 30 minutes for each. A few extra minutes afterward allowed for Q&A and leg stretching. I liked the shorter format as a viewer and as a presenter.

A second Hindsight 20/20 RPM was held in August [3] with additional events set for coming months. Organizers are planning Wednesday-evening events to feature longer clinics. A

Flickr site was also available for participants to display their model work. www.flickr.com/groups/14711992@N20/pool.

The Hindsight 20/20 RPM events have been free, but registration is required to participate. Speedwitch Media has been hosting the registration details on their website. speedwitchmedia.com.

The Operations Special Interest Group (OPSIG) has been hosting virtual meetings to share details to improve model railroad operations. Some meetings have included a layout tour. Many of these meetings can be accessed via the group's website. www.opsig.org/Virtual/Past.



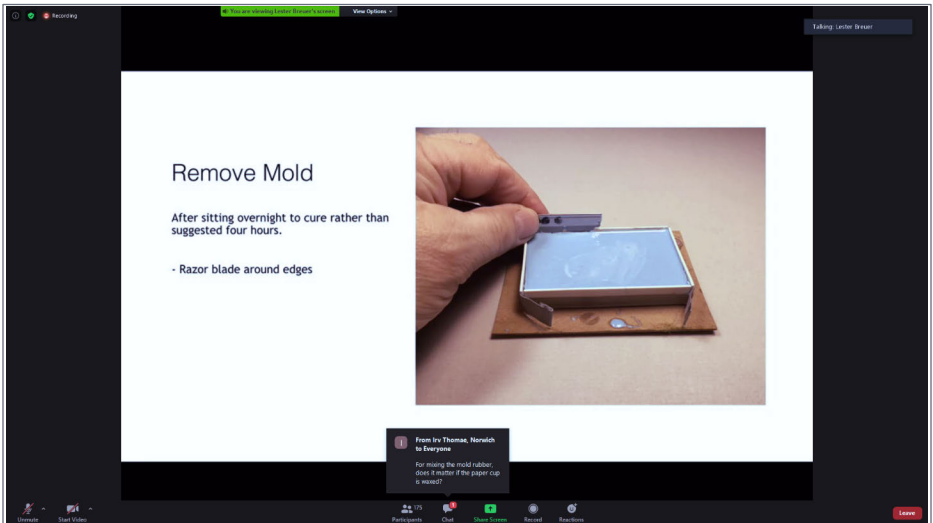
2. Here's the screen as Tim O presented his Cricut Styrene clinic during GatewayX. People could leave comments via the Facebook chat area during Tim's clinic.

OTHER EVENTS

Virtual meetings aren't only for national audiences. Many NMRA divisions have been organizing online gatherings to keep local members informed and inspired. Some model railroad clubs have held occasional online chats to share updates.

I plan to present at upcoming virtual events for NMRA divisions and a modeling special interest group. It might be several months before our favorite events start up again. Take advantage of these virtual meetings. The clinics I've seen are top-notch and it's great to see friends in the virtual crowd.

★★★★★
RATE THIS ARTICLE



3. The Zoom format is a bit different from Facebook. This is a slide during Lester Breuer's resin-casting presentation. It's easy to share a PowerPoint presentation using the conference meeting software. A chat square pops up when someone posts during the presentation. The chat can also appear as a rectangular box on the right side of the screen.



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[INDEX](#)

[TABLE OF CONTENTS](#)

SAVVY MODELER *Online*



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Structure modeling selective compression: 1

We captured the late Earl Smallshaw's superb clinic on Selective Compression in 2009 on video and posted it on our website. More than a few of you may not know about this video, so here it is again, and real blast from the past!

This is one of four parts. Put together, all the parts show Earl's full clinic – a most delightful clinic at that. Earl was one of the real master modelers in the hobby. ■



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By Joe Fugate



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[INDEX](#)

[TABLE OF CONTENTS](#)

SEPTEMBER NEWS

column



Model Railroad Hobbyist | September 2020

RICHARD BALE AND JEFF SHULTZ
REPORT THE LATEST HOBBY
INDUSTRY NEWS ...



RATE THIS ARTICLE

NEW CLUB CARS



The **Central Ohio Model Railroad Club** is selling a 40' CCC&StL double-door steel automobile boxcar.

Two road numbers are available for the Cleveland, Cincinnati, Chicago and St. Louis Railway, also known as the Big Four line. Proceeds from the sale of the HO scale kit help support activities of the long-standing club. The kit, which includes trucks and couplers, was produced for COMRC by Accurail. For ordering information visit www.comrc.club.

NEW PRODUCTS FOR MULTIPLE SCALES

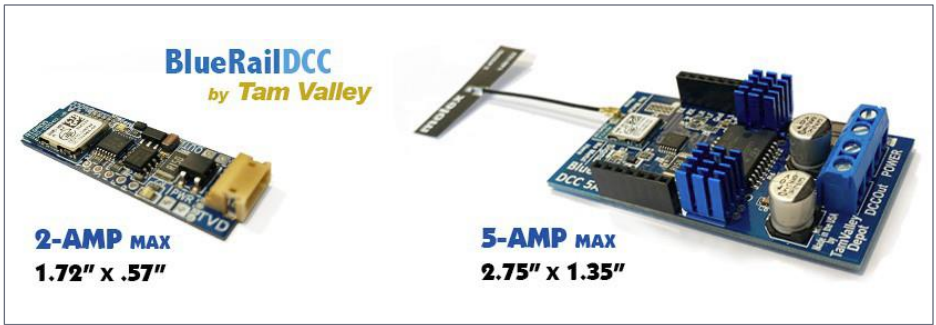
BlueRail Trains and **Tam Valley** have released new compact circuit boards that allow any DCC decoder to be controlled by a smart device using the BlueRail Trains app. The boards are

THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

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[INDEX](#)

[TABLE OF CONTENTS](#)



available in 5 amp and 2 amp versions that can be controlled at a distance of up to 75', and up to 150' with optional external antenna. Power supply options are DCC, battery, or track power. The boards also offer a basic mode which will control the motor and lights of a loco without the need for a DCC decoder.

The popular BlueRail Trains app (available free for Android and iOS) allows an operator to control a train's speed, direction, lights, and sound; trigger all functions, and edit CVs. The app also has an easy-to-use consisting utility that simplifies speed matching. The system is compatible with Bachmann E-Z Apps and previous generation BlueRail boards. The new boards are available at www.DeadRailInstalls.com. For installation details, more technical information and a user guide visit www.BlueRailTrains.com.

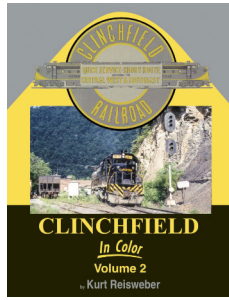
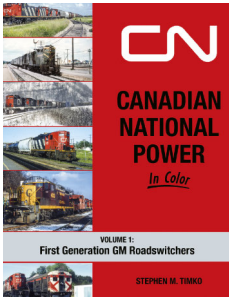
New publications from **Morning Sun Books** include *Canadian National Power in Color* by Stephen M. Timko. This initial volume covers CN's first generation GM road switchers including GP7s, GP9s, and Canada's own GMD-1s, all in



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[INDEX](#)

[TABLE OF CONTENTS](#)

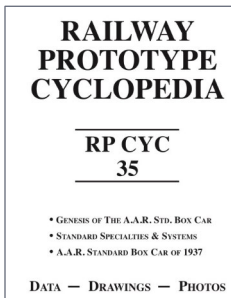


multiple paint schemes from delivery to retirement in over 300 color photos. An October release is scheduled.

Volume 2 of *Clinchfield in Color* by Kurt Reisweber, revisits the glory years of an Appalachian coal hauler that

incongruously also handled perishables from Florida. This second volume features a combination of scenic views, diesel locomotives, and freight cars ranging from the 1960s to the 1980s. The volume concludes with CSX images illustrating the post-merger period. Track charts and maps are included. For additional information contact a dealer or visit

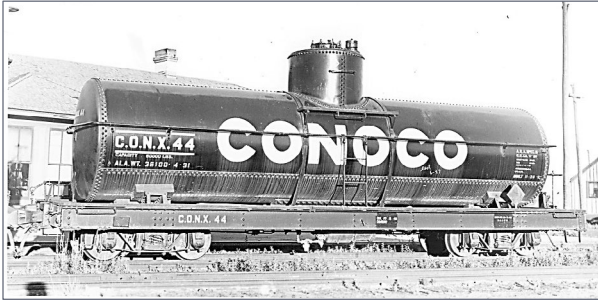
www.morningsunbooks.com.



***Railway Prototype Cyclopedia*, Volume 35**, by Pat Wider, is scheduled to be published next month by Silverlake Images. This super-sized edition of RPC is a 385-page study of the 1937 A.A.R standard 40' boxcar including its genesis and numerous improvements over its 1932 predecessor. In his usual meticulous style, author Wider reviews each

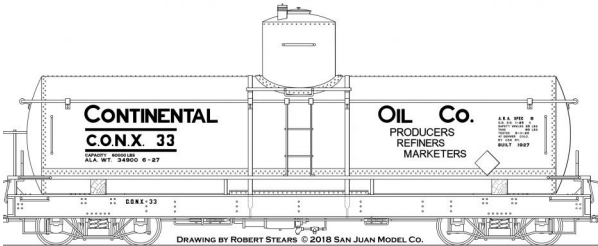
improvement including the cars increased inside dimensions, better riding trucks, standardization of vendor-supplied car body components, improved friction draft gear and automatic air brake systems, longer-lasting wheels, stronger floors, and safer, easier to operate power hand brakes. The book includes

72 diagrams and 428 B&W photographs. Reservations are being taken by Ron's Books at www.ronsbooks.com.



San Juan Model Company is accepting reservations for models of narrow gauge tank cars with outside frames and distinctive tall domes. The painted

and lettered models will be available in both HOn3 and On3 scales. Decorating schemes include a 1940-era black car with white CONOCO lettering (above), and a similar scheme on a 1935 CONOCO car with green lettering on a silver tank.



Additional schemes include a 1926-era black car with white sans serif lettering, and similar wording in serif lettering on a 1930 car.

Completing the decorating options is a car with a silver tank decorated for Mexican National. For additional information visit www.sanjuanmodelco.com.

O SCALE PRODUCT NEWS

Atlas O is booking advance reservations for a Trinity 25,500 gallon general-purpose insulated tank car. The O scale model is based on a prototype introduced in 1986. The ready-to-run



limited-edition car will be available decorated for Louisiana Hot Sauce, and Kung Fu Fighting graffiti.

Atlas O models are available for either 3-rail or 2-rail operation. For additional information

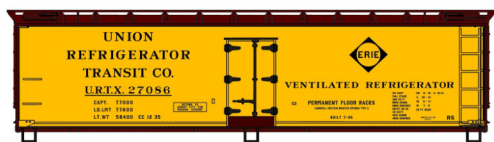
contact a dealer or visit atlaso.com.

HO SCALE PRODUCT NEWS



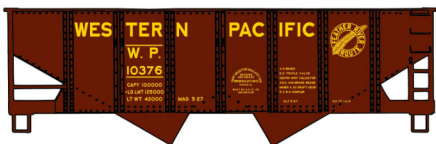
Accurail has released kits for a 40' Pennsylvania Railroad X29D steel boxcar in three road numbers. The HO scale model represents a prototype built in 1955. It is decorated with a shadow keystone herald and PRR's *Don't Stand Me Still* slogan printed in yellow.

Accurail has released kits for a 40' Pennsylvania Railroad X29D steel boxcar in three road numbers. The HO scale



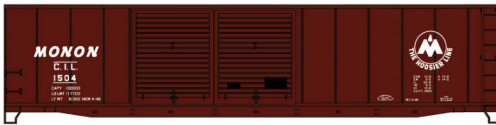
Also new from Accurail is an HO scale kit for an Erie 40' wood refrigerator car. Data printed on the car side indicates it was built in July 1925, and is fitted with permanent floor racks. Routing instructions state *Return to Jeffrey City for Banana Loading*.

Also new from Accurail is an HO scale kit for an Erie 40' wood refrigerator car. Data printed on the



HO scale version includes a Feather River Route herald.

AC&F built the prototype of this Western Pacific 55-ton USRA twin-bay hopper in 1927. The yellow WP lettering on Accurail's



This 50' Monon-Chicago, Indianapolis & Louisville steel boxcar features double

Youngstown sliding doors. Accurail's HO scale kit displays a Hoosier Line herald and an April 1948 built date.



The prototype of Accurail's HO scale 36' Montreal & Atlantic (Canadian Pacific) Fowler wood boxcar was fitted with grain doors.



Accurail's HO scale kit for this 36' Bangor & Aroostook double-sheathed wood boxcar is based on a real car built in 1914.



This 70-ton Southern Pacific class H-70-13 triple-bay open hopper car with offset sides had a

capacity of 2773 cu. ft. Accurail's HO scale kit is based on a prototype built in the summer of 1953. All Accurail kits come with Accumate knuckle couplers and appropriate trucks with plastic wheels. For additional information contact a dealer or visit www.accurail.com.



REGISTER
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INDEX

TABLE OF CONTENTS



R. Bale

DASH 9 C44-9W LOCOMOTIVE

General Electric introduced its C44-9W demonstrator in 1993. Dubbed the Dash 9, the 4,400hp six-axle diesel road switcher proved to be a major success with more than 3,500 units being built through 2004. A new alternator resulted in 4,400hp – thus determining the locomotives designation. The Dash 9 was the first production locomotive to have a wide North American Safety cab as standard equipment. While similar in appearance to its C40-8 predecessor, the C449W was built on a slightly longer platform to accommodate a massive 5,000 gallon fuel tank. Another spotting feature is the thicker radiator wings at the rear of the car body. Improvements over the C40-8 include a more reliable braking system, updated electronics, a larger engine radiator cooling system, and improved high-adhesion trucks. The Dash-9 was superseded in the early 2000s by GE's Evolution Series locomotives.



Athearn has announced plans to deliver a Genesis 2.0 model of a GE Dash 9-44CW diesel locomotive next July. In addition to the usual high-end Genesis features, this Genesis 2.0 model will have etched see-through walkway steps, illuminated number boards, illuminated ground lights on the forward trucks, illuminated front and rear walkway lights, and working classification lights. Road names will include the BNSF No. 977 as shown above in its 2010 to present day scheme. No. 977 is the only BNSF Dash 9-44CW to wear the GN-inspired Heritage 1 livery.



Athearn's HO scale 9-44CW models wearing BNSF's

Heritage 2 scheme will have a poly bag of optional modeler-applied details including a long PTC skate antenna and an air dryer.



Chicago & North Western 9-44CW locomotives can be spotted by the unique CNW roof vent, the lack of vents on the A/C cabinet, and early tabbed dynamic brake intake panels. Less obvious are the 40" wheels on units delivered early and the 42" wheels on high-adhesion trucks on later units.



Athearn's Genesis 2.0 models of Union Pacific 9-44CW will reflect the prototype's 2012 appearance as repainted with lightning stripes but without the American flag on its flanks.



Athearn Dash 9-44CWLs decorated for Canadian National and BC Rail will have a Canadian-style safety cab with a four-piece front windshield, unique Canadian anti-climbers, and a walkway with continuous etched snow grates.



Completing this release are Dash 9-40C models decorated for Norfolk Southern in the 2013 to 2018 Thoroughbred paint scheme. NS units will have a standard cab, a curved engine compartment hood profile, and 40" wheels with struts vertically mounted on the truck side frames.

In addition to the Genesis 2.0 details mentioned above, all Athearn 9-44CW models will have coupler cut levers, flexible rubber MU and trainline hoses, see-through cab windows with cab interior, walkway tread, Celcon handrails, windshield wipers, lift rings, wire grab irons, detailed fuel tank with fuel

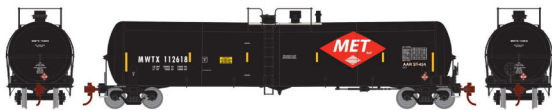


REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)

fillers, fuel gauges, and breather pipes; sander lines, all-wheel drive and pickup, and LED lighting.



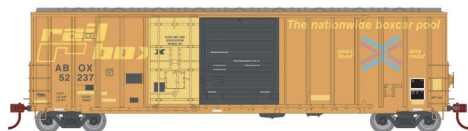
Athearn has scheduled the release of a 30,000 gallon Ethanol tank car for next July. The HO scale Ready-to-Roll model will be available in three-packs with different car numbers. Two schemes will be available for MWTX-Midwest Ethanol Transport. Additional road names include GATX-Abengoa Bioenergy, ADMX, Union Tank Car, Celtran, and CTCX.



The models will have photo-etched metal walkways and end platforms, wire safety rails and end handrails, and 100-ton roller-bearing trucks with 36" machined metal wheels. A 22" minimum track radius is recommended for reliable operation.



Athearn plans to release 50' FMC combination door boxcars decorated for Railbox in both fresh and Primed for Grime paint schemes.



Additional road names include Canadian National, BC Rail, and Minnesota, Dakota & Western.

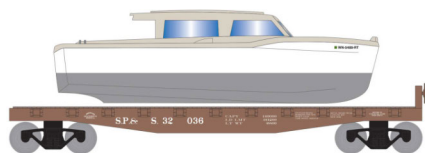


The HO scale Ready-to-Roll model will have individual wire grab irons, etched metal end platforms, and appropriate trucks with machined metal wheels.



A 54' FMC 4700 cu. ft. triple-bay covered hopper is included in Athearn's July

2021 production schedule. Road names will be Union Pacific/DRGW, Burlington Northern, Chicago & North Western, Klemme Coop Grain Service, Western Pacific, BNSF, and BNSF Buffer Service. Separately applied details include brake wheel, chain, and housing; brake lever, air reservoir, brake cylinder and triple valve, wire grab irons, see-through etched metal end platforms, and two outlet gate variations. The model will have 100-ton trucks with 36" machined wheels.



Roundhouse Brand models coming from Athearn next July include a 40' flat car with a removable small cabin cruiser. Road names with boats in

different color combinations include Chicago & North Western, Spokane, Portland & Seattle; Southern Pacific, Texas & Pacific, New York Central, and Florida East Coast.



DODX flat cars in olive drab will be available with boats specially decorated for United States Coast Guard, United States Air Force Rescue, United States Army

COE, and United States Navy.

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[INDEX](#)

[TABLE OF CONTENTS](#)



Also coming next summer under the Roundhouse brand is an HO scale ready-

to-run model of a 50' boxcar with double Youngstown sliding doors. Road names will be New York Central, Illinois Central, Southern Railway, Baltimore & Ohio, Soo Line, Great Northern, and Gulf, Mobile & Ohio. For additional information on Athearn and Roundhouse products contact a dealer or visit www.athearn.com.



Atlas is selling two versions of an ACF 11,000 gallon insulated tank car. The HO scale model is available with and without a top loading platform and railing.



Decorating schemes include Warren, Shell Chemical, Shamrock, Foley Butane, Tidewater Associated, and Mississippi Chemical. The Master series model comes with

50-ton Bettendorf-style solid-bearing trucks and AccuMate knuckle couplers.

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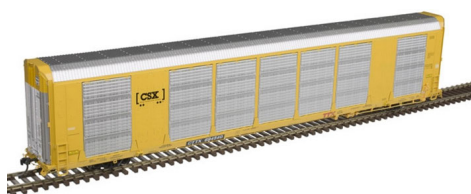
3D printing a signature C&E caboose

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trucks with 28" metal wheelsets.



undecorated version is also in this release. For additional information contact a dealer or visit www.atlasrr.com.

Atlas has released its new HO scale Gunderson Multi-Max auto rack. Features of the new accurately scaled model include a newly-tooled flat car and body structure, and

Road names in this initial production run are CN-GTW, Kansas City Southern, CSX (CTTX), Norfolk Southern (TOCX), and Union Pacific (Building America slogan). An



R. Bale

SIEMENS ACS-64

The Siemens ACS-64 electric locomotive was designed specifically for use on the Keystone and Northeast Corridor (NEC). Amtrak and Siemens unveiled the first three completed locomotives on May 13, 2013. The design is based on locomotives Siemens created for Europe and Asia, but with numerous changes to comply with tougher American standards. The ACS-64 has several advanced safety systems including specialized couplers designed to keep trains from rolling over, jackknifing, or derailling during a collision. The ACS-64s develop 8,600hp and are able to accelerate up to 125 mph with eight Amfleet cars in a little over two and a half minutes. The locomotives are compliant with the Buy America Act and were assembled at the Siemens factory near Sacramento, CA.



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)



Bachmann is selling an HO scale version of the Siemens ACS-64 mainline electric locomotive. The HO scale DCC sound-equipped model comes with a TCS

WOWSound 16-bit 44,100Hz decoder with Audio Assist sound package that includes horn, bell, cooling fan/power inverter, pantograph extension and retraction, coupler close/release, brake release and application. Additional sounds include crew alert, departing and arriving station announcements, and grade crossing quill. The ACS-64 also has a Keep-Alive system for uninterrupted operation on dirty track and a selector switch for either rail pickup or pantograph operation. A 22" minimum track radius is recommended for reliable operation.



Also new from Bachmann is an EMD GP38-2 diesel locomotive. The DCC-ready HO scale model comes with a factory-installed 8-pin socket ready for an aftermarket decoder.



Road names include CSX, GMTX Locomotive Group, Norfolk Southern, Rail America, Alaska Railroad, and CP Rail. For additional information contact a dealer or visit

www.bachmanntrains.com.



Berkshire Valley Models has released a kit for an HO scale Watkins Delivery Wagon. The kit is composed of laser-cut wood and white metal castings. An illustrated

instruction sheet is included. The signage provided gives an option of using decals or paper signs. The horse and driver are sold separately.



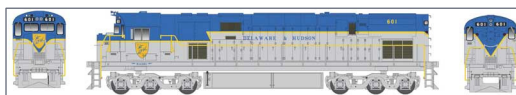
Also new from Berkshire is a small ore bin loading platform that is available with a truck/wagon loading

ramp, or with a railroad mine track. All components in the HO scale kit are laser-cut wood. The assembled ore bin measures approximately 2.125" x 1.85". For additional information visit www.berkshirevalleymodels.com.



Bowser is preparing to release HO scale models of GMD SD40-2F diesel

units decorated for CP Rail. The models are based on a 3,000hp locomotive General Motors Diesel built in 1988-89 exclusively for Canadian Pacific Railway. Variations in the bright red CP models include units with a round porthole and either white stripes or white dashes at the sill, and a similar unit with a rectangular porthole.



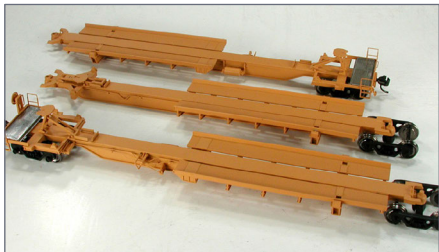
Also coming soon from Bowser are HO scale Alco C628 and C630 diesel

locomotives. The visually similar units differ primarily in their power rating with the C628 listed at 2,750hp and the C630 at 3,000hp. Road names will be Duluth, Missabe & Iron Range (ex UP); Delaware & Hudson, Reading, and L&N with a yellow nose.

Features common to Bowser's SD40-2F, C628 and C630 HO models include individual air hoses, windshield wipers, wire grab irons, uncoupling bars, operating headlights, and glazed



windows. Models ready for standard DC operation come with a 21-pin plug for installation of an aftermarket decoder. Bowser's DCC sound models come with a LokSound Select decoder.



Bowser is working on a new production run of Trinity 53' spine cars for release next summer. Both three-unit RAF 33C and five-unit RAF 53C spine cars will be included in the release. The HO scale

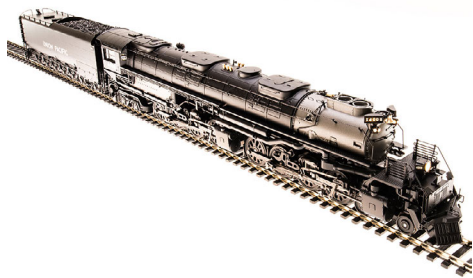
models have die cast metal frames and feature positionable hitches, chemically etched walkways and 70-ton trucks with 33" metal wheel sets. For additional information contact a dealer or visit www.bowser-trains.com.



R. Bale

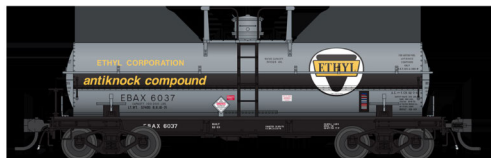
UP BIG BOY

Union Pacific's Big Boy is a simple articulated 4-8-8-4 steam locomotive built by the American Locomotive Company between 1941 and 1944. The initial group of 20 locomotives was delivered in 1941, followed by five more in 1944. The Big Boys were designed to eliminate the need for double heading on the UP mainline climb eastward from Ogden into the Wasatch Range with the ability to pull long freight trains at a sustained speed of 60 mph once past mountain grades. They more than met the goal and remained in service until 1959. Scheduled to be named Wasatch, the locomotive acquired its nickname after an unknown worker scrawled "Big Boy" in chalk on the front of No. 4000, then under construction at ALCo. Specifications include 68" drivers, 23.75" x 32" cylinders, a weight of 762,000 lbs, and an overall length of 85' (plus the tender). Peak horsepower of about 7,000hp is attained at 41 mph.



Broadway Limited plans to release a new run of Union Pacific 4-8-8-4 Big Boy locomotives this month. The HO scale versions of UP No. 4006 and 4018 will be available as-delivered in 1941 with an aftercooler and

25-C-100 coal tender, as well as unlettered and unnumbered. Big Boys No. 4020 and 4023, upgraded with a Wilson aftercooler and 25-C-400 coal tender, are also in this release. Big Boy No. 4014, modernized with a Challenger excursion tender, will be available in both standard and glossy paint finish. Completing this release is No. 4021 in two-tone gray with an aluminum Wilson aftercooler and a 25-C-400 tender. Broadway Limited's HO scale models come with Paragon3 sound with Rolling Thunder that functions in both DC and DCC environments.



Broadway Limited plans to release a series of AC&F 6,000 gallon Type 27 tank cars this fall. The HO scale models are based on

insulated high-pressure cars built from the late 1920s through the post-war era. The ready-to-run models have a die cast chassis and plastic body with separately applied hand rails, ladders, brake wheel, and walkway.



The HO scale models will be available in two-packs for SACX-Columbia

Southern, GWEX-Dow Chemical, EBAX-Ethyl Corporation, HOKX-Hooker Chemicals, TELX-Penn Salt, SHPX-Stauffer Chemical, and SHPX-Wyandotte. Two-packs with mixed road

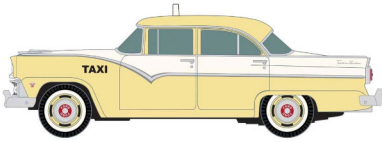


REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)

names will also be available. For more information contact a dealer or visit www.broadway-limited.com.



New **Classic Metal Works** Mini Metal Models this quarter include a 1955 Ford 4-door sedan in three paint schemes. In addition to the yellow and white taxi version, the 1:87 scale vehicle will be available in two-tone Pinetree green, and in the decidedly 1950s combination of black and Coral Mist.



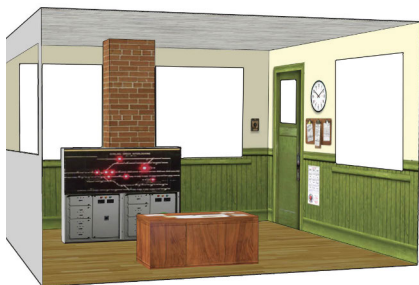
For additional information contact a dealer or visit www.walthers.com.



The Electric Wallpaper Co. has released ten new Roomettes laser-cut cardstock kits to fit Atlas, Woodland Scenics/DPM, City Classics, Rix Products, and Walthers HO scale buildings. Roomettes offer

a fast way to bring the illusion of 3-D detail to the inside of model structures. The kits include LEDs with plugs that are compatible with lighting systems from Woodland Scenics Just-Plug, Model Train Technology and NCE.

The new releases include Fallow Feed Mill (above) with four interior rooms for Walthers Sunrise Feed Mill kit. Also new is Sporto's Outdoor & Athletic with four window displays, a foyer, and three offices that fit Woodland Scenics/DPM's JC Nickels store.



New Roomette interiors are available for the Atlas Signal Tower (left), Passenger Station, and Trackside Shanty.



New Roomettes for residential houses include Parker's House for City Classics Railroad Street Company House, Whelan's House fits Walthers' American Bungalow or Updated American Bungalow kit; and Millie's House offers a suitable period

interior for Woodland Scenics/DPM Victorian Cottage. Additional residential Roomettes include Oliver's House interior for Rix Maxwell Avenue Home, while Chrysler's House and Carlson's House bring life to Atlas's Barb's Bungalow and Kim's Classic American Home, respectively.

Roomettes are made by The Electric Wallpaper Co. For additional information including ordering instructions visit www.roometteslighting.com.



ExactRail has completed another production run of its HO scale 67' 11" bulkhead flat car. The HO scale model is an accurately

scaled version of a group of cars built for TTX in 2000 by Greenbrier at Trenton Works Ltd., in Nova Scotia.

The HO scale model consists of molded plastic, etched metal, laser-cut fiber board, and formed brass and wire parts. Details include separate air hoses, brake rods and brake appliances,



REGISTER
(free)

INDEX

TABLE OF CONTENTS

photo-etched stainless-steel brake platforms, and Kadee #156 whisker couplers in a narrow-style draft box. The models ride on ExactRail's equalized 100-ton ASF Ride Control trucks with machined metal wheels sets.



The ready-to-run TTX bulkhead flat cars will be available in multiple numbers in three decorating schemes including as-delivered, patched with TTX's new logo, and stenciled with DO NOT WELD TO FLOOR. For additional information visit www.exactrail.com.



InterMountain is taking reservations for an HO scale ACF Type 27 riveted 8,000 gallon tank car. Production is on hold until sufficient quantities have been booked.



Hobbyists interested in this model are urged to place a pre order either direct or with a dealer.



A list of tentative road names include Robeson Process, Spencer Kellogg, Harbor Tank Line, Hercules Powder, Bell Oil & Gas, Wolf's Head Oil, A.E. Staley, Union

Tank Car, Mobilgas, Wobirm Degreasing, King Taste Products, Stauffer Chemical, Canadian General Transit, Gulf States Creosoting, Silver Fox Lard, Everett Distilling, Mobile Rosin Oil, North American Car Corp, Mathieson Alkali Works, and Union Pacific.



Also on hold at InterMountain pending receipt of sufficient pre-orders is an HO scale USRA

gondola. The model will have laser-cut wood for the sides and floor.



Tentative road names include Nashville, Chattanooga & St. Louis; Chesapeake & Ohio, Louisville & Nashville,

Wheeling & Lake Erie, Kansas City Southern, and Frisco.

Contact a dealer to order or visit intermountain-railway.com.



Kadee is selling an undecorated HO scale AAR twin-bay open hopper car with offset sides. The ready-to-run model is available in black or BC red, and with a choice of Enterprise or Wine discharge doors and hardware. Features include scale grab irons,

ladders, and brake rigging, Kadee metal knuckle couplers, and Kadee self-centering equalized trucks. For additional information contact a dealer or visit kadee.com.



Monster Model Works is selling a kit for Bonded Warehouse &

Storage, a flat background structure that is less than 2" deep. The dimensions of the assembled structure are 15" long x 2.5" high x 1.75" deep. Contents of the kit include 3D laser-engraved old brick sides and corners; 3D printed drain spouts, loading dock and wall anchors; block glass, peel & stick laser-cut windows and doors, and laser-cut sign stencils. The kit comes unbuilt and unpainted. For additional information go to www.larkspurlaserart.com.



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)



New from **Oxford Diecast** is this 1:87 model of a 1959 Bonneville Coupe in what Pontiac sales literature called Seaspray Green. For additional information

contact a dealer or visit www.walthers.com.



Rapido will continue to accept advance orders through September 15, 2020, for an upgraded EMD SW1200 switch engine. In addition to Southern Pacific, road names for the HO scale diesel equipped with Type A trucks will be Conrail, Milwaukee

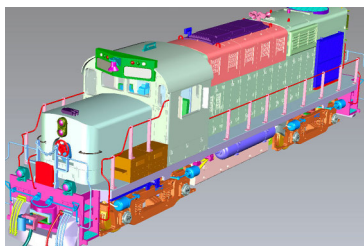
Road, Missouri Pacific, Northern Pacific, Pennsylvania, Denver & Rio Grande Western, and Chicago, Burlington & Quincy. Road names with Flexcoil trucks will be Rock Island, Chicago North Western, Grand Trunk Western, Burlington Northern, Great Northern, New Haven, Penn Central, and Soo Line.



Features of Rapido's SW1200 model include complete underbody piping and conduit detail, full cab interior, and separate handrails including crash bars inside the cab. Lighting features include headlights, number

boards, classification lights, inspection lights, and interior cab lights. Road specific details include working drop steps, and Type A or Flexicoil trucks. The model will be available for basic DC (silent) operation and with DC/DCC/Sound featuring an ESU Loksound decoder with recordings from a full size 567 prime mover. Reservations close September 15, 2020.

Rapido has released this computer image showing progress on the revised RS-18u locomotive currently under development. Rapido's design team based the HO scale model on a 3D scan



illuminated cab control stand.

of a real RS-18 and measurements from an active RS-18u. Features include completely redesigned chassis and shell access, operating headlights, rear lights, ditch lights, operating tri-color front and rear classification lights, and an



Canadian road names for the RS-18u will be CP Rail with and without multimark, New Brunswick East Coast, Ontario Southland, and Ottawa Central. US-based roads will be Bath & Hammondsport, Minnesota Commercial, and Western New

York & Pennsylvania Railroad. The HO scale model with the chopped nose will incorporate several important upgrades over Rapido's earlier model that suffered from motor and motherboard problems. Rapido reports these problems have been fully resolved including a greatly simplified method for removing the body shell. Rapido's RS-18u will be available for basic DC (silent) operation and with DC/DCC/Sound featuring an ESU Loksound decoder with recordings from a full size Alco 251B prime mover.



Rapido has announced plans to produce an HO scale version of the Canadian National RSC-14 diesel switcher. In need of replacements for its aging and underpowered fleet of RSC-13s for its Maritime branch lines, CN

found an easy solution by retruckng MLW-built RS-18s with six-wheel trucks from expired RSC-13s. Early reports indicate that the Rapido design team is applying its usual attention to detail in



developing this HO scale model including completing a 3D scan of a full size RSC-14 to develop the nuances of the exterior.

Preorders are being booked now for the HO scale RSC-

14 which will be available decorated for Canadian National in multiple numbers in both the noodle and striped schemes.



R. Bale

CANADIAN COMFORT CAB

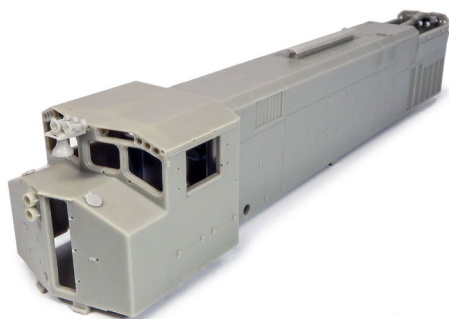
(aka wide-nose safety cab, North American safety cab)

Beginning in the early 1970s, design engineers from Canadian National Railway began working with Montreal Locomotive Works in developing a safer locomotive cab for road locomotives. The result was a specially reinforced wider nose sheathed with .375" thick steel plating. In addition the cab met tougher regulations that required windows to withstand the impact of a cinder block or 22 caliber bullet. The wider cab also had significantly more interior space for crew members to move about. As the design continued to evolve cab doors were fitted with improved weather stripping, electrically heated windows were installed, and the cab itself was acoustically isolated from the rest of the locomotive.



Rapido is finalizing production details on an all-new HO scale MLW M420 diesel locomotive with delivery planned for early next year. The prototype, built by Montreal Locomotive Works from 1973 to 1977, was the first locomotive to be

delivered with the wide-nose Canadian comfort cab.



Rapido's HO scale version is based on a 3D scan of a full size M420. Features include straight metal side handrails with plastic stanchions, complete underframe detail including traction motor cables, detailed cab interior with optional open front door, operating headlights, rear

lights, tri-color classification lights, an illuminated cab control stand, and a die cast chassis with the same 5-pole skew-wound motor used in Rapido's FA-2 and FB-2 models. Rapido originally planned to use a large coreless motor in the M420, however, none of the Chinese coreless motors tested met all Rapido's specifications.



Rapido's CN M420 diesel road engine will be available in ten road numbers

plus undecorated. Models offered will include silent DC operation and DCC sound with the new Rapido-TCS decoder

Rapido has released a new video on its HO scale F59PH diesel locomotive. It can be viewed at www.youtube.com/watch?v=Oiw_e65EKYw&feature=youtu.be.



Beginning in 1972 Canadian Pacific's Angus Shops in Montreal built over 300 wide-vision vans. Rapido is preparing to make another release of its highly-regarded HO scale version of the

modern Angus caboose. The model will be equipped with



REGISTER
(free)

[INDEX](#)

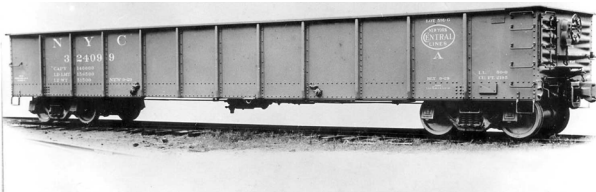
[TABLE OF CONTENTS](#)

Barber-Bettendorf caboose trucks with metal wheels and all-wheel electrical pick-up.

Special features include full underbody detail including all air and brake piping, multi-colored interior with proper floor texture, interior handrails, positionable cupola windows, etched metal end platforms and steps, interior lighting, and operating marker lights.



Decorating schemes will be Canadian Pacific, CP (white), CP (maroon), Algoma Central, Ontario Northland, Ontario Northland (chevron scheme), and Toronto, Hamilton & Buffalo. An undecorated version will also be available in this release. For additional information contact a dealer or visit www.rapidotrains.com.



Resin Car Works has released a new HO scale kit that builds into a prototypically accurate New York

Central 50' 70-ton steel gondola built by Pressed Steel Car Company in 1929. The model replicates cars rebuilt in the mid-1940s with wood floors. The drop-door hardware was removed and the cars were renumbered into the 751000-751999 series. The kit features a one-piece cast resin car body, several detail parts, and accurate decals. Trucks and couplers are not included. For additional information including ordering instructions visit resincarworks.com/kits.htm.



R. Bale

F68 SERIES FLAT CARS

Bethlehem Steel Co. (BSC) introduced a new generation of flat cars in late 1969. Measuring 68' over the end sills, the new design was given the simple designation of F68. BSC began delivering the general service F68CH version to Trailer Train in 1970. It had a wood deck with integral tie-down channels and was equipped with 36" wheelsets in 100-ton trucks with hydraulic snubbers at opposite corners of the car. All were delivered in the bright yellow "Trailer Train" scheme introduced earlier that year. The F68DH version was equipped with a beefier deck intended for heavy-duty service. To handle heavy-duty chocks and chains, the F68DH had tie-down tracks that extended the full length of the car at the centerline and at the side sills.



ScaleTrains.com is booking reservations through August 24, 2020, for HO scale Rivet Counter models of both the F68CH general purpose and F68DH heavy duty variant of the Bethlehem flat car, with two different paint schemes for each version. Early cars feature the as-delivered appearance while later versions include the Speed Logo which was introduced in the early 1990s. When Trailer Train changed their logo, they also changed the shade of yellow for their equipment, so some cars were completely repainted while others were simply patched out.

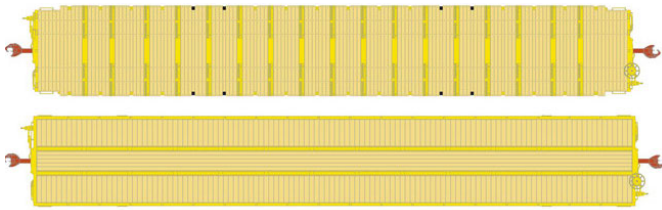
Modeler applied details in the ScaleTrains.com model include a laser-cut wood deck and optional ACI plates. Additional features on the Rivet Counter model are recessed deck tie-down details, H-shaped jacking pads, metal grab irons, coupler



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)



cut levers, trainline hoses, and die-cast metal Type E couplers. Brake details include

full underbody linkage, triple valve, cylinder, actuator, and a vertical handbrake staff with brake wheel. The 36" machined metal wheelsets have a .110" wide tread. The 100-ton trucks are detailed with hydraulic snubbers, rotating bearing caps, and truck-mounted brake beams. For additional information visit www.scalettrains.com.



Tangent Scale Models has added a Greenville 86' high-cube double plug door boxcar to its

lineup of accurately scaled freight cars. The HO model replicates a series of 4,400 prototype cars built in the late 1960s by Greenville Steel Car Company.



Special features include Kadee couplers with EOCC (end of car cushioning) or COCC (center of car

cushioning) draft gear, flexible rubber air hoses, brake system details, and etched metal crossover platforms. Depending on the practice of the railroad being modeled the brake wheel and gear box will be Ajax, Universal, Equipco, Miner 6600, Champion-Peacock, Elcon-National, or Peacock. Road names include the distinctive Southern Pacific scheme from 1969, and a more sedate Canadian Pacific CPAA with bare aluminum doors.



Additional road names include DT&I in an original 1971 scheme with bare aluminum doors, New York Central

in jade green, Conrail, and Southern Railway with a green dot inside the O of Southern. Undecorated kits are also available. The models come with Tangent's new 70-ton Barber S-2A or 100-ton low-profile Barber S-2-C roller-bearing trucks with machined metal wheelsets. A minimum track radius of 24" is recommended. For additional information visit

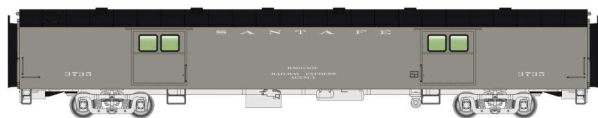
www.tangentscalemodels.com.



Walthers is including a special 3-car deluxe edition of the Santa Fe's Denver Connection in its combined Super Chief/El Capitan name

train project (See MRH August for details). The consist of the HO scale Denver-La Junta connection includes steam generator car #134, baggage car #3817, and Budd 46-seat coach #2842 with LED interior lighting and 18 Preiser figures installed.

Although not part of the deluxe set, appropriate motive power will be available in WalthersProto EMD F7A and F7B diesel units decorated in Santa Fe's red and yellow Warbonnet scheme. The HO scale diesels feature LokSound 5 Sound and DCC. They will be available next February.



Models making up the deluxe set will also be available individually. They

include a 74' Pullman-Standard baggage car, and an 86' Budd-built 46-seat coach. The ready-to-run cars will include modeler-installed extended drawbars for operation on curves under 24" radius.



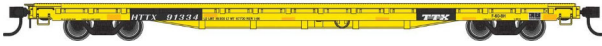
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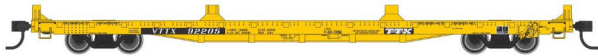
[TABLE OF CONTENTS](#)



Features include separate grab irons, prototypical window tinting, sprung operating diaphragms, and appropriate trucks with electrical pickup and machined metal wheel sets.



Walthers is quoting a November release date for a group of 60' Pullman-Standard flat cars based on a series of some 4,000 prototypes P-S launched in the mid-1960s. The cars were designed to handle all types of freight including 20' and 40' containers, and 45' or 48' trailers. Features of the Walthers Mainline series model include a realistic board deck pattern with wood grain and bolt details, brake gear piping and brake wheel cutout, and 70-ton roller-bearing trucks with 33" machined metal wheelsets.

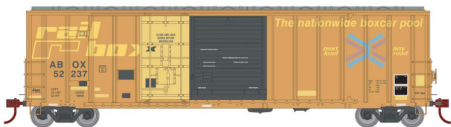


Variations will include a Trailer Train HTTX car equipped for heavy duty loading, Trailer-Train MTTX flat car for general loading and TTX VTXX for container loading. For additional information contact a dealer or visit www.walthers.com.

N SCALE PRODUCT NEWS



Athearn plans to release an N scale 50' FMC combination door boxcars decorated for Railbox in both fresh and Primed for Grime paint schemes.



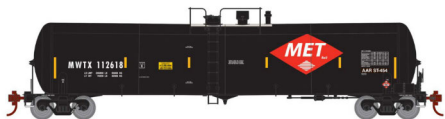
Additional road names include Minnesota, Dakota & Western; Canadian National, and BC Rail.



Features include screw-mounted roller-bearing trucks with machined metal wheels, and body-mounted knuckle couplers.



Also coming next summer is an N scale model of a 50' box car with double Youngstown sliding doors. Road names will be New York Central, Illinois Central, Southern Railway, Baltimore & Ohio, Soo Line, Great Northern, and Gulf, Mobile & Ohio.



Athearn has scheduled the release of a 30,000 gallon Ethanol tank car next July. The N scale model will be available decorated for MWTX-Midwest Ethanol Transport, GATX-Abengoa Bioenergy, ADMX, Union Tank Car Co., Celtran, and CTCX. Features include separately applied photo-etched metal walkways and end platforms, outlet valves, ladders, brake rigging, safety rail supports, tank saddles, and printed placards. The models will have screw mounted 100-ton roller-bearing trucks with 36" machined metal wheels, and body mounted knuckle couplers. For additional information contact a dealer or visit www.athearn.com.



Atlas has released an N scale ready-to-run model of a 50' General American Corporation RBL bunkerless refrigerator car. The model represents an RBL car introduced in the early 1960s with a welded body capable of holding a temperature within a few degrees for several days while in transit.



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INDEX

TABLE OF CONTENTS



Atlas' N scale version features etched metal running boards and crossover platforms. Road names are Milwaukee Road, Missouri Pacific, Delaware & Hudson, and Conrail.



Also new from Atlas is a 40' stock car. The N scale model represents a prototype with wood sides and steel Dreadnaught ends. In addition to the Union Pacific version shown, the N scale Trainman series model is available decorated for Chicago & North Western, Great Northern, and Denver & Rio Grande Western. For additional information contact a dealer or visit www.atlasrr.com.



R. Bale

THE N&W J CLASS 4-8-4

The Norfolk & Western J class was a group of 14 steam locomotives built from 1941-1950 at N&W's shops in Roanoke, Virginia. The 4-8-4 J class locomotives were designed for N&W main line duty between Norfolk and Cincinnati, and between Monroe, Virginia and Bristol, Tennessee. The Js continued in revenue service until the late 1950s. The locomotives had 70" drivers, which were considered small for a locomotive that was intended to pull trains at over 100 mph. The Js' streamlining look was designed by N&W's Tool Supervisor, Franklin C. Noel. Due to the wartime limitations on the use of strategic material, the second batch of five locomotives were delivered in 1943 without streamline shrouding. One locomotive, No. 611, survives at the Virginia Museum of Transportation.



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Bachmann is selling an N scale version of a Norfolk &

Western Class J 4-8-4 steam locomotive. The model is equipped with a SoundTraxx Econami steam package with a choice of 16 whistles, multiple variations of six bell types, four prototypical exhaust chuffs, five air pumps, and four dynamos. Additional sounds include cylinder cocks, grade crossing signal, blowdown, brake squeal & release, coupling/uncoupling, water stop, and a conductor calling *All Aboard*. The model is available in three N&W road numbers. For best performance a minimum track radius of 11.25" is recommended.



Also available from Bachmann is an N scale 40' steel gondola. In addition to Pennsylvania Railroad with a circle keystone, road

names are Santa Fe, Burlington Northern, and Denver & Rio Grande Western. For additional information contact a dealer or visit www.bachmanntrains.com.



Jacksonville Terminal Company is

releasing 40' high-cube containers this month in 11 new paint schemes. The N scale models feature IBC connecting pins, multiple door styles, and JTC's magnetic connecting system. Carrier names include NYK Logistics and Hyundai.



Additional carriers are MSC MEDU (beige version), and a gray MOL unit with an alligator logo.



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[INDEX](#)

[TABLE OF CONTENTS](#)



Containers decorated for Hamburg Süd, HMM (blue on orange), and Safmarine are included in this release.



Additional decorating schemes include TEX-TGBU, Transamerica



TRLU (ex-MOL Patch), Evergreen, and CMA/CGA. The N scale containers will be available in two-packs.



JTC # 772013- 17-Post 53' well car – TTX Car number 655117 Silver 3-stripes



JTC # 772022- 17-Post 53' well car – CP Car number 527578 CP RAIL



JTC # 772020- 17-Post 53' well car – TTX Car number 656673 Yellow 3-stripes



JTC # 772017 TWO PACK (not shown)

Jacksonville Terminal Company has scheduled a fourth quarter release for a group of N scale 17-post NSC well-cars. For additional information contact a dealer or visit www.jtcmodeltrains.com.

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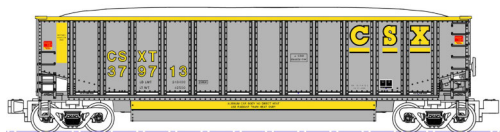




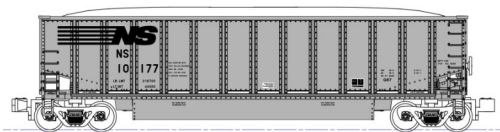
R. Bale

BATHTUB GONDOLAS

Unit trains of specially designed gondolas began to replace conventional coal carrying hopper cars in the 1970s. The new gondola design replaced moving hopper doors and high-maintenance locking mechanisms with long tubs on either side of the cars center sill. Eliminating the slope sheets and hopper outlets provided additional coal-carrying capacity in a car of the same length. One of the most popular of the modern coal gondolas is Johnstown-America's BethGon Coalporter. In production since 1978, these cars are distinguished by their angled end slope sheets and two lengthwise tubs below the frame levels. Gondola cars dedicated to coal hauling have rotary couplers allowing them to be emptied by a rotary car dumper.



KatoUSA is preparing a new release of Bethgon Coalporters for February 2021. The model is based on a prototype bathtub-style rotary dump coal gondola built by Freightcar America. Road names for Kato's N scale version will be Union Pacific, CSX, BNSF (Swoosh scheme), Canadian National, and Norfolk Southern.



Each road name will be available in eight-car sets with each car having a different road number. The road numbers do not

duplicate those issued on previous releases of Kato's Coalporters. Each model comes with a removable coal load. For additional information contact a dealer or visit www.katousa.com.



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[INDEX](#)

[TABLE OF CONTENTS](#)



R. Bale

SCALE TEST CAR

Freight hauling railroads earn their keep based on the weight of the freight they transport. Loaded freight cars are weighed on track scales to determine the overall weight of the loaded car. The difference between the total and the cars known weight determines the weight of the load. The track scales must be kept accurate and since they take a beating they must be periodically checked for accuracy. An odd looking two-axle car called a Scale Test Car (STC) of known weight is used to calibrate the accuracy of the track scale. A compartment on the side of the STC holds lead weights that may be added or removed when the car itself is calibrated on a master scale. To eliminate possible variables that could alter their weight most STCs do not have brakes. The poling pockets on many STCs still in use today gives away their age.



Micro-Trains Line is selling a 13' two-axle scale test car based on a prototype built during WW-I. The N scale model is available decorated for Chesapeake & Ohio, Milwaukee Road, and CSX.



The ducting added to the clerestory roof of this Denver & Rio Grande Western heavyweight

business car indicates that it has been upgraded with air conditioning. Micro-Trains N scale model rides comfortably on six-axle Pullman passenger trucks.

New N scale freight equipment from Micro-Trains includes this 60' Norfolk Southern excess height boxcar. The N scale model is based on a prototype built in 1970 for Norfolk & Western.



It retained its NW reporting marks when repainted for NS in the early 1990s.



Also new from Micro-Trains is a 50' D&RGW steel gondola that comes with a load. The N scale model represents a car built in the late 1960s with fixed-ends and fishbelly sides.



Completing Micro-Trains list of recent releases is a 39' 10,000 gallon tank car decorated for MEC-Maine Central Railroad. For additional information on Micro-Trains models contact a dealer.



RailSmith Models is bringing out a newly tooled Pullman-Standard coach in N scale

that follows plan 7510. Planned in both skirted and unskirted versions as appropriate, the first release is planned for January 2021. That release will include Northern Pacific, Great Northern, and Spokane, Portland & Seattle painted versions, as well as "close" Union Pacific and Southern Pacific paint schemes. These cars were part of the Northern Pacific North Coast Limited, Mainstreeter, Alaskan, and Coast Pool Trains #407 and #408, and lasted into the Amtrak era. Paint schemes



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[INDEX](#)

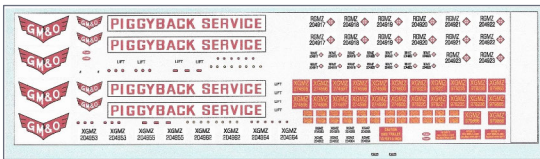
[TABLE OF CONTENTS](#)

under consideration include GN Empire Builder and Big Sky blue; Illinois Central, Northern Pacific Two-tone green and 1947 'Pine Tree'; SP&S Broad Stripe, Four Stripe, and Empire Builder; Union Pacific yellow and gray and possibly 'Challenger'; and Southern Pacific yellow and possibly General Service 'silver and red.' RailSmith Models is also judging the interest in an Amtrak version. For more information as well as to indicate which paint schemes you would be interested in, visit lowellsmith.net.

NEW DECALS, SIGNS AND FINISHING PRODUCTS



Mask Island Decals offers a variety of water slide decals for decorating HO scale trailers, including a set for this Rock Island Intermodal Service trailer.



Depending on the prototype scheme being modeled, this lettering set will decorate two or more Gulf, Mobile &

Ohio Piggyback Service trailers.

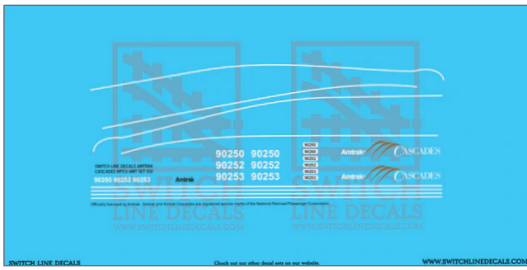


The lettering set for this Chicago & Eastern Illinois Railroad trailer includes oval

end logos and the slogan Route of the Piggyback Flyer. For additional information visit www.maskislanddecals.com.

Switch Line Decals has released new HO and N scale water

slide decals for Amtrak's Cascade and Pacific Surfliner trains.



Individual lettering sets are available for Cascade F40PH NPCU, passenger cars, car end stripes, and passenger car logos.



Lettering sets are available Pacific Surfliner cars, car names, and F40PH locomotives. For additional information visit www.switchlinedecals.com.

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INDEX

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[INDEX](#)

[TABLE OF CONTENTS](#)

BRIEFLY NOTED AT PRESS TIME ...

Accurail is expanding its selection of HO scale Milwaukee Road rib side cars with the addition of a double-door version. Tooling is currently being prepared with the initial release expected to be a Route of the Hiawatha car with a 1942-1957 era Pacific Herald ...

Atlas has purchased the tooling for several models from True Line Trains of Canada. The acquisition includes a slab side covered hopper which Atlas will release as a Master series model during the second quarter of 2021. Additional models in the transaction include TLT's HO scale C-Liner and RS18 locomotives, 50' newsprint boxcar, Fowler stock car, bulkhead flat car, CN/CP caboose, and 40' AAR boxcar. Atlas also acquired TLT's N scale C424 and GP9 locomotives. Formerly known as Life-Like of Canada, True Line Trains was started in 2003 after the purchase of Life-Like by Walthers ...

Late word from **ExactRail** confirms the HO scale coil cars announced at the West Springfield Train Show in January, should be ready for release in October ...

InterMountain plans to produce N scale Superdome passenger cars in 14 decorating schemes. We'll have full details next month ...

In response to the financial difficulties caused by Covid-19, **ScaleTrains.com** is offering customers the opportunity to purchase through Affirm which allows consumers to buy now and make easy monthly payments. For details call 844-987-2467 ext 1, or send an email to Sales@ScaleTrains.com. ■



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[INDEX](#)

[TABLE OF CONTENTS](#)

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SEPTEMBER

Due to COVID-19 restrictions, please check with any organization hosting an in-person event for the latest status of the event. ■

Ongoing

ONLINE, Zoom, dates vary, see website. Operation Special Interest Group Meetups – limited attendance available. For more information visit www.opsig.org/Virtual. Past meets are available online at www.opsig.org/Virtual/Past.

September 2020, by location

ONLINE, Zoom, September 2, New Tracks Meetup, ongoing series of meets hosted by Jim Kellow, MMR. For more information visit www.facebook.com/pg/Jim-Kellow-MMR-107123997469688/events.

ONLINE, Zoom, September 5, Virtual National Narrow Gauge Convention part 3. Recordings of clinics and layout tours available on YouTube. For more information visit <http://40nngc.com>.

ONLINE, Zoom, September 18-20, Reading Railroad Prototype Modelers Meet-VIII Virtual. For more information visit www.readingrrmm.com/index.html.

ONLINE, Zoom, September 19, New Tracks Meetup Train Show. Multiple vendors presenting. For more information visit www.facebook.com/events/339809083701676.

ONLINE, Facebook/YouTube, September 26, NMRAX Virtual Model Railroad Convention. For more information visit www.facebook.com/groups/nmragroup or email nmrax@nmra.org
Note: Past NMRAX presentations can be viewed on the NMRA YouTube channel at www.youtube.com/playlist?list=PLBbDHVLodgxn8otpnudMsHdQMucCzcTWD.

October 2020

OHIO, CAMBRIDGE, October 18, Division 6 Model Railroad Train Show, presented by the MCR Buckeye Division, Pritchard Laughlin Center, 7033 Glenn Highway. For more information visit div6-mcr-nmra.org/trainshow.html.

ONLINE, 19-24 October, NMRA British Region – Virtual Convention 2020. Membership in the NMRA British Region required. For more information visit convention.nmrabr.org.uk.

November 2020

CANADA, ONTARIO, FENWICK, November 14-15, 21-22, Greater Niagara Model Railroad Engineers Open House, 1141 Maple Street. For more information visit www.gnmre.ca.

INDIANA, DANVILLE, November 21, Danville Train Show, presented by the Central Indiana Division of the NMRA. Hendricks County Fairgrounds, corner of E. Main St. and County Road 200 E. Due to COVID-19 restrictions, Masks will be required, hand sanitizer stations provided, and contact tracing in effect. For more information visit www.cidnmra.org/services.

Future 2021-2022

CALIFORNIA, SANTA CLARA, July 4-11, 2021, Rails By the Bay, 2021 NMRA National Convention and National Train Show. Santa Clara Marriott Hotel. For more information visit www.nmra2021.com.



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[INDEX](#)

[TABLE OF CONTENTS](#)

INDIANA, NOBELSVILLE, January 31, Noblesville Train Show, presented by the Central Indiana Division of the NMRA. 2003 Pleasant Street. For more information visit www.cidnmra.org/services.

INDIANA, FRANKLIN, May 15, Franklin Train Show, presented by the Central Indiana Division of the NMRA. Johnson County Fairgrounds. For more information visit www.cidnmra.org/services.

MISSOURI, St. LOUIS, tentatively September 2022, NMRA National Convention and National Train Show. ■

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STEAM HEATER CARS

A photograph of a steam heater car, which is a large industrial vehicle used for heating. It is emitting a thick, white plume of steam that fills the left and center of the frame. The car itself is blue with yellow horizontal stripes and is visible on the right side. The background is a clear blue sky.

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[INDEX](#)

[TABLE OF CONTENTS](#)

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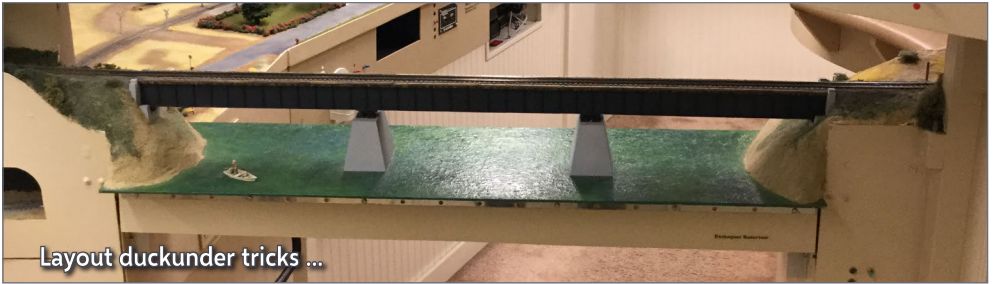
[INDEX](#)

[TABLE OF CONTENTS](#)

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