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Dennis Murphy models A branchline diorama

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MRH MODEL RAILROAD HOBBYIST

Model Railroad Hobbyist | February 2016 | #72

STAFF CREDITS

Front cover: Dennis Murphy builds a shortline diorama in this issue's cover story, reminding us of the joys of modeling light steam.

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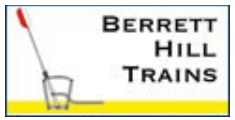

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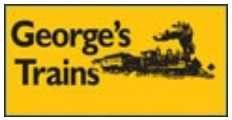

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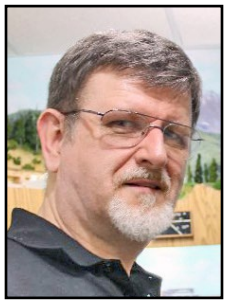


PUBLISHER'S MUSINGS

editorial

JOE FUGATE

Click here for reader comments

BUILDING FOR THE FUTURE

WHEN BUILDING A LAYOUT, DO YOU WONDER

what parts will go the quickest, and what parts will take the most time to do?

Having built several layouts – my current Siskiyou Line is layout number four – I can tell you benchwork goes in fast. Benchwork for my rather large Siskiyou Line, which is more complex than some with its mushroom configuration, took only a few Saturdays of work.

After the benchwork, things slow down. Roadbed and trackwork, if done right, will take some time. Wiring, if done by adding feeders to every rail section, will also take time and goes much more slowly than benchwork.

Adding rough scenery, dirt, grass and bushes also is slower than benchwork, but goes faster than trackwork or wiring because it doesn't need a lot of measuring and testing. Did you make that rock larger than expected? No matter. It's just a bigger rock.

Then comes the slowest part of the hobby – the detailing. Adding scenery details, building structures and bridges, as well as detailing rolling stock and locos – that's what really takes the time. I've

spent an entire year building a two-span truss bridge scene at west Roseburg on my layout. And that's just four or five feet of layout on a layout with a 360-foot mainline!

I see modelers posting photos of benchwork online and getting all excited to see their layout start to materialize. Then, later, they drop out of sight and we never hear from them again. They've discovered what those of us who have been in the hobby for a while know – the benchwork is the easy part and it goes in really fast.

The first true test comes when you get to the trackwork. Can you stick with it now that progress has slowed? You had better get comfortable with slower progress because trackwork that is slapped down without proper care will haunt you the entire life of your layout with poor performance issues.

Publisher's Musings | 3

If you thought the trackwork was slow, wait until you get to building structures, bridges, locos, and rolling stock. You'll be doing this part of the hobby 10 to 100 times longer than you will be doing benchwork and rough scenery.

After you have made it past the trackwork and wiring slowdown, you'll find doing rough scenery encouraging because it goes faster than the immediately previous steps. But then comes the real killer – adding the final details.

The postings I really love to see are those showing layout builders doing structures, bridges, or loco and rolling stock detailing. Those prove you've made it past the quicker steps and are progressing into the real meat of the hobby – the modeling.

If you don't yet have space for a layout, I recommend you go ahead and build some structures and detail a few locos and some rolling

stock. Because this detail modeling is among the slowest work, anything you do in advance is time well spent.

You're building for the future by building these models now – think of it as a time investment in your dream layout.

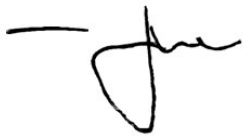
Here's one scenario. Let's say it takes you 10 years before you get the space for your dream layout. In that time, let's say you've detailed up a dozen locos, several dozen railroad cars, and built a couple dozen structures.

Now, with space for your dream layout, you can take a couple weeks doing the benchwork, and then take a few months doing the trackwork and wiring. Another couple months and you can have some brown plaster scenery in place.

If you had not invested the previous 10 years wisely, you would now be looking at *10 years* to build the structures and detail your locos and rolling stock. Ouch!

Without building for the future like this, you'll need to use up a lot of time on the back end to build up your collection of detailed models.

If you're in waiting mode for layout space, then start building for the future by doing some structure, rolling stock, and locomotive modeling. You won't be sorry! ☑



STAFF NOTES

Click here for reader comments

THE MRH MEDIA STORY ... *AND MORE*

IT ALL STARTED IN 2004 WITH MODEL-TRAINS-VIDEO.COM.

After Joe Fugate's tenure as editor of the Layout Design Special Interest Group (LD SIG) *Layout Journal* publication, Joe found modelers had some interest in how he designed and built his home layout, the Siskiyou Line.

Digital video had hit the scene and Joe elected to produce a DVD series about his layout. Many LD SIG regulars supported the idea and Joe founded Model Trains Video to produce and sell his videos.

In 2005, Joe did an article for *Model Railroader* on ballasting track and included a video segment along with the article. MR liked the video and offered Joe a contract to produce video segments for them. The *Model Railroader* staff noted that PDFs allowed video content embedded in them, and they asked Joe to format his videos as video step-by-steps inside a PDF. From 2005 to 2008, Joe produced video PDFs for *Model Railroader.*

However, Joe kept watching technology developments and ideas like The Power of Free by Wired Magazine got Joe thinking that a free model railroading magazine offered via the Internet could inject new life into hobby publishing for the 21st century. Joe

wanted to focus on not just the models, but deal with all aspects of what model railroad hobbyists face in achieving their model railroading dreams.

Joe first pitched his idea to *Model Railroader* but the MR management declined the idea as too radical for them. So Joe let his contract with MR lapse and launched out on his own, forming *Model Railroad Hobbyist magazine* (MRH magazine) in late 2008. Joe settled on the Model Railroad *HOBBYIST* name because, as he describes it, "my passion is to help my fellow hobbyists achieve their hobby dreams as a wholistic hobby pursuit – it's way bigger than just building a model or two."

So Joe launched the first issue of MRH magazine in January of 2009 as a free model-trains-video.com publication.

MRH magazine has done extremely well, growing from a mere 16,000 readership at launch to over 70,000 readers and 33,000 subscribers here seven years later. In fact, MRH has outgrown *Railroad Model Craftsman*, which is currently at around 30,000 readers and 21,000 subscribers, to become the number two magazine in the hobby as to audience reach.

Here are some other comparative stats on MRH:

- **MRH:** Facebook page likes: ~46,000;
  YouTube channel views: ~2.5 million
- **MR:** Facebook page likes: ~32,000;
  YouTube channel views: ~2.4 million
- **RMC:** Facebook page likes: ~10,000;
  No YouTube channel

It became clear a couple years ago the MRH name had become much more recognizable by modelers than Model Trains Video, so all the videos and the book line migrated to the new MRH Store.

LAST ISSUE'S RATINGS

The five top-rated articles in the January 2016 issue of *Model Railroad Hobbyist* are:.

5.0 MRH product showcase
4.7 Joe Fugate's Siskiyou Line at 25 years
4.6 How to model working cranes-2
4.5 DCC Impulses: Econami decoder + RS3 sound install
4.5 What's Neat: Installing SoundCar decoder, and more

Issue overall: **4.3**

Please rate the articles! Click the reader comments button on each article and select the star rating you think each article deserves. Thanks! ■

The MRH Media family

About that time we also launched our new TrainMasters TV premium web video channel as part of the MRH family. We had simply outgrown the original Model Trains Video idea, so Joe reorganized things under the new MRH Media name and rolled out the new look with the MRH shield logo, designed by Scott Thornton.

So that's the story to this point. The MRH Media family has become a trio: MRH Magazine, the MRH Store, and TrainMasters TV. We've grown every year since our founding, and yet we're still finding modelers and hobby vendors who have never heard of us!

That's where *you*, our readers, come in. Because MRH magazine is free, we totally depend on word of mouth to grow. If you want to "pay us back" for this free publication, please tell others about us. Tell all your modeling buddies about us, and mention us to hobby vendors.

One of our staff in southern California recently joined a club with over 50 members – and found only *two members* who knew about MRH! How is it that those two members failed to tell all their fellow members about us? That's 48+ modelers missing out on almost 20,000 pages of free how-to material from MRH. This true story clearly shows you can't just "assume" those other modelers know about us. Speak up and ask if they've seen the latest issue of MRH. You may be surprised!

We also had a reader recently tell us they were talking to one of their favorite hobby vendors and they mentioned MRH. The vendor has *never* heard of us! So the modeler told the vendor how much they appreciate the free ad-supported MRH and suggested the vendor ought to check us out.

Again, don't just assume a vendor has heard about us either. Mention us to vendors. If they decide to become an advertiser, that's money in the bank to us – and possibly to them as well!

Seven years in, our founder Joe Fugate keeps involved with MRH Media, including regularly making posts on the MRH website.

What's new on the MRH website?

Speaking of the MRH website, check out the ***What's on your workbench?*** threads. At the start of most months, the forum regulars kick off a recurring thread of show-and-tell photos showing projects on their workbench. Here some of the recent ones.

Jan 2016: mrhmag.com/node/24927

Dec 2015: mrhmag.com/node/24520

Nov 2015: mrhmag.com/node/24182

Oct 2015: mrhmag.com/node/23832

Sep 2015: mrhmag.com/node/23549

Aug 2015: mrhmag.com/node/23262

Jun-Jul 2015: mrhmag.com/node/22782

Apr-May 2015: mrhmag.com/node/22018

Mar 2015: mrhmag.com/node/21728

Jan-Feb 2015: mrhmag.com/node/20856

Be sure to check out these workbench threads. They help keep you jazzed about doing the hobby between issues of MRH! ☑

MRH Q-A-T column

compiled by Joe Brugger

Click here for reader comments

Questions and Answers

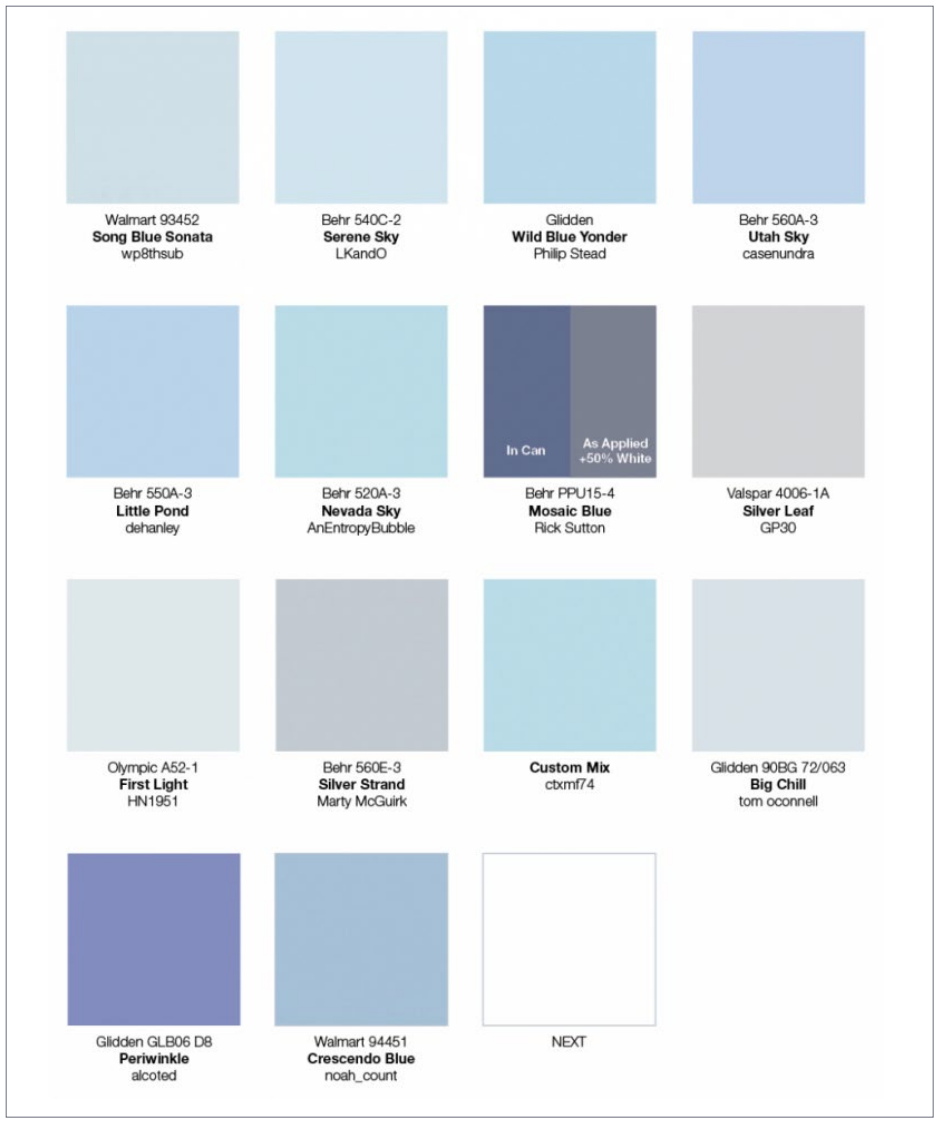
What color is your sky?

Q. I have never had much luck at consistently mixing paints and matching them later. So, I am looking for a formula or off-the-shelf color from one of the big-box stores that would make a nice sky color. Any suggestions or a recipe would be great. Mostly I'm just curious as to what base color folks use for the sky on their model railroads.

—Tim the Trainman

A. Anything from dead-fish white to pitch black could be correct. Location, time of day, time of year – all sorts of factors influence the sky's color. On a model layout, the color is also affected by the ambient lighting and the viewing angle. Get sample paint cards from your dealer and look at them both in sunlight and under your layout lighting. We'll start with paint colors other modelers like.

MRH QUESTIONS, ANSWERS, AND TIPS



1. LK&O assembled a chart of paint colors recommended by MRH readers. The "correct" color depends on the time and place being modeled, lighting, and personal perception. Try matching the colors here to photos of the area you want to model.

Rick Sutton: It seems to me that the Western U.S. is generally modeled with a darker blue sky than Midwestern or Eastern locations. I'm depicting a California scene and start with a deep blue **Behr (Home Depot) Mosaic Blue** and add white to it match what I want under layout lighting conditions. The darkest blue at the top of the sky is two parts Mosaic Blue to one part white. I know I am on the deeper blue end of the spectrum, but that's what I really like.

Philip Stead: I use **Glidden Wild Blue Yonder.**

Marty McGuirk: I use **Behr Silver Strand.** Horizon line haze is created by horizontal scrubbing of Titanium White with some of the sky blue color mixed in.

Ed Bradbury: I use a deep blue **Dutch Boy # R96B, Seine River Blue** top to bottom and go back with white and some blue as needed. I am modeling the Maine Central from Portland through the mountains of New Hampshire. The mountain sky is deep blue high up, descending to whitish blue on the horizon. The other day on the way home along the water, the sky was deep blue along the water getting lighter going up.

Rob Spangler: I went with **Walmart Color Place Song Blue Sonata.** I painted the whole surface with plain blue first. When I finished the sky with clouds, I repainted the lower portion, fading the blue toward the horizon with PVA drywall primer.

JerryRGS: Sherwin Williams #33-4 **Universe Blue** (out of stock but can be mixed) because it photographs well, i.e., does not wash out and looks good.

Rich S.: I'm partial to **Behr Utah Sky** (560A-3).

Tom O'Connell: I use Glidden's **Big Chill** from the Home Depot, #90BG-72/063. This is under LED lights.

Don Hanley: I use **Behr Little Pond Blue** as my base color. I mix it and a plain white 50/50 to create a lighter blue. I paint the top portion of my backdrop with the base blue and then paint the middle portion with the 50/50 mix and the lower portion with white. I do about a three- to four-foot section at a time. While the paint is still wet I blend the colors and end up with a nice graduated sky.

I make the base of my clouds with a 25/75 mix, with 25% of the light blue 50/50 mix and 75% white. I use a soft two-inch trim brush to dab on the cloud base color and then add white over that to represent the top of the clouds. I don't wait for the paint to dry before I add the white; that way I get some natural blending of the colors.

Practice on scrap hardboard or backdrop material. The key is to practice.

A quick note about clouds – I make mine big, 12 to 18 inches long or longer. Most of us make our clouds small. I think the reason for that is we don't have something good to measure them against. The thing to remember is that clouds can be huge. I watch them come over the mountain peaks in Nevada (25 miles long), and they often dwarf them.

Noah count: I'm not a lighting expert but I generally don't make my color choices under store lights. I take the paint sample chips outside and look at them in bright sunlight. Backdrop sky is not hard to paint. If you establish your horizon

line at eye level and then paint blue down towards that with a transition from that blue to white right about your horizon line, things will be fine.

Syl: IMHO the most important part is how does it fit in with the overall scene? It's all a matter of balance; the same as for ground cover, trees etc. My backdrop is commercially available, however it is a close match to what I used to have on the bare wall, minus the clouds.

Michael Watson: I bought a darker color to start with, then also bought a gallon of white latex and mixed it into the darker color as I moved down the wall. Starting at the top with the darker color, and *gradually* adding in more white as I moved down the wall. I tried both a roller and a brush, and it did not seem to matter either way with the results. Play with a test section or a piece of foam core board first to learn how to blend colors. If you do choose to do this technique, it looks strange at first, but as it dries, it comes out pretty good! However, if you ever have to touch up the color … not easily done.

Andrew: On the Nelson and Fort Sheppard Railway I use **Behr Nevada Sky** (520A-3) (Flat) with a Titanium White fade from the bottom to the middle. I might throw in some brown color for dust – I have to try it out though to see if it would work.

Pat Miller: I started with **Valspar Silver Leaf Flat.** See m.valsparpaint.com/color-detail.php?id=1964&g=1014. Then I took small separated portions and mixed one lighter and one darker and hand painted clouds into the backdrop.

Thanks also to Brent Ciccone, Michael Watson, Neil Willoughby, Den Austin, Rustman, Rick (HN951), dark2star,

2. Valspar Silver Leaf Flat is Pat Miller's starting point for a wintry northeastern sky. Marty McGuirk uses a similar shade on his Southern New England railroad. *Pat Miller photo*

AlcoTed, Rick Sutton, Barry Silverthorn, Jerry RGS, Dave B, Rob in Texas, and others who shared their experiences.

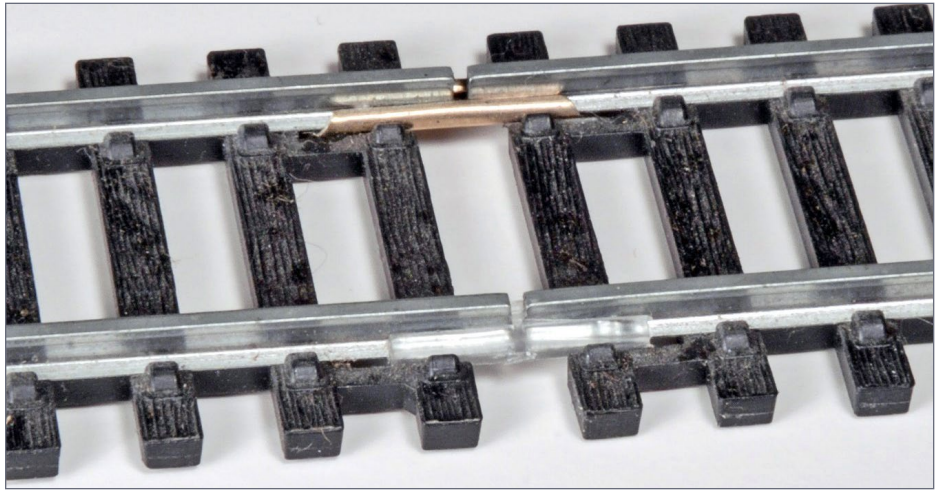
Look at more photos and details on selecting backdrop colors at mrhmag.com/node/22496.

Insulated rail joiners

Q. I'm a newbie and don't understand the use of plastic rail joiners. I don't understand the need to stop the flow of current through the track. What am I missing? Thanks.

—pdonati1

A. Rick Wade: Insulated rail joiners – or cutting gaps in track – are used to electrically insulate a section (often called a "block") for a number of reasons including troubleshooting



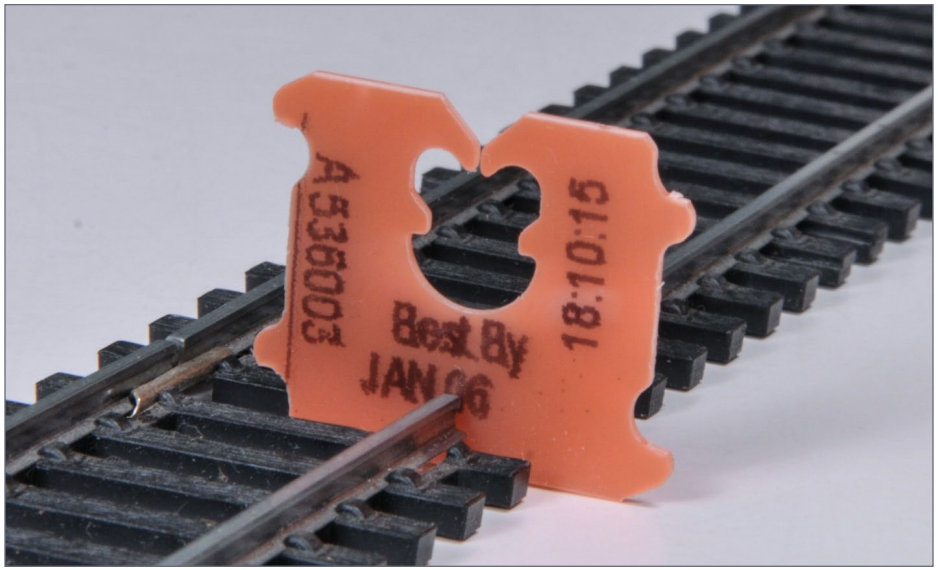
3. Atlas clear plastic insulating joiners are hard to spot when they are installed, but are more obvious when rail is painted and ballasted. This track is ancient Roco code 100.

4. Plastic insulating joiners are available from most flex track makers, and come in a variety of sizes and colors.

a short. If my layout is one big block, when I get a short it can be difficult to find. Let's say I have my layout electrically set up (using insulated rail joiners) into six separate power blocks. If I get a short, I can disconnect the power (often done with a toggle switch) to each block one by one until the short disappears. I now know which block the short is in.

Bill Brillinger: Sometimes it is necessary to split a model railroad into electrical blocks to manage the electrical load on a power supply, or to create protected zones so if a short happens, the entire railroad does not shut down.

It is possible with two-rail wiring to create a situation where the track loops back on itself and creates a short circuit. Wyes



5. Insulate a track section by inserting a piece of tough plastic in a gap. Bread wrapper clips are easy to trim with a knife or scissors and can be epoxied into place.

and reverse loops are the common examples. Electrical blocks with special wiring or circuitry can be used to manage these and make it possible to turn a train without shorting.

Note: The all-rail points and frogs of some older turnouts needed these parts electrically isolated, with power routed by switch machine contacts. Most turnouts today, and some older turnouts, are made with the frog and points isolated. These require no added gaps or plastic rail joiners. They may require additional feeders and circuitry to power all of the rail segments correctly.

Russ Bellinis: Actually, you don't need plastic rail joiners at all. The insulated sections are sometimes needed for the reasons mentioned but the plastic rail joiners are grossly oversize. We use them in our modular club because every set-up we do is different. We move the power districts around to different locations at different set-ups. For a home layout, cutting a gap in the rail, and filling the gap with a bit of plastic (this is a good use for "bread clips") will hide the gap and look much better than an oversize plastic rail joiner.

DrJolS: Go to Allan Gartner's "Wiring for DCC" at wiring-fordcc.com. On the first page that appears, look in the top left-hand corner for "track" and click on it. You'll learn a lot more, and more quickly, than just relying on this forum.

For the complete discussion, got to mrhmag.com/node/24615.

TIPS

Tender connection

When I get a new sound/DCC steam loco, I like to plug in the wire harness, and keep the loco and tender connected. The

drawbar seems to be constantly falling off the tender pin. Here is an easy tip to keep the connection together, stop chipped paint, and end other wire harness disconnections.

I take a small slice of rubber fuel tubing, 1/6 inch or 3 mm long, and slip this on to the pin under the drawbar. It grabs the pin and prevents the drawbar from slipping off. I use Du-Bro #221 "super blue fuel tubing." If you do need to split the connection, just pull the tubing off. It sticks on its own, needing no glue.

—William Weiss

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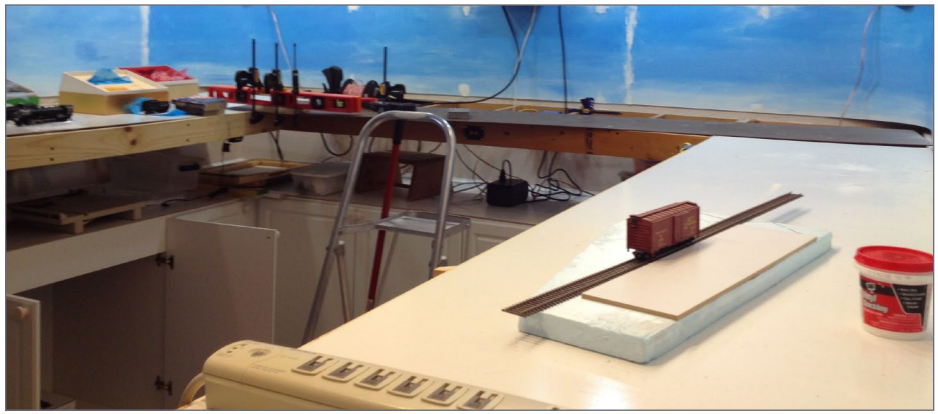
A Dozen More DCC Myths

A LITTLE WHILE AGO, OK, TWO YEARS AGO, I offered a dozen myths. Now it is time to visit the oracle again and see what myths are being propagated now.

Myth #1: Using DCC is difficult

Yes, it can be. However, it doesn't need to be any more difficult than you want it to be. A simple unit like (alphabetically) the Digitrax



1. My bedroom-sized HO layout under construction.

Zephyr Xtra or MRC Prodigy or NCE PowerCab will get you up and running in a few minutes.

If you choose to go with an extremely sophisticated system and lots of bells and whistles, it will bring with it added complexity.

If you are designing a layout to run in a bedroom, you wouldn't be buying a dozen cases of track, and turnouts by the case. You might use a case of track, but certainly not a case of turnouts.

Similarly, size your DCC system to your needs. My HO layout under construction will be under 30 feet in total length (basically a U shape) and 2 feet deep [1]. I'll have, at most, three operators. Most of the turnouts will be controlled by Tortoise machines activated by fascia switches; a few will be in a small yard and controlled with push buttons and a NCE MiniPanel. I'm going to run it all with a NCE PowerCab and three Tam Valley Depot Boosters [2]. The branch line I'm modeling, the Santa Maria Valley Railroad, is dark territory so no signals are needed.

I could spend a lot of money on a more sophisticated DCC system that would add nothing to the operation of the layout.

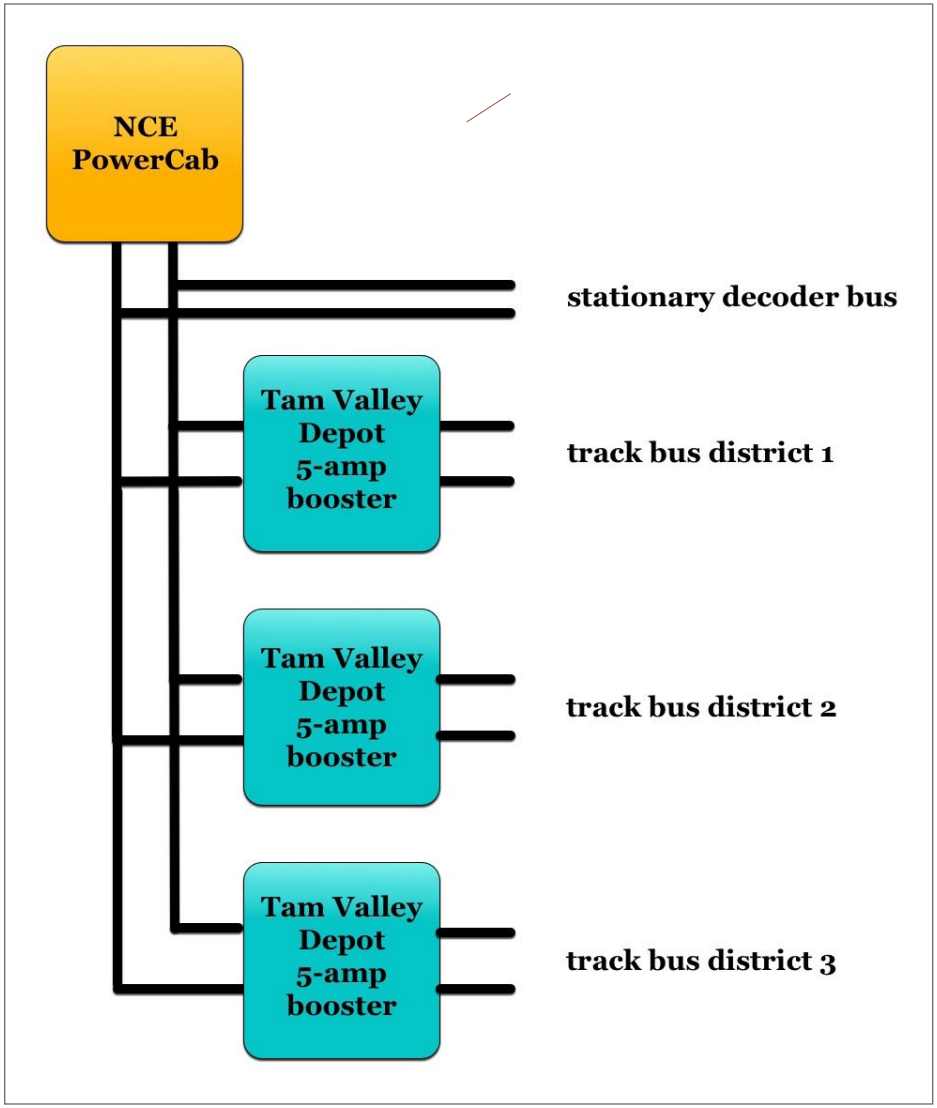
When you are working on your "givens and 'druthers" is a good time to consider what you will need for a DCC system, just as it is not a good idea to scratchbuild a structure and decide on size and location of windows half way through.

Myth #2: A reversing section shorter than longest train is ok

Just because you get away with it for a bit of time does not make it a good design practice.

You want to be able to get your entire train inside the reversing section before any of it starts to leave.

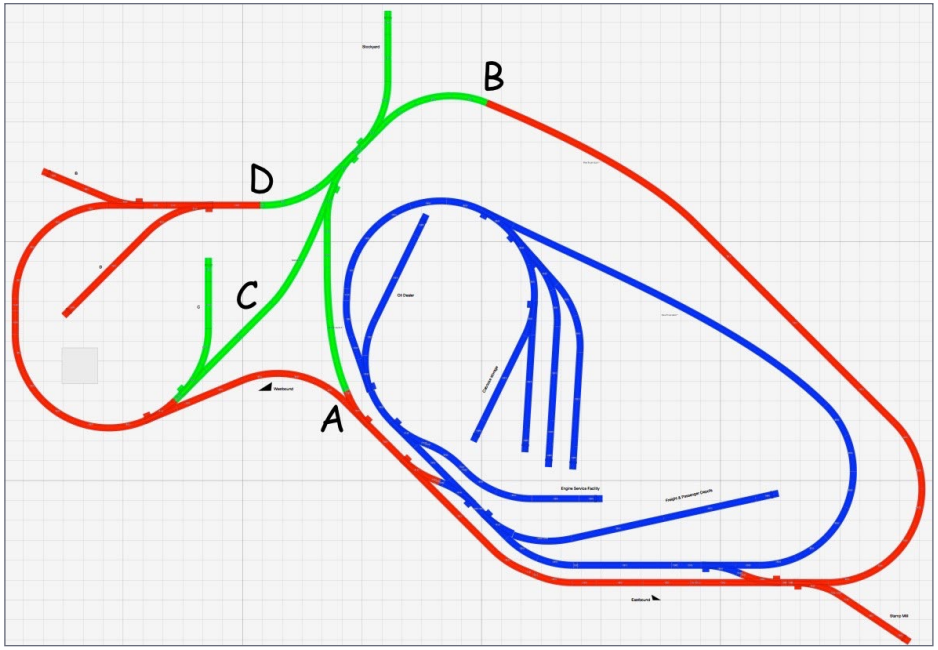
The reversing section controller (auto-reverser) senses a short whenever a metal wheel bridges the gap between two sections of rail that are of opposite polarity. It reverses the polarity of the small



2. System diagram of my PowerCab-driven HO layout.

section to match the rest of the layout. If you have rolling stock entering and leaving the district, you run a chance that you will short each end of the reversing section at the same time, confusing the controller. Note that this bridging occurs on one rail at a time, not across the rails. This is why I recommend staggering the gaps a bit (½ inch to several feet – there is really no maximum distance). As a matter of fact, the gaps at D in the track diagram [3] are on opposite ends of a section of LGB curved track, more than a foot long.

The reversing section of my garden layout is shown in green on the track diagram [3]. The adjacent track is shown in red. Blue is the unrelated inner loop. The actual reversing occurs in the



3. Track diagram of my garden layout. The reversing section is in green. The adjacent track is the red loop. See text for explanation of A, B, C and D.

(inverted) wye in the middle of the district. The short side of the wye plus the tail on the top part of the outer loop (A to B) sets the longest train that I can operate through this reversing loop.

The two spurs are wired as part of the loop, since they attach to track that is in the loop. When switching the upper spur, it is a good idea to use the long section of the wye (C) as the drill track. If one were to use the track that curves off to the left (D), it would be possible to have a wheel bridging the gap at B while another wheel was bridging the gap at D.

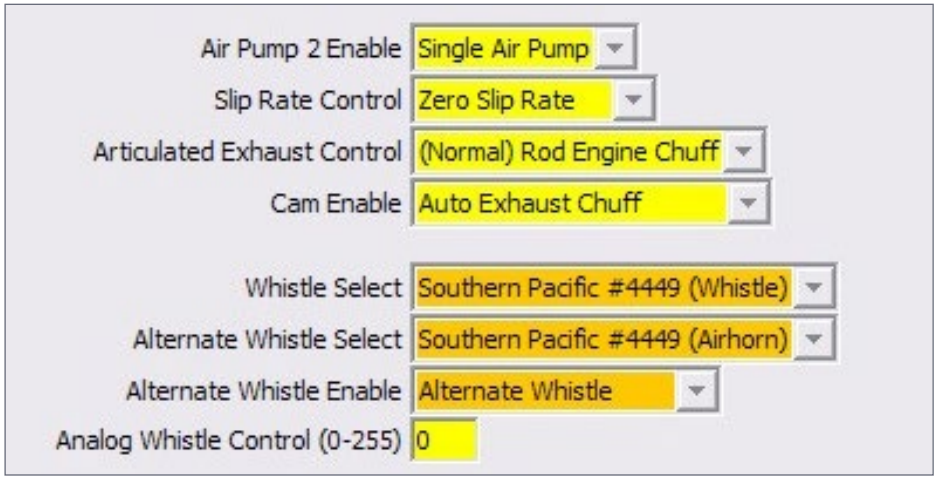
It doesn't matter if the offending wheels are on a loco or on a car, nor does it matter if the car is drawing power from the track, such as a resistor wheel set or lights. They will still trip the auto-reverser.

Myth #3: I can read decoder CVs "on the main"

When you write CVs "on the main," aka Programming On the Main (POM) or Ops Mode programming (Digitrax parlance), you cannot read back what you wrote. Folks get lured into believing this due to a couple of factors:

A. DecoderPro changes the color of the window when it writes the value. That doesn't mean that it read back that value, just that it wrote it. In figure [4], the values that had been input from the computer file are yellow. A whistle sound setting has been changed and the resulting changed panes are orange. After writing the changes on the main, the orange windows will turn white. That doesn't mean that the new values have been read back, though.

B. Some DCC systems will show what they wrote into a specific CV after they write it, as does DecoderPro. Again, this is not an indication of read-back, just remembering what it attempted to write.



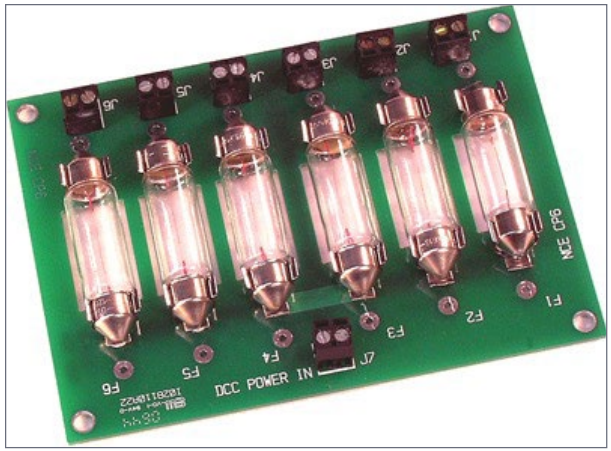
4. DecoderPro window showing sound settings in a SoundTraxx Tsunami decoder.

That said, there is a method available to read back settings on the main. It is called bi-directional communication. Digitrax calls it Transponding. Lenz developed it under the RailCom moniker and has assigned its patent to the NMRA. RailCom is the basis of the NMRA DCC Standard 9.3.2. Both of these methods allow various amounts of CV read-back from the main. However, you would know if you had implemented the hardware and software to do bi-directional communication. If you did, then you can read back. If you didn't, you can't.

If a DCC user has undergone the expense and time to install bi-directional communication, they will know it. See section Myth #1, above, kinda like Rule #1 – it's your railroad.

Myth #4: I must use light bulbs for circuit protection with my PowerCab

The popular NCE PowerCab reacts to a short by shutting down the entire unit. It is very unsettling to have to wait for it to completely reboot. NCE has created a product specifically to provide six districts of circuit protection for the PowerCab, using automotive bulbs [5].



5. NCE CP6 circuit protection module utilizing automotive bulbs.

Lots of folks have tried to use electronic circuit breakers and auto-reverse controllers with the PowerCab. Most have failed because most circuit breakers are slower than the PowerCab's circuit protection.

However, there is a solution that I have utilized. The PSx series of circuit breakers will work with the PowerCab, provided that they are wired for manual reset and the trip current is set to the minimum at about 1-¼ amps. If both of these settings are not utilized, the PowerCab will shut down instead of the PSx tripping.

What about an auto reverser? I have anecdotal evidence that two Tam Valley Depot Frog Juicers will work, with one driving each rail. In my experience with the TVD Frog Juicers, I expect this to be true, but I haven't used it myself.

While we are on the subject, take another look at figure [2]. I'm using the output of the PowerCab to drive the inputs of various electronic modules (TVD boosters and stationary decoders). This way, there is no need for a circuit breaker anywhere. The TVD boosters will protect their track districts. The PowerCab doesn't drive any track or exposed wiring.

Myth #5: MTH locos use DCC

MTH (Mike's Train House) has chosen to build its own command system, called Digital Command System, or DCS. MTH Proto-Sound 2.0 and Proto-Sound 3.0 equipped locomotives are designed to run and be programmed by the MTH DCS system.

The DCS system is not DCC. It is similar. MTH Proto-Sound locos may be able to be programmed on a DCC system, or they may not. The MTH web site (mthtrains.com/product-line-pages), as of early 2016 says, "MTH HO Runs On DCC."

Runs, yes. They make no claim to programming.

So that's why I say they do not "use" DCC. They "use" DCS, which MTH claims can "run" on DCC.

Myth #6: The prime mover is the loudest sound on a loco

My experience says differently. I've studied this from many vantage points: inside the cab, along the track, riding behind in an open car and in a closed car. My experiences include steam (narrow and standard gauge), diesel (vintage and modern).

Other than inside the cab, the horn is always louder than the motor ("prime mover" in modeler's terms). Depending upon sound

6. Sound measured in open-air gondola one car behind GP9 locomotive on California Western Railroad in September 2015.

insulation and horn location, the motor may be louder inside the cab. But we aren't modeling inside the cab but outside the cab.

I actually measured the decibel difference on the Skunk Train out of Willits CA this summer. Measuring their GP9 from an open-air gondola one car back of the locomotive, while pulling a grade, the horn showed 6 to 8 dB louder than the motor [6].

How did I measure it? I used a neat little app for my iPhone. Called "Decibel 10th" [7], this app turns an iPhone or iPad into a sound level meter. They even have an Apple watch version. Not having a watch, I don't know how that version works. The app is free, but it has ads. However, if the advertising banner on the top of the page bothers you too much, you can remove with an in-app purchase for the princely price of 99¢.

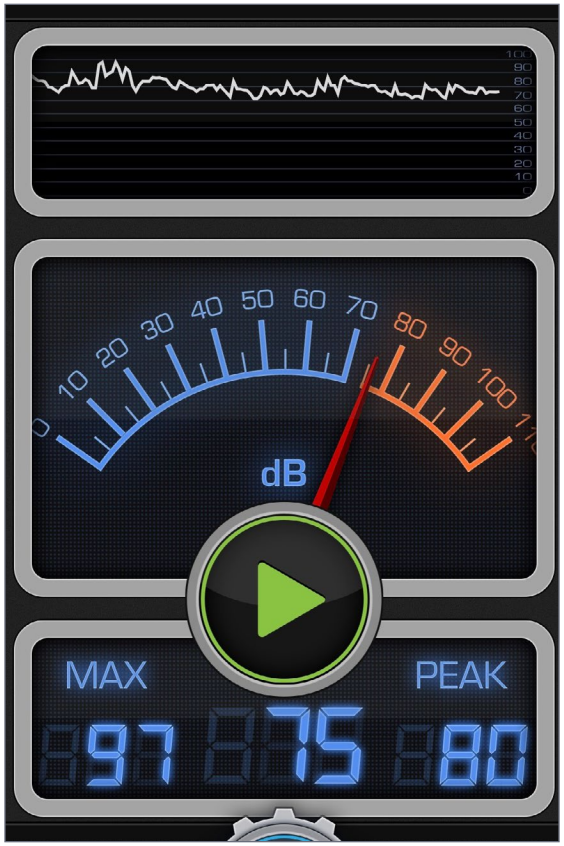
The motor at full load will be louder than the bell or just about the same level. Other external sounds (dynamo, automatic water release valves, etc.) will be lower yet.

This is sort of a stair-step setup, in the order of decreasing loudness: horn, motor, dynamic brakes, bell, and other stuff.

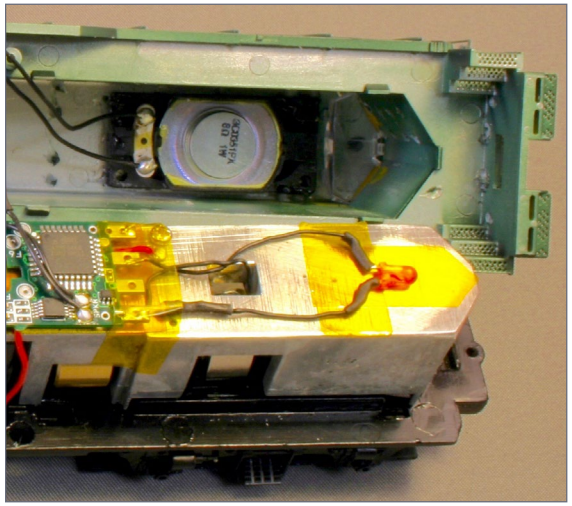
Myth #7: A speaker must have an enclosure

Ok, is this a surprise to long-time readers? I eschew putting speakers in boxes.

To my ear, a baffle style design, where the sound is allowed to come off both sides of the speaker and blend together such that the lower notes are reinforced, is preferable to putting the speaker in a box and nulling out all the sound off one side of the speaker.



7. iPhone screen shot of Decibel 10th app. This shows a recent peak of 80 dB with a current level of 75 dB. This is approximately what I measured on the Skunk Train just after the horn was blown. This would be a 5 dB difference.



8. Here is a speaker installation below the fan grilles in an HO scale Proto 2000 GP9. The sound off the front of the speaker goes out through the fan grilles. That coming off the rear goes down through the mechanism and exits next to the rear truck.

For detailed information on how this is accomplished, see my August 2012 column (mrhmag.com/magazine/mrh-2012-08-aug/dcc_impulses) or my web site (mrdccu.com/curriculum/soundout.htm).

However, folks say a picture is worth a thousand words. See [8]. As long as the path from the front of the speaker around to the rear (when the shell is in place) is about five inches or more, the sound is great. Of course, the speaker must face an opening, such as a fan grille or exhaust ports or smoke stack.

Speakers need baffling. This may be an enclosure or a horn or some other method. Yes, there are times that I use a box (enclosure), but they are only as a last resort.

Myth #8: One must carefully wire the speaker to the decoder with correct polarity

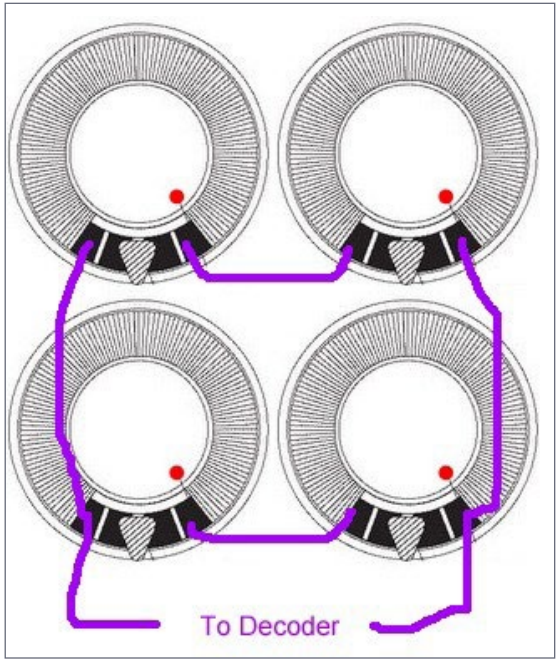
This hogwash has been perpetrated by many folks, including at least one manufacturer which sells locomotives with decoders installed.

Some manufacturers label the speaker connections on their decoders with a plus (+) and minus (-) terminal. I do not know why. This means nothing relative to an installation. I really wish decoder manufacturers would just label both of the contacts SPK, or some such, and ignore the polarity there.

Speakers themselves have a mark near the positive terminal. This mark has real, physical meaning. When a voltage is applied to the speaker with the marked terminal positive relative to the other terminal, the cone moves away from the magnet.

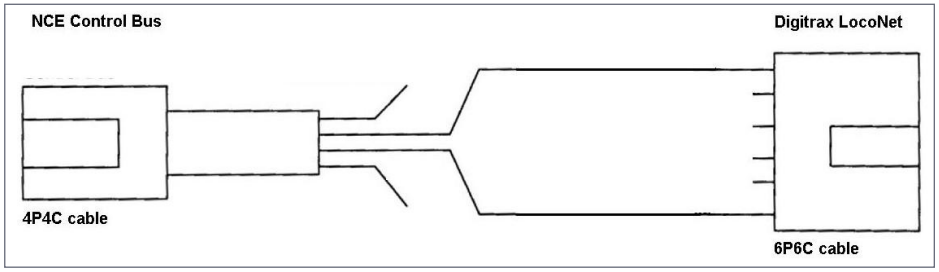
In the process of designing multiple-speaker arrays, it is important to get the speakers going in the same direction, so those little marks are very important [9].

Once the array is designed, it doesn't matter which side of the array is connected to which side of the decoder. Similarly, it doesn't matter which side of a single speaker is connected to which side of the decoder.



9. A four-speaker array showing positive wired to negative in the series leg and the positive and negative sides connected in parallel.

A poster on one of the Yahoo Groups that I read said that he was told by the loco



10. NCE's diagram of how to connect between their Cab Bus and Digitrax' LocoNet. This allows NCE or Digitrax boosters to be used on the other's command station.

manufacturer that connecting the decoder positive to the speaker negative "will cause the speaker to work in the opposite direction and you will get a bit of distortion." Reality is that the speaker must move equally in both directions to function properly. Period.

Riddle me this: what is the polarity on a SoundTraxx Tsunami decoder with two purple wires for the speaker connection? Point made.

Myth #9: Boosters are brand-specific

One of the few places where one can cross brand lines in DCC is with the boosters. Most boosters use a low voltage bus signal as their input. This allows them to be interconnected with a minimum of fuss. One of the simplest is connecting between Digitrax and NCE [10]. Here it is simply a matter of interconnecting two different plugs with the proper two wires. Other brands may require a few resistors, as well.

Some boosters use the track level signal as their input, sort of like the old car stereo amps that connected between the in-dash radio and the speakers. The Tam Valley Depot units that I'm using for my HO layout are an example of this [2].

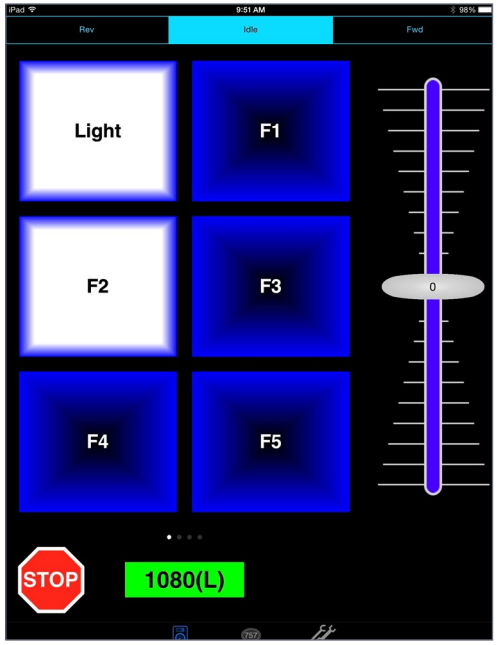
Myth #10: Wireless operation is very expensive

Do you have your layout connected to a computer running JMRI (DecoderPro)? Is that computer connected to a WiFi hub? Okay, you can use your smart phone for a wireless throttle. So can all your guest operators.

Our club (pcmrc.org) fits this category exactly. We have a Digitrax system connected with a LocoBuffer-USB to a computer. The computer connects to the internet via WiFi. One of our members also joined to a club that encourages using smart phone throttles. He came back and asked why we weren't doing the same. Never occurred to us. We adjusted JMRI to advertise on the WiFi network and now folks can use their smart phones.

You will need an app on your phone.

WiThrottle (withrottle.com) is for Apple devices (iPhone, iPad or iPod Touch). The WiThrottle Lite version is free through the Apple Store. There is an in-app upgrade ($10) to the full version, allowing dual throttles and consisting. You can buy the full version one at the Apple Store, too.



11. Screen shot of WiThrottle Lite from my iPhone.

Engine Driver (enginedriver.rrclubs.org) is for Android

devices. It can be downloaded from the Google Play store. That is the recommended way to start. If your device is unable to access the Google Play store, you can download the software from the site above and install it. Engine Driver is an open source part of JMRI and is free.

Some folks buy an old device for a few bucks, do not activate it as a phone, and use it as a throttle only. I've seen folks mentioning sales at various stores for $20 to $30.

One final note. For systems like the NCE PowerCab that have limited throttle slots, all the smartphones connected via JMRI utilize only one slot.

Myth #11: Energy storage circuits cure all ills

Energy storage modules (CurrentKeeper, Keep-Alive, No Halt, Power Xtender, etc.) are all the rage just now. They help with marginal contact issues: dead frogs, track discontinuities, marginal pick-up in the loco. But they are not a fix-all.

Nothing beats clean track, wheels, good trackwork and running stock.

The down side is these keep the loco moving absent any DCC signal. That movement can be off the track or off the layout, even. Even if the loco stays on the track, the absence of a DCC signal can result in an uncontrollable loco. Remember that same contact that brings the power also brings the control signal to the loco.

Myth #12: DecoderPro will read something my system won't

I wish I had a buck for every post I've seen, "My system won't read a sound decoder, even with DecoderPro." The second half of that sentence is meaningless. If your system won't read a decoder by itself, adding JMRI's DecoderPro won't change a thing.

DecoderPro only sends commands to your command station. If there are things that the command station can understand, it will try to execute them. However, if you are asking for something that the command station cannot do, it won't because it can't.

For example, if you wish to read back from a QSI sound decoder, most command stations need a programming track booster (mrdccu.com/curriculum/ptb.htm) to read that decoder. If your command station is one that does, it doesn't matter if you used your throttle or DecoderPro, it still needs a PTB.

For troubleshooting, get your system to read a non-sound decoder with the throttle. Then, get it to work with the same decoder via

DecoderPro. Now, try reading a sound decoder with the throttle. Add a PTB, if necessary. When you have communication between the throttle and the decoder, then use DecoderPro.

Well, I've had fun popping bubbles with this column. Perhaps it will jog your memory about a myth you have disproven. Share it with us.

Folks always seem to have additional ideas to share. Just click on the Reader Feedback icon at the beginning or the end of the column. While you are there, I encourage you to rate the column. "Awesome" is always appreciated. Thanks.

Until next month, I wish you green boards in all your endeavors. ☑

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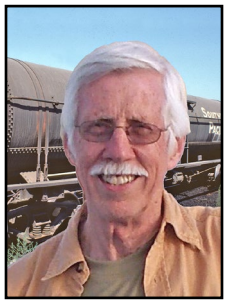

Model Railroad Hobbyist | February 2016 | #72

GETTING REAL
column

TONY THOMPSON

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TANK CAR BASICS: PART 1

| ACCURATE TANK CAR MODELING REQUIRES PROTOTYPE UNDERSTANDING

FOR A NUMBER OF YEARS, I HAVE PRESENTED talks and clinics about the basics of tank car construction and operation, and continue to be surprised how often these topics are understood poorly by significant parts of the audience. Accordingly, I am presenting a summary of that material here.

Understanding how tank cars were built, as late as the 1950s, as well as how they were operated, is essential to accurate modeling. Not only the selection of appropriate car models, and the correct lettering of tank cars, but also the realistic assignment of them in model operation, is essential to "getting it right" with tank cars.

MODELING REAL RAILROADS AND WHAT THEY DO

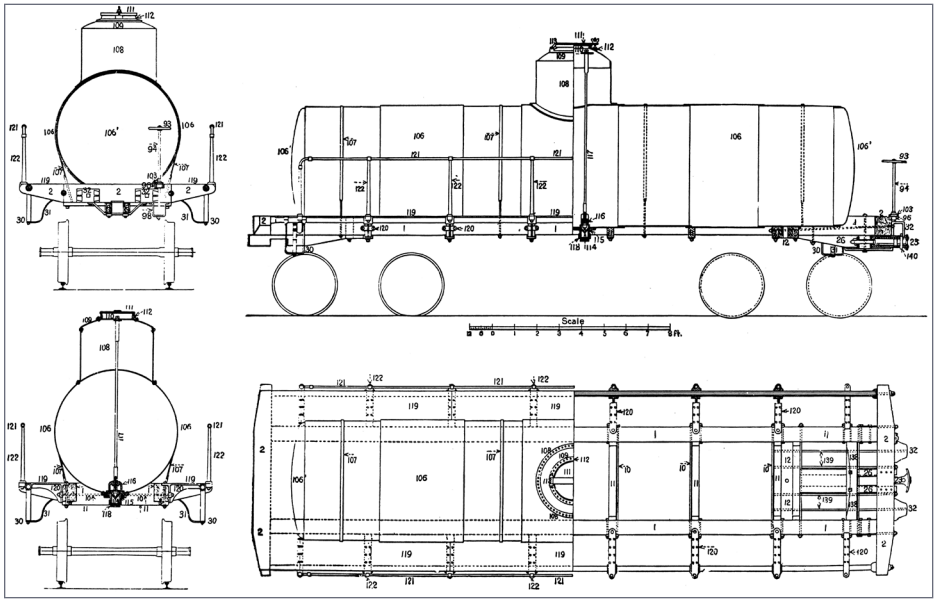
Early tank car construction

Hoary legend assigns the invention of the railroad tank car to the Densmore brothers in the Pennsylvania oil fields in 1865. Their design, a pair of vertical wooden tubs on a flat car, was not particularly sophisticated, and indeed very similar tubs had been in use for many years, not only to haul water on wagons, both in the U.S. and in Europe, but to store water, vinegar, wine, and other common liquids. John White's extensively detailed and referenced book covers this topic well (see Bibliography).

At the same time, other inventors were patenting designs for cars with horizontal iron tanks, also hardly an innovation, since riveted locomotive boilers became an established technology in prior decades. Soon oil and its byproducts were being hauled in cars with horizontal iron tanks. These were built to whatever standards a builder or a purchaser might choose.

In-service performance of all freight cars, including tank cars, was greatly affected toward the end of the 19th century, because of the rapidly growing introduction and use of knuckle couplers and air brakes. Those changes made possible considerable increases in train lengths, and those increases in turn caused very large increases in the forces experienced by cars in trains. One common result was damage to, or destruction of, wood underframes, which had particular importance for tank cars.

The early tank cars had iron or steel cylindrical tanks, but they also had wood underframes, and often these were arranged with widely separated center sills. That arrangement permitted the tank to sit lower on the underframe, lowering the center of gravity of the car, but it meant that greater stresses and bending forces were present in these underframes. Damage in accidents or even in hard switching was often severe.



1. The tank car design shown here received patent No. 100,058, granted to Samuel S. Murray in 1870 for Murray, Dougal & Company, a predecessor company of American Car & Foundry. (1879 *Car Builders Dictionary*).

To be more specific, a drawing for a late 19th-century tank car is shown in [1], and in the plan view, the wide spacing of the center sills, and the corresponding need for cross pieces between the sills for attachment of draft gear, are clearly seen. This drawing closely follows the 1870 patent for a tank car, assigned to Samuel W. Murray of Murray, Dougal & Company, located in Milton, Pennsylvania, and a predecessor of American Car & Foundry.

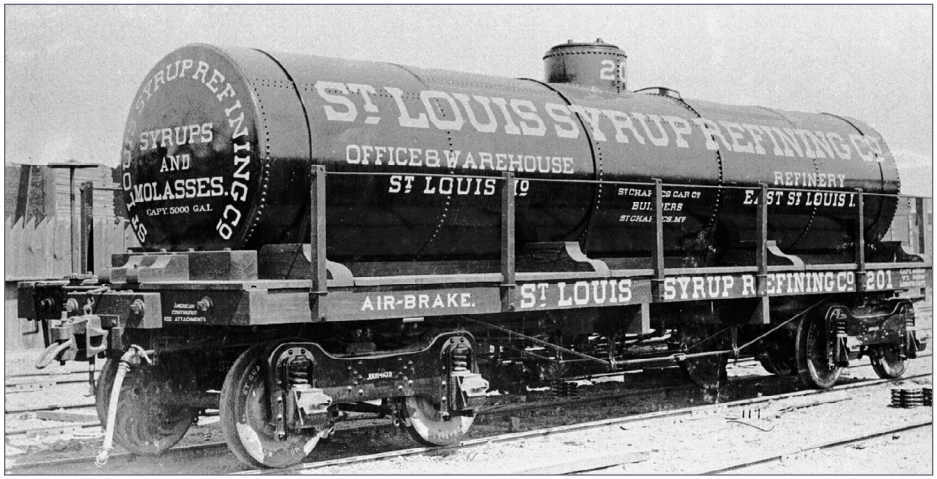
Let's look at this drawing for a moment. The car has several modern features. The metal sheets making up the tank have joints that run around the circumference of the tank, and the

end of the tank, called the tank head, is pressed to shape. There are four bands around the tank, securing it to the underframe. Note in the sectional view that the bottom outlet valve is operated through a long shaft and a handwheel in the dome, which has a manway opening at the top. A walkway and railing are provided along each side of the car, a common arrangement in 19th-century tank cars.

The 1879 drawing also shows, with the benefit of hindsight, some weaknesses. The center sills, as mentioned, are widely spaced and thus cannot transfer pulling (draft) and pushing (buff) forces without also exerting bending forces at the body bolster and draft gear crosspieces. No safety valve is provided to relieve a build-up of pressure from volatile cargoes. Lastly, the tank is not significantly restrained longitudinally, nor prevented from rotating about the long axis of the tank. In impacts from an accident or hard switching, the tank can rotate or move along the underframe, both of which, among other things, endanger the projecting bottom outlet. These features would gradually be improved after 1903, as described below.

An example of a somewhat later 19th-century tank car is shown in [2]. Though most tank cars of the time were used for petroleum products, this example shows that tank cars had other uses then too. Its tank only has four hold-down bands, and no yoke around the dome, but does sit above its wooden underframe, and it has a large head block. The head block restrained tank motion, preventing longitudinal movement. This had some disadvantages in very hot weather, as the tank could not expand lengthwise, and might bow upward at the center. In violent derailments, the head block restraint could be responsible for tank penetration.

Safety valves to relieve pressure build-up with volatile cargoes were also needed, but were at the discretion of car purchasers



2. This tank car was built by St. Charles Car Company (an AC&F predecessor) about 1890. It has a 5,000-gallon tank on a wooden underframe, with 30-ton pressed-steel trucks. Car no. 201 shows common features of construction at that time. The underframe has head blocks to restrain longitudinal movement of the tank; it also has four hold-down bands. There is no bottom sheet, nor a ladder to access the dome. (AC&F photo, Edward S. Kaminski collection)

until regulation began. Early in the 20th century, regulation would begin to dictate that tank cars be much better-designed, better-built, and safer.

Tank car standards introduced

After several dramatic railroad accidents in which tank car contents caught fire, an especially dangerous event in the days of wooden cars, the Master Car Builders' Association (MCB) was called upon by the American Railway Association or ARA in 1903 to assess the state of tank car design and make

recommendations for changes. This was evidently not a surprise to the MCB, for they submitted a full report within months, and the recommendations were soon adopted by ballot as Recommended Practice. Citations for the 1903 MCB report, and a 1903 editorial about it, are in the Bibliography.

These recommendations were revised several times before 1910, and in that year were advanced to Standard. There were two parts to these standards: first, changes to older cars if they were to stay in service; second, improved construction practices for new cars.

For older tank cars to continue in operation required the following: certain minimum strengths for center sills, both as to sill dimensions and for 18-inch maximum separation; direct attachment of draft gear to center sills; and at least three, and preferably five, tank bands holding the tank to the underframe; one had to be a yoke around the dome to prevent tank rotation around the long axis. It was also recommended that wood bolsters, body or truck, be replaced with steel ones.

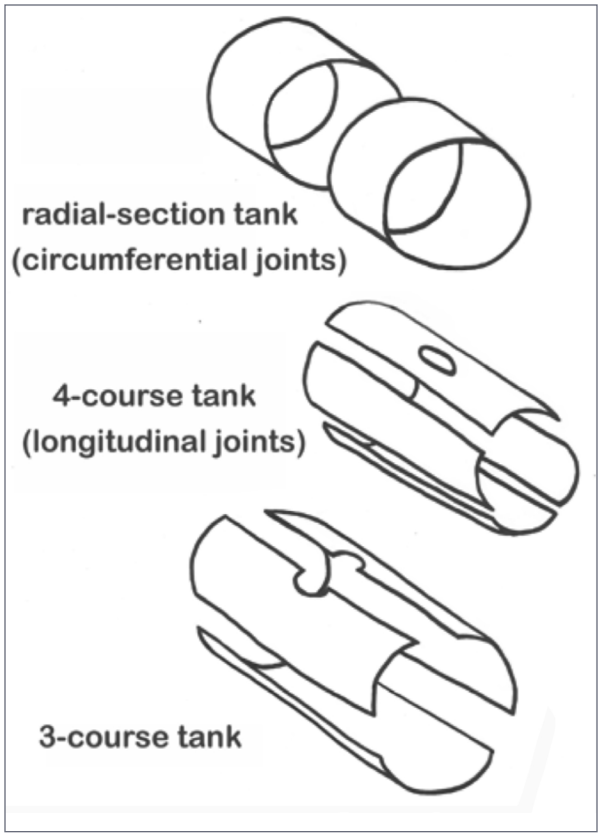
An additional requirement was that the tank had to pass a 40-pound-per-square inch (psi) pressurization test with cold water "without distress," meaning without distortion or leakage, and the test had to be repeated every five years. For volatile cargoes, safety valves were also required. The cars were then designated as Class I cars, meaning that they had been built before 1903, but conformed to minimum standards.

Cars built after 1903 were designated Class II, and had to meet these core requirements: steel tanks and underframe members; application of safety valves, friction draft gear, and certain combinations of tank hold-down fixtures, head blocks, or both; and tanks had to be designed to meet a 240-psi bursting pressure.

The test pressure for new cars was 60 psi, which tanks had to withstand without distress, and which would not only be certified for that tank, but would have to be periodically re-tested.

Quite a few tanks built before 1903 were permitted to continue in operation, designated as Class I cars, though most had to undergo modifications to qualify. The newer cars, conforming to the Recommended Practice or, later, the 1910 Standard, were designated Class II.

Tank cars at this time were built with circumferential joints between tank sheets [2], as sketched in [3]. Having the seams between tank sheets run under the bottom of the tank created a location prone to leakage, and presently a bottom sheet was introduced, running the length

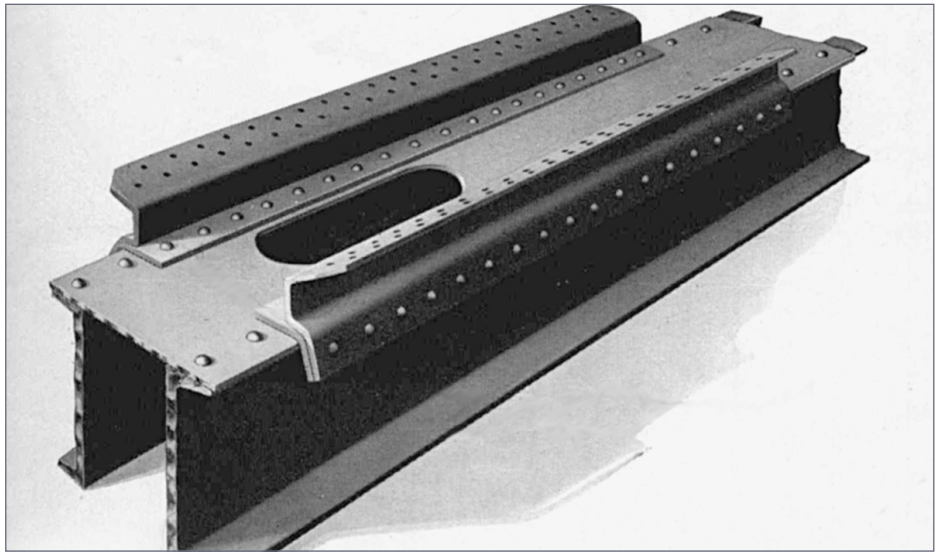


3. Shown here are sketches of three types of tank car construction: top, all circumferential joints; below, all longitudinal joints, in either three or four courses.

of the car, and avoiding these under-tank seams. This is visible in the AC&F "Type 7" tank car shown in [4]. (Eventually all circumferential joints would be eliminated in favor of longitudinal ones, as shown in [3].) Also visible in [4] is a new arrangement of tank hold-down, the center anchorage.

The problem of tank hold-down, anchorage, and restraint was a lively challenge in tank car design at that time. Not only the vertical tank bands of the 1903 MCB recommendations, but other appliances such as diagonal tie rod hold-downs and head blocks, were also in use to restrain tanks. Coincidentally, in that year of 1903 John Van Dyke at Union Tank Line was inventing

4. This 8,000-gallon Class II tank car was built in January, 1911 by American Car & Foundry. It was designated "Type 7" for the year of its underframe design, 1907. Longitudinal tank seams are double riveted. Note the white band on the car end, lettered "MCB CONSTRUCTION," as was required until about 1918. (ACF photo, Edward S. Kaminski collection)



5. A view of a center anchorage. It can be regarded as simply a cradle, riveted to the center sills and their cover plate, and also riveted by means of its upper flanges to the tank, which would be on top of the part shown. This admirably simple design was a major advance in tank car technology. (American Car & Foundry)

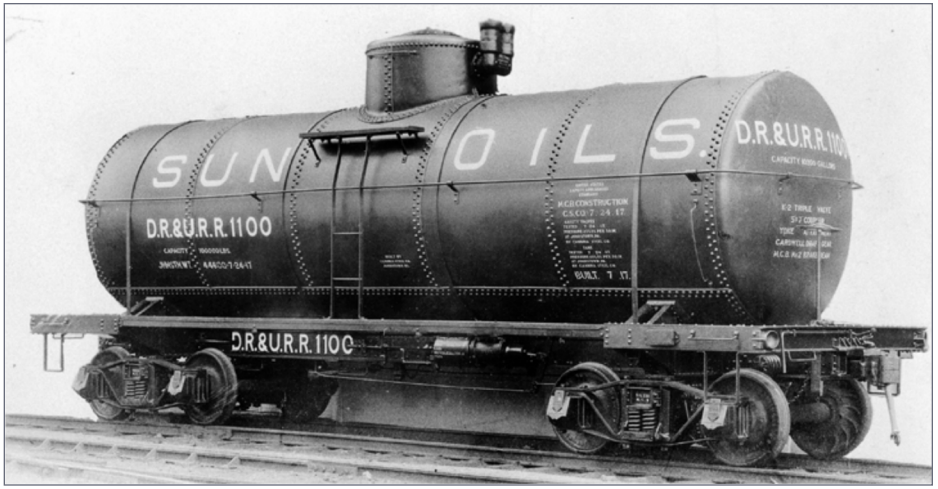
a new, superior tank attachment, the center anchorage, which would eventually become universal on tank cars. With this anchorage, tanks were attached to the underframe only at the center, and were free to expand and contract longitudinally inside the tank bands [5]. In addition, a dome yoke was not needed. Before long, Class II tank car standards recommended center anchorages and discouraged use of head blocks.

Design of safety valves also received attention. About a year after the 1903 MCB report, an additional MCB report discussed safety valves in some detail, and a preliminary design was

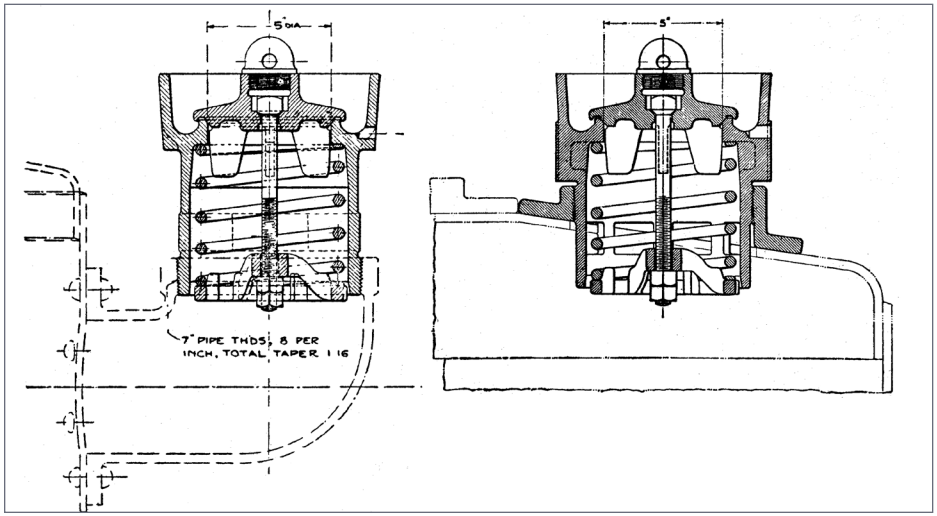
shown (see Bibliography). A slightly different design was soon adopted, in the form of an elbow to be applied to the dome. This kind of design is visible in [4].

Soon afterward, it was decided that a five-inch diameter valve such as this was adequate for tanks (or tank compartments) of up to 6,500 gallons; tanks larger than that would require additional valves, one for each 6,500 gallons. Those values continued in force for decades thereafter.

In the years after adoption of the 1910 standard, several modifications to Class II requirements were made, until 1916, when it was decided that a new standard design was needed. Cars built after May 1, 1917 had to conform to a new Class III standard. Required draft attachment capacity was increased (though the center sill



6. New Class III tank car, built by Cambria Steel Car Company in July 1917. Capacity is 10,200 gallons. All seams are now double-riveted, and a center anchorage is used. Reporting marks DR&URR = Delaware River & Union Railroad. (*Car Builders Dictionary*, 1919)



7. These two drawings are to the same scale, and show clearly that the elbow and dome-top safety valve designs are internally identical, and have the same five-inch outlet diameter. (*Car Builders Cyclopedia*, 1922)

requirement remained at 30 square inches effective area), and the design requirement for tank bursting pressure was raised to 300 psi. Expansion domes were regulated to have no less than 2 percent of the tank capacity, and all seams had to be double-riveted. An example of a new Class III car is shown in [6].

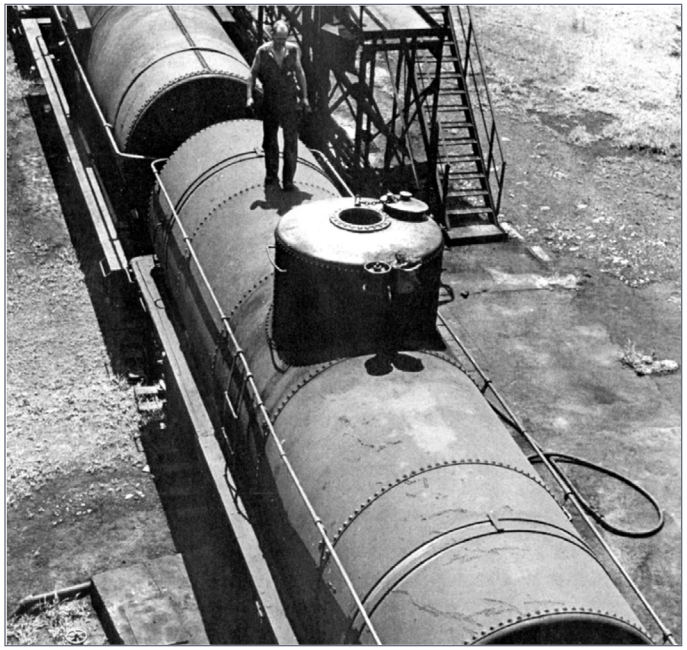
At about this same time, a modified safety valve design was introduced, intended to fit atop the expansion dome of a tank car. It is shown in [7]. The dome-top design had the advantage that expanding cargo was less likely to submerge it, and it came to be universally used after the mid-1920s. But the elbow arrangement continued in use through the 1950s on older cars.

In addition to Class III, new classes IV and V were introduced in 1916 and 1917. The Class IV car was essentially a Class III car with

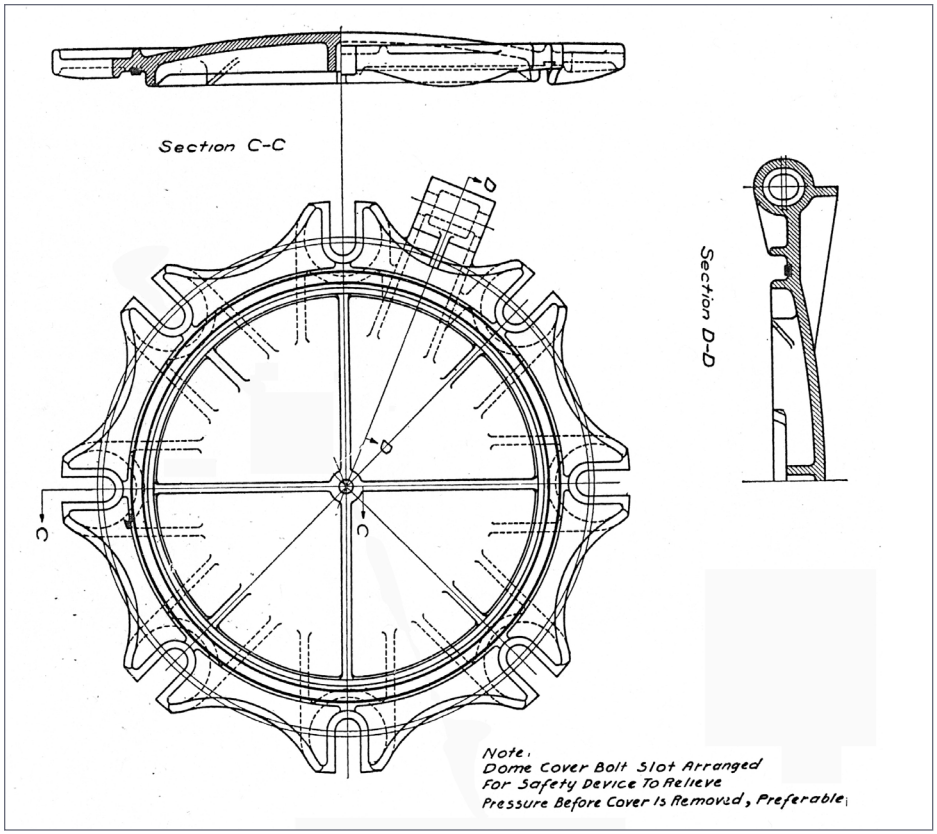
two inches of insulation, making it suitable for volatile and flammable commodities, but the Class V was a true high-pressure car. At that time, such cars had to be fabricated by forge welding, as fusion welding was not yet sufficiently developed for this use.

In 1919, the MCB became "Division V–Mechanical" of the ARA, and thereafter the MCB classes became ARA classes; moreover, the class number was subsequently required to be stenciled on tanks, a new requirement.

From early days, manway closures atop domes, also called dome covers, had usually been a flat, threaded plate arrangement, with a short safety chain [8], but there were repeated accidents in which internal tank pressure blew this cover into the workman who was opening it. In 1922, an "approved"



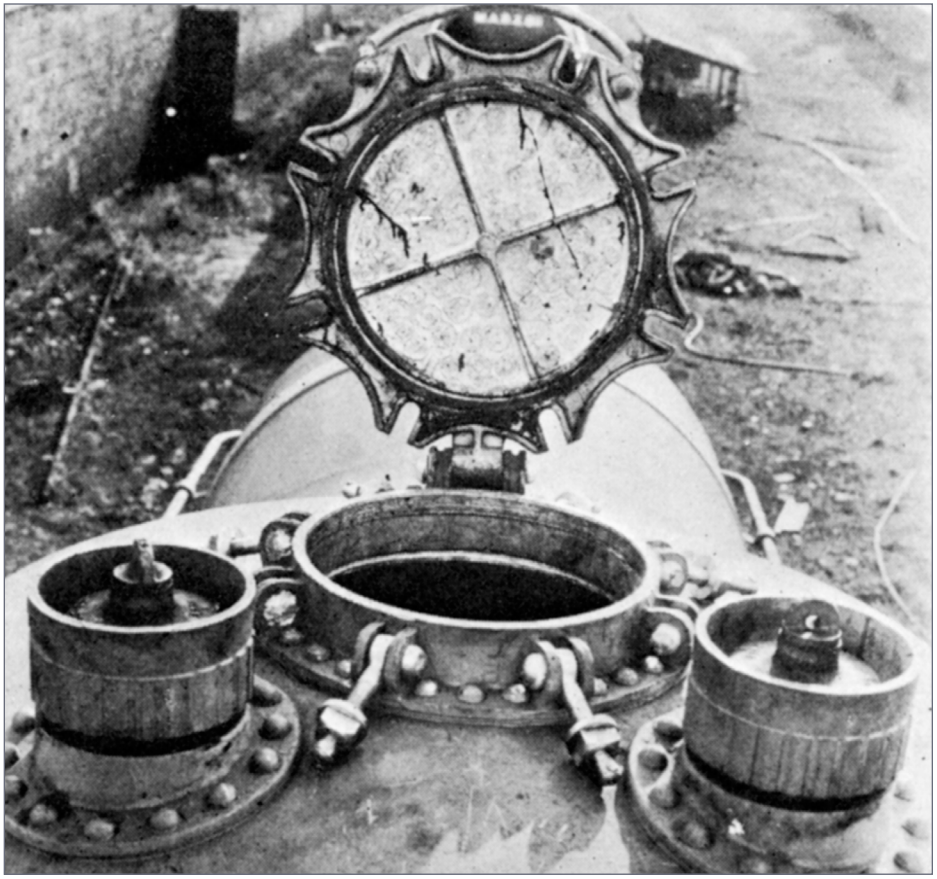
8. An overhead view of a tank car with a screw-top manway cover. The cover simply screws into the threaded opening, and is secured by a chain. Note that there are no dome walkways on this particular car. (Standard Oil of New Jersey photo, courtesy Ted Culotta)



9. The ARA "approved" bolted manway cover was adopted in 1922, and thereafter widely used, except for cargoes that developed no pressure, such as vegetable oils, wine, or other unregulated commodities. (*Car Builders Cyclopedia*, 1931)

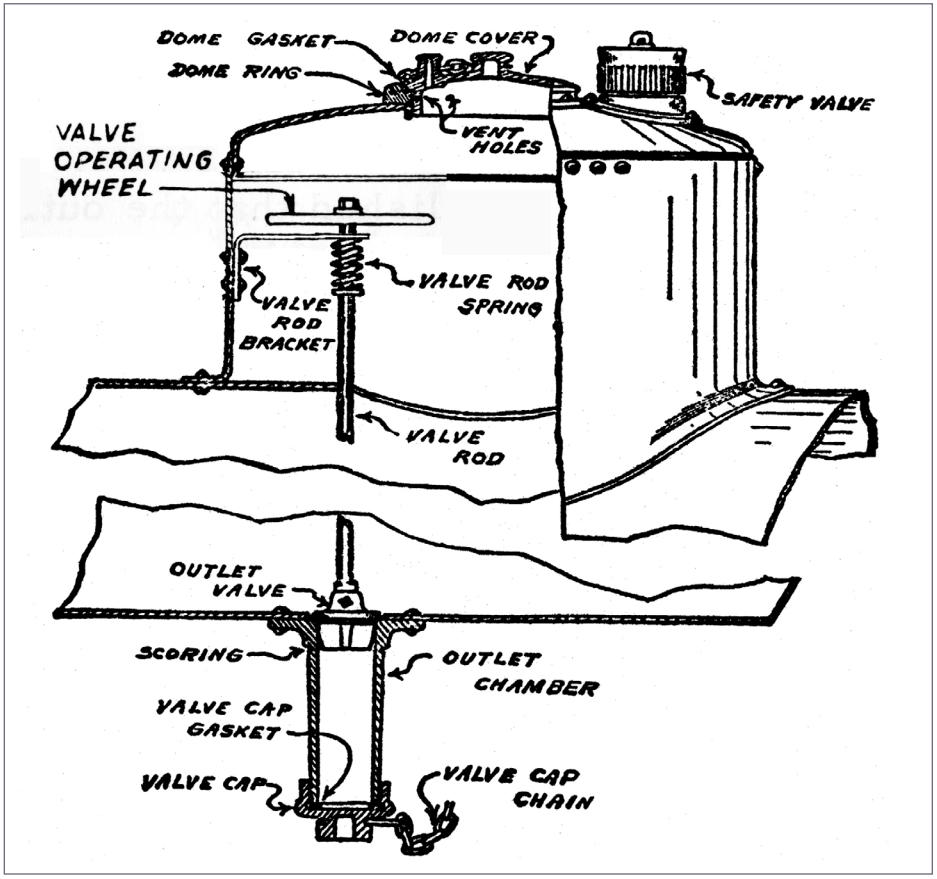
bolted manway, with a special design of bolt-secured cover which was much safer, was adopted. This is shown in [9] and [10], in both drawing and photograph. A small diamond could be stenciled on the side of the dome to indicate the presence of an approved bolted manway, but such stenciling was entirely at the option of the car owner.

The outlet valves at tank bottoms had been recognized as vulnerable in accidents from the earliest days of tank cars, and as early as the Class I standards, it had been recommended that the valve itself be located inside the tank, with an external tube called an "outlet chamber" below it. This chamber was scored around its circumference near the tank shell, so that in



10. A clear photograph of an "approved" bolted manway in the open position, with restraining bolts pivoted away from their working position. (American Car & Foundry)

an accident the outlet chamber would fracture cleanly at that point, and not exert bending forces on the shell itself. These features are shown in [11].



11. This cutaway drawing shows the arrangement of the valve operating wheel inside the dome of the car, the valve at the bottom of the tank, and the exterior outlet pipe, scored just below the bottom of the tank. Note that safety valves are located on the opposite side of the dome center line from the outlet. (*AAR Manual,* Section K)

Note also in this drawing that the control wheel for the outlet valve is located inside the dome, accessible through the dome cover. This arrangement had been used since the 19th century (compare [1]). The outlet valve then permitted gravity unloading through the bottom outlet [12].

In 1927, the ICC took over regulation of tank cars, and the existing ARA classes III through VI were renamed as ICC classes 103 through 106, while the older cars surviving in classes I and II remained stenciled as ARA (not ICC) Class I or Class II cars. Moreover, all cars built as ARA Class III tank cars remained so-stenciled, even though that specification had become an ICC specification after the cars were built.

12. Gravity unloading of a tank car, by attaching a hose to the bottom outlet. Photo at the diesel fuel spot in Alturas, California. (SP photo, Shasta Division Archives)

13. Typical tank car construction by 1930. All tank sheets are longitudinal, safety valves are atop dome, tank proportions are relatively long and slender (compare [6]). This nominally 8,000-gallon car, owned by leasing company California Dispatch Line, has 40-ton trucks and shows characteristic American Car & Foundry construction, having end sills as well as stub side sills from bolster to end sill. The photo date is April 19, 1930. (AC&F photo, Richard Hendrickson collection)

The Appendix contains an abbreviated list of landmark dates in tank car development and regulation.

Standard car designs emerge

During the 1920s, the arrangement of tank sheets gradually changed to one in which all sheets were joined with longitudinal joints [3], instead of upper sections all having circumferential joints, as in [6]. By the end of the 1920s, most ICC 103 cars had the general appearance of the California Dispatch Line car shown in [13].

The onset of the Great Depression in the early 1930s was the final blow to many of the smaller tank car companies shown in Table 1, and by 1935 there were only two in the United States: American Car & Foundry and General American. Typical car construction for each builder is shown in [13] and [14].

With all the changes of the 1920s, overall car appearance had become similar from purchaser to purchaser, though many lesser features and details of cars were in fact chosen by the buyer. The tank construction, dome arrangements and walkways, even location of brake equipment, was subject to choice by the buyer. Both General American and American Car & Foundry had essentially standard underframe designs, from before World War I into the 1950s, but the kind and

14. This 8,053-gallon Tidewater Associated Oil Co. tank car, built by General American in 1925, has 40-ton trucks and was photographed in lighting that clearly shows its absence of side or end sills, typical General American features. The walkways are supported entirely from the center sill. Photo at Kansas City, 1954. (George Sisk photo, Charles Winters collection)

Table 1

Builders of tank cars in two time periods

Before 1920	After 1935
American Car & Foundry	American Car & Foundry
General American	General American
Canadian Car & Foundry	Canadian Car & Foundry
Standard Tank Car	
Pennsylvania Tank Car	
Pressed Steel Car	(after 1949: Union Tank Car)
Cambria Steel	
Keith Railway Equipment	
Chicago Steel Car	
McGuire-Cummings Manufacturing	

arrangement of tank and specialties mounted on that underframe could be quite variable.

There were ARA classifications for tank cars (which in 1934 became AAR classes), separate from ICC classes, which gradually shifted over time. As with these kinds of classes for other freight cars, the intent was only to identify broad categories of use. Table 2 lists the AAR classes as of 1950. More details may be found in various issues of the *Official Railway Equipment Register.* Note in particular the "TA" class, because the use of the "A" suffix carried over to ICC classes to designate cars with no bottom outlet.

The ICC classes, mentioned above, were a somewhat parallel but differently directed set of tank car classifications, aimed

Table 2

AAR classes of tank cars

TM = "merchandise" or general service
TA = "acid service," no bottom outlet
TP = high-pressure cars
TG = cars with glass lining
TL = cars with lining other than glass
TW = cars with wood tanks

suffix "I" for insulated cars, e.g. TPI

more at car capability. A list of the major ones of these is shown in Table 3, and more information about each of them can be found at the beginning of the chapters on tank cars in various volumes of the *Car Builders Cyclopedia.* Since any car would be assigned classes in both of these systems, such as an ICC-103 car which was AAR Class TM, a complete description would have to cite both classifications.

As mentioned above, the ICC-104 cars [15] can almost be described as insulated ICC-103 cars (the standard safety valve setting is 25 psi for ICC-103, 30 psi for ICC-104), often with distinctive fittings [16]. On the other hand, the high-pressure cars, ICC-105, are very different in design and construction. For one thing, they by definition have no bottom outlets for gravity unloading, and are thus always described as ICC-105A (the "A" indicates the lack of that outlet). The car interior is accessed by a pipe, as can be seen in [17].

Table 3

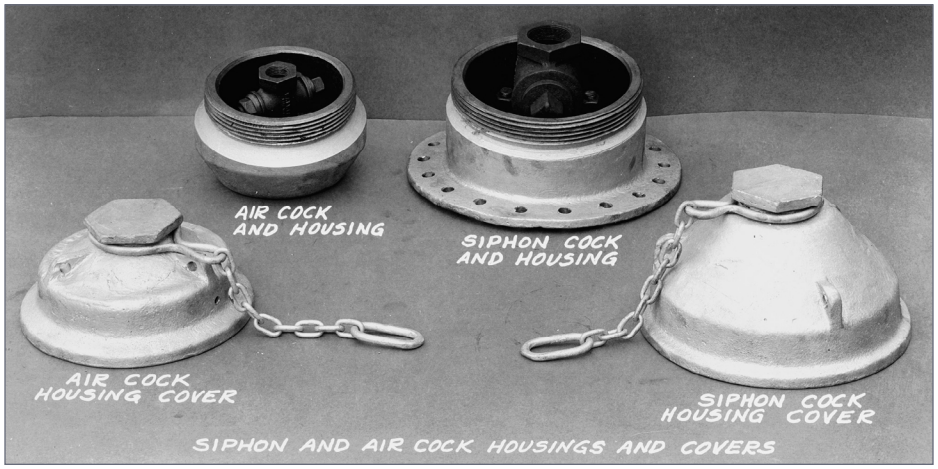
ICC tank car classifications

103 = low-pressure general service car
103A = modified 103, no bottom outlet
103B = rubber-lined 103 car
104 = similar to 103 but insulated and jacketed, used for flammable products
105A = welded tank, heavily insulated, pressurized and suitable for dangerous cargo. A 105A tank has a suf fix number for rated pressure in pounds per square inch, e.g. 300 psi: 105A300
107A = seamless tanks, 3350 psi pressure
108 = wooden tank
AAR 201, 203 = "not covered by regulations for transportation of dangerous articles"

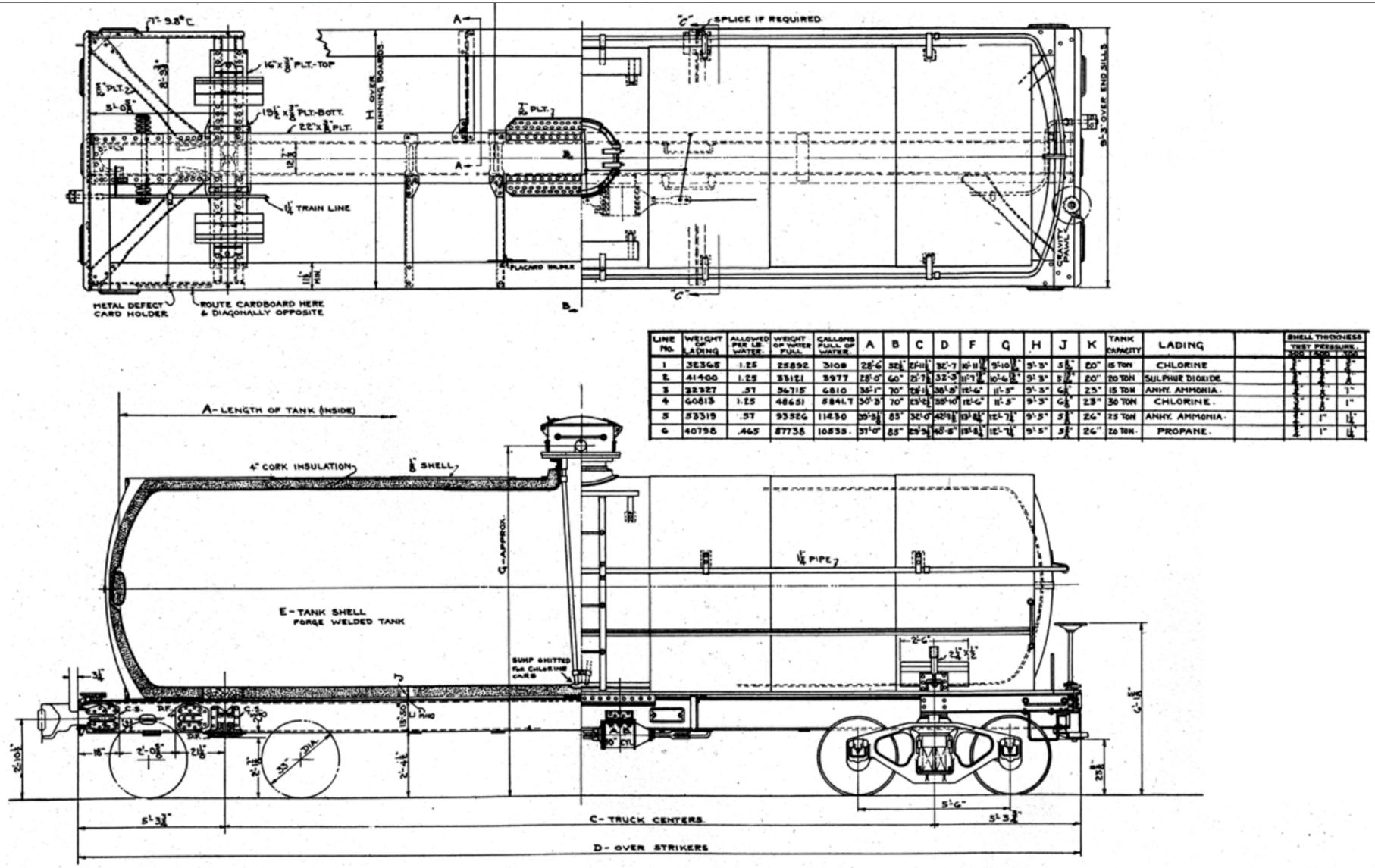
Second, as they are by definition cars rated for some elevated pressure, the pressure rating became part of the ICC car class. For example, a car rated at 300 psi maximum pressure would be designated as ICC-105A300 and its safety valves would be set at 225 psi.

And third, the loading and unloading of cargo in these cars requires entirely different forms of piping and valving, compared to ICC-103 or -104 cars. This equipment is housed in a "valve bonnet" atop the tank (shown in drawing [17]), which should not be called a "dome," as it serves no expansion purpose (although railroaders certainly refer to valve bonnets as "domes" on occasion, just as a simplification).

15. This Warren Petroleum car is a good example of an ICC-104 class of car. It's an 8,074-gallon insulated car built in 1948 by AC&F with 40-ton trucks. Atop the dome is visible one of the safety valves, but also visible are some stubby conical appliances. These are the covers for air vents (during unloading) and siphon valves for sampling. A close-up view of these parts is presented in [16]. (ACF photo, courtesy Edward S. Kaminski)



16. These tank car parts, similar to those visible on the dome of WRNX 204, shown in [15], are clearly labeled as to function. (AC&F photo, courtesy Edward S. Kaminski)

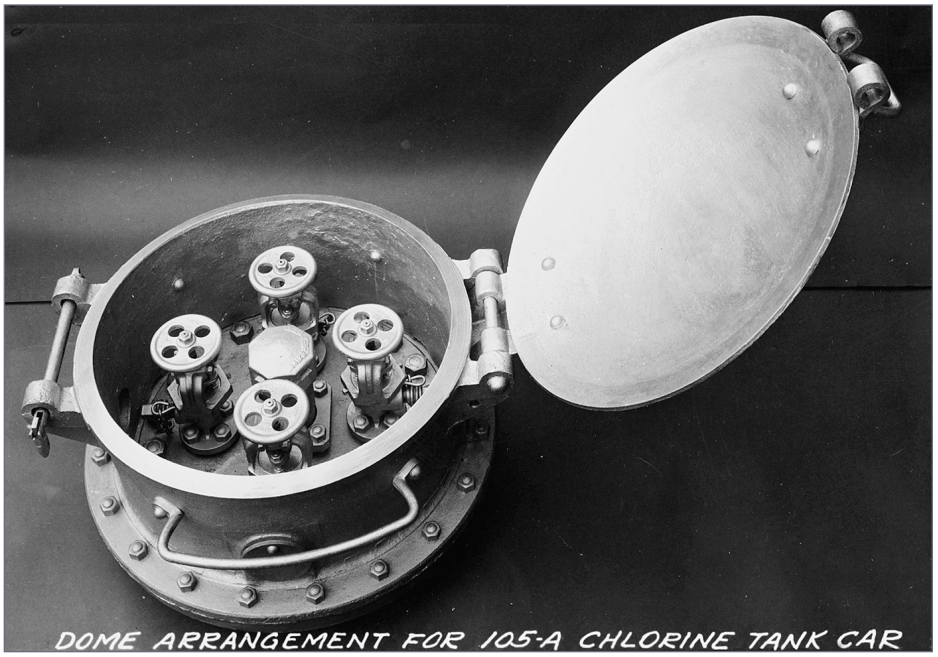


LINE NO.	WEIGHT OF LADING	ALLOWED PER LB. WATER	WEIGHT OF WATER FULL	GALLONS FULL OF WATER	A	B	C	D	F	G	H	J	K	TANK CAPACITY	LADING	SHELL THICKNESS TEST PRESSURE 200	225	300
1	32368	1.25	25892	3108	28'-6"	52½"	27-11"	32'-7"	10'-11"	9'-10"	9'-3"	5"	20"	15 TON	CHLORINE			
2	41400	1.25	33121	3977	28'-0"	60"	28'-7"	32'-3"	11'-7"	10'-6"	9'-3"	5"	20"	20 TON	SULPHUR DIOXIDE			
3	28327	.57	36715	6810	36'-1"	70"	29'-1"	36'-9"	12'-6"	11'-5"	9'-3"	6"	23"	15 TON	ANHY. AMMONIA.			1"
4	60813	1.25	48651	5841.7	30'-3"	70"	25'-2"	35'-10"	12'-6"	11'-5"	9'-3"	6"	23"	30 TON	CHLORINE.			1"
5	53319	.57	93526	11430	30'-3"	85"	32'-0"	42'-1"	13'-8"	12'-7"	9'-3"	5"	26"	25 TON	ANHY. AMMONIA.		1"	1"
6	40798	.465	87738	10535.	31'-0"	85"	29'-9"	40'-8"	13'-8"	12'-7"	9'-3"	5"	26"	20 TON	PROPANE.		1"	1"

17. Drawing of an ICC 105A tank car, showing insulation thickness and valve bonnet, together with the eduction pipe by which cargo can be pumped out of the car, and the small sump located below that pipe to permit effective emptying of the car. The table shows dimensions for cars of varying capacities sized for cargoes such as chlorine, anhydrous ammonia, and propane. (American Car & Foundry, courtesy Edward S. Kaminski)

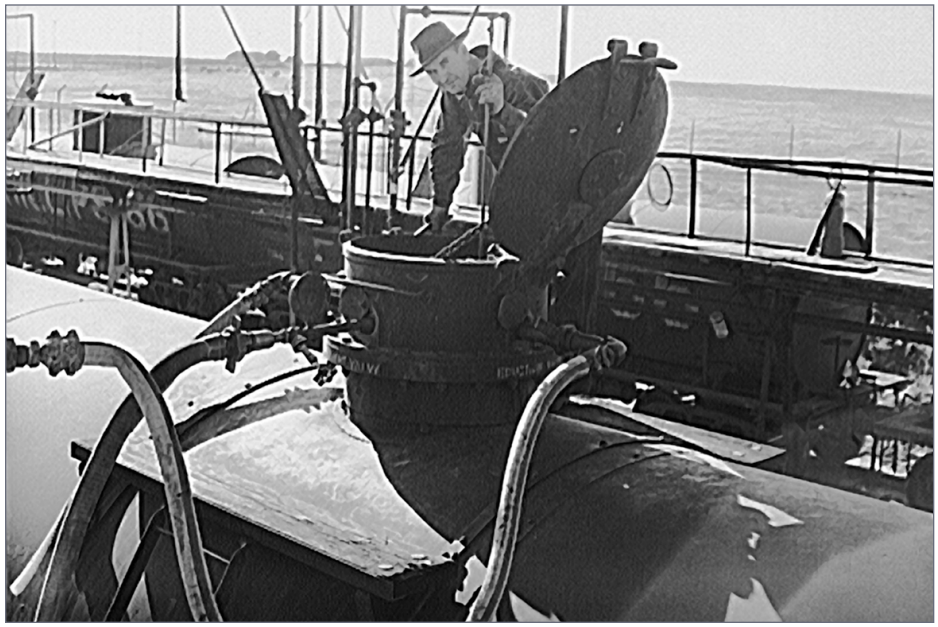
When a valve bonnet is opened, one of course does not see the cargo inside, as would be the case with an ICC-103 car. Instead, the operating valves and piping are located there. This is shown in [18] for a chlorine car such as that shown in [19]. When in use, there are typically multiple connections to this internal valving [20].

Fourth, the ICC-105A cars are always insulated, since their cargoes of liquified gasses can experience large pressure changes with temperature. A wide range of insulation material has been



18. Interior of a valve bonnet for a chlorine car. Valve handles control openings for sampling, temperature measurement, and venting, as well as loading and unloading. The shell of the bonnet has openings for hose connections, for example nearest the camera, just below the grab iron. (AC&F photo, courtesy Edward S. Kaminski)

19. A typical high-pressure tank car, in this case a Hooker Electrochemical car carrying chlorine. It is a 5,907-gallon car, a common size for chlorine, and has 40-ton trucks. Photographed on the Santa Fe in the Los Angeles area in 1959. (Morris Abowitz)

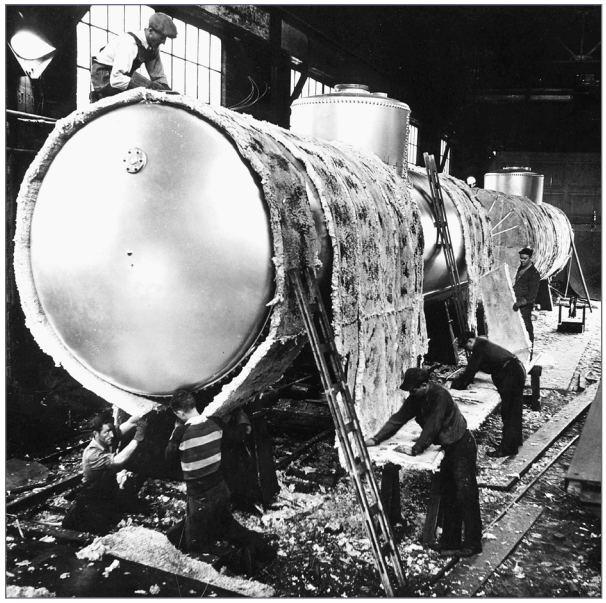


20. Unloading view of a high-pressure car. Pipe connections on sides of valve bonnet are evident. John Vachon photograph, 1943. (Library of Congress, negative LC-USW3-010341-D)

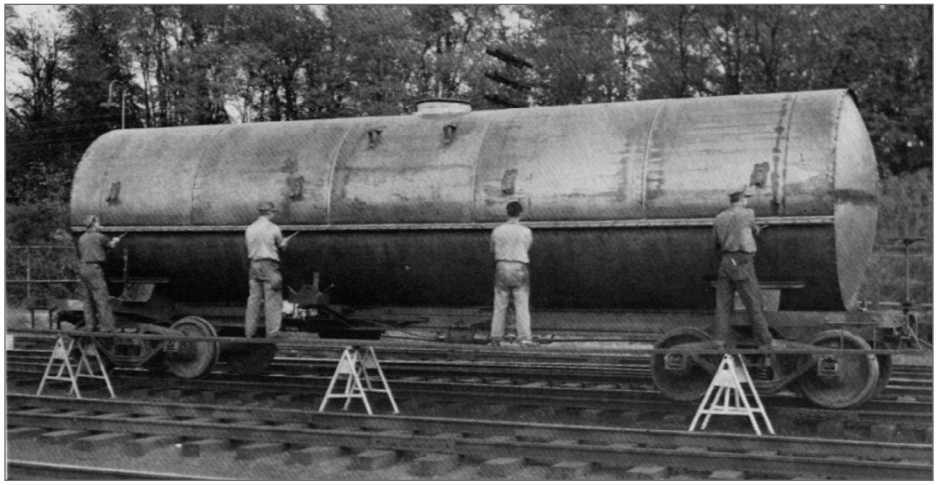
used, as specified by the purchaser of the car, from cork and magnesite, to products such as mineral wool and fiberglass. (Mineral wool is a fiber spun or drawn from molten minerals, in much the same way that fiberglass is made from glass). The insulation blanket is then covered with a jacket of thin sheet steel, which may be bolted together to permit removal, or may be welded, in which case removal would be destructive and would require a new jacket.

Application of insulation was labor-intensive with some insulating materials [21], but some of them, such as sheet cork, were simpler to apply. The final step was the enclosure with the jacket. The example shown is being bolted along the longitudinal flange [22].

Another category of car entirely is the helium car, assigned to ICC-107A class. The helium is highly compressed for shipment,



21. In this 1930s view, a four-inch blanket of mineral wool insulation is being applied to a tank car body. It would then be covered with a thin steel jacket. (AC&F photo, courtesy Edward S. Kaminski)



22. Here workmen are bolting together the top and bottom sections of a steel jacket, along the prominent flange on the car side. (AC&F photo, courtesy Edward S. Kaminski)

to 2000 psi or more, and the cars have very heavy-walled tanks, making the cars themselves quite heavy, in excess of 235,000 pounds gross weight. Until the mid-1950s, these cars were owned and operated by the U.S. Navy, but gradually all were transferred to ownership by the U.S. Bureau of Mines, reporting marks MHAX (for Mines Helium Activity). An example is shown in [23].

Major changes in tank car regulations were adopted by the ICC in 1957, both in softening the requirements for certain specific design features such as expansion domes, and also in a growth of the long-standing list of ICC classes. These new categories were for welded tank cars (class suffix "W") in the several subclasses of ICC classes 109, 110, 111 and 112. These were usually built with only small manway housings, instead of the 2 percent expansion domes of earlier designs. One example is a car leased by Union Carbide from Shippers Car Line and shown in [24].

23. This is a helium tank car, ICC-107A, photographed about 1975. Loading and unloading is accomplished with fittings inside the end doors of the car. Note the empty placards on the car. (Richard Hendrickson collection)

24. The late 1950s changes in ICC requirements led to major changes in tank car appearance. This large car, SHPX 12831, is ICC Class 111A100-W-1, has 20,000 gallons nominal capacity. Photo at Los Angeles in 1960. (Morris Abowitz)

Service assignments

It is important to remember that, unusual among North American freight cars, tank cars were almost entirely privately owned and operated. About 95 percent of all tank cars in service in 1950 had owners other than railroads. That privately owned fleet was dominated by a few large leasing companies, as shown in Table 4, along with petroleum companies. The major exception was the U.S. Department of the Army.

Table 4 shows that the largest fleet was that of Union Tank Line, one of the many corporations spun off in the breakup of Standard Oil in 1911. Though independent after that date,

Table 4

Principal private owners of tank cars in 1950s

Union Tank Line (UTLX)	38,700
General American Tank Line (GATX)	37,500
Shippers' Car Line (SHPX)	7,500
Sinclair Oil (SDRX)	6,400
North American Car (NATX)	4,500
Shell Oil (SCCX, RPX)	3,700
U.S. Army (USAX, USQX, USOX)	3,300
Phillips Petroleum (PSPX, SWLX)	2,700
Canadian General Transit (CGTX)	2,300
Warren Petroleum (WRNX)	2,200
Mid-Continent Petroleum (COSX)	2,100
Tide Water Associated Oil (AOX, TIDX, TWOX)	1,500
Gulf Oil (GRLX)	1,500

Union retained its friendly connections with all the Standard entities, and continued into the 1950s as the primary supplier of tank cars to Standard companies across the U.S. This is amply documented in Albert Carr's book (see Bibliography).

In contrast to the private owners, most railroads owned only a handful of tank cars, retained for company service. There were three exceptions of note, as shown in Table 5, the western railroads Santa Fe, Southern Pacific and Union Pacific. Together, they owned nearly two-thirds of all railroad-owned tank cars in the United States. The Santa Fe and UP cars were heavily devoted to company fuel and water service, but two-thirds of the SP cars were in revenue service, an unusual railroad ownership situation for tank cars.

The tank car fleet in North America was heavily tilted toward ICC-103 type cars, that is, general service cars suitable for a wide variety of cargoes. To choose one specific year, in 1930 about 90 percent of all tank cars were ICC-103 type, with only 10 percent assigned to carry various special commodities.

Another important point to recognize is that cars were sized according to the cargo they were expected to carry. Densities of cargoes vary considerably. For non-pressure tanks, cargo densities range from gasoline at about six pounds per gallon, to nitric acid and sulfuric acid at 13 and 15.3 pounds per gallon,

Table 5

Principal railroad owners of tank cars in 1950

ATSF	3575
SP + T&NO	2520
UP	860

25. A typical acid tank car, Class ICC-103A, with its distinctive dome shape and appliances. The car was built in 1927 and has 50-ton trucks and 7045 gallons capacity, typical for cars carrying dense acids. (AC&F photo, courtesy Edward S. Kaminski)

respectively. Many common liquids are not greatly different from the density of water (water is 8.34 pounds per gallon), so that water capacity in pounds is often stenciled on tanks.

An entire group of tank cars was designed to carry acids. This type is much like an ICC-103 but with no bottom outlet, thus its designation as ICC-103A, and will have an eduction pipe for withdrawal of the cargo. Also, dome fittings are elevated farther above the cargo space to minimize any contact with the acid. As there is usually little danger of pressure build-up, these cars may have frangible disk vents rather than safety valves. These disks are designed to break at a specified pressure, and if that happens, the device would have to be disassembled to insert a new disk for further use. These differences give their domes a distinctive look, as in [25].

An acid tank car of 7,000 gallons nominal capacity, as in [25], would have a cargo weight of around 100,000 pounds for either nitric or sulfuric acid, which is the nominal capacity with 50-ton trucks. However, even 12,500 gallons of gasoline would weigh only about 75,000 pounds, and could be shipped in an ICC-103 car of 12,500 gallons capacity with 40-ton trucks, though 50-ton trucks were more usual.

Pressurized cargoes also vary in density. Among the liquified gasses shipped in ICC-105A cars, densities range from propane and anhydrous ammonia, at 4.24 and 5.14 pounds per gallon, respectively, to liquid chlorine at 12.26 pounds per gallon. And liquid bromine weighs in at 26 pounds per gallon. So an 11,000-gallon car would be suitable for a cargo like propane, while chlorine would normally not be shipped in a car larger than 8,000 gallons, and even 4,000 gallons of liquid bromine weighs more than 100,000 pounds.

These widely varying cargo densities are one reason why gallonage capacity of tank cars is usually not well related to pounds capacity of the car, unless the specific cargo is known. Capacity of trucks can also play a role, because car capacity in pounds can be set entirely by truck journal size, as noted above in discussing the relation of cargo weights and car capacity. When that is the case, tank size for such a car is normally chosen so that the maximum loads will be well below the truck capacity.

A second factor in car size for some consignees is the amount needed to be shipped. Thus a bulk oil dealer might need 6,000, 8,000 or 10,000 gallons of kerosene and would request a shipment accordingly. But many chemical cargoes are shipped in only one size of car.

In addition, service assignments must take into account the character of the cargo, for example, whether it develops

26. This tank car, General American-built GATX 66674, is an 8,093-gallon car of ICC-104 classification. Its insulation jacket is thicker than the normal two inches, likely intended for a specific cargo and specified by the buyer for a particular lessee. This undated photograph was taken at Milwaukee. (Richard Hendrickson collection)

pressure when warmed in the normal ambient range, in which case an insulated car is specified [26]. Much higher pressures are applied if it is a liquified gas. Liquified gasses typically have far greater density than the same gas would have at ambient pressure, and are thus far more efficient to ship.

Many specialized commodities are restricted to certain types of cars or cars with specific equipment. This applies to a number of dangerous or flammable organic compounds. These commodities generally also have required warning placards which the car must carry. Placards will be discussed in Part 2 of this work.

At the other extreme, there are a number of liquids not subject to ICC oversight, designated "non-regulated commodities," which can be shipped in more simply equipped cars. Commodities which would be rarely if ever expected to develop excess pressure in transit can move in cars without safety valves, with a frangible disk safety vent instead. Such disk safeties are often visible on wine cars, for example, as seen in [27].

The wine tank car shown in [27] raises the complex and interesting subject of multi-compartment tank cars, but that topic has been thoroughly and knowledgeably explored by Richard Hendrickson in his recent article in *Model Railroad Hobbyist* (see Bibliography), and will not be further discussed here. These types of cars were a minority of the total tank car fleet.

27. This GATX tank car, built in 1926 and leased to the Roma Wine Company, is Class AAR-203 and has 6,600-gallon capacity, divided into six compartments of about 1,100 gallons each. The individual domes all have approved manways, and their frangible-disk safety vents are on an elbow off of each dome. (General American photo, author's collection)

28. Tank cars were used for a variety of foodstuffs, as this 8,111-gallon car shows. It is an ICC-103 built in 1929. (AC&F photo, courtesy Edward S. Kaminski)

It is difficult to generalize about the interaction of commodity requirements, placards, and permitted or preferred types of tank cars. A very helpful table, giving many such details, forms the Appendix of Edward Kaminski's 2003 book on tank cars (see Bibliography). These cargoes range from the exotic to the mundane [28]. Kaminski's table is one issued by American Car & Foundry. A similar table issued by General American can be found in the 1961 *Tank Car Manual* (see Bibliography). I have put this table onto Google Drive, at this link: drive.google.com/file/d/0Bz_ctrHrDz4wbE81TFRybkFMUk0/view?usp=sharing.

Tank cars in service

The great majority of tank cars are leased, many from the big companies like General American and Shippers Car Line, but the existence of other reporting marks may not indicate ownership. For example, The Texas Company (Texaco) sold all its tank cars to General American in 1936 and then leased them back, keeping its existing TCX reporting mark.

The lessee usually has an agreement to be able to direct its leased cars as it wishes, for example, repeating a cycle between a refinery and one or more bulk oil dealers. But in some situations, such as when cars from a general pool are used instead of individually leased, the cars are directed instead by the lessor, with movement directives provided to the railroads on which the cars are made empty.

The important point is that the cars tend to remain in a particular lease, sometimes for years, and to carry the same cargo again and again. If nothing else, this avoids the necessity to clean the cars between loads. Such cleaning certainly could be and was done (the car leasing companies, as well as private contractors, maintained cleaning and repair facilities around the country), but is an expense all concerned would prefer to avoid.

Note that a tank car made empty at a particular consignee does not become an empty car which can be confiscated for other loading. Instead, directives for its empty movement will have already been specified, and normally it then moves on a regular freight waybill to return it in reverse, back over the route it followed when loaded. The previous cargo, which might easily be dangerous, poisonous, or flammable even as residue in the unloaded car, is indicated on that waybill. (There are commodities, such as gasoline, which pose a bigger danger of explosion and fire when in the form of vapor in an empty car, compared to the same car filled with liquid.)

Another point worth emphasizing is that as late as the transition era, most tank car loads were billed by gallonage, not by weight. That has two important implications: first, the requirement for all other types of freight cars, that they be periodically reweighed to validate their light or empty weight, did not apply to tank cars, and often the weigh date on the car could be decades old.

Second, knowing the exact gallonage of a "full" car became an important simplification in loading and billing. This gallonage was measured when the car was built, and was lettered on the end of the car. Then the car was loaded "shell full," that is, with liquid level just at the top of the horizontal tank, readily verified through the manway, and that level corresponded to the stenciled gallonage.

As indicated above, after 1960 many aspects of tank car construction were considerably altered, not only the prevalence of welded construction but substantial increases in car size and appearance. These changes are beyond the scope of the present account.

Concluding remarks

Tank cars are different in many ways from other freight cars, not all of which differences may be recognized by modelers. Understanding their construction, specialty appliances, and usage can help, which was the purpose of the general and historical background information contained in this column. In Part 2 of this work, modeling aspects and placards will be presented. ☑

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WHAT'S NEAT WITH KEN PATTERSON

column

KEN PATTERSON

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NEW MOTOR TOOL, SAGEBRUSH TREES ...

THIS MONTH IN THE "WHAT'S NEAT WITH

Ken Patterson" video we look at the new Dremel Micro rotary tool, we explore the world of HO scale radio control trucks, Mike Budde shows some new trailers he just finished, Jon Dietzen presents drone footage in the "Modeling Ideas from Above" segment, and we look at raw fresh-picked sagebrush for trees. The video ends with an Athearn snow photo shoot in pursuit of the perfect model photo. There are plenty of runbys, including the new Bachmann 4-4-0 in HO with sound, and their SD45 with sound in N scale.

We start this month with a look at the new Dremel rechargeable lithium-ion powered Micro Rotary Tool. This little tool has plenty of power, variable speeds, and a light on the cutting end. It is perfect for drilling tiny holes for nut and bolt castings, yet

PHOTOS AND VIDEO OF SUPERB MODELS

has enough power to cut through track. Lithium-ion power means you don't have to worry about the battery developing a memory. It's worth checking out on your next trip to the hardware store.

Playback problems? Click here ...

Mike Budde stops by with some piggyback trailer loads he made recently. He scratchbuilt 20 drop-frame trailers in various styles and road names. He started with an out-of-production metal trailer from TK Models, made in the 1970s.

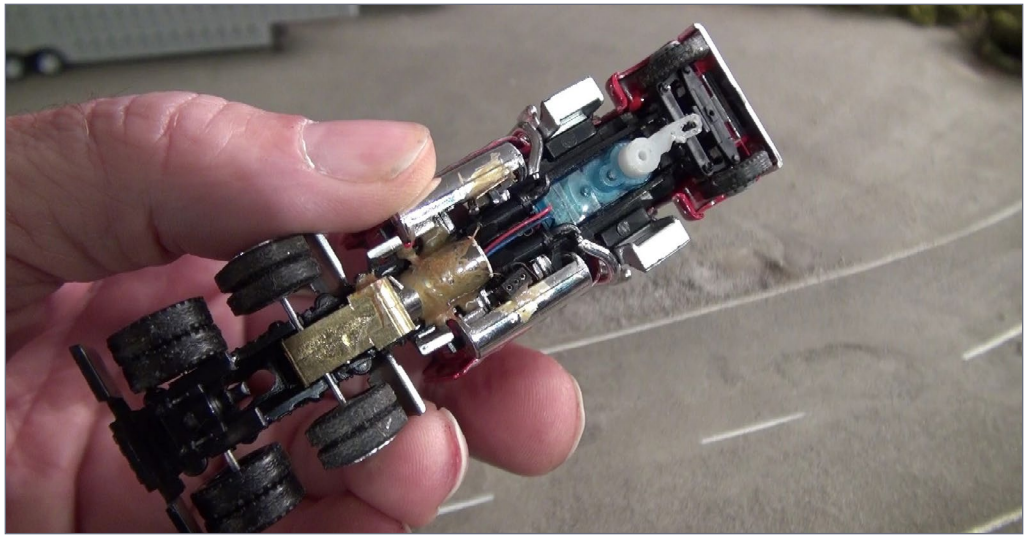
Mike filled the wheel areas with body putty and then made a silicone mold from which he cast 40 trailer sides to make 20 models.

This Missouri Pacific drop-frame trailer has ribs running horizontally along the sides. The roof is painted with oil paints and Floquil silver.

Mike's Norfolk and Western drop-frame trailer has smooth sides.

Mike also cast one of the rear doors to make a single side door on some of his models as per the prototype variations. And with that, Mike informed me that a company will soon be manufacturing drop-frame trailers in HO scale so we won't need to scratchbuild them. Check out train-worx.com to see these new trailer models.

Ed Richardson shows us how he creates his radio-controlled vehicles with a simple radio from a toy drone, and a Kenworth tractor from trucksnstuff187.com.



On the underside of the Kenworth truck you see the scale speed gear box and the servo for steering. These parts are available at sol-expert.de on line.

The container load houses the batteries that power this radio-controlled Mack tractor-trailer rig. Ed Richardson used a Keyence power train and servo from a 15-year-old radio-controlled model to power this Mack.

Ed Richardson did the pre-production work and created the auto transport model shown here and available from Lone Star Models. In a future show, Ed will show us his River Point Station pickup truck fully powered with steering.

Ed Dressel came all the way from Colorado with a truck full of fresh-picked sagebrush I will use to make trees for my layout. He picked them on the New Mexico-Colorado border. The pile of sage made the studio smell really nice.

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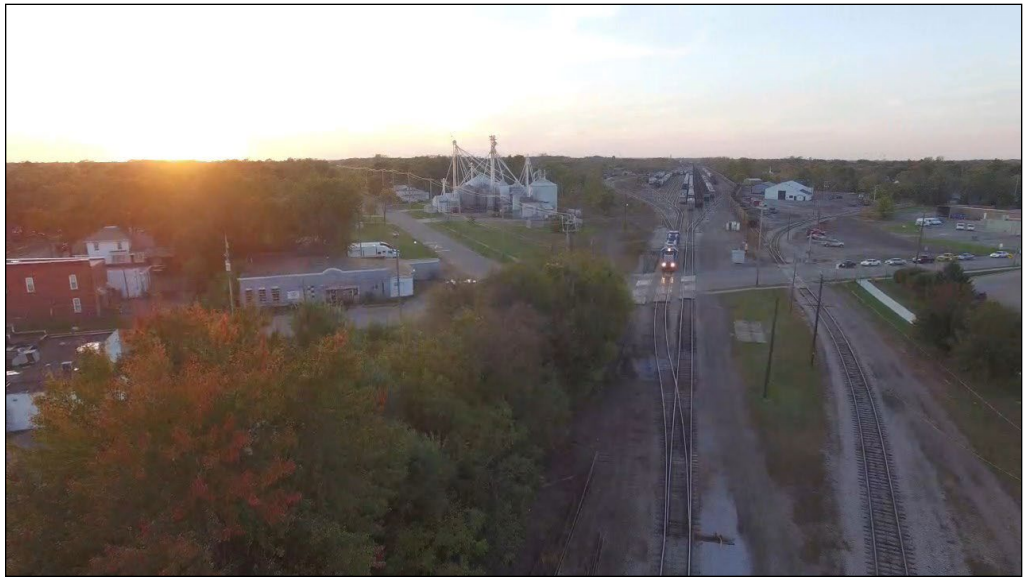
The Midwest Valley Modelers used sagebrush used to make all the trees on this part of their layout.

Ed likes to use a wire brush to remove all the sage leaves prior to flocking the sagebrush with poly fiber and colored ground foam.

Bachmann has introduced a new, fully retooled 4-4-0 in HO scale with sound. The older model had a drive shaft between the tender and locomotive. This has been replaced in the new model with a smooth-running coreless motor in the boiler. In the video you can see and hear a runby of this wonderful sound-equipped model.



John Dietzen entertains us with some wonderful drone footage in the "Modeling Ideas from Above" video segment. We look at a swing bridge over the Saginaw River and a beautiful sunset over a rail yard in Michigan.

In the last segment of the video, Athearn asked that I design a winter photo using this painting by Robert Frascella of a cold February runby on the Erie Lackawanna in the plains of the upper Midwest. I wanted to nail the painting by reproducing every detail. I would shoot the scene three times, under various lighting conditions, to reproduce the shot exactly. Then I pushed things further with a sunrise to create the perfect shot with a little pizazz.

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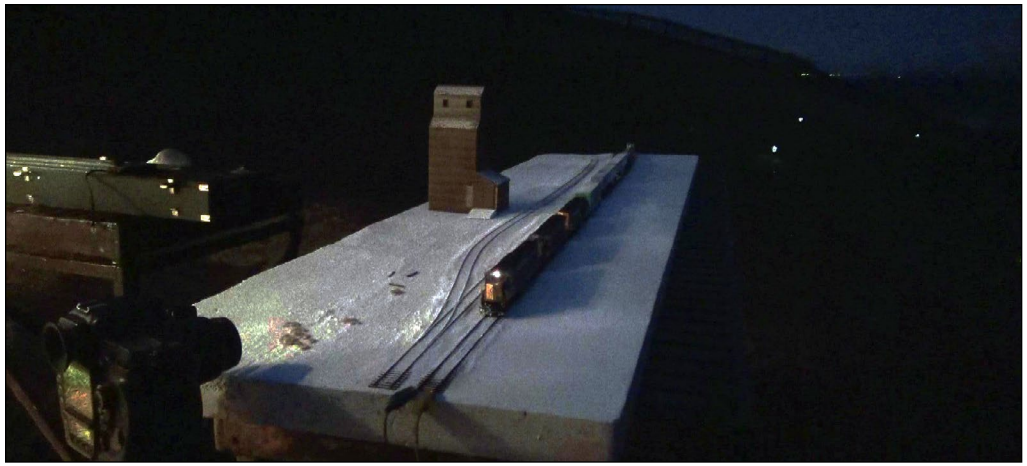
I designed the shot with the camera set up in to position using an eight-foot piece of foam as the base. I used a Walthers grain elevator and Micro Engineering code 70 and 83 track.

I carved the foam with a Stanley Surform planer making the siding tracks a little lower than the mainline as per the painting.

I glued the track down with Liquid Nails. The foam was painted with white latex paint. All the track was ballasted as to avoid large gaps between the ties when the snow is applied.

Chris Palomarez from Athearn came by to instruct me on the type of consist he wanted behind the locomotives and in the order he wanted the cars and trailers to be in.

I applied plaster to the scene sifted through a screen to make for a light even snowfall.



The first photo shoot was done in total darkness with a 1000 watt light directed at the back of my house. Light reflected off the brick added a little yellow to the scene. The tracks were connected to DCC lighting for the headlights on the locomotive. I shot one five-minute exposure with the shutter stopped down to f/22.

This is the result I got from shooting in total darkness for five minutes. Nice but it can be better.

The second photo shoot was done on a foggy day, I added three more feet of track to the rear of the scene making it 11 feet long. I shot half-second exposures with the headlights on.

This is the result of that shoot. It pretty much captures the painting dead on with the cloudy foggy sky adding just the right touch to the mood of the shot. With that I would consider the job done. I wanted to push things a little further to add something more to the shot.

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For the third photo shoot, I set up during a sunrise putting the sun just in front of the locomotives. I shot ¼ to ½ second exposures at f/22, reflecting sunlight on to the sides of the train with a piece of foam painted white. Again the headlights were lit with DCC power to the tracks.

This is my final result from the sunrise shoot. Everything fell together on this one just right. Chris Palomarez from Athearn added the smoke to the locomotives and snow dust along the wheels, making for a perfect cold winter shot in the snow. ☑

MRH MARKETPLACE

Classic backwoods diorama

With a Howe truss bridge

BY DENNIS MURPHY

Finding room for a Howe Deck Truss ...

I AM A REAL SUCKER FOR BRIDGE KITS. WOOD, plastic, paper or metal ... I love them all. I have bridges all over my layout and I still have a sizeable pile of finished bridge kits waiting for some space to present itself so I can add another one. Life is good!

When my friends at the Hunterline Company hunterline.com told me about their two new all-wood Howe Truss Deck Bridge kits, I just had to have them both [1-2]. These kits come in an 86-foot and a 170-foot version that are also offered in different scales. I have built a number of their other fine kits and was really looking forward to getting started on these new projects.

This Howe Truss Deck Bridge design was widely used from the mid-1800s all the way through the 1930s. This design was used for

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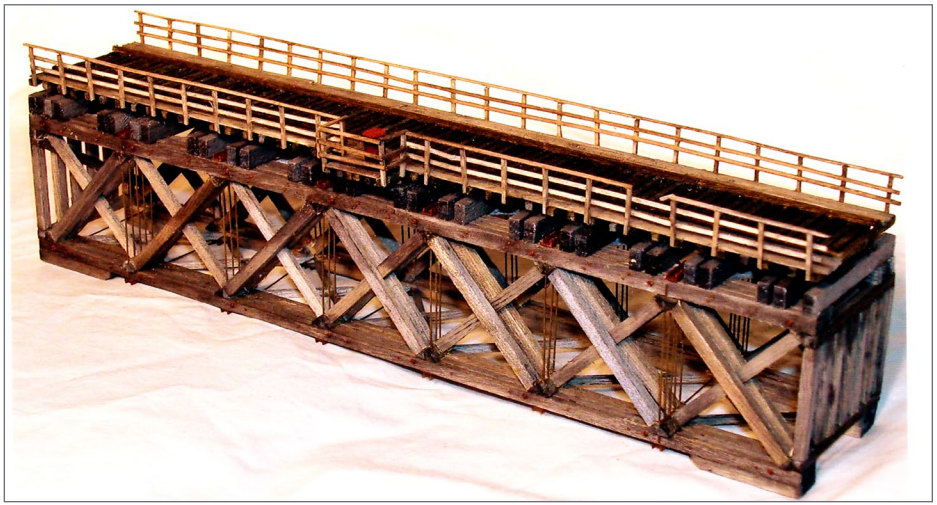
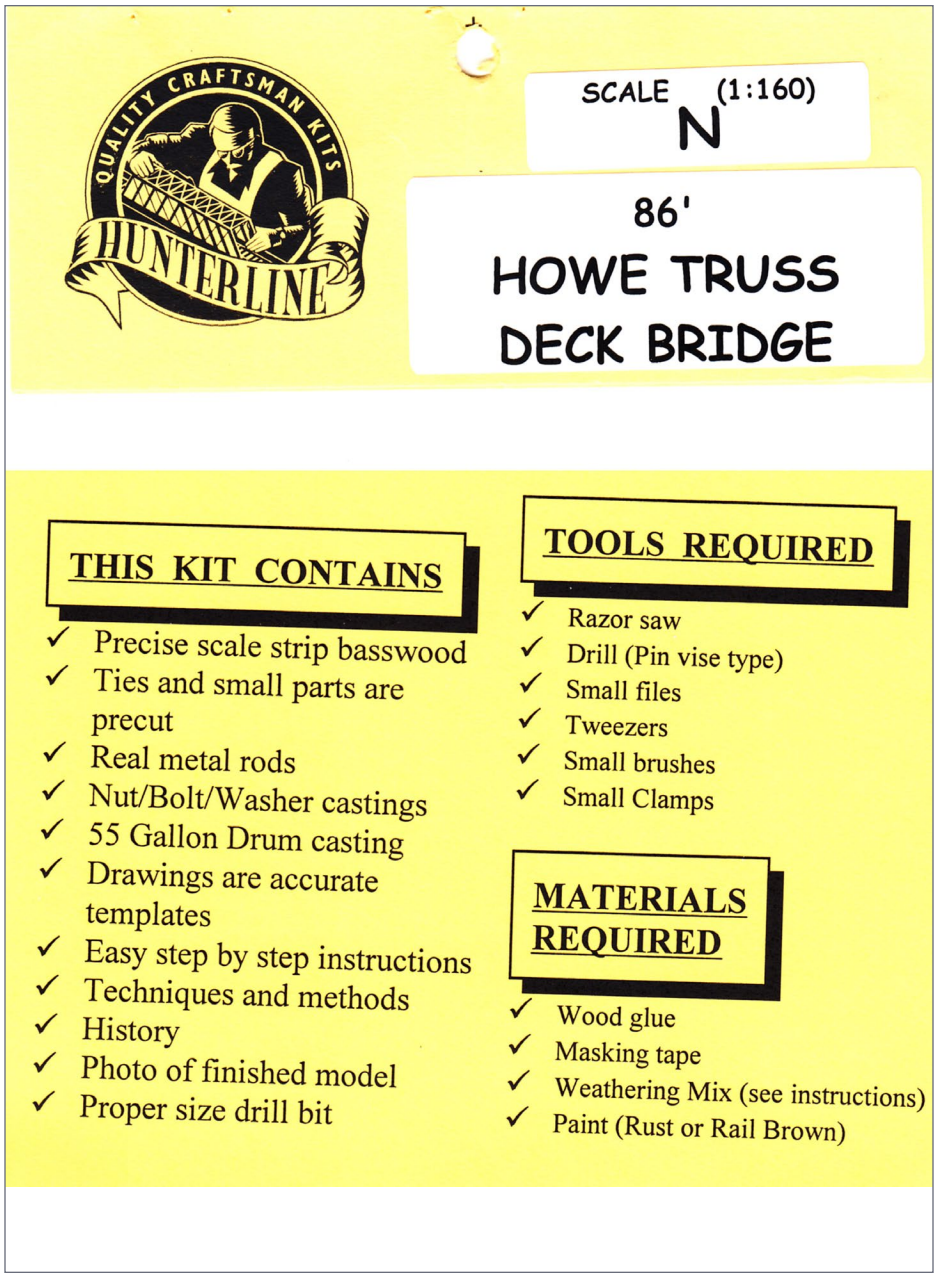
railroad bridges, road bridges, and even some footbridges. This bridge design worked so well that only the widespread use of steel caused their replacement.

First look at the kit

Knowing these kits as well as I do, I expected first-rate instructions and I was not disappointed. They include detailed written directions and also very detailed blueprint-type drawings. I build the sub-sections right on the drawings themselves. More on that later, and do not forget about all the helpful "how-to" hints that are included [1-4].



1. The photo that comes with the kit.



2. The packing.

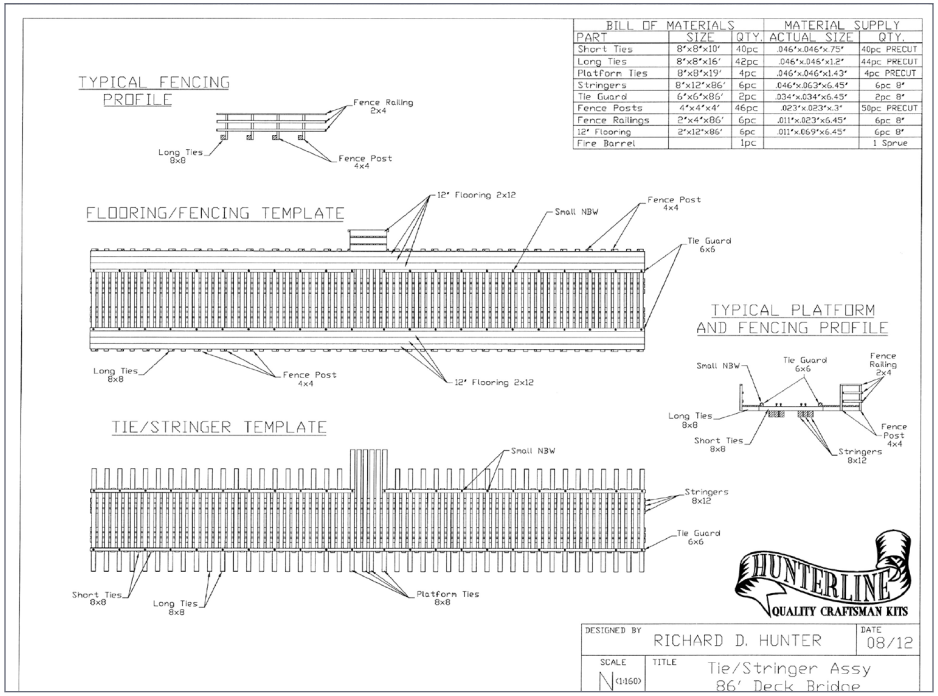
HUNTERLINE CRAFTSMAN QUALITY • NOVICE SIMPLICITY
1072 Riverbank Drive, Cambridge, ON Canada N3H 4R6
Phone/Fax: 1-866-934-4174
E-mail: rick@hunterline.com
www.hunterline.com

86' HOWE TRUSS DECK BRIDGE

William Howe of Spencer, Massachusetts built his first bridge in 1840. He came from a family of inventors; brother Tyler invented a bed spring and brother Elias invented the sewing machine. Howe decided there had to be a better way to span further and carry more weight. At the time the King Post and Queen Post Truss Bridges were common place. He took those basic designs and extended them. By increasing the chord size and the panel size, he found he could expand to a greater length which was unfounded before. The chord size and number, along with the size of truss rod, as well as the number of truss rods, allowed Howe to expand to hundreds of feet long. It also had the upgrade capability by simply adding more rods. As the Howe Truss developed, it became a style that was precut at a factory, then shipped and assembled on site without a lot of cutting and fitting... the first prefab bridge. This standardization of parts helped cut the cost and it proved to be the cheapest and easiest way to safely span a river. From 1840 to the 1870's the Howe Truss Bridge was the predominant structure to use. Many variations have developed, each improvement carried the name of that person, but the original design was still a Howe. This design served the railroad industry until the 1930's, when steel truss bridges took over.

A through bridge provides greater clearance under the bridge than does a deck bridge but is more expensive for the same span and loading.

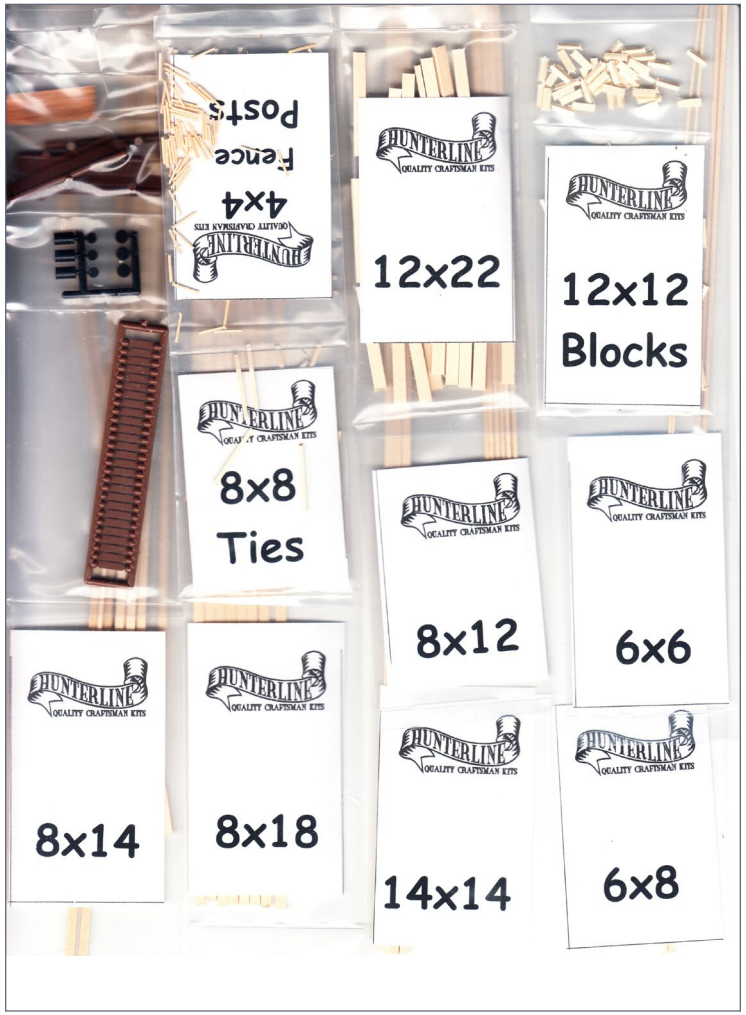
Today you will find Howe Truss Bridges and Howe Truss Covered Bridges surviving almost everywhere throughout Canada and the United States. Some are still in use for railroads, many have been converted into highway bridges and many kept just for historic reasons. There are publications that will guide you in finding these magnificent structures. Go looking, you might have one close to you.



3-4. (Left and above) The instructions.

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

Upon receiving my kits, I carefully inspected the parts. As expected, all was well. What I found was a sizeable pile of packets with different size wood stock along with some metal and plastic parts. If I had not already built a number of their other kits, I might have beem a bit intimidated by the sight. But I have learned that these kits are much easier to build than they appear [5].



5. The packs of parts.

A great tool to use on kits like these, where you need to make accurate repetitive cuts, is the "Chopper II." This little jewel just works great. You can cut wood, plastic and other materials like the "pressed paper" that some laser-cut kits are starting to use. The cutting blade is a standard single-edged razor blade that is easy to replace. This is a must-have tool for model building [6].

6. The "Chopper II" Tool.

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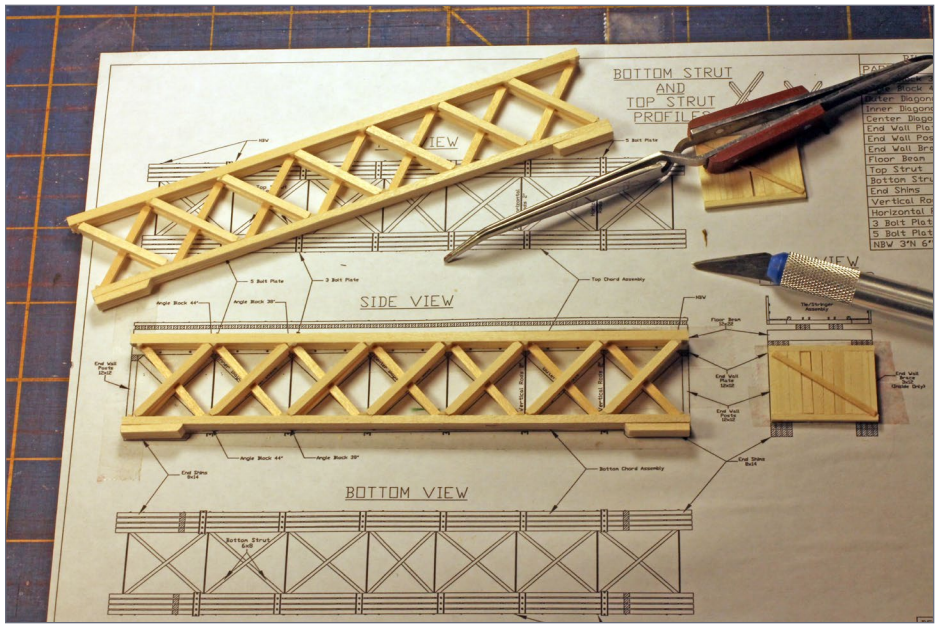
Accurate blueprint-type drawings are provided with the kit and I build the sub-sections right on the drawings. I mean, right on them! I make a number of copies of the drawings and save the originals. I tape one or two of the copies on my worktable [7].

Building the trusses

Place double-sided tape at every place where there will be a glue point. I like the "permanent" type. The tape holds the parts tightly while the glue dries. The tape also prevents the parts from sticking to the paper. I then start placing the cut wood sections into place on top of the drawing. Try this some time. It works great!

At this point, make sure to read the directions while building the sides of the main truss section. Each run requires a different combination of wood stock. That is why you have so many little



7. Building the first sub-assemblies right on the drawings.

packets of wood. Keep the wood parts in their respective plastic packs until you need them. I must admit that I have in the past mixed up wood parts and now make sure that, when I am done with a certain sized wood stock, the extra goes back into the correct packet right away rather that letting it sit around on my workbench. There it is again: The old "voice of experience."

For wood kits I always use good old white household adhesive. It is cheap, dries mostly clear, gives you plenty of working time, and it remains flexible when dry. What more could you want? Remember that "less is more" with any adhesive. Use the smallest amount of adhesive you can to hold things together.

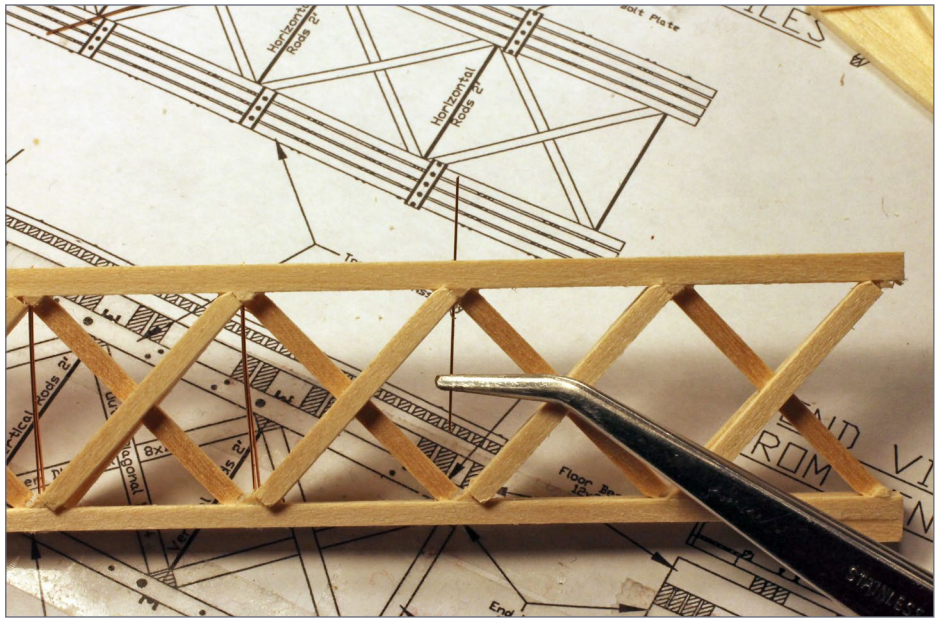
Once the glue on the side sections has had time to dry, carefully remove them from the double-sided tape. Next, you need to drill the holes for the metal tension rods. When drilling and installing, try to keep the holes in line, as it looks better when finished.

8. A great new tool. A power pin-drill driver.

It quickly came my attention while building the smaller bridge kit that it seemed to take forever to drill all those holes for the tension rods with my little hand pin-drill. There are almost 200 holes in the larger bridge kit, so I realized I really needed a better way to get the job done. My friends at Micro-Mark (micromark.com) had just what I needed, the #86258 power screwdriver and #86259 chuck for power screwdriver, and I was in business [8]!

This screwdriver/drill motor is not the fastest tool I have ever used but it is way better than that silly little hand drill. It also works for very small screws.

After installing a set of these bars, dab CA glue on the holes to keep the bars from falling out. If the holes are small enough they should not fall out, but why take a chance [9]?



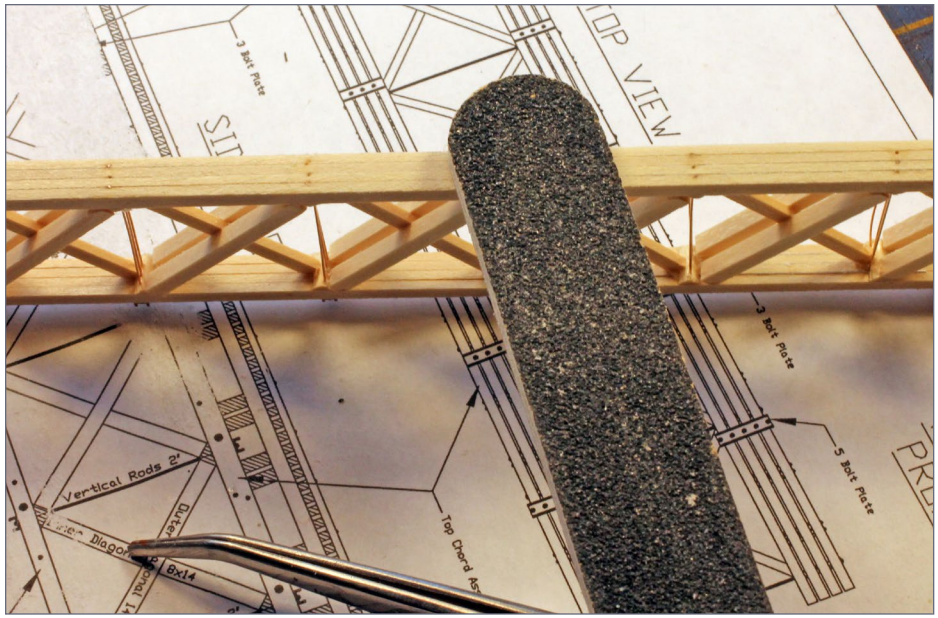
9. Installing the torsion bars one at a time.

Once you have the bars installed, take a little time and file all the ends down flat. A few of the bars will extend slightly out of the holes. If you allow them to stick out above the top or bottom chord the backing plates will not sit flat [10].

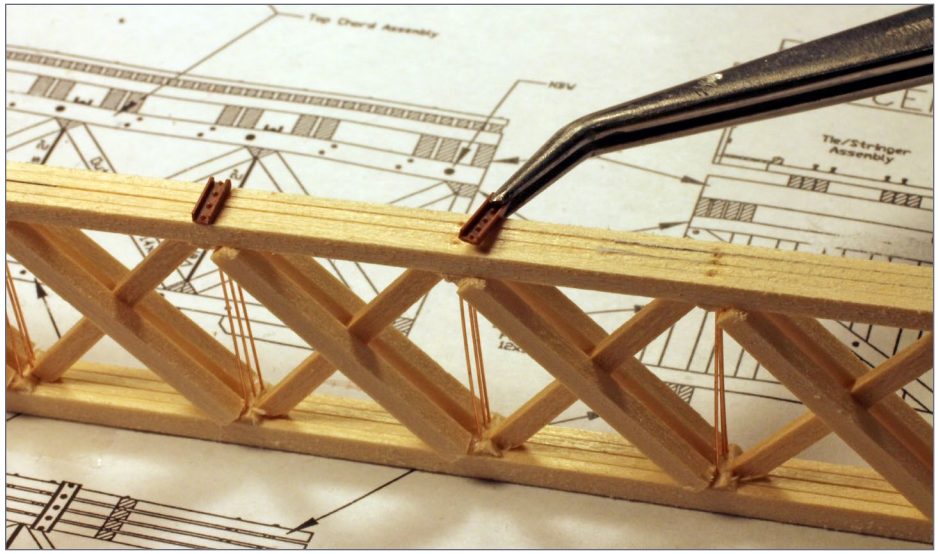
Next come the backing plates. These little extras make the model look much better when finished. I found the little dab of CA used earlier to hold the rods in place is a good surface to glue these pieces to [11].

Putting the bridge together

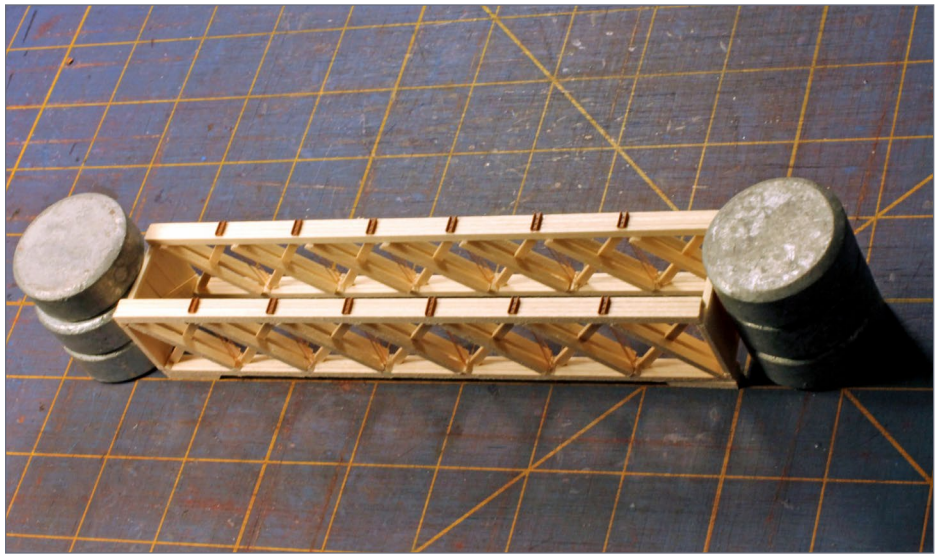
Now it is time to glue the sides of the box together with the two end sections built earlier. Once again, I glued these parts together right on the plans. Take your time and carefully make



10. Make sure to file off any bar ends that are not flush.



11. Adding detail before you move on.



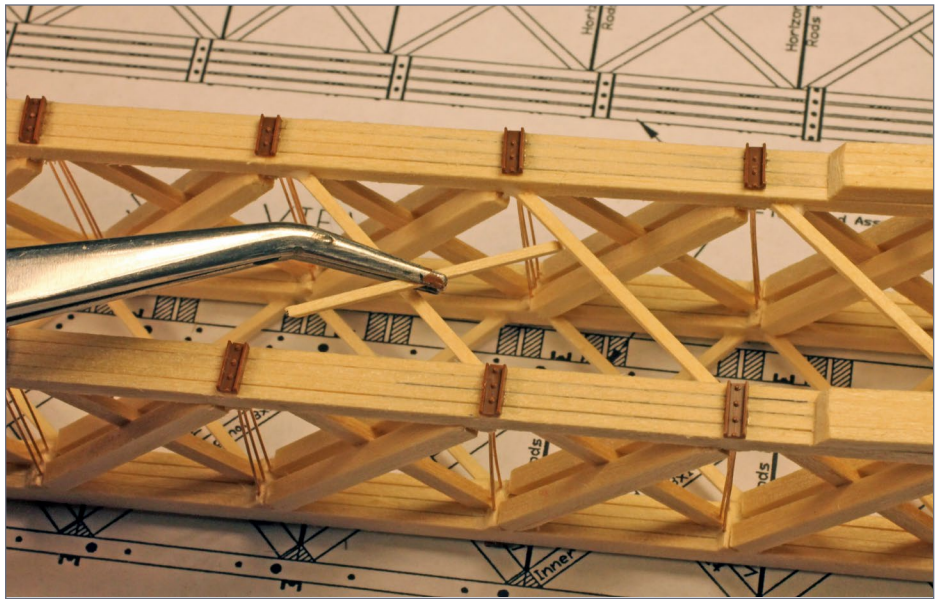
12. When you glue the ends on, make sure that everything is square and plumb.

sure the box (sides and ends) is square and true. If it is not, the entire project will look wrong.

Once the assembly is square and the glue has set up, it is time to install the cross bracing to hold the box together. Once the glue dries, it is back to drilling more holes and installing more tension rods. Be careful not to drill a hole where the existing bars are installed. Pick one side or the other of the existing torsion bars and maintain that positioning for the rest of the holes [13].

Install the deck

Next comes building the decking for the track. The kit I'm building is marketed as N scale, but I wanted to do something a bit different (I'm such a rebel). I decided to use these bridges with HOn3 equipment rather than N scale stuff, so out came the scale ruler



13. Constructing the top and bottom of the box.

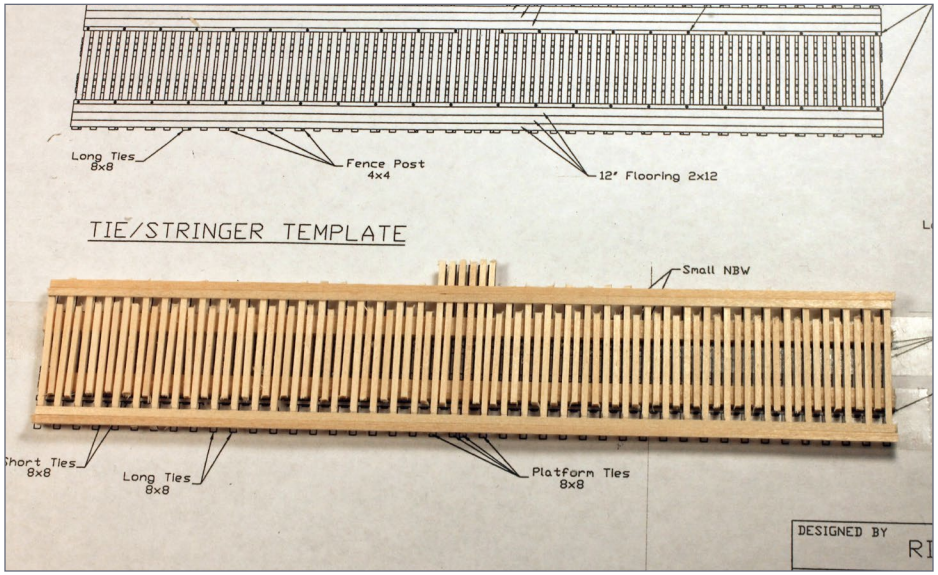
and some paper. After careful examination, I found widening the decking a bit would suit my HOn3 track just fine [14].

Once again I put double-sided tape on the plans and built the decking there. I had to add a bit to the edges of the deck to accommodate the wider track, but used wood I had on hand.

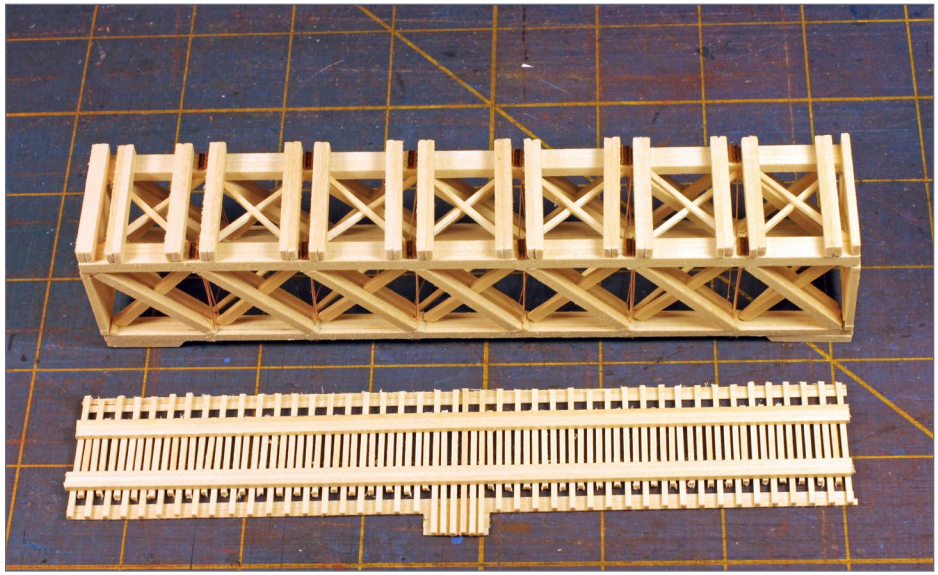
The N scale size of the crossties is no problem. I ballasted the bridge deck and once installed you will not see the original ties.

The sub-sections are finished and ready to assemble. Only a few more steps, and the bridge will be finished [15].

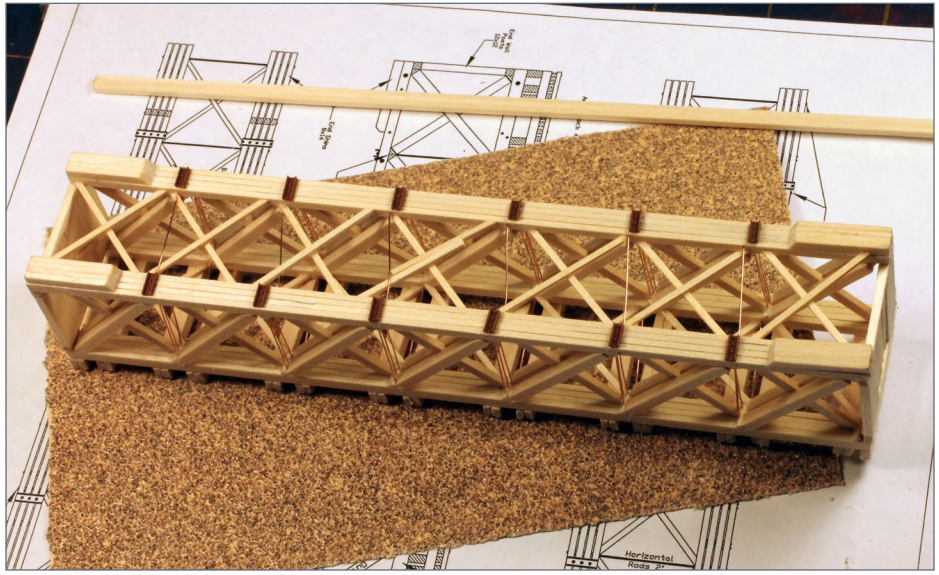
It is almost time to glue the decking on but first you need to make sure the deck supports are perfectly flat. Tape down a sheet of sandpaper and carefully sand the top of the bridge box on it. Before gluing check the decking supports with a straight-edge or ruler to make sure all will contact the deck [16].



14. The completed decking ready to be installed.



15. The decking and box structure completed.



16. Make sure the deck supports are absolutely flat before gluing on the decking.

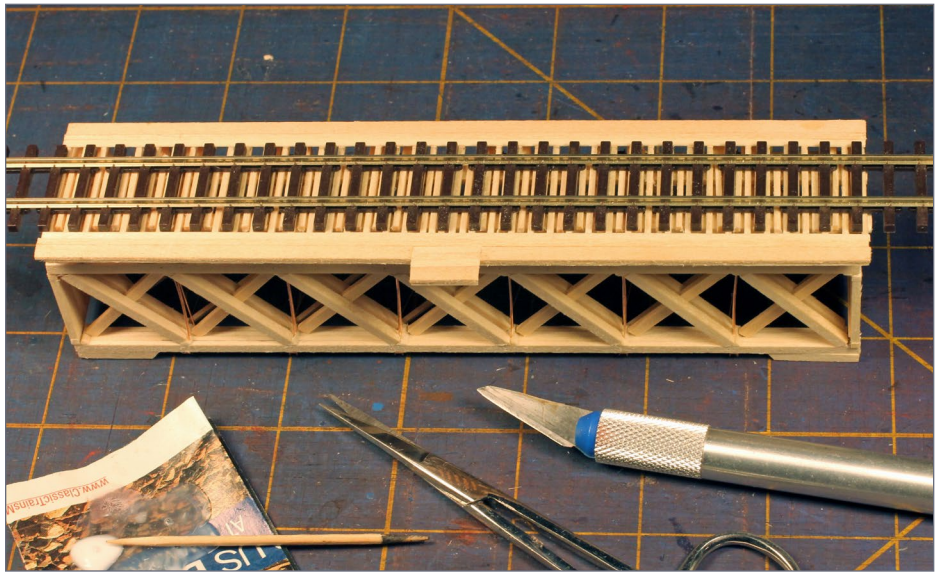
At last it is time to glue on the track decking. Take your time and make sure you get this decking on straight. I wanted good contact with the glue and used plenty of weight to hold it in place while drying [17].

Once the glue dried, I found that the decking was not quite wide enough to look correct for HOn3. So it was back to my wood pile to make it wider. Problem solved [18].

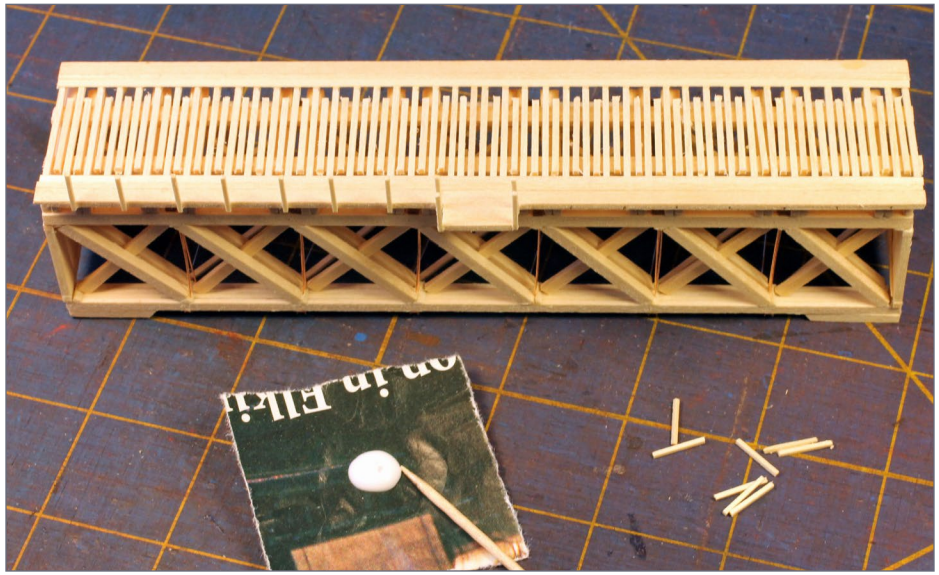
Now came an interesting question. These kits come with N scale railing parts. This railing would be way too small for the adapted HOn3 project. Fortunately I had wood on hand that should look about correct [19].

I am defiantly not a rivet counter. If it looks correct in a photo, then it is good enough for me. The deck extensions I added turned out to be perfect gluing platforms for these railing supports.

17. Gluing on the decking.



18. Test-fitting HOn3 flex track on the deck.



19. Adding the railing.

Painting

Now that the bridges are finished, the next question was, what color did I want? Some of my modeling buddies color all parts before they build the item, but I color after it is complete.

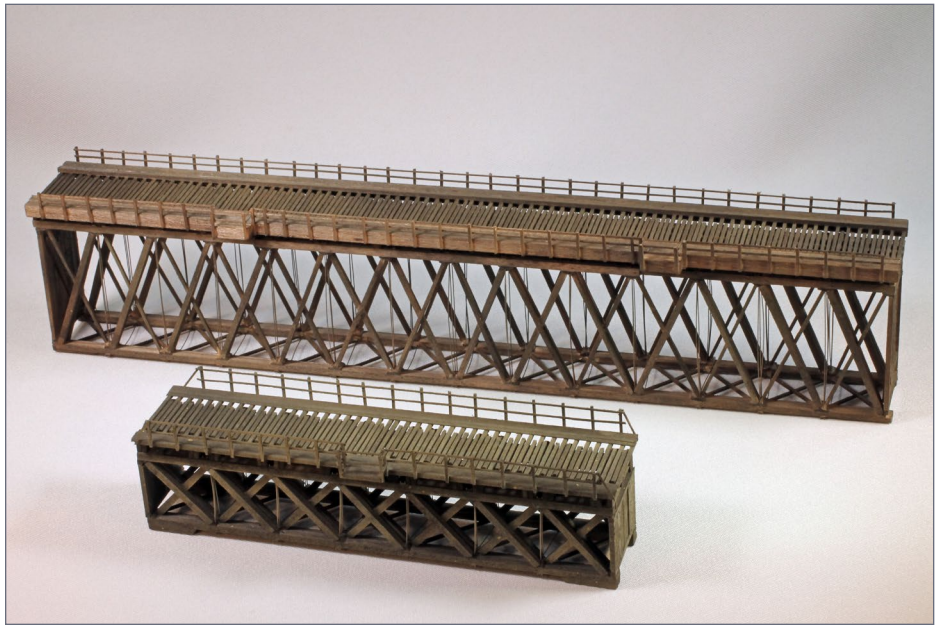
I have a wide assortment of colors of Hunterline Company "Weathering Mixes." These mixes are an alcohol-based product that goes on evenly and dries right away. When using liquid colors, I always use my airbrush. I find I get a more consistent coverage than if using a brush. It's your choice; use whichever method makes you comfortable.

There you have it. Two new bridges to add to the ever-growing pile of "to be used sometime" finished projects. Hold on just a moment! I should build another photo module and include at least one of these wonderful models! But please do not tell my wonderful wife as she thinks I have too many of these modules around the house [20-21].

Building the module

I have built a number of photo modules in the past. They are not designed to match up to any others. I use them to, well, take photos. They are also a great way to try new techniques on a small scale. So, what new technique do I want to learn this time? Hummmm.... I have been putting off a water scene for at least two years. To build the base, I will use some leftover high-density foam insulation. Be careful gluing these foam sections as some adhesives will eat the foam. I find what works best for me is to use a hot glue gun set on the LOW setting. If the glue is too hot, it will melt the foam [22].

I had a basic idea of what I wanted for the final scene. I just go with the flow and most of the time it works out fine. So it was



20-21. The two different finished bridges.

time to cut a little foam from here, rasp a bit off of there, and then sand a bit over there and there [23].

I wanted a small stream running alongside the tracks, passing under the bridge about mid-module. I made a "foam bridge" to use a cutting size-gauge. I did not want to risk the actual bridge during construction.

I gave the shaped foam panel a hard coat of Durham's Water Putty. This a plaster-like powder that you mix with water. It sets up hard and strong in about three hours. You can find this product at large hardware stores. It is very easy to work [24].

I started using this product because I have no local source of the more traditional Hydrocal plaster. Once I tried Durham's Water Putty I was hooked. The product dries to a nice light brown color.

22. "Playing with foam" Moving bits of foam around to get an idea what I might want from the photo module.

23. Cutting and fitting the foam.

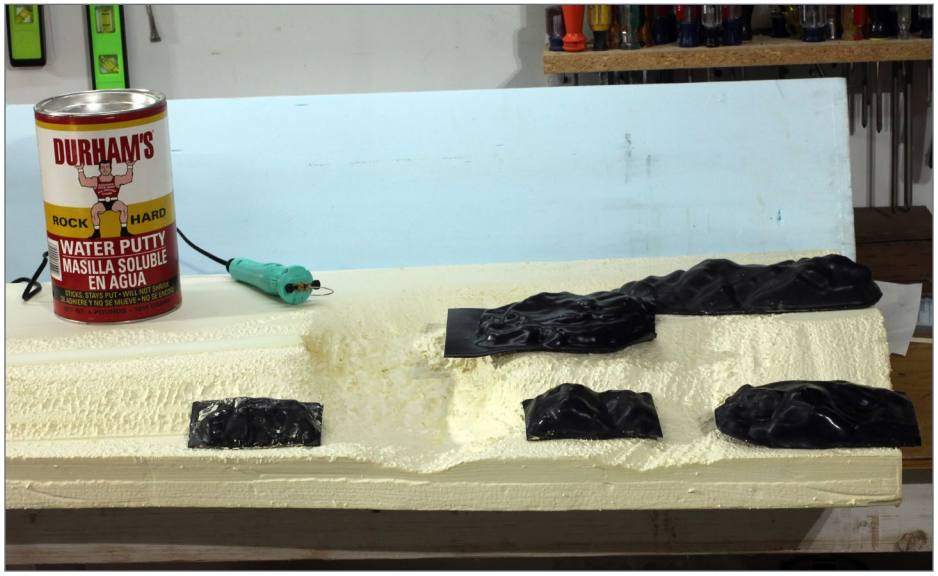
24. Appling the first coat of "Water Putty".

Now it was time to dig out my old rock molds. To be honest, I had not used them for some time, but after some moving around I had something that looks about right [25].

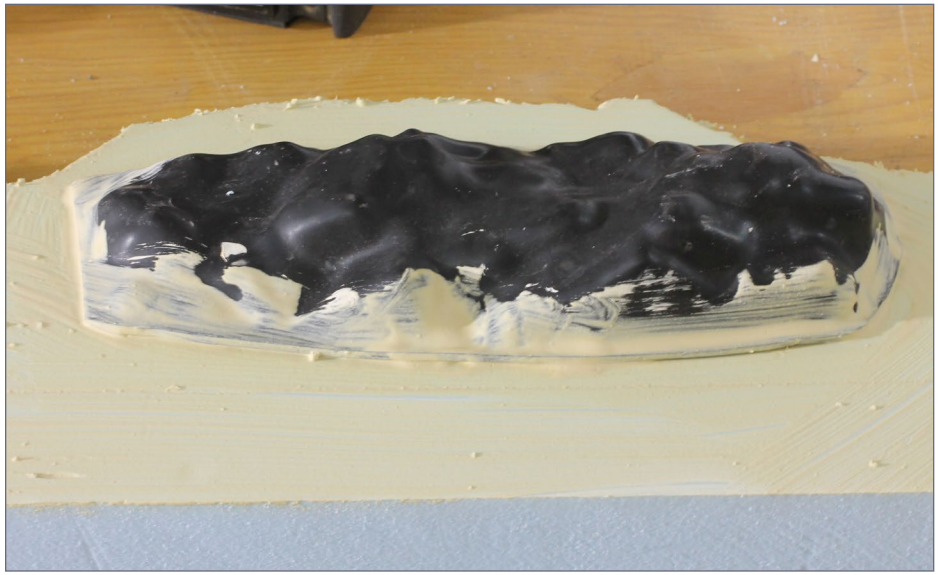
To use these rock molds, some modelers make the rocks first and glue them onto place later. What I find works for me is to let the putty set up only until about "jelly" consistency and then smush them into place. Durham's sticks very well to itself [26].

The easy part is mixing the powder with water. Be careful not to add too much water, but if it happens just add a bit more powder. You want the consistency of gravy without any lumps. Take your time mixing and the rocks will come out much better.

To prevent the putty from sticking as the product sets up, I spray a mix of water and dish soap on the mold, shaking out the excess before I pour in the mix. Support the mold carefully



25. Figuring out where the rocks might go.



26. Applying a rock mold.

because the putty is heavy and will distort the shape of the rubber mold.

I really wanted one of these rocks right on the break between the facing ridge and the flat area in front. No problem; the molds are flexible and I can finesse the rubber mold to stay just where and how I want it until the putty sets up. A specialty tool like a chunk of wood should do the trick [27].

Adding texture to the module face

I did not like the look of the side and front faces of the module, but remembered some ground-up coconut husks from a long-forgotten project. I spread white glue on one facing surface at a time, adding the ground husks and a bit of gravel. It came out better than I expected. Give it a try some time [28].

27. Rock molds are flexible, and some times the mold needs a little "help" to stay in place during set-up time.

28. A close look at the organic material applied to the sides and front.

29. It's time to fit the bridge into the scene.

With the rocks in place and the edges sealed, it is time for final fitting and adjustments for the bridge and track. The rocks look good, so what is next? Ah, yes. Finish the stream bed and pond before placing the bridge [29].

For the first layer of scenic detail I used white glue full strength and spread it around evenly. All recovered scenic materials from past projects go into my slop jar. Everything but sawdust and foam bits goes into this mix, so it is never the same twice [30].

I put this slop mix all over the module except the riverbed, the track bed, and an area on the left where I decided to work in a sawmill scene. After the glue dries, vacuum up the excess to use later.

It was time to confront my fear of doing water. It was easier than I anticipated. I carefully poured the liquid product at the stream's highest point and let it run down to the pond. I was

having sooooo much fun watching the water run down the stream that I entirely forgot what the directions said [31].

The directions specifically say to add a thin layer of product and let it dry completely, then add another layer. I tried to fill the stream and pond all at once! When the water product dries it shrinks just a bit, and leaves an unnatural dip. I added a much thinner layer on top of the low area and that fixed the problem.

I install track and bridges a bit differently than my modeling buddies, who have this elaborate ritual for installing track and ballast. My installation is without question quick and dirty, but it works great [32].

When everything fits correctly and the flex track is bent just right, I evenly spread white glue all along where the ballast will be. I set the bridge and track into place, put a liberal amount of ballast over the entire track section, and then weight the entire area. I use containers that I have handy.

30. The riverbed needs to be finished before the bridge and track can be permanently attached.

31. The start of application of the "water effect."

The hardest part of this technique is waiting patiently until the glue is completely dry. Once it is dry, I vacuum up the excess ballast and return it to the container. This one-step technique is easy, fast, and comes out just fine. When you try it start with a short practice project before moving on to your layout.

Adding details

There is no such thing as too much detail. I like having all kinds of textures and colors lined up on my workbench so I can get inspired. A bit of this, a bit of that, and some of this over in the back and I find things start to take on a life of their own. What fun [33].

After some attempts I gave up my plan for a backdrop of foam and molded rocks because it was not coming out anything like my mental image. I took a series of photos of my real layout

32. Attaching the track and bridge to the module.

33. The start of the scenic coverings.

34. The backdrop is added. The scenery is developing around the pond. Can you spot the problem?

backdrop, stitched them together in PhotoShop, and had it printed at my friendly local Costco store. I then attached it to cardstock and added it to the back of the module [34].

Just by adding the backdrop the scene really came to life! I started adding all kinds of scenic details. I make it a point to take photos of my projects as they progress to check on how things look through the camera. Can you see the mistake I made? I did not see it in "real life," but the camera view makes it obvious.

Look carefully at the pond under the bridge. See how the tall grass on the left is in a straight line? Well, that's not natural. I will have to work on that area to make it look natural [35].

35. A closer look shows that the tall grass is all in a row. Very un-natural!

36. Here you can see the same area after a little "touch-up".

Add a bit of brush there, a rock or two, and some more tall grass. Let's have another good close look at the bridge and pond. Now that looks better! [36]

The flat rock in the back was looking a bit empty, so I decided to add a small storage work shed and some guys working.

Other details seen along railroad lines are old rail sections that have been removed but never carted away. With a bit of ballast, some grass and a weed or two I can make them look like they have been there for a while. I also added sections of rail for future replacement by the section gang.

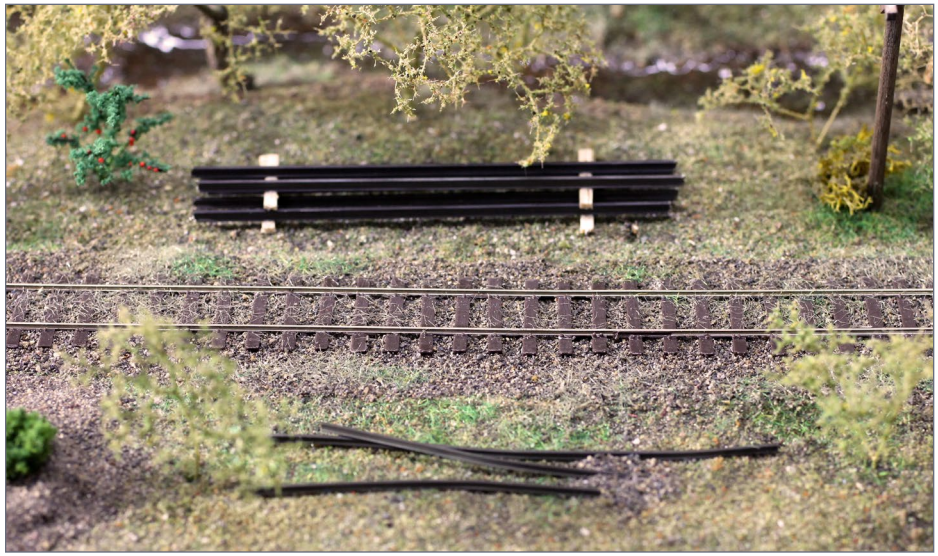
I dedicated the area on the left side of the module for a rural sawmill kit, so I started some piles of finished milled wood.

Eventually there will be all kinds of tid-bits to go along with the scene, but this is a good start [37].

I decided to add some telegraph poles along the tracks, and had some plastic HO poles on hand. But my wonderful wife put her foot down and said, if I may quote: "No plastic on this module!" What can a loving husband say except: "Yes, dear." I had never even thought about making my own telephone poles, but I brought out my wood and glue and went to work. In one evening's fun hobby time I had a fist full of first-rate wood poles. [38] They look way better than the plastic one!

Now it was time to take on the sawmill scene. This would be a focal point of the module so it needed to be as real as possible. As a much younger man, I owned a recreation sawmill not too

37. I added a small work shed with a couple guys moving things around.



38. Don't forget to add a little growth along the track bed.

much different. You need sawdust, and some milled lumber piled up. You definitely need some slash, bark, and junk lying around that always accumulates [39-40].

How would they move the logs around? These logs are too heavy to pick up and move, so I needed a crane or two. It was back to my wood pile for inspiration. Then it hit me: Nothing looks as real as real! So I went to my yard and found the perfect trees to use for my hand cranes.

This type of hand crane was called a haystack boom and was once a common sight on farms and rural work sites. Considering how heavy these logs are, I might relent and add a horse or small gas winch to help. With the cranes installed, there was no one to produce any milled lumber, so I put a guy over there holding a line and another guy over there, and ... you get the point.

39. Make little "scenes of interest."

40. Don't be afraid to make your own scenery items. Don't these telegraph poles look better than plastic ones?

I sometimes ask my wife what her artistic eye sees. "So, where did all the trees come from for the sawmill?" she asked. Yeah, where are the tree stumps and slash? They must have cut the trees down someplace close, or they would have moved the entire camp closer to the trees [41].

I cut bits of wood to look like stumps and glued them into place. I ran a bead of white glue around the base of the stumps and added more of my slop mixture. After the glue was fully dry, I once again vacuumed up the excess.

Although it was designed as an N scale item, the bridge works great in HO narrow gauge [42-43].

41. Logs, logs, logs. A sawmill needs plenty of logs to cut up.

42. A look at the sawmill scene.

43. I wanted to have a sawmill scene, so you need lots of tree stumps around.

As the Portland NMRA National Convention approached, I kept thinking about what else I could add to this diorama? Why not build a small name tag to go along with it? So a bit of foam, some scenic coverings and some stumps and there you go. A matching name tag [44].

Conclusion

There you have it. I now have another photo module to stage shots of my HOn3 rolling stock. It is not entirely finished but layouts big and small are never truly done. This project took me about 50 fun-filled hours of hobby time and I learned tons of things. The big advantage of these modules or dioramas is you can try anything you want. If it does not come out well, salvage what you can, dump the project, and start again.

Another big attraction of modules or dioramas is that you can actually finish something. I understand that a hobby should never be finished, or you would have to go out and find another. But I do enjoy finishing a project. These modules fill that bill quite nicely.

The only question I have left is: What to build next?

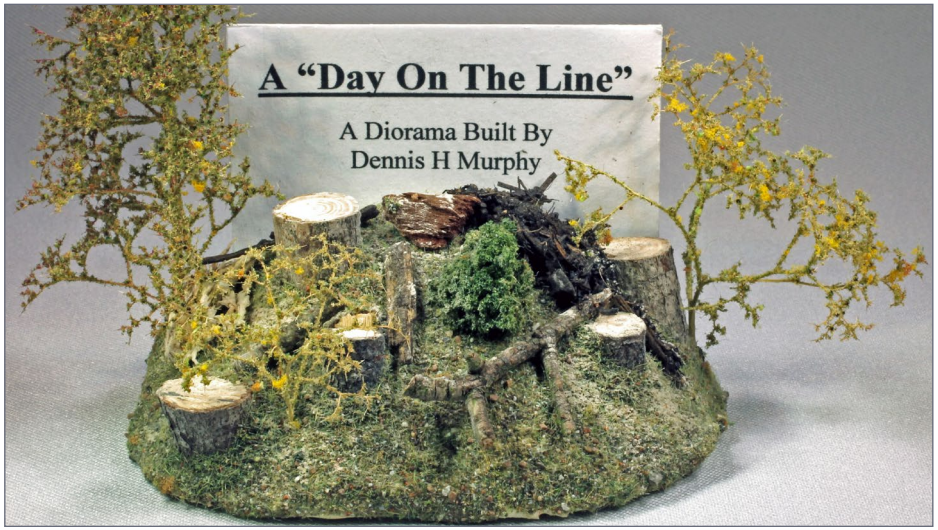
Bridge source:

The Hunterline Company
1072 Riverbank Dr., Cambridge
Ontario, Canada, N3H 4R6

Phone: (866) 934-4174
Email: rick@hunterline.com
Web page: hunterline.com

Retail price(US/Canadian):
N scale $65 / $100
HO scale $145 / $220

44-45. Here are some shots of the finished bridge in place. Looks good.



46. And every good diorama should have a nameplate! ☑

DENNIS MURPHY

Dennis was attracted to trains and other large machines when he was young. When he was an adult, he found he never lost interest in big machines, and went on to be a professional ship captain.

Dennis is presently working on his 3rd generation N scale layout, and has expanded his stable of rolling stock well beyond his wildest dreams. But most importantly, his modeling has improved beyond what he thought was possible.

Another thing he discovered about himself was that he enjoyed sharing his knowledge with others. Often when he builds a kit or tries a new technique, he makes it into an article topic.

His modeling has made his life much richer and fun. So he invites all to join him to share topics through his articles. ▪

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YES, IT'S A MODEL

compiled by
DON HANLEY

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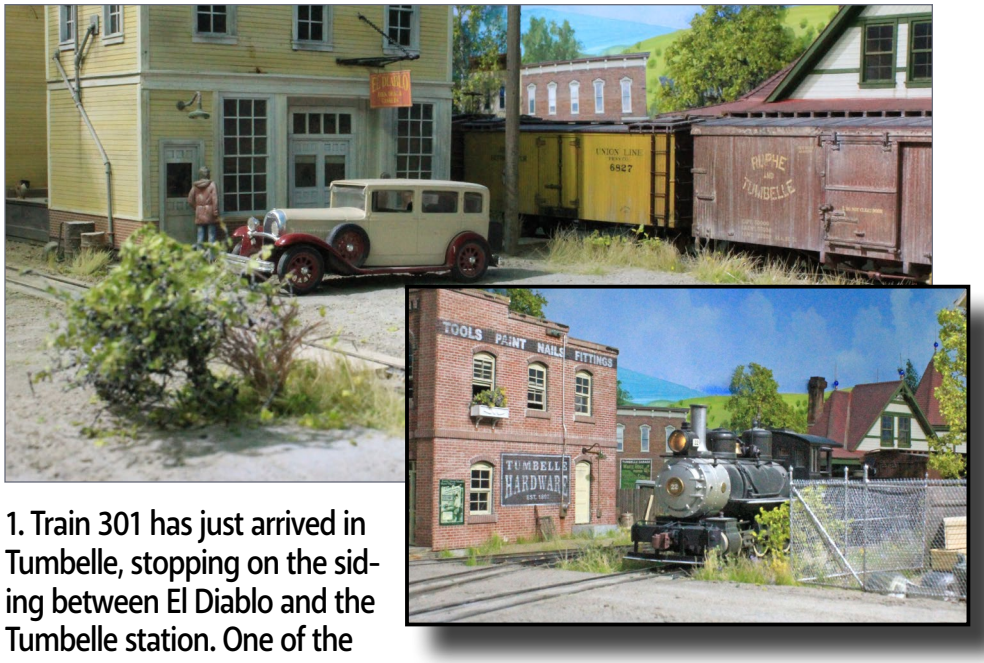

1. Train 301 has just arrived in Tumbelle, stopping on the siding between El Diablo and the Tumbelle station. One of the local residents entering the building is oblivious to the train, but fortunately for us the photographer wasn't. Our photographer was quick enough to run around the block and take a picture of Train 301 with locomotive 22 at the point getting ready to head out of town. The photos were taken on Dale Olson's Ruphe & Tumbelle during a recent operating session.

▶ MRH'S MONTHLY PHOTO ALBUM

2. It's 1984 and the farmers are preparing for a hot summer up in the Australian high country. Luke Towan built this 20" x 18" diorama. The main shed is scratchbuilt with over 150 individual handmade sheets of corrugated iron. There are over 40 trees on the diorama as well. We think Luke did a great job of capturing that typical rural feel, be it Australia or somewhere in the USA or Canada.

3. SP 8306 has seen many years of use. While it receives regular mechanical maintenance and is in good running order, it's had very little maintenance in regards to it appearance. After all, it's just one of many freight units owned by the Southern Pacific, and appearance isn't a high priority. Ralph Renzetti weathered this Athearn model for Joe Fugate's Siskiyou line.

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4. Rob Arsenault has been an aviation and railway artist since the late '70s and just recently began trying his hand at weathering locomotives and rolling stock, since he couldn't find anyone local to do it for him. CN1015 is a Rapido GMD-1 and CP 8759 is an Athearn ES44AC that he weathered using custom mixes of Vallejo Model water-based paints. Great job Rob. You can see more of his work at (Facebook.com/MyDirtyDiesel).

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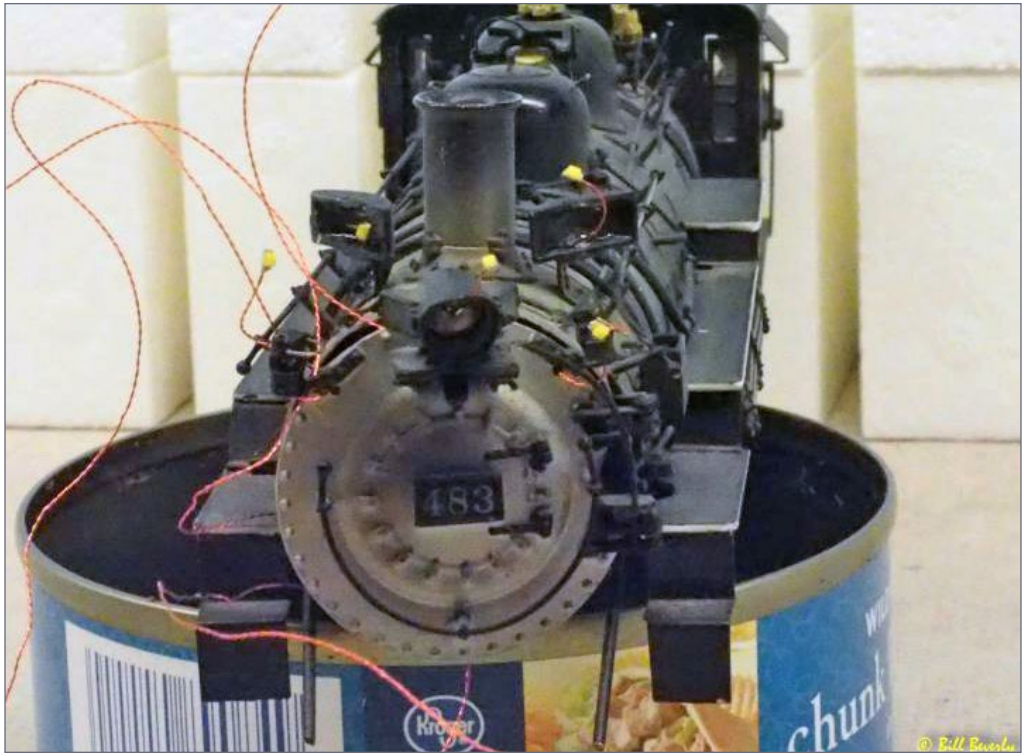

5. "Help I'm a steam locomotive. I have all of these wires coming out of me, and I have lost my drivers." Bill Beverly took this photo of his Sn3 K-36 2-8-2 that was in pieces and missing parts when he got it. This is his in-progress shot in the first stage restoring the locomotive.

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See mrhmag.com/help for more on how to post an image. You need to be an MRH subscriber to post photos to our website, and becoming a subscriber is free, just fill out this form here. ■

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Horizontal-braced Hopper Cars

BY MICHAEL TYLICK MMR

Photos by the author

Follow along, step-by-step!

A freelanced freight car ...

EVEN THOUGH DEMAND HAS BEEN DECLINING, today's railroads move almost as much coal as ever, although most if it is now destined for power plants. At one time most machinery was powered by steam, and many homes and factories were still heated by coal during the first half of my life. Today the largest northern cities may still have one or two coal dealers who are likely the only source for ice outside of supermarkets and package stores. But remnants of these once-thriving consumer industries still remain.

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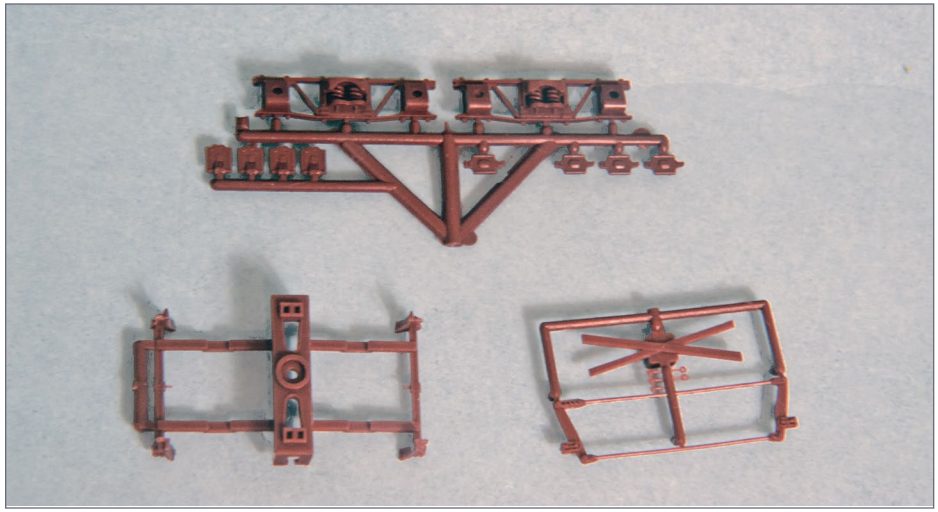
A surprising number of coal dealer trestles are still in existence in my area, and a few small ice houses also survive, although now these are mostly boutiques and restaurants. Even the lumber yards that often sold these products are becoming few and far between as home-improvement centers proliferate, and building supplies are more accessible to the public than ever.

While few of us would ever wish to return to coal-fired furnaces and ice boxes, the facilities of these bygone merchants make for interesting models and switching destinations for our miniature railways. Since I had already built a coal trestle for my On30 Marshfield and Old Colony Railroad, I needed hopper cars to deliver coal to my still-thriving South Shore Coal Company.

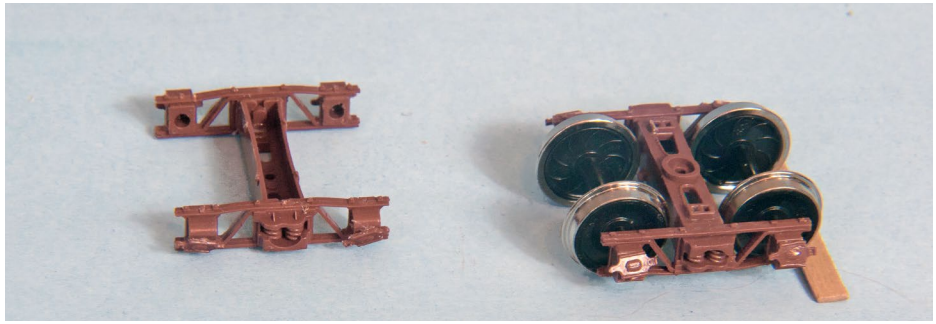
Several excellent On30 hopper car models are available commercially, but I was eager to work on the somewhat-lost craft of freight car building. I could have replicated one of these fine commercial pieces, but this seemed rather a waste of time and effort. Years ago, following an old *RMC* construction article, I built several models of an unusual standard gauge Erie Railroad horizontal-braced car. Other than the Susquehanna Railroad, no one had anything like this. They were small and older, an ideal basis for an imagineered car. Narrow gauge railroads are notorious for designing and building their own rolling stock, and my railroad is freelance, so I am free to make this up as I go along.

I could find little prototype information. Fortunately *MRH* Assistant Editor Don Hanley was kind enough to send a few good photos of the Erie car, and Howard Zane allowed me to examine and make cell phone photographs of his brass HO model. Other than that, I had a Walthers catalog photo of a Funaro & Camerlengo model. I sized my narrow gauge version from a car Jack Work described in *Model Railroader* for October, 1958. Let's get started.

STEP 1: PREPARING THE TRUCKS

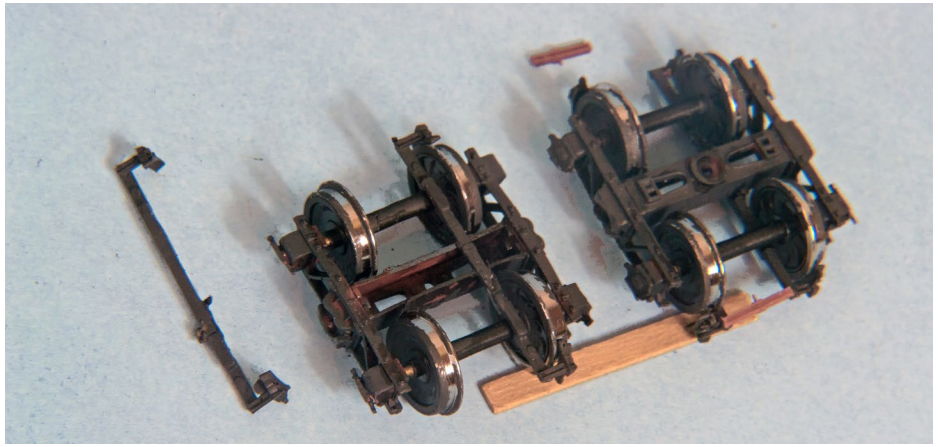


2. The parts for the San Juan Car Company On30 trucks. These were really designed for the Western On3 crowd, with On30 wheelsets supplied. I never did figure out where all of the details went, since no instructions were provided.



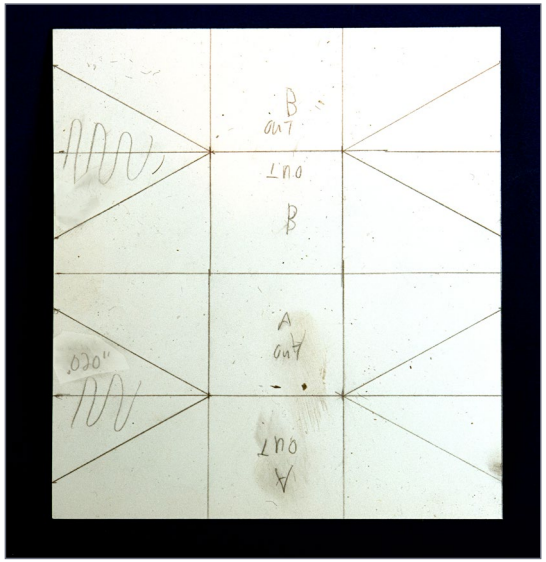
3. Assembling the trucks. Evidently they are made from acetyl plastic, and I had difficulty finding a glue to adhere them. Aileen's Tacky Glue seemed to work the best.

4. The brake shoes were spaced for On3 use and interfered with the supplied wheelsets. I had to cut them off, re-glue them onto spacers and then back onto the trucks. I almost didn't bother.

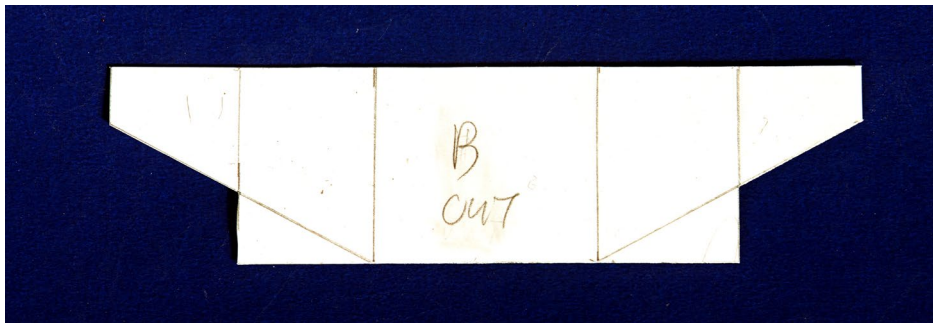


5. Assembled trucks. Despite my seemingly careful calculations, the wheels interfered with my underframe, and the couplers were a bit high for my other Bachmann equipment. I ended up not using them, and substituted Bachmann trucks. I would not recommend these trucks to anyone for On30 use.

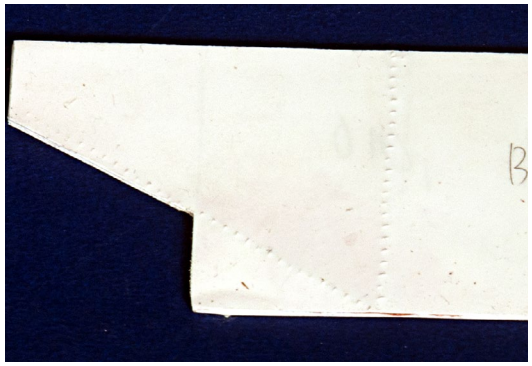
STEP 2: HOPPER CAR SIDES



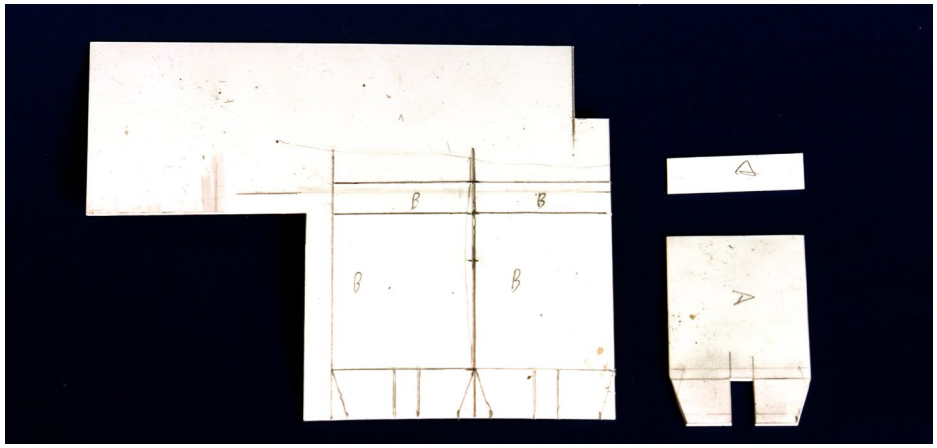
6. The hopper car sides are laid out on .020" styrene sheet. Models of similar cars have been built from both wood and brass, but styrene is easy to work with, inexpensive, and has a texture similar to steel. Laying the sides out together helps improve accuracy. I built two cars at one time – only a little extra work was necessary to make the second, and they proved handy for photography.



7. A cut-out car side. Score-and-snap techniques make styrene work fast and easy.



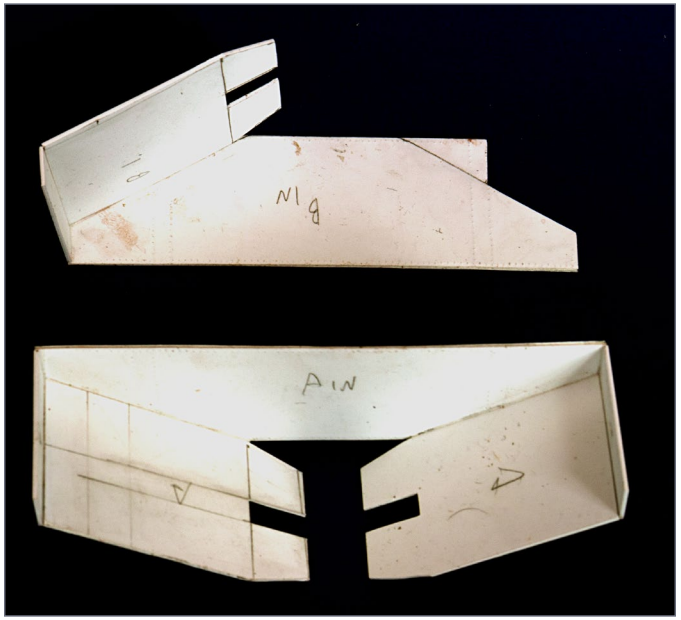
8. Rivet detail is added to the sides by laminating thinner .010" styrene sheet to both sides. These have been embossed with rivets made with a Micro Mark rivet wheel. The walls are now .060" thick – a little heavy for O scale, but thinner than the sides of commercial cars. They are durable enough for handling.

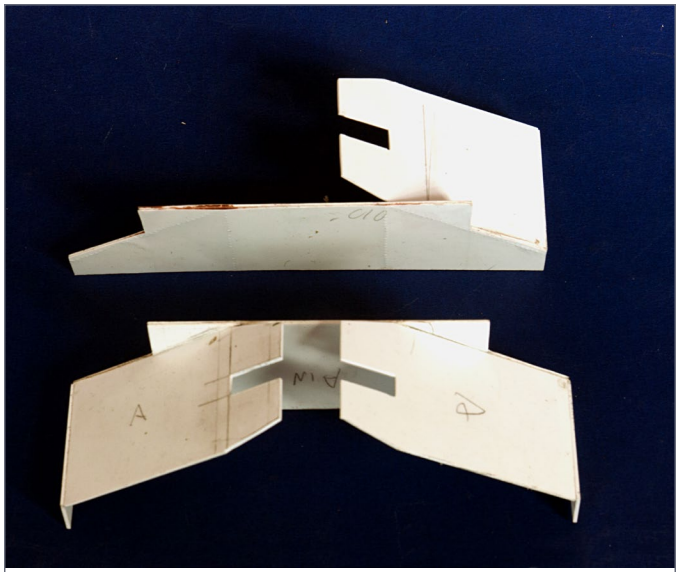


9. The slope sheets and ends are laid out for each car on .040" styrene. Why use new material when I have suitable leftovers? Note cars are marked "A" and "B" in an effort to match my handmade parts to each other as much as possible.

STEP 2: HOPPER CAR SIDES *CONTINUED...*

10. The slope sheets are glued to the sides. I made liberal use of small squares to keep them as perfect as I could. Take your time – it pays dividends in the end.

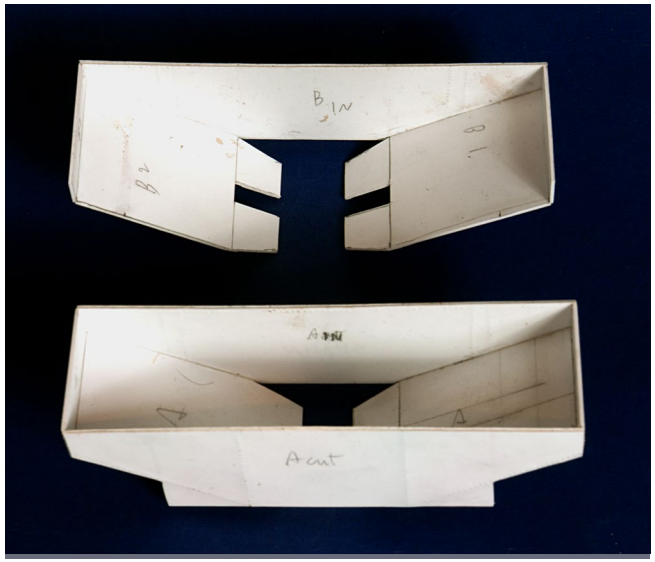


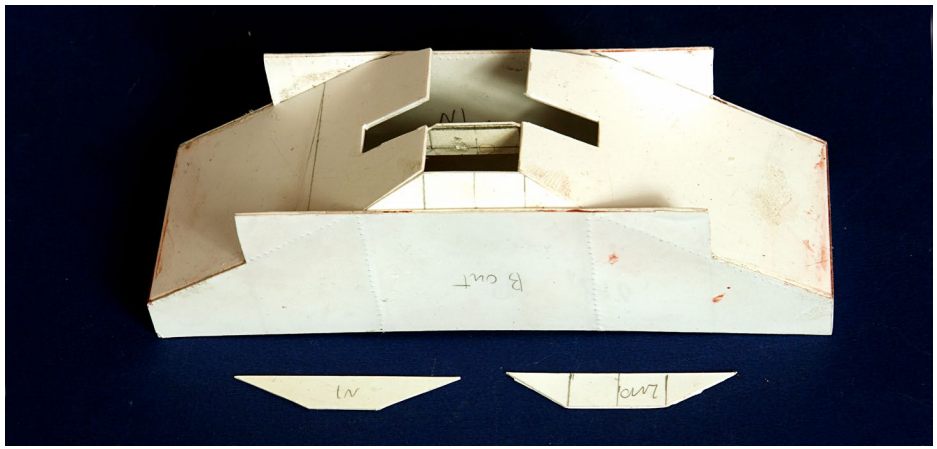


11. From the opposite side.

STEP 3: CONSTRUCTING THE BODY

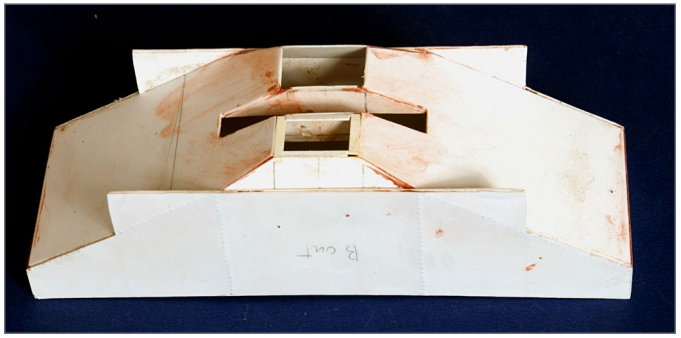
12. The other side is glued to the slope sheets on the lower car.



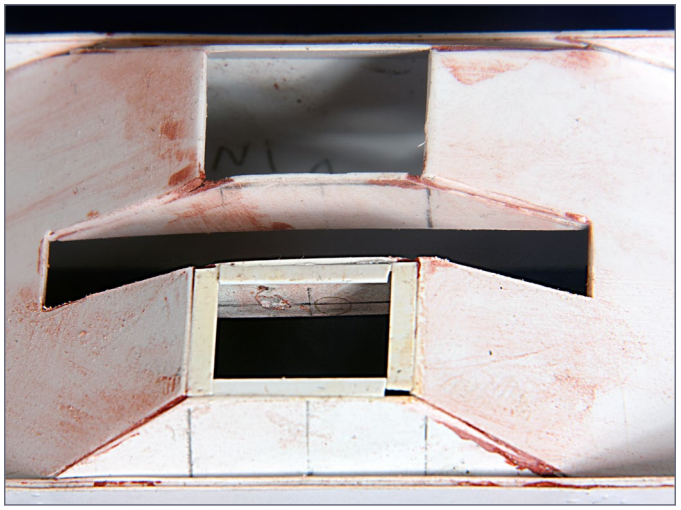


13. The small lower hopper sides are glued to the slope sheets. The flat-bottomed hopper doors are unusual, but probably easier to build than the more conventional slanted ones.

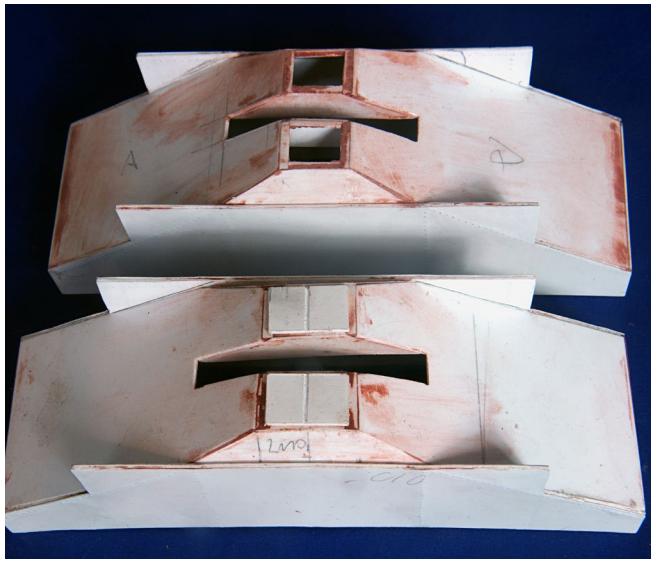
STEP 3: CONSTRUCTING THE BODY *CONTINUED...*



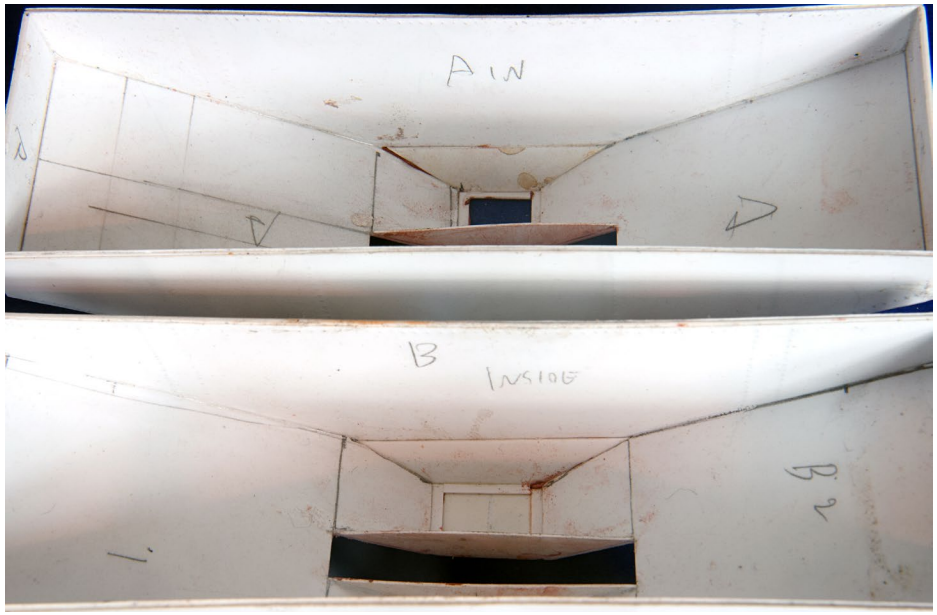
14. The hopper opening is framed with .020" x .060" styrene strip. I didn't bleed all over the car. The red is Bondo spot putty, not my blood from workshop accidents. I make liberal use of this material to correct my many inaccuracies. In practice, I worry less about perfectly fitting parts because I know I can fill the gaps with Bondo. After all, these are not contest models, and I am trying to build a whole railroad.



15. A close-up view of the opening.

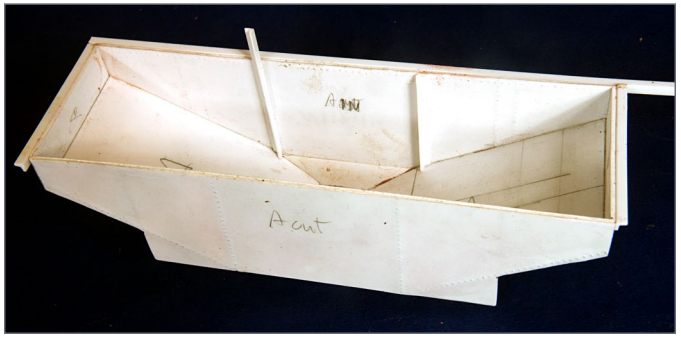


16. Hopper doors are small .030" rectangles. I did include a bit of probably unseen detail by scribing a line to represent the door halves. I added the doors early in the build to help stabilize the car body.

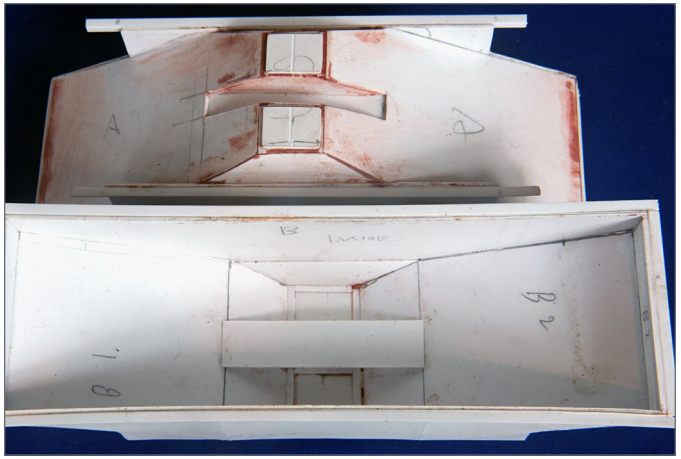


17. The doors as seen from the inside of the car.

STEP 3: CONSTRUCTING THE BODY *CONTINUED...*

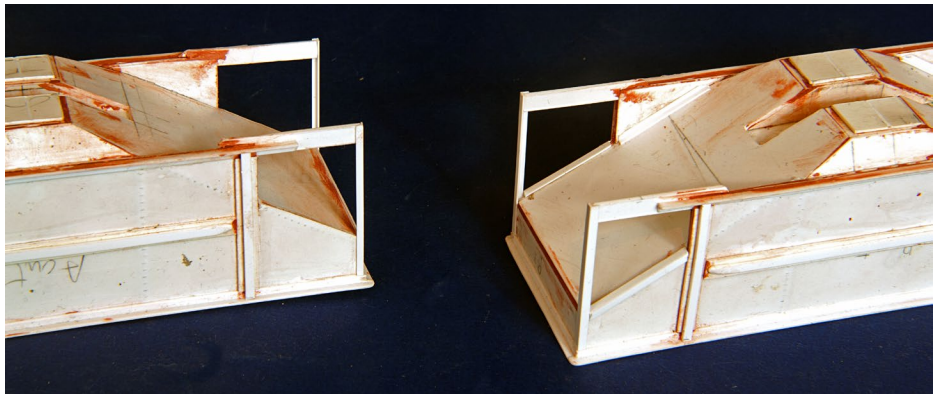


18. The 3/32" angle bracing is installed. The outer rim is the first step towards stiffening the car body. This seems to be present on every hopper car I have seen. The interior bracing follows the prototype. The ends on mine are beveled similar to what I have seen on some prototypes. I find it much easier to install oversize pieces and trim to the correct size, using Bondo where necessary. I used a combination of Evergreen and Plastruct structural shapes for these cars, using what I had on hand. Evergreen shapes are given in decimal inches, Plastruct in fractional inches.



19. Top and bottom angles are in place. Following the Erie cars, the bottom angles do not extend all the way to the end.

20. The distinctive horizontal bracing is built from .040" x .080" strips laid over scale 8"-wide strips cut from .030" stock. The much taller and longer Erie car had two horizontal braces, but one seemed better for my On30 version.

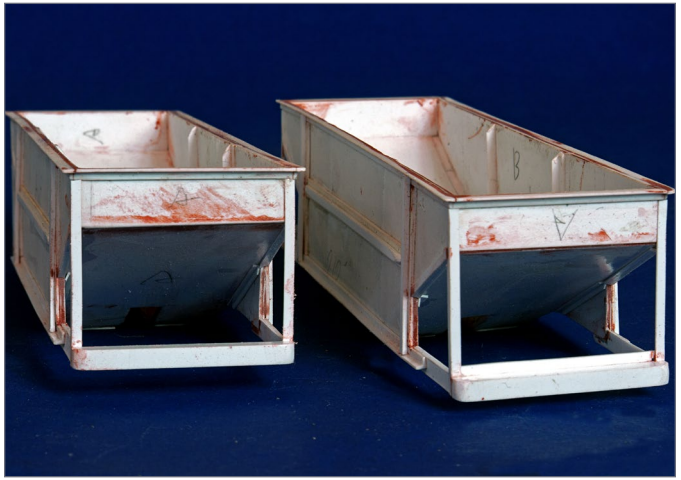


21. Older cars were often built from available structural shapes, so the 3" (.080") angle corner posts connect to .040" x .125" members which connect the lower horizontal angles to the corners. As you can see, I used lots of Bondo.

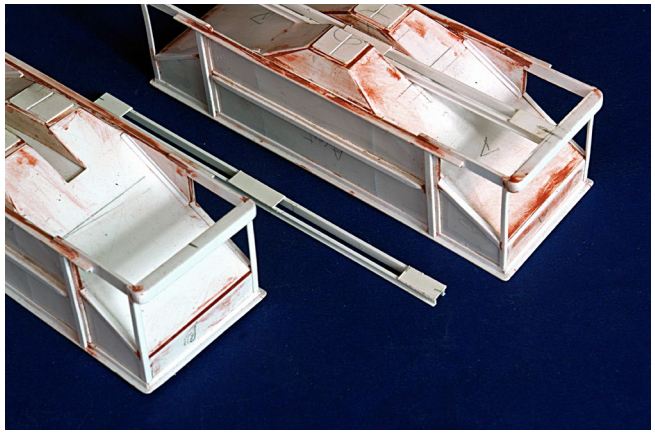
STEP 4: END SILLS

22. The end sill is laminated from .125" x .156" and .010" x .125" strips. The prototype is likely fabricated from sheet steel, but building this up seemed too fine a detail for my model.

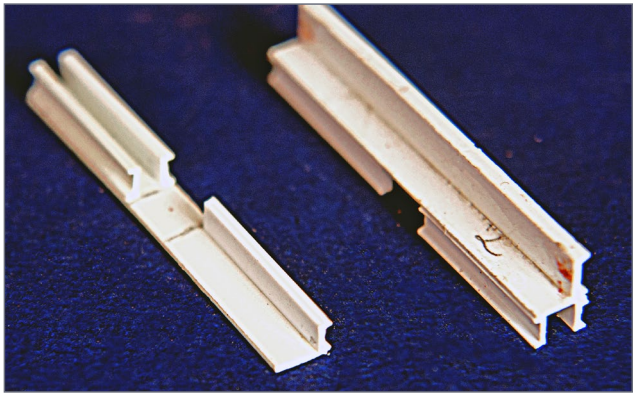
23. The .020" x .080" strip above the sill provides a fastening for the inside vertical braces. On the Erie car the strip also supports the end safety equipment.



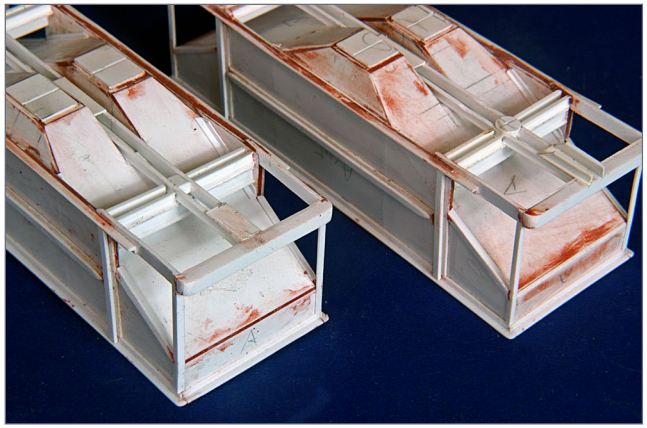
24. The center sill is fabricated from .125" channel with .020" x .250" spacers. The sills were made slightly oversize and sanded to fit tightly against the end sill.



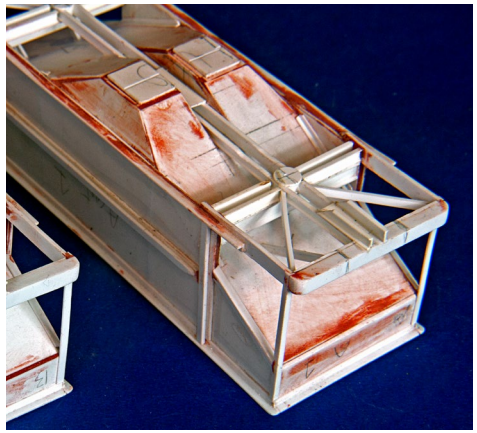
STEP 5: TRUCK BOLSTERS



25. Truck bolsters are built up from 3/16" channels plus a .020" x .250" spacer. The notch is for the center sill. I had no good information for this assembly, so I built up one that looks plausible. Most hoppers have a vertical sheet between the slope sheet and the bolster, but I wanted to keep mine somewhat open.



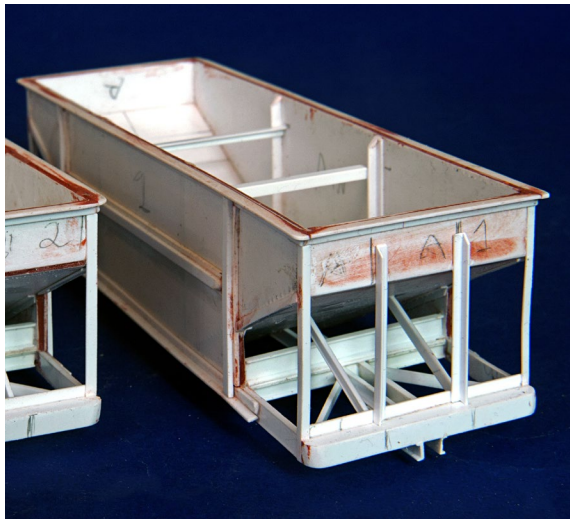
26. Cut with a paper punch, a ¼"-diameter disk of .030" styrene makes a good truck bolster pad. The channels at the end were added to place the coupler pocket at the correct height. My calculations proved incorrect when the Bachmann trucks were installed, and these were removed. The pockets proved to be the correct height when glued directly to the sills.



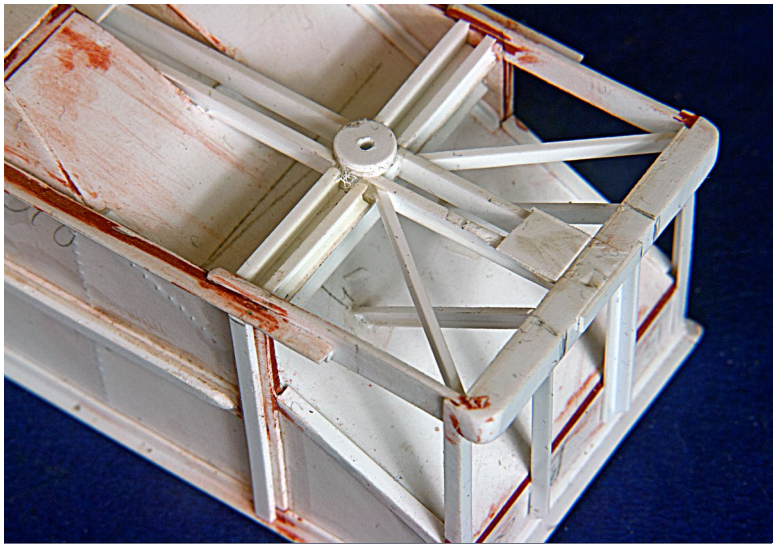
27. Diagonal braces across the sills and up to the slope sheet add strength and complexity to the ends. They seem to be needed both on the model and the prototype; they went a long way to stabilizing the car body.

STEP 6: BRACING AND DETAIL

28. The diagonal bracing as seen from the top. Vertical .080" angle end bracing was added toward the center of the car ends. These did more to stabilize the car than expected.

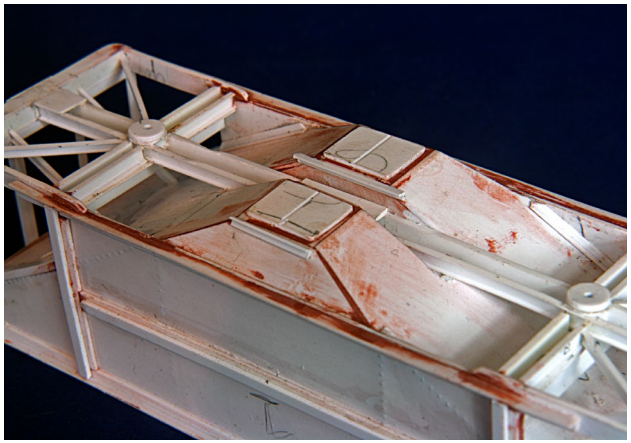


29. The Erie cars did not, but some hopper cars had interior cross bracing. I found it necessary to install these .080" angles to pull out an inward warp in the car sides.

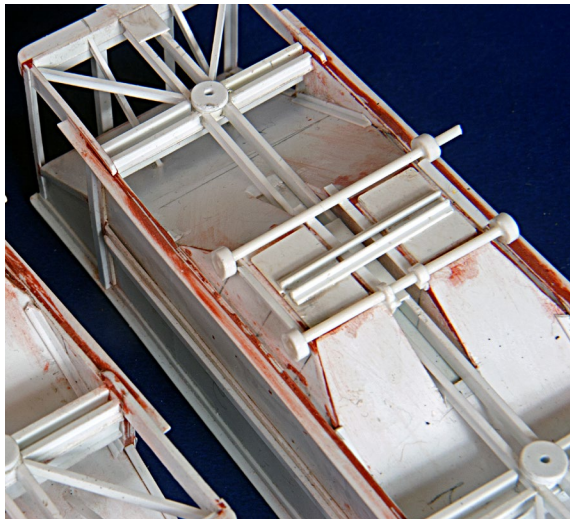


30. The completed end with the corrected coupler pocket base. It is easy to rework plastic, so removing the unnecessary channels only took a few minutes with a razor blade and some sandpaper.

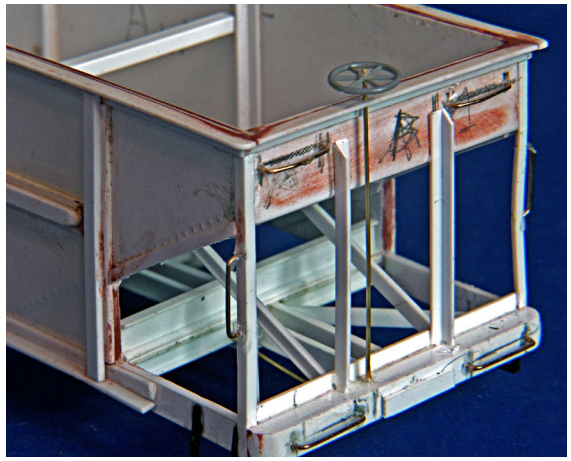
31. 030" angles are added to the hopper bottoms to follow the prototype design. I am not sure of their purpose, but they did make handy hangers for the door mechanism.



STEP 6: BRACING AND DETAIL *CONTINUED...*

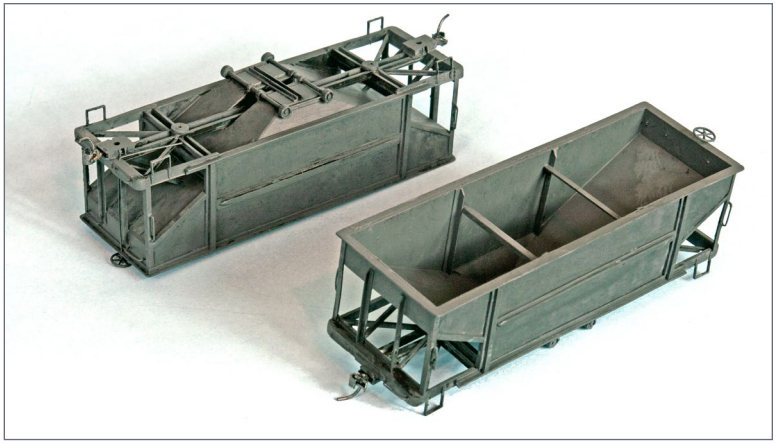


32. Assemblies of various telescoping rods and tubes make an approximation of the door operating mechanism. These are small enough and somewhat hidden, so the additional effort to make an accurate model seemed pointless. Other than the basic shape, I also had little documentation to draw on.



33. Tichy Grab irons, stirrups, and a brake wheel have been added. I used Jack Work's wood car as a guide for a plausible setup. Narrow gauge and other non-interchange cars were not subjected to AAR safety appliance rules. The simple ironwork looks good, and saved a considerable amount of tedious detail work. No need for an air brake system or cut levers either.

STEP 7: PAINTING



34. Couplers are installed and the completed cars have been washed and primed with Walmart Color Place flat black spray cans. I find the fine pigments of the Walmart sprays work well for priming models.

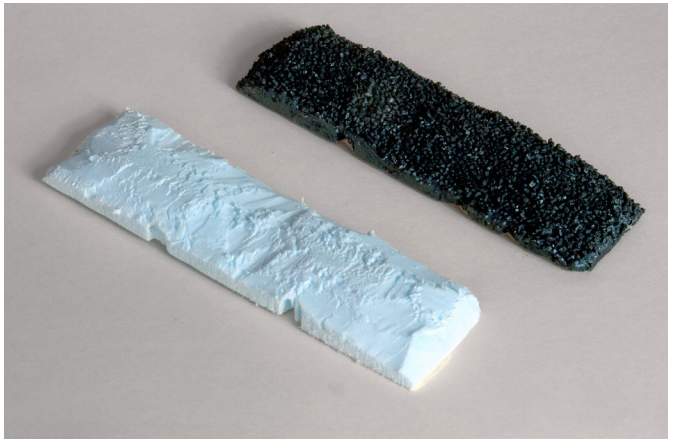
35. The cars were painted with Delta CeramCoat Charcoal acrylic craft paint. This is a close match to Polly S Grimy Black. I had mostly switched to craft paint years ago, so I was not very concerned when Floquil left the paint business. The decals were printed from my design on an Alps printer by Jonathan White.

STEP 7: PAINTING *CONTINUED...*

36. Car 304 was weathered with a "rust" wash of raw sienna and "mud" splatters of Americana Antique White. A coal load has been added. The cars are spotted at my South Shore Coal Company trestle.

37. Car 244 has also been weathered, this time with a wash of Americana Burnt Orange and Red Rust paint.

38. Removable coal loads were carved from foam insulation and painted black. Bachmann coal was glued over this using dilute white glue.



39. An artier view of the cars with sky added.

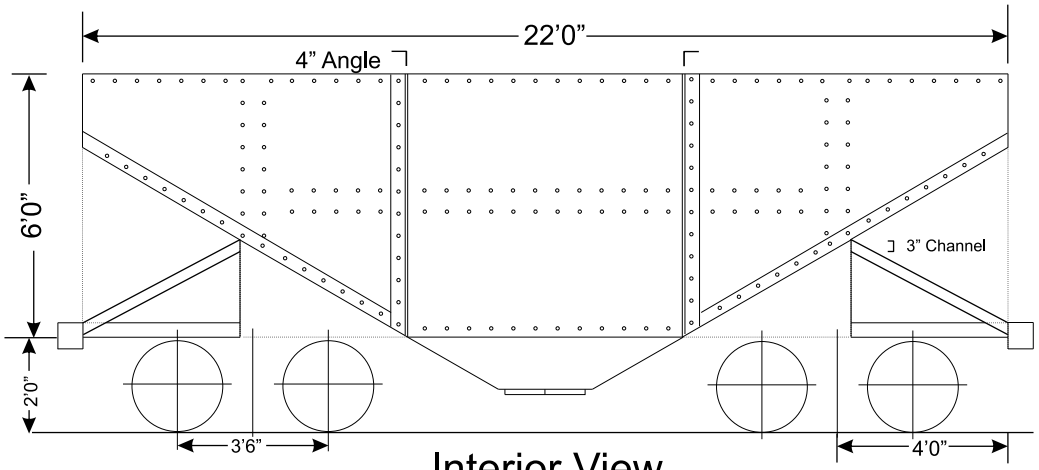
40. Final beauty shot. Marshfield and Old Colony Shay #15 pulls a hopper car across the North River causeway between Situate and Marshfield. The still-standing Fairview Inn can be seen in the background. ☑

See next page for hopper plans ...

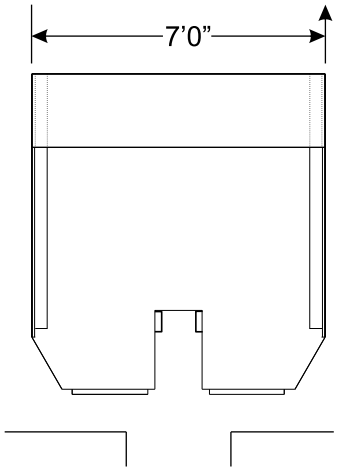
MICHAEL TYLICK, MMR

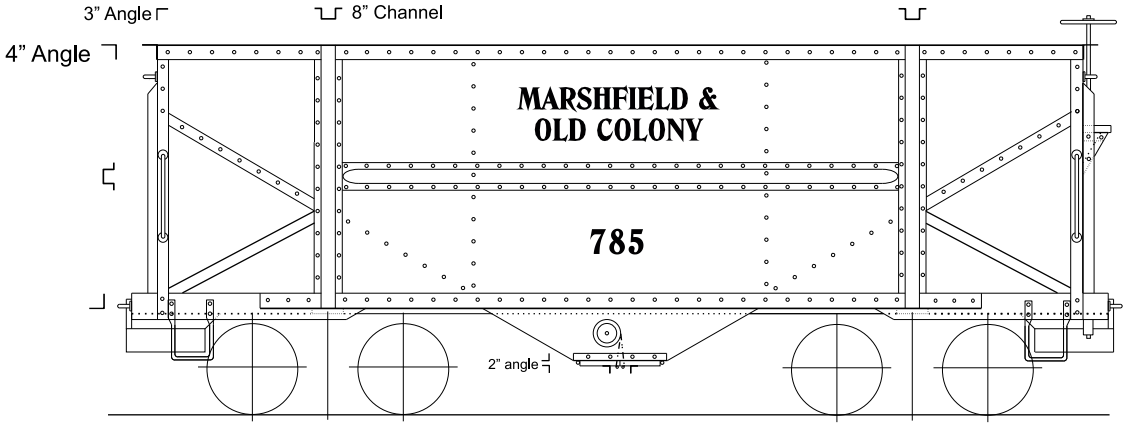
Michael Tylick has built a number of smaller layouts of various types and scales over the years. Mike has been a long-time contributor to *Model Railroader, Railroad Model Craftsman,* the National Model Railroad Association Bulletin, and other hobby publications. He has also presented numerous clinics and presentations on various railroad and historical subjects.

He now works as a custom builder of railroad structures and rolling stock, and is the owner of RailDesign Services, for design and graphic aspects of model railroading. ■

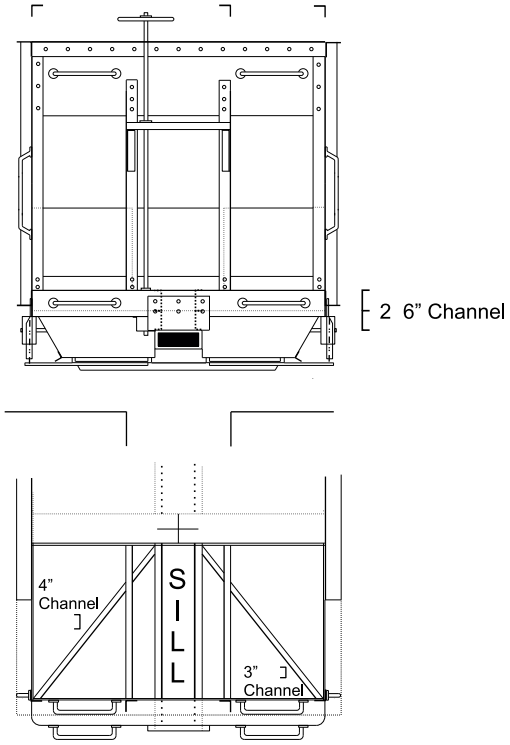


Interior View



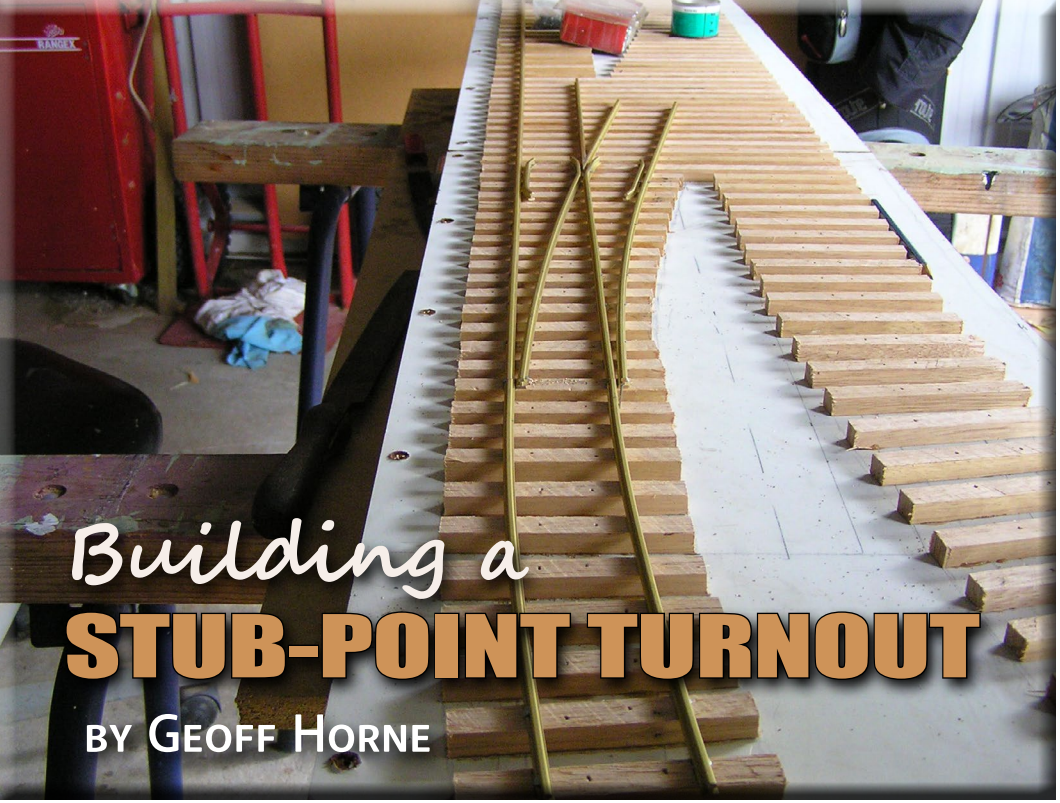


San Juan Car Co.
On30 D&RGW
37"Archbar Truck
K201-30



Plan View of End

STEEL HOPPER PLANS



Building a STUB-POINT TURNOUT

BY GEOFF HORNE

Click here for reader comments

Building a large-scale turnout ...

BEFORE THE ADVENT OF THE MODERN TURNOUT stub-point turnouts were the norm. In fact they were common on many narrow gauge lines long after they were no longer used on standard gauge railroads. Most modellers have shied away from this type of turnout, but they are not difficult build.

The tools required are very basic:

- One good-quality flat smooth file
- Small hobby-sized hacksaw
- Or Dremel motor tool or similar with cutoff wheels
- Small drills, 1mm and 1.5mm and 2mm
- Good-quality soldering iron, minimum 150w
- Solder and paste soldering flux
- Fine wet-and-dry sandpaper
- Vise
- Track gauge – flat or roller gauge
- Track spikes

You will require some timber sleepers (ties). In my case I usually cut them from Tasmanian Oak hardwood if they are to be used on an inside layout, or treated oak hardwood if used outside. I cut all of mine on a table saw to a size of 10mm x 12mm (13/32" x 15/32") and cut them to a length of 100mm (4") by using a drop-saw with a very fine blade.

I mark out where I intend to build the points, and lay the sleepers. When I build a turnout for outside, I glue them with waterproof white glue and then nail them with a small finishing style nail gun. This is a handy piece of equipment and are now available for under $50.

You can see in [1] that this section of track for Kato Creek is designed to have two sets of points to form a crossover. These will both throw at the same time with the use of two air cylinders. The baseboard is Weathertex weathertex.com.au. I use the 9mm because of its superior resistance to anything that nature can throw at it. The sleepers in this case are home-cut Tasmanian Oak hardwood.

First I lay out and fix in place the straight rail. In this instance, the section of track is curved at each end. I make sure that it

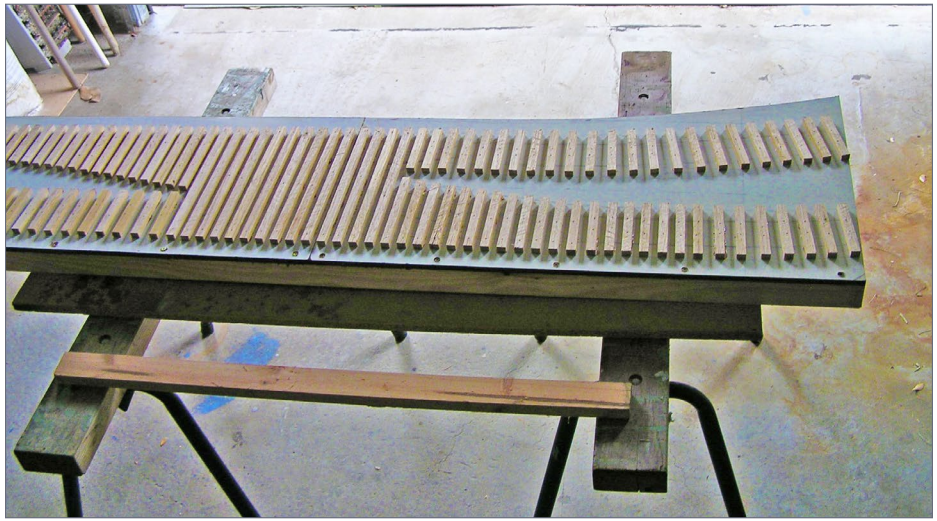
has all of the necessary curves done before spiking it in place. To begin I only spike the rail at least 10 ties away from the point where the straight track and the curved track are likely to spread out of gauge. The suppliers of the spikes are such companies as Peco (UK), Llagas Creek (US) and Micro Engineering (US). I am sure that there are others.

1. Here are the sleepers (ties) laid out on the weathertex board.

I sometimes use 15mm x 18 gauge 'T' nails intended for my nail gun. It just takes a bit of time to take them off the strip. The advantage to using these is that they are square and bite very nicely into pre-drilled holes. If you look around the tool stores, you can also get them galvanized. They still rust, but it seems to be only surface rust.

[4] shows how I use a Llagas Creek track roller to pre-bend the rail before spiking it in place.

I next lay the curved rail and also spike it

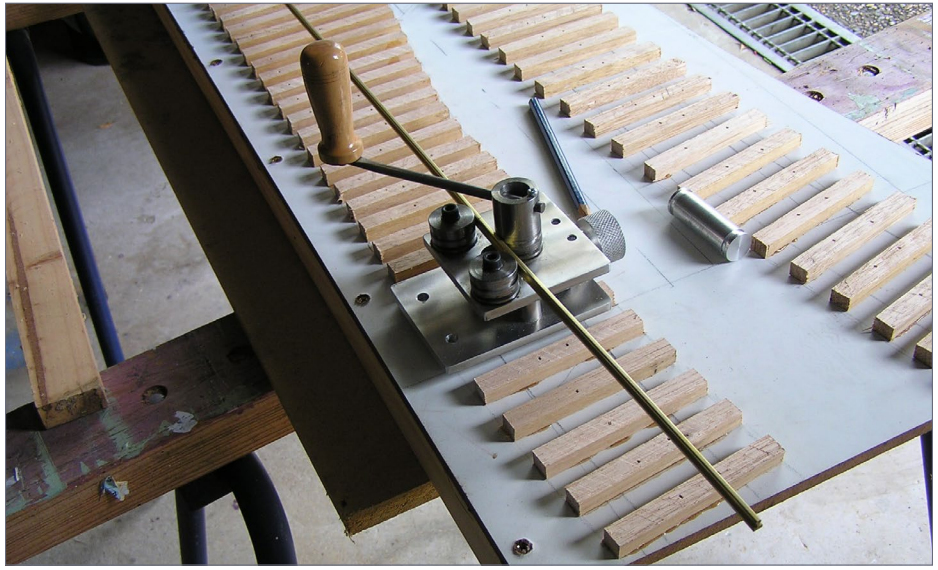


2. I set the turnout on a pair of work benches for ease and comfort spiking the rails to the ties.

3. The spikes are cut from a strip of nails that are used in my nail gun.

once near where the roller gauge indicates that they are diverging [5]. I drill the flange of the rail and spike it into place on the two sleepers. This will then leave eight sleepers that the rail is not fixed to. This is so that the rail can flex; you will see why later. Now I need to spike the straight rail, in this case at tie number 11, and then carefully use either a small hacksaw [7] or a Dremel motor tool to cut through both rails.

Now I spike the curved rail into position. This is done by moving the rail away from the straight one and rolling the gauge so that it clears the outside of it [8]. This is designed to emulate the width of the wheels of the locos and rolling stock, and also provide a clearance so that nothing gets jammed up. This measurement can vary if you decide that you are going to model in fine-scale. Then, you may then have to make your own gauges. I



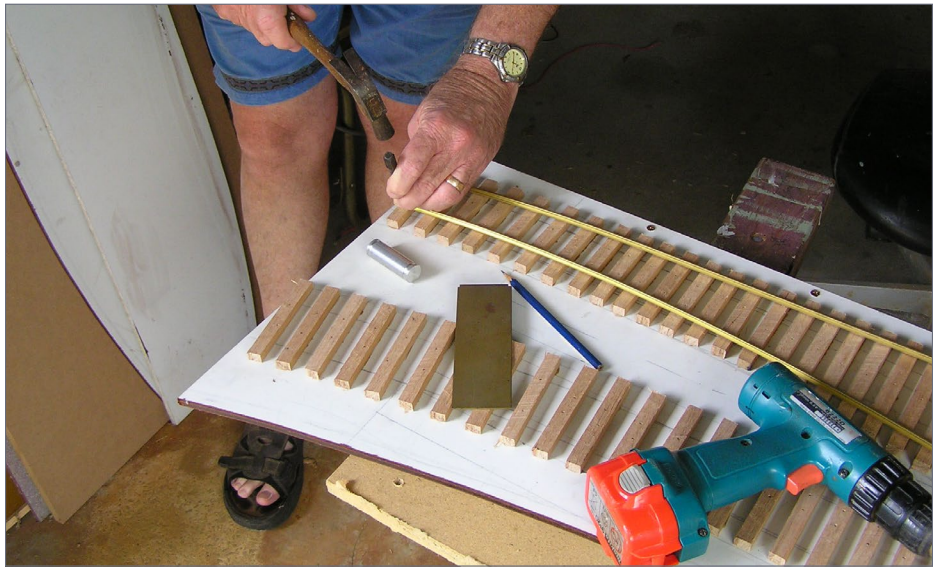
4. I use a Llagas Creek track roller to bend the curved rail to match the curvature of the diverging route.

got my measurements from the Gauge One Model Railway Assn in the UK g1mra.com.

5. I begin by laying the diverging route first. I then use the roller gauge to locate where the tracks begin to divirge.

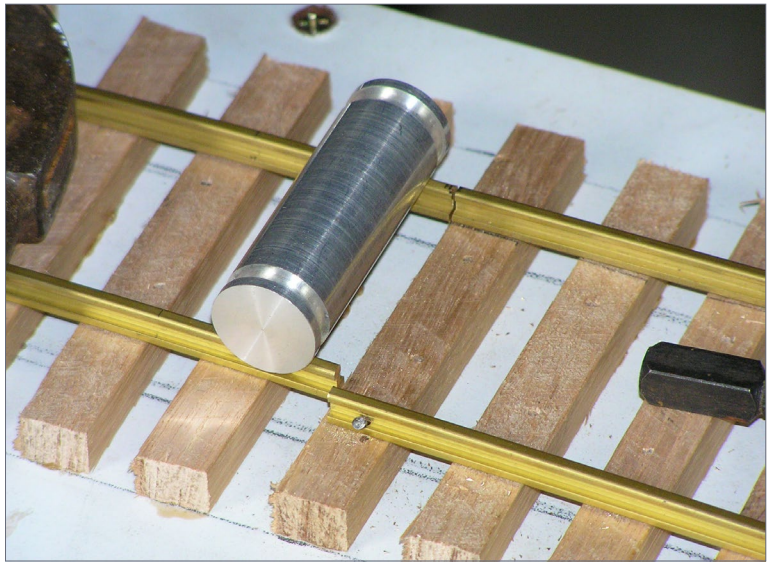
Next, I lay a piece of straight rail to match up with the incoming rail, and use a roller gauge and a flat gauge to mark where it has to be bent to form the inside wing rail at the frog. This can be done in a vise for heavier rails, but can be quite easily done with a pair of pliers if using rail such as Peco Code 200.

Now comes the good bit – making the frog. Don't freak out about it because after the first one, you will see there is nothing to be frightened about. I begin by using a piece of pre-bent rail, and mark the angle that must be filed or ground to match the points. With the two sections of rail filed, cleaned, and free from oil and grease, they are

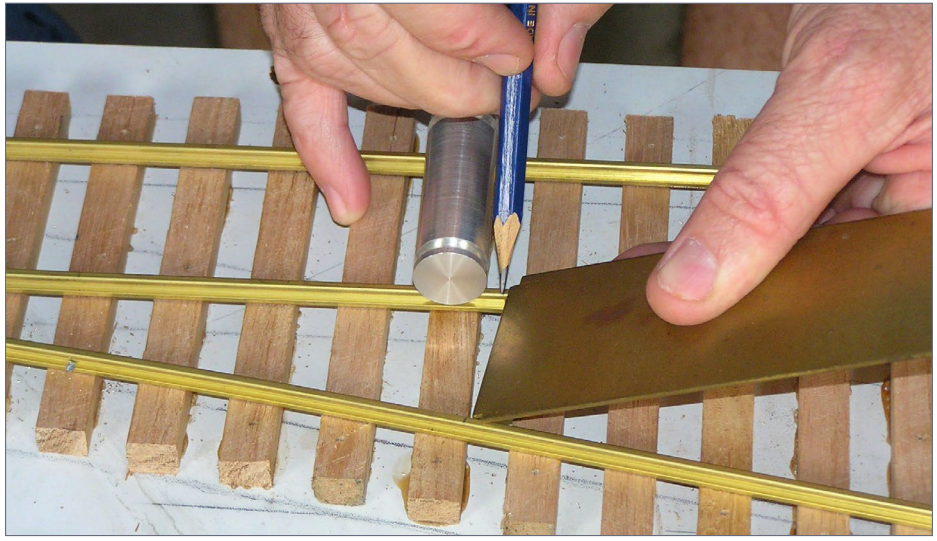


6. I drill the flange and then drive one of the spikes into the ties.

7. I use a small hacksaw to cut the rails where the rails move to switch routes.

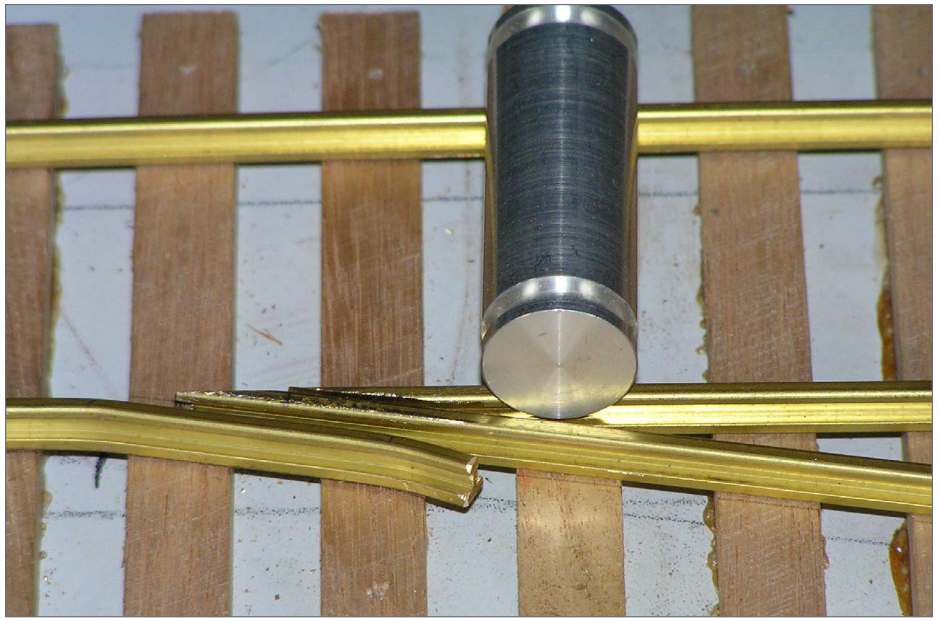


8. The gauge is used to make sure that the curved rail clears the straight rail.

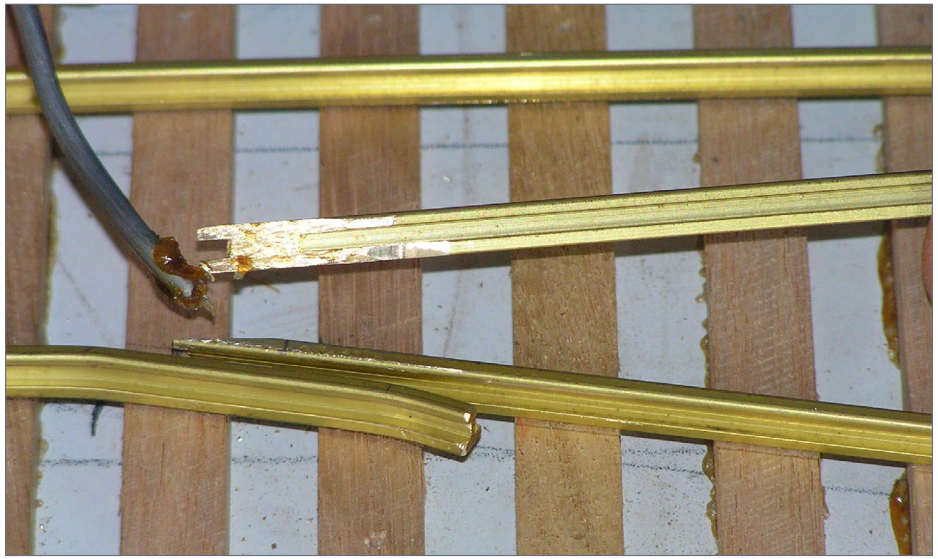


9. Locating the frog.

10. Bending the closure rail to form the guardrail.



11. I use the roller gauge to check the gauge at the frog.

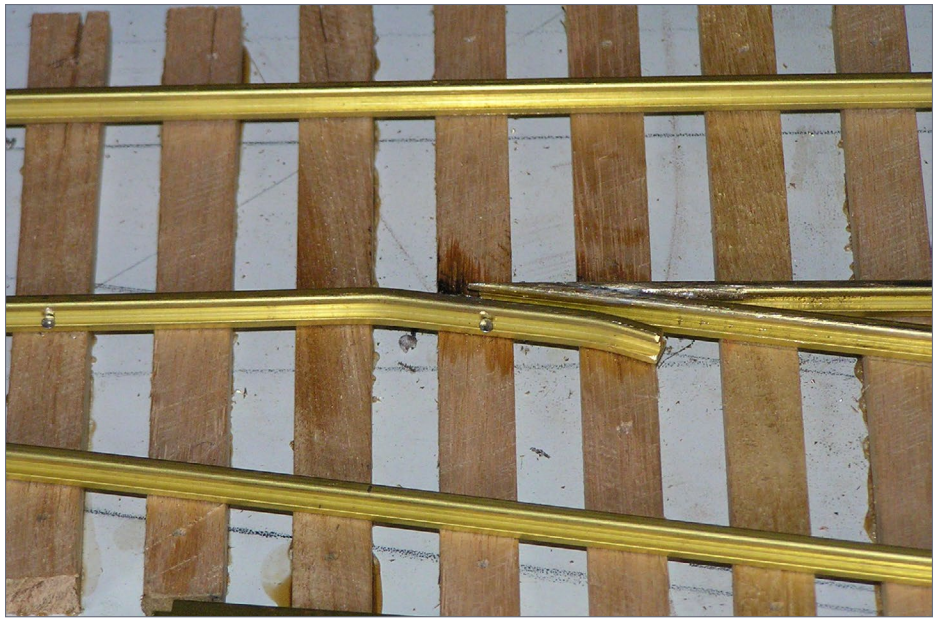


12. I apply flux prior to soldering the rails together to form the point.

ready to solder. I check that they fit correctly by running the gauge along the point [11]. I suppose that I am spoiled in that I have a 300w soldering iron, which makes very short work of this type of job.

Next I apply a good flux onto the mating surfaces, apply plenty of heat until the flux bubbles and runs like water along the rail. I apply solder (not fluxed – available at plumbing supplies) and let it run into the joint. The solder should be very shiny when cool. If it has a matte surface, that means there was not enough heat, and the joint will be very brittle and will break easily. I don't worry if I get too much solder into the joint, as it's easily removable with a file or two hacksaw blades side-by-side. I file any excess solder off the top and the edges of the rail with a flat file.

13. With large rail, a large soldering iron is required to generate enough heat for proper soldering.

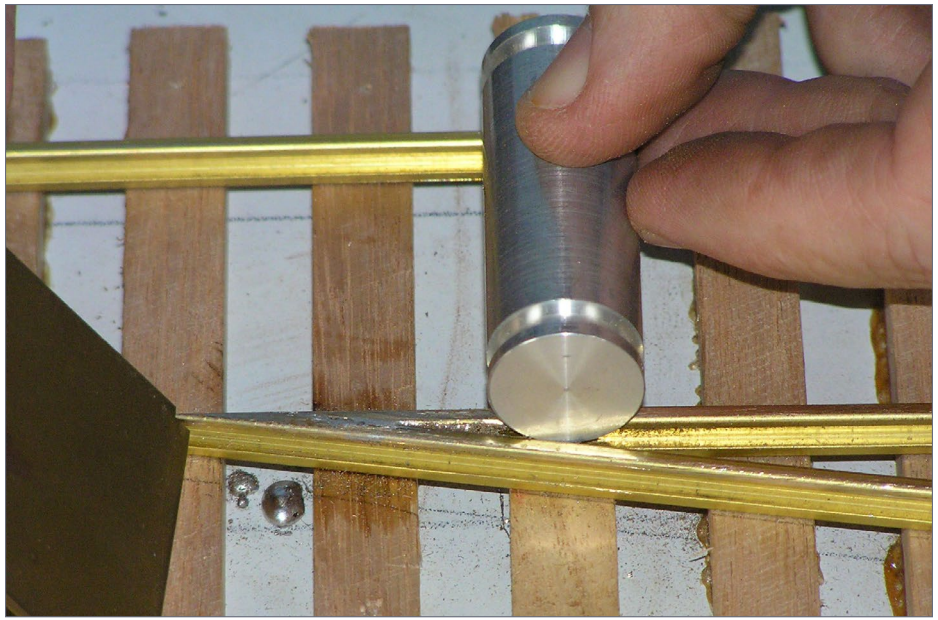


14. The straight closure rail is spiked in place.

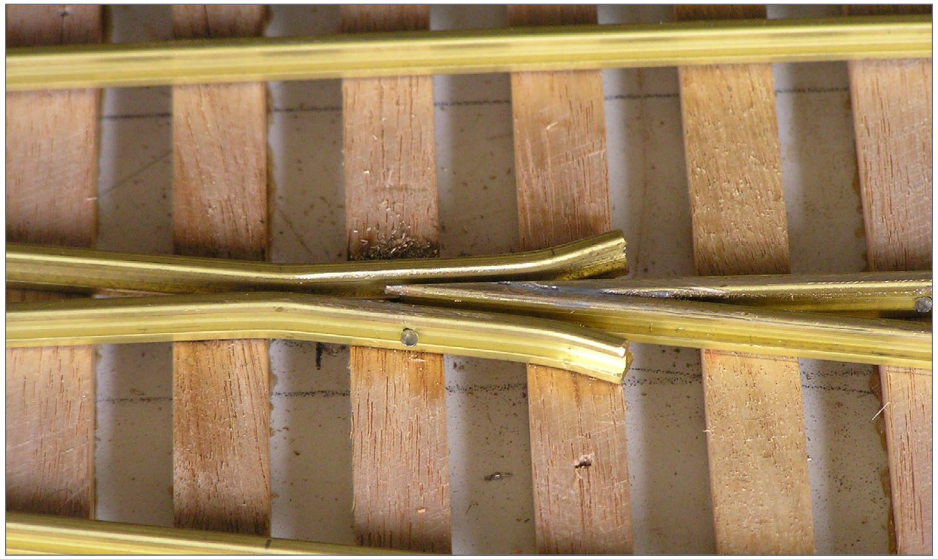
Now by using the two gauges [15] I set the point of the frog into position and drill and spike it and then set and spike the straight section of track. I repeat this exercise with the other short section of track, and spike it into position, measuring at all times with the gauges. When done correctly, I feel very pleased.

I measure and cut two short pieces of rail for the wing rails, making sure that they are long enough to be functional, maybe 90mm long (3-1/2”), then spike them into position and then try running a truck through.

I now have to either solder or screw a tie-bar across the two lead-in rails, and a good idea is to spike a flat piece of 0.010” brass over the top of it – especially if using it outside – and apply a small amount of petroleum jelly (Vaseline) on the bar first. The linkage is then attached to the bell-crank which in

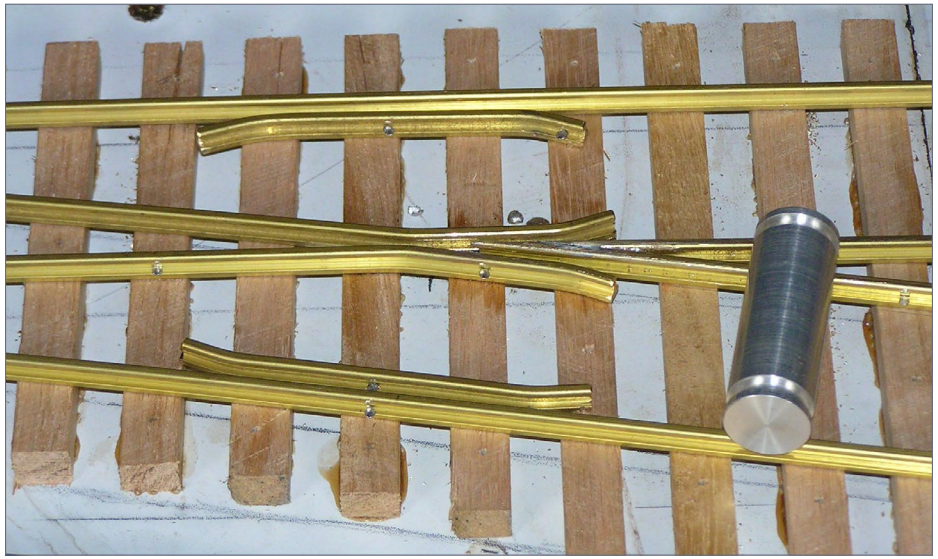


15. With the points soldered, the gauge is checked again.

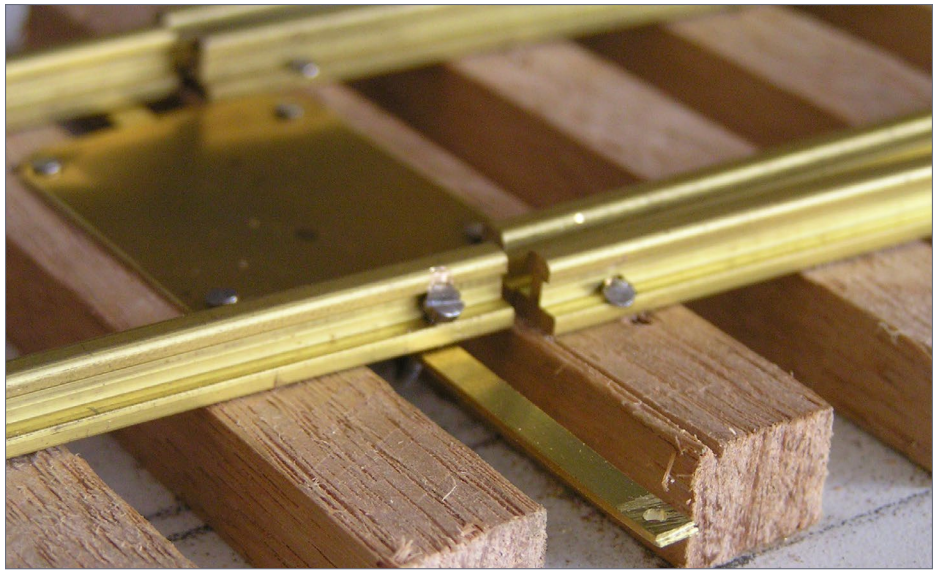


16. A close-up of the finished point and wing rails.

17. Both closure rails are now spiked into place.



18. The gauge is checked on the diverging route.

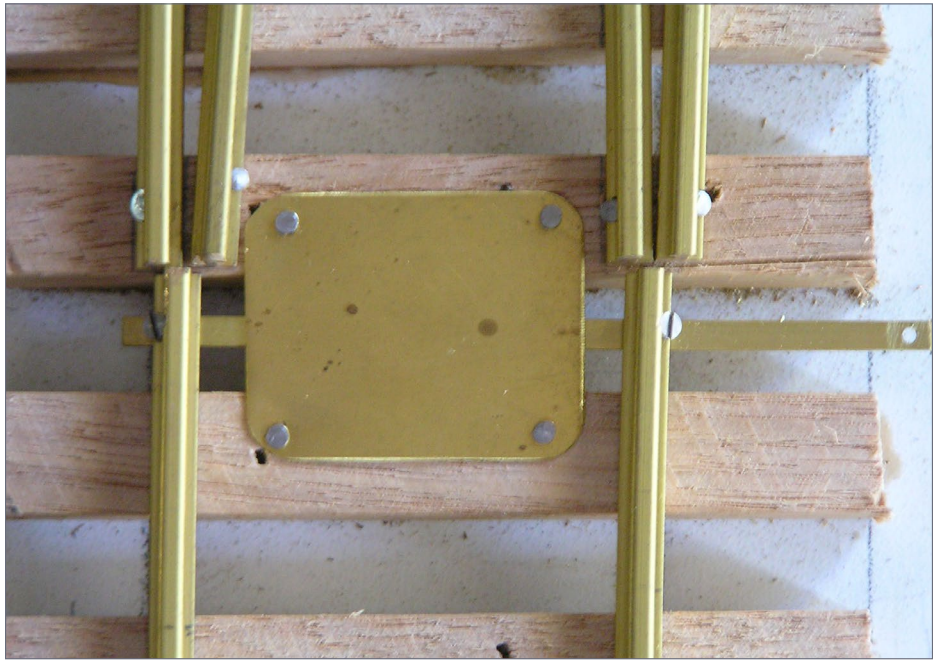


19. This closeup shows the machine screws used to attach the rails to the throwbar.

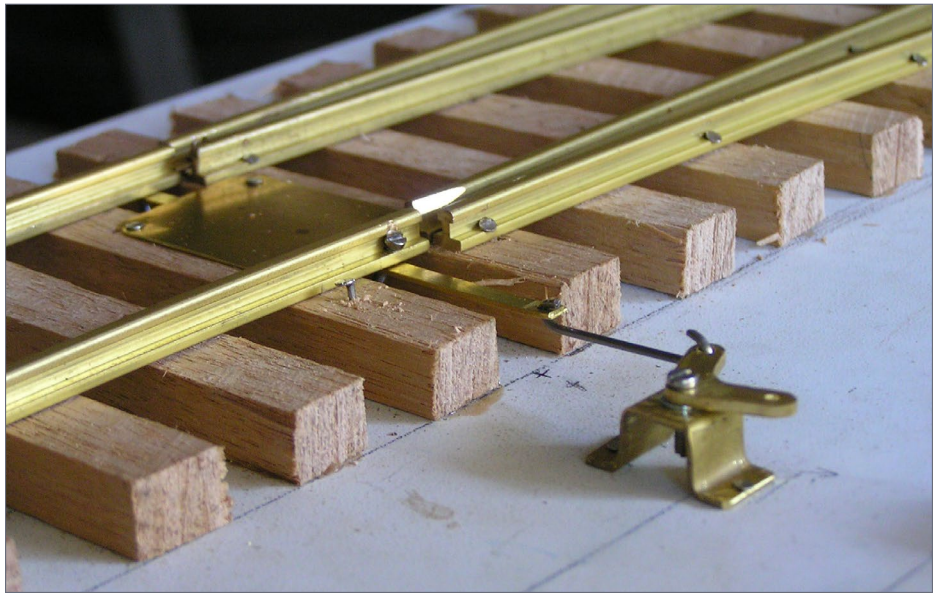
turn is connected to the air cylinder that will be used to operate them.

If I find any tight spots while checking with the gauge, it takes only a light tap with a hammer and nail punch to spread the gauge, and another tap on the top to make sure it is set into position.

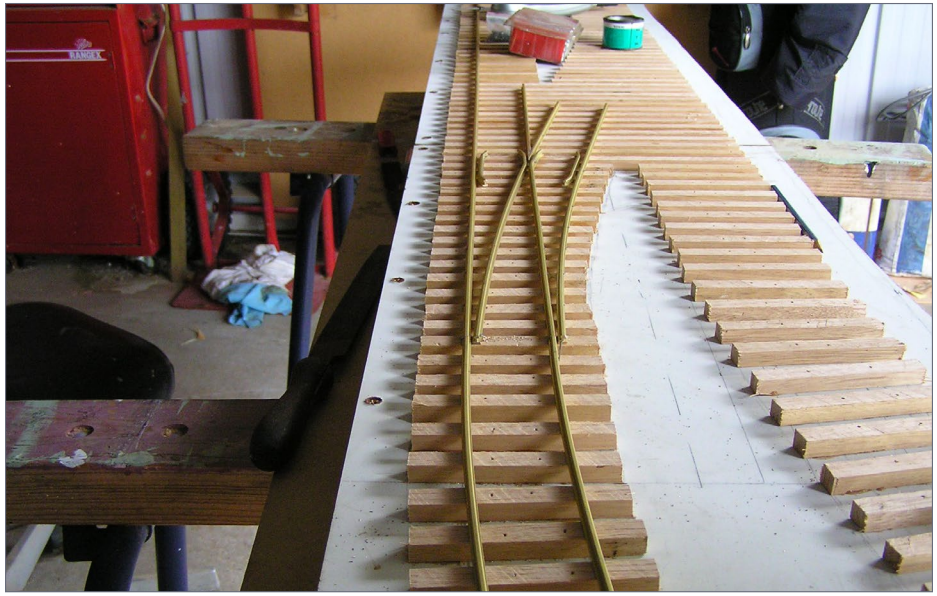
I am sure that you will be pleasantly surprised as to how easily these turnouts go together, and will soon be looking at somewhere else to put a set. Now play with them, because you have just completed a very pleasurable project. ☑



20. This is the throwbar assembly used to "bend" the rails.



21. The turnout linkage is attached to the throw bar.



22. Looking down the completed turnout.

GEOFF HORNE

Geoff Horne lives on the eastern coast of Australia, and until he and his wife were married, he lived directly opposite the Main Northern Rail Line between Sydney and Brisbane. He received his first train set as a Christmas present at the age of 12, and at 67, the train disease is alive and well.

In the early days, money didn't go very far so he scratchbuilt whatever he needed with the supplies at hand. Many years later he still scratchbuilds many items, and this adds to his enjoyment of the hobby. He also uses a 3D printer, doing the initial drawings and then printing multiple items at a time.

Initially he modeled in HO, but due to a lack of space he is modelling in N scale now. He has also dabbled in live steam garden rail for about five years. ▪

Click here for reader comments

Save money by making your own ballast

BY GREG LUERS

A wonderful way to cut costs ...

FOR RAILROADS, BALLAST IS ESSENTIAL TO keep the track level, to distribute the loads of the trains that pass over, and to maintain proper drainage along the right-of-way to keep the ground from eroding around the tracks.

As model railroaders we strive to replicate this look on our layouts. However, buying ballast from the manufacturers out there can be expensive, especially if you need a lot. Some of the manufacturers don't even use real rock, using crushed walnut shells instead, which can be harder to glue down. With a little elbow grease, rock from gravel roads can sifted down small enough to use as ballast on our model tracks, and to create gravel roads.

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Materials

- Two sizes of strainers (a medium one to sift the raw rock, and a finer one to sift the material after we sift the raw rock); from your local department store
- Multiple containers to hold the ballast
- A bucket
- A shovel
- A gravel road

Where I found the material

I visit my dad's farm where there are gravel roads. I could have used the gravel in my driveway, but it's too dark; the gravel at the farm matches the color I am trying to achieve. I am after a light-gray blend used on CSX here in Indiana. On the farm there are several colors of gravel, so I scour the ground looking for the correct blend. I pick up some loose gravel and examine the colors in my hand to make sure they are what I want.

Collecting the best material

Once I have found the correct blend and color, I use my shovel to scrape the top layer of gravel into a pile so I can scoop it up and dump it into my bucket. The gravel on most roads is so packed down that scraping the top layer won't affect vehicle travel. I'm after fine to ultra-fine. I try my best not to scoop up

1. Tools I use to sift the rock into ballast.

2. Side-by-side comparison of the two strainers' mesh sizes.

3. This is the road where I got the gravel.

large rocks, since they would be disposed of after the first sifting. If larger rocks are in your modeling scheme, then they may be of interest to you. Once my bucket is full, I load the bucket and shovel into the trunk of my car to take home.

Coarse straining the material

Upon arriving home, I grab my medium strainer and large

4. Scraping the top layer of gravel.

bowl for the sifted material to fall into. I also need a container to hold the rocks I don't want. Using the strainer, I take a scoop of rock out of the bucket, and hold the strainer above the bowl and shake it so the sifted material falls into the bowl. When the material stops falling in the bowl, it's time to dump the material off the strainer. Dump the rocks left in the strainer into the other container.

Fine-straining the material

After I have sifted all the large rocks out, I move on to sieve number two. I have my bowl with my material from sieve one,

5. My full bucket of gravel. This is heavy, so I'm careful when I pick it up.

6. This is my medium-mesh strainer, bucket of gravel, and my collection bucket that the sifted material falls into.

7. My ballast in the bowl. This will go through sieve number two in a bit.

my fine strainer, and two empty containers. One is for the extra-fine material used for N scale ballast, HO scale roads, or siding tracks, and one is for the HO scale ballast. I rest my strainer on one of the bowls and use a cup to transfer the material from the initial sifting into my fine sieve. I shake the sieve, causing the extra-fine material to fall into bowl number one. Once all the material has stopped falling, all that remains in the strainer is the HO scale ballast, which I dump from the strainer into bowl number two.

All I have to do is repeat these steps, and before long I have filled large bowls with ballast and never have to buy ballast again. This can be a pretty tedious process, but the extra effort is definitely

8. The pile on the left is the final product from my process. The pile on the right was created used a different blend of rock from a different gravel road. This is my HO scale ballast.

9. This is the extra-fine N scale ballast, or gravel for roads and other uses. You can see the HO ballast to the right

10. Here is an example of my attempt to match ballast from a CSX line in Cedar Lake, IN. The prototype is on the left and my sifted ballast on the right. While it's not a 100% match, it shows that if you can find gravel somewhere with similar colors to your prototype rail line ballast, you can get a very realistic result to display on your layout.

worth the reward. Making your own ballast can be an easy way to save money and add realism to your layout or diorama.

By carefully selecting where you find your rock – your gravel road of choice – you can match the ballast color from the prototype to your model railway. I have personally used sifted ballast at the Purdue Railroad Club and with some of my personal projects with great success. At the club we have used the HO ballast on the main lines and used the N scale ballast on our grain elevator gravel lot, industry spurs, and other various gravel roads on the layout. ☑

Playback problems? Click here ...

GREG LUERS

Greg Luers is a 23-year-old graduate from Purdue University with a bachelors degree in computer graphics. He has been interested in trains for pretty much his whole life. Greg's interest in trains came from watching them go by on his dad's property in Terre Haute, IN. He became interested in modeling about seven or eight years ago when he saw some photos online and couldn't believe that what he was looking at was a model.

Greg currently belongs to two model railroad clubs, the CIY (Central Indiana Yardmasters Club) located in Kokomo, IN, and the Purdue Railroad Club at Purdue University West Lafayette, IN. ■

Click here for reader comments

THE SCRAP YARD

BY MATTHEW NITKA

Click here for reader comments

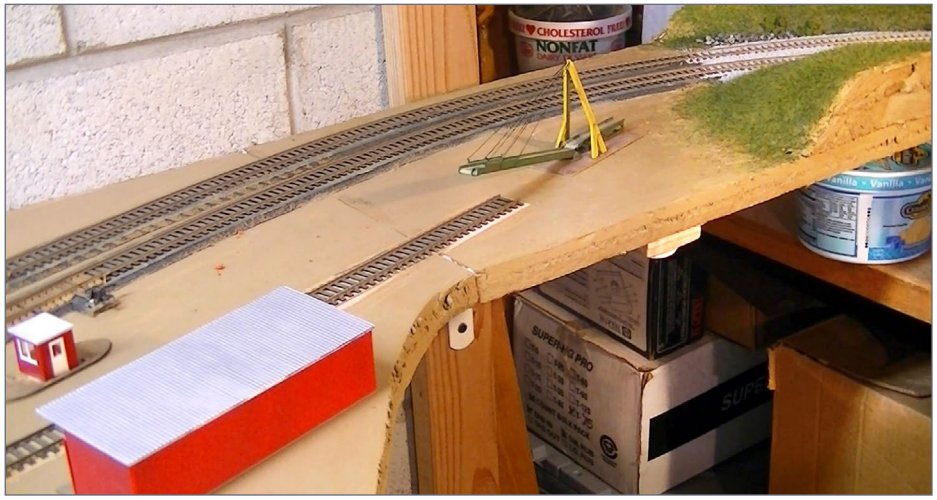
A great railroad-served industry ...

GONDOLAS. THE PROVERBIAL DONKEY OF THE railroad. They are abused, banged, dented, pierced, sagging, and overall neglected, yet they carry everything from scrap metal to finished coils. I-beams to crossties. Pipe to poles. Gondolas do it all. But like any revenue freight car, gondolas are nothing without customers to provide those loads. One such customer is the scrap yard.

For years, long before recycling became the en vogue idea of the 2000s, scrap yards have been turning old material into scrap suitable for shipment and reuse. The beauty of a scrap yard on a model layout is they have no set footprint. Scrap yards are often stuck in-between businesses, tucked under a bridge, located in a remote setoff area of town. They need road access for trucks, and a siding from the railroad, but beyond that, their structure requirements can be quite low. This makes them an ideal industry to model, and offers a wide variety of flexibility.

On my Wisconsin Central-based layout, I have a siding that is less than ideal for a larger structure. It is not against a backdrop lending itself to a background building, and the benchwork itself called for a large section to be removed for access to shelving behind my layout. As I gave it more thought I realized that much like real life, a scrap yard would be ideal for this location.

For reference, there is a scrap yard located near my place of employment which can be seen on Google Maps:



1. This is the area of the layout that I've decided would best host a scrap yard. The lead coming off the main is capable of holding two or three gondolas.

google.com/maps/preview#!data=!1m4!1m3!1d570!2d-88.049919!3d43.1786544!2m1!1e3&fid=7.

The Google satellite view provides an invaluable reference for how a simple scrap yard can look and still function as a track-side industry. As can be seen from the satellite view, the scrap yard has one small building, several piles of scrap, miscellaneous vehicles for loading and unloading, and a siding. Very simple. This particular scrap yard, AMG Resources Co., is served by the Wisconsin and Southern Railroad.

For modeling purposes, Walthers recently released a Scrap Yard series of Cornerstone Series kits, including a fencing system and a scrap conveyor. I purchased both of these from my local hobby shop and then found two out-buildings I could use from a Walthers' Mill Bros, Lumber Company kit I had not used.

The final key to this project: scrap. Walthers offers scrap piles, but I wanted something less uniform and more distinctive. The piles shown via the satellite view of revealed the scrap to be bright and shiny. I did a quick search of eBay and came upon MoTrak Models who creates scrap loads for gondolas. I dropped him an email and inquired if he would be willing to sell me the raw materials that he uses. He was happy to, so I purchased a bag of the material and set about making some scrap piles.

To create the scrap piles, I started with pieces of pink extruded Styrofoam as a base. Using a knife and rasp, I contoured the Styrofoam into mounds. Once I had the piles shaped, I wanted to hide the pink color, so I covered the Styrofoam with basic craft acrylic gray paint. I wanted to be sure that any areas not covered by scrap material would show as gray and not pink. Pink Styrofoam showing through would ruin the illusion that the piles were all scrap metal.

2. The Styrofoam is contoured into three small scrap piles. Next up is a layer of gray acrylic paint.

Before the paint dried, I spread a layer of Elmer's Wood Glue over the entire pile surface. Once the pile was thoroughly coated in paint and wood glue, I began sprinkling on the scrap material. I wanted to keep a good texture to the material, so I avoided pressing the scrap into the glue. To help draw the glue onto the scrap material, I sprayed the piles with a water/alcohol mixture, then followed up with matte medium.

While I waited for the scrap piles to dry completely, I set about creating the scrap yard scene.

I decided to start the scene by installing an asphalt roadway leading into the yard. In the October 2010 *Model Railroader,* Tom Johnson wrote an article entitled "Continue Your Roads into the Backdrop." In this article, Tom described a process of using N scale ballast to create an asphalt road. His results were very realistic, so I decided to try this method with some alterations.

I chose two Woodland Scenics colors of N Scale ballast: Cinders and Medium gray. I mixed the two colors 1:1 in a container.

I deviated from Tom's article by first laying down a roadway of Ultracal 30. This is a casting plaster made by USG which is lightweight and has the added advantage of not shrinking as it dries. I mixed it per the manufacturer's specifications, but made it a bit more soupy. My intent was to sprinkle the wet surface of the Ultracal with my ballast mixture and press it into place. This would give me an asphalt road with some thickness, but not require as much ballast to build it up.

After sprinkling on the ballast mixture, I pressed the granules into place with the flat bottom of a measuring cup. Aside from pressing the ballast into place and helping embed it in the Ultracal, it also flattened the surface of the roadway.

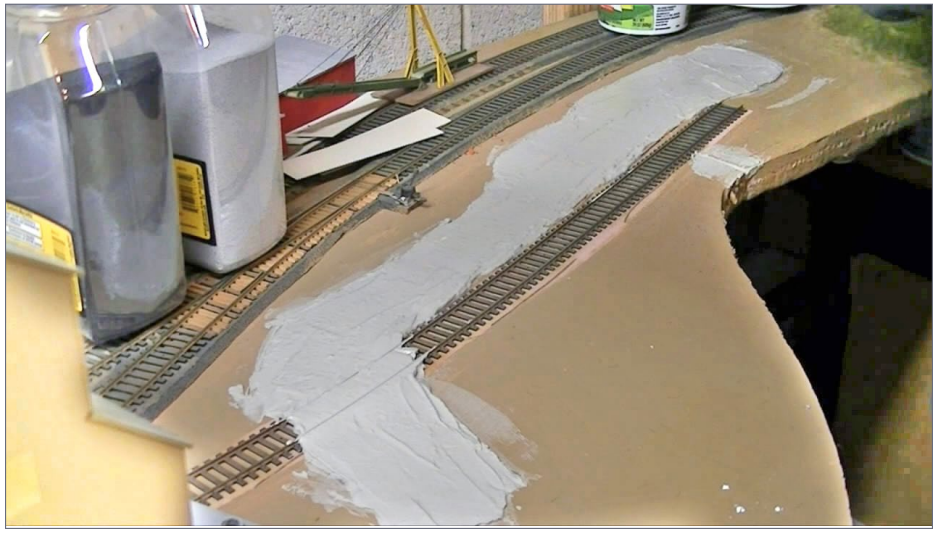
3. The piles of scrap painted, coated in wood glue, scrap material, and a liberal soaking of matte medium.

4. The cinders and medium-gray ballast mixture.

As the Ultracal began to cure, I used an X-Acto #5 blade to carefully cut away clearance for the wheel flanges where the roadway went across the tracks. The Ultracal has a quick setup time, so it can be cut very cleanly with a sharp blade shortly after application. I recommend doing this before the Ultracal dries completely. Once dry, the Ultracal is very strong and can be difficult to shape.

While the Ultracal roadway dried, the next phase of the project was general scenery and building placement. I placed the now-dry scrap piles, and positioned my outbuilding and guard shack near the road. I marked where these items would be placed, then removed them and began to lay down a layer of real dirt.

Real dirt has the great advantage of being real and therefore looking good without much modification. It is important to first sift the dirt to remove larger pieces. After sifting the dirt in a screen I placed it into a Ziploc bag. Borrowing an idea I used



5. Ultracal has been laid down and given a once-over smoothing on the surface. The ballast is pressed into place in the following step, a perfect road surface wasn't necessary.

6. Once the ballast mixture was sprinkled in place on the Ultracal, I came back with a flat-bottomed measuring cup and pressed the ballast into the roadway. This helped flatten the road surface and secure the ballast to the Ultracal.

7. Basic scenery in place. Buildings, scrap piles, ground foam, dirt, and clumps of foliage help to draw everything together.

when helping my wife crush candy canes for Christmas cookies, I proceeded to pulverize the dirt with a hammer on our concrete basement floor. This provided me with very fine dirt.

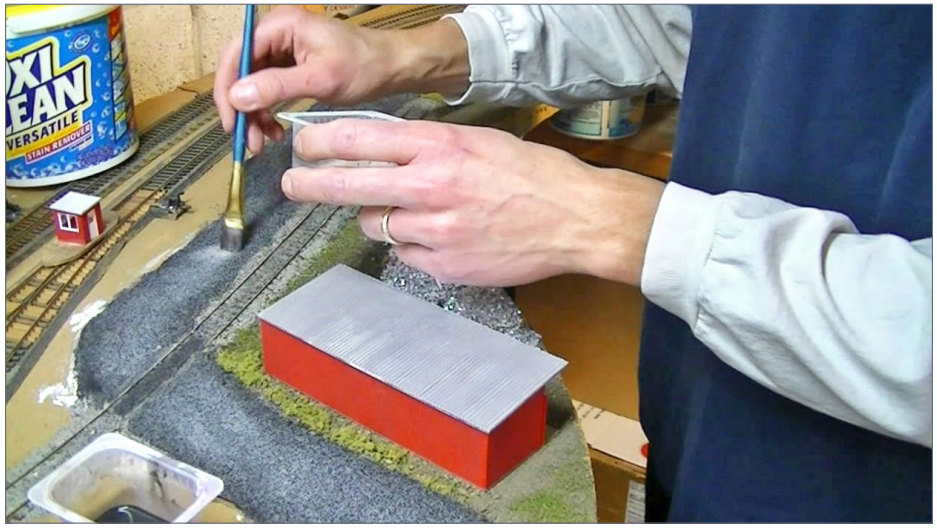
I applied the dirt in the areas I wanted, and then ballasted the track with Highball Products gray ballast. Since this is a scrap yard and a siding, I decided to go heavy with the ballast and cover the ties, giving the track a more unkempt look.

Over the dirt I applied areas of clump foliage and ground foam, and placed the scrap piles in place. To keep the piles from looking like they were just placed there, I added extra scrap material around the base of each pile to help blend them into the surrounding area. I applied a spray of alcohol/water mixture and gave everything a good soaking of matte medium to bond it all in place. In addition to securing the ground cover, I also went over the roadway with a layer of matte medium as well. The Ultracal was holding the ballast well, but this helps to adhere everything.

After a day of drying time, the Ultracal and ballast were dry and ready for the second step of creating the asphalt road. I prepared two wash mixtures using acrylic craft paint, one black and one gray. I mixed them about 50/50, but any mixture close to 50/50 will work. A thinner mixture of paint will require more coats to be applied, but is more forgiving as you will apply color in lighter coats.

I applied the wash of black to the outer edges of the roadway, since these areas see less traffic than the center of the road. After the black wash application, I came back with a larger brush and applied the gray mixture down the center. This gray wash helped draw together the mixture of ballast and give the road a uniform look without destroying the overall color of the asphalt.

8. A black wash of acrylic and water mixed is applied to the outer edge of the roadway. I also applied this to the area between the rails, as that will collect oil and dirt as trucks hit the railheads.



9. After applying the black wash, I brushed on a gray wash mixture. I concentrated on the center of the roadway that sees the most wear and tear.

Now that the basic scenery was in place, the Walthers fencing could be installed. The fence comes in four-panel sections, which allows for non-rectangular scenes. Around the outbuilding, I trimmed one section of the fence to be two panels in length and another section to be one panel. The remaining sections were installed as full four-panel sections. This gave the scrap yard a completed look and closed off the area nicely.

I gave the entire scene time to dry completely so I could come back with static grass to add a bit of texture to the scenery. I have found that using Elmer's Wood Glue straight from the container works best, and I cut the surface tension with my alcohol/water mixture. I randomly placed spots of glue and came through with my Noch static grass applicator.

For variety, I use a product sold at Michael Craft Stores called Pot Toppers. These are nine- to 11-inch disks sold for use in artificial flower arrangements and placed over the green foam used in the pot. The hidden beauty of these is they have the appearance of static grass. At their price of a few dollars, they are a very inexpensive way to get static grass clumps on your layout.

The Pot Toppers need to be cut open and have the poly fill removed. Once removed, you are left with the grass surface which can then be cut or torn off and placed on the layout. I hold small clumps of grass in place with the wood glue.

Not all scrap yards are as simplistic as the one I created. Some involve more elaborate processing and sorting buildings, and can handle scrap from multiple different sources. As seen in the

10. The Walthers fence panels have been installed. The layout is set on a one-inch Styrofoam base, so the fence was pressed into place. The area was still wet with matte medium, so no additional glue was used to secure the sections.

11. Here is a piece of the Pot Topper grass against the outbuilding. Static grass has been applied next to it, and the two complement each other with the different texture and length.

12. Fencing and scrap conveyor from Walthers, homemade scrap piles, and an old Roundhouse 50' gondola finish the scrap yard scene.

Google Maps link at the beginning of this article, they can also be a simple business trans-loading from truck to gondola. Regardless of their complexity, scrap yards can provide a great industry to switch and give us a source of loads for all our careworn gondolas. ☑

MATTHEW NITKA

Matthew started model railroading at three years of age when his parents opened a bank account with the sole purpose of getting the free train set. He was hooked instantly and has been hooked ever since.

Growing up, he had many temporary layouts on 4'x8' sheets of plywood, but he was able to eventually convince his father to let him put up a more permanent layout that didn't need to be removed for holiday parties.

Once he was married and had a house of his own, it didn't take long for Matthew to take over much of the basement. He modeled the Wisconsin Central Railroad in the mid-to-late-90s, prior to it being purchased by the Canadian National. His layout is based in Southern and Central Wisconsin, centered around the paper, aggregate, and pulp industries that the Wisconsin Central served.

Besides model railroading, Matthew is an avid cyclist, racing competitively in the Wisconsin Cycling Association Criterium Circuit.

Hobbies aside, he is a husband and father. He and his wife Eva have three children, Rachel (10), Naomi (8) and Josh (6). Josh has taken an interest in trains as well, and enjoys trips down to Rochelle, Illinois to railfan at their Railroad Park. ■

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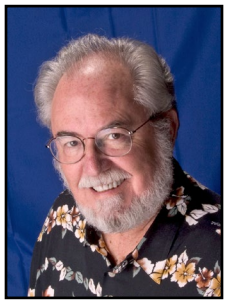


FEBRUARY NEWS
column

Richard Bale *and* Jeff Shultz

Click here for reader comments

Atlas acquires BLMA

Atlas Model Railroad Company of Hillside, New Jersey, has purchased BLMA Models of Fullerton, California. Founded by Craig Martyn in 2000, BLMA manufactures HO, N, and Z scale rolling stock and accessories. According to the official announcement Atlas will release all current BLMA inventory and will continue with production plans outlined by BLMA prior to the sale. Commenting on the quality and level of detail in BLMA products, Atlas CEO Paul Graf stated that the BLMA line of HO and N scale rolling stock will become part of the Atlas Master line. Martyn will work as a consultant to Atlas and will help bring some of BLMA's planned new products to fruition. Atlas has been an established supplier of model railroad products for more than 60 years. Since purchasing the tooling for Branchline rolling stock in 2011, Atlas has succeeded in maintaining continuity of the line while

THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

blending it smoothly into the Atlas family of products. Atlas' sister company, Atlas O, purchased the Weaver brand of O scale rolling stock last fall and is introducing the first models from that acquisition during the second quarter of this year. See the report on page 5 of the News column ...

Northeastern Scale Models closes

As of February 1, Northeastern Scale Models, a manufacturer of laser-cut N and HO scale structures and miniature dollhouse kits and supplies, has discontinued all operations. The announcement did not provide any specific reason for the closure. Northeastern Scale Models was established in Methuen, MA more than 60 years ago as a supplier of specialized building materials for architects, model railroaders, miniaturists, and other hobbyists. In recent years the building materials portion of the business (Northeastern Scale Lumber-NSL) and the now-closed structure and dollhouse division (Northeastern Scale Models) split with the latter enterprise moving to Chico, CA. The two businesses are under different ownership, and NSL is not affected by this change. NSL's current product line can be viewed at northeasternscalelumber.com ...

Trout Creek Engineering

In this day and age it is difficult to run a business without a website. Cliff Mestel, who owns and operates Trout Creek Engineering, BK TruScale, and Classic Miniatures in a remote area of Colorado learned the hard way when the local ISP that hosted his site went out of business. Cliff is rebuilding sites for his various enterprises but cautions that it will take some time.

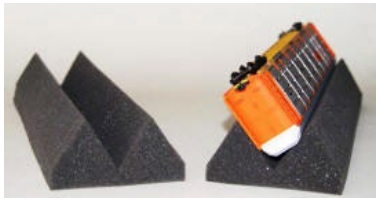
Meanwhile inquiries and orders can be sent to Cliff at bktruscale@aol.com, troutckeng@aol.com, or classicmin@aol.com ...

NEW PRODUCTS FOR ALL SCALES

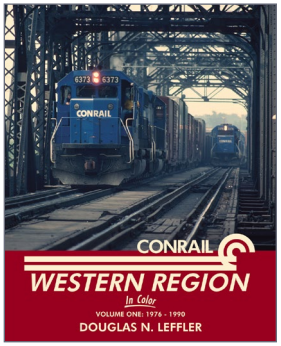
Coastmans Scenic Products has released several new scenery products. Logs made from real wood are available in a variety of lengths in diameters ranging from .1875 to .500 inches. All are made from white cedar except the smallest diameter, which is bamboo material. Custom sizes are also available.

Young evergreen trees are also new as are bird nests suitable for HO scale and larger. For complete details on these and other unique scenery items, visit coastmans.com.

K.I.S.S. Method Inc. has introduced the Super-V Mini Cradle, a car/locomotive holder specifically designed for use with N and Z scale models. The combination of soft foam and V-shaped open design holds models in any position without harming delicate details or scratching lettered car sides.

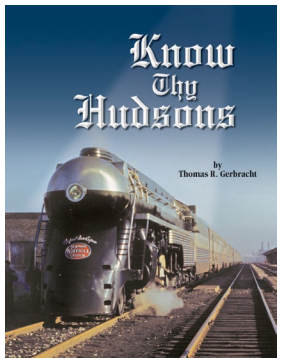


The Super-V Mini cradle is 12 inches long. Standard and Maxi cradles are also available for HO, S, O and G scale models. For additional information, visit kissmethodinc.com.



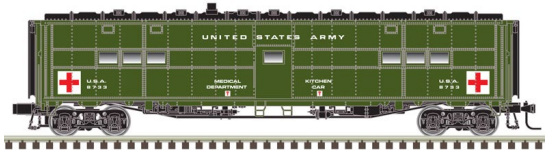
Morning Sun Publications has released several new hardcover books including *Conrail Western Region 1976-1990,* by Douglas Leffler. Conrail's Western Region initially comprised three former NYC divisions (Cleveland, Toledo, and Chicago) and one PRR (Fort Wayne). The author portrays the road's early struggle to maintain operations and conduct rehabilitation, all of which eventually paid off in the 1980s as Conrail gained momentum. Additional new hardback books include *Erie Lackawanna: Working the Extra List,* by Arthur Erdman; *Algoma Central,* by Stephen Timko; *Tank Car Color Guide – Cars with Full Center Sills,* by James Kinkaid; and *Pennsy Diesel Years,* by Robert Yanosey.

New e-books from Morning Sun include *Western Canada Rails,* by Bob Davis and *General Electric Industrial Locomotives,* by Stephen Timko. For additional information on all Morning Sun publications, visit morningsunbooks.com.



The New York Central System Historical Society has released a definitive new book about NYC's famous 4-6-4 Hudson steam locomotives. *Know Thy Hudsons* is written by NYCSHS director and former president Tom Gerbracht. All variants of the Hudson class, including Boston & Albany J-2s, and the Dreyfuss and Empire State streamlined locomotives, are thoroughly covered. The 250 page hardcover book includes 200 photographs of which 32 are in color. For additional information, visit nycshs.org.

O SCALE PRODUCT NEWS

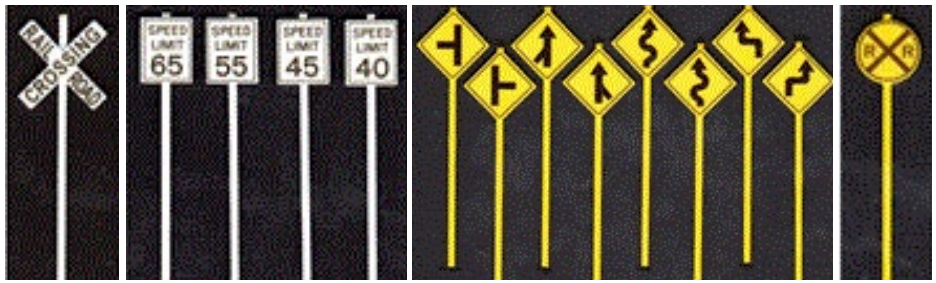


Atlas O reports that the first models it plans to produce from the tooling recently acquired from Weaver Models will be a group of WWII troop cars. The release is expected during the second quarter of this year, and will include a troop sleeper (top), a troop kitchen car, and a hospital car (bottom). The cars feature interior lighting, flush-fitting window glazing, rubber diaphragms, and Allied Full Cushion trucks.

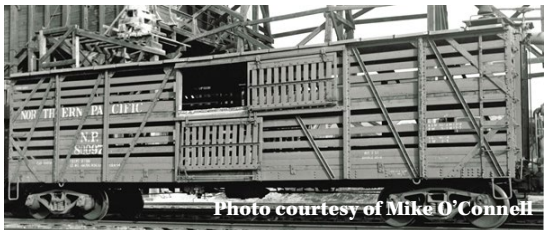
The release also includes a group of express boxcars rebuilt from

troop sleepers. Decorating schemes will be Burlington, Chesapeake & Ohio, New Haven, and New York Central.

Also due from Atlas O in the second quarter of 2016 is an ACF 8,000 gallon Type 27 tank car. In addition to the St. Lawrence Starch-Bee Hive Corn Syrup scheme shown here, the O scale ready-to-run model will be available decorated for Mobilgas, MKT, Niacet Chemicals, SCO-Southern Cotton Oil, and United States Army. Atlas O rolling stock is available for both 2-rail and 3-rail operation. For additional information, contact a dealer or visit atlaso.com.



Tichy Train Group continues to expand its selection of O scale highway signs. The cleanly molded plastic signs currently available include crossing signs, crossing warning signs, restricted speed signs, no parking signs, red and yellow stop signs, and many more accurately scaled road signs. For complete details, visit tichytraingroup.com/Shop/tabid/91/c/o_scale/Default.aspx.



RY Models is taking reservations for a group of handcrafted brass Mather stock cars and boxcars. Several versions of Mather single and double deck stock cars with either truss rod or steel underframes are scheduled to be produced. Both O scale and Proto 48 versions of each model will be available. Advance reservations are a necessity since RY projects have a history of selling out quickly. For complete details, visit richyodermodels.com.

HO SCALE PRODUCT NEWS

New Accurail HO scale kits released this month include this Virginian wood-side twin-hopper car. The model is based on a prototype built during WWII and rebuilt in 1953. The kit has an MSRP of $15.98.

A triple-bay ACF covered hopper decorated for Sid Richardson Carbon Co. is also available now from Accurail. The kit has an MSRP of $17.98.

Additional new items include this 40-foot Western Pacific

single-sheathed eight-panel wood boxcar. The car has a steel underframe, wood ends, and a National door. The kit has an MSRP of $16.98.

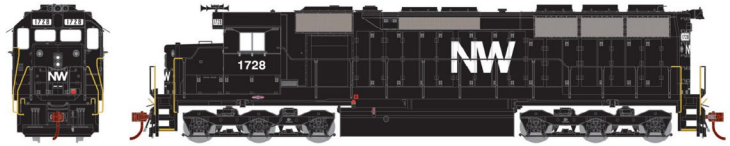
This Lehigh & New England 40-foot boxcar is available now in a special two-car set. The six-panel single-sheathed wood car has a steel underframe, wood ends and a National door. A kit for the same body style is available decorated for Central Vermont. The kits have an MSRP of $16.98 each.

Accurail is offering its Pullman Standard 4750 cu. ft. triple-bay covered hopper decorated for Lehigh Valley. The kit has an MSRP of $18.98. All Accurail kits come with appropriate trucks and Accumate couplers. For additional information, contact a dealer or visit accurail.com.

Athearn is taking dealer reservations for a Genesis series GP38-2 scheduled for release next December. EMD began production of the revolutionary 2,000-horsepower locomotive in 1972. Rather than power a generator, the 16-cylinder prime mover drove an alternator that produced alternating current. Solid-state silicon rectifiers converted the AC to DC that powered the locomotive's four traction motors.

Athearn's HO scale version will be available decorated for Gulf, Mobile & Ohio; Santa Fe; Chicago & North Western; Missouri

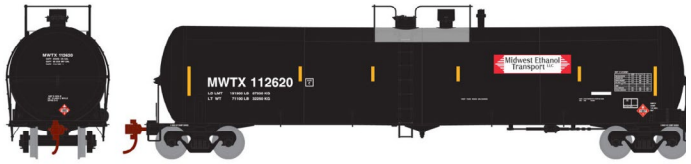
Pacific; Illinois Central; and Union Pacific. DC models without sound will be offered, as well as models factory equipped with a Tsunami Sound and DCC decoder.



Also coming from Athearn next December is a new production run of SD45 diesel locomotives. EMD introduced the powerful 20-cylinder road switcher in the late 1960s. Athearn's HO scale Ready-to-Roll version will be available decorated for Norfolk & Western, Santa Fe, CSX, Morrison Knudson, Seaboard, and Southern Pacific (SD40M-2 version).

New models scheduled to be available next November include an HO scale version of a 50-foot 6+8 boxcar built by Pacific Car & Foundry. As with the prototype, Athearn's Genesis series model features a six-foot and an eight-foot plug door on each side of the car. In addition to the SP speed lettering version shown here, the model will be available decorated for SP (Gothic lettering), Golden West Service, Southern Pacific (ex-Golden West Service), Cotton Belt, and Wisconsin Central.

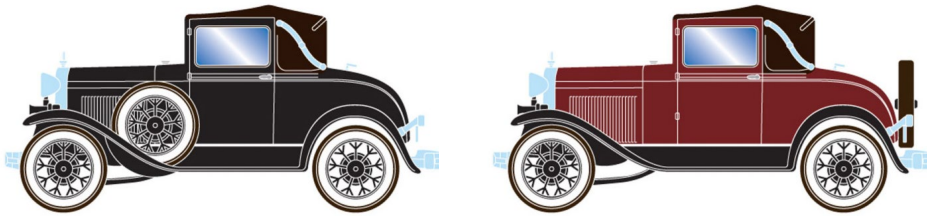
Due next November is a new run of modern 30,000 gallon ethanol tank cars. Decorating schemes will be for Canadian



General Transit, Nebraska Corn Processing, Reeve Agri Energy, and Midwest Ethanol Transport.

Fifty-six foot well-cars designed specifically to handle 28-foot containers will be available in November. They will be decorated for Greenbrier Leasing Corporation (above) and Trailer Train.

Appropriate 28-foot UPS trailers will be available separately.



Athearn is planning to produce several versions of a nicely rendered Ford Model A sport coupe this fall. Models with a side-mounted spare tire will be available in dark green and black (above left). Cars decorated in blue, cream and burgundy (above right) have the spare tire mounted above the rear bumper.

Completing Athearn's November schedule is a run of Bethgon Coalporters. Road names will be BNSF, Canadian National, Citicorp Railmark, CSX Transportation, Midwest Generation, Norfolk Southern, and Union Pacific.

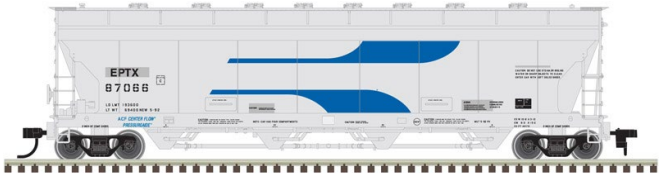
Athearn-Roundhouse brand models due in November include a 40-foot grain boxcar with a pair of small grain doors at the top of one of the twin plug-doors. In addition to the Soo Line car shown here, road names will be Chicago, Burlington & Quincy; Santa Fe; Canadian Pacific; Great Northern; and Union Pacific.

An Eastern-style steel caboose is due in November under the Athearn-Roundhouse label. In addition to the Conrail version shown here, the HO scale ready-to-run model will be available for Detroit, Toledo & Ironton; Amtrak (MOW scheme); Boston & Maine; Chesapeake & Ohio; Illinois Central Gulf; New Haven; and Chicago Great Western. For additional information about Athearn products, contact a dealer or visit athearn.com.

Atlas Model Railroad Company has announced a third-quarter delivery schedule for several HO scale models including its Master Line EMD Dash 8-40C/CW diesel locomotive. Ready-to-run Dash 8-40C models will be decorated for CSX (YN3b

scheme), Chicago & North Western, Chessie System-C&O, and Chessie System-B&O.

Dash 8-40CW locomotives, with wide-nose North American safety cabs, will be available for Canadian National (red, black and white, above), Canadian National (blue and white), LMS, Norfolk Southern, Santa Fe, and CSX (YN3b). DC models come with an 8-pin NMRA socket ready for an aftermarket decoder. DCC versions have a factory-installed ESU Loksound Sound decoder.



Atlas's third-quarter release includes a Master Series Pressureaide Centerflow four-bay covered hopper based on a prototype built by ACF. In addition to the Elk Point Transportation scheme shown above, the HO scale ready-to-run model will be available decorated for Kansas City Southern, ADM (Leaf logo), BNSF, CASCO, Green Mountain Railroad, Norfolk Southern, North Dakota Mill, SCYX-First Union, and TCMX-CIT Group.

An Atlas Trainman series ACF 50-foot 6-inch boxcar is also scheduled for release in the third quarter of this year. This is the 10th production

run of this popular Atlas HO scale model. Road names on this release will include new numbers for CSX, Burlington Northern, Canadian National, Railbox, and St. Mary's Railroad. First-time schemes will be available for Susquehanna, and Hartford & Slocumb Railroad. For more information on all Atlas products, contact a dealer or visit atlasrr.com.

Broadway Limited plans to release its HO scale version of Pennsylvania Railroad's unique class S2 6-8-6 turbine locomotive this spring. The brass-hybrid model replicates the world's first and only 6-8-6 wheel configuration. The S2 was originally designed as a 4-8-4, but wartime restrictions on the availability of lightweight steel alloys forced the use of heavier alloys which increased the weight of the entire locomotive and the need for larger leading and trailing trucks. The large boiler and Belpaire firebox provided steam for two turbines – one for each direction. For additional information, contact a dealer or visit broadway-limited.com.

ExactRail has released its HO scale Vert-A-Pac in three new paint schemes plus new road numbers for the previously released Rock Island version. The ready-to-run models come equipped with 70-ton Barber trucks with machined 28-inch wheels.

Available now are Vert-A-Pacs decorated for Denver & Rio Grande Western (in 1970 as-delivered boxcar red), Baltimore & Ohio (Capitol dome scheme), Merchants Dispatch Transportation, and Rock Island (1970 as-delivered scheme with billboard lettering). For additional information, visit exactrail.com.

The latest HO scale craftsman kit from **Fos Scale Models** is Gordon's Novelty Co., a three-story wood structure inspired by a run-down building Doug Fos located in New York City. The kit includes components for the detailed storefront, laser-cut clapboard walls, one-piece sidewalk base, exterior stair, signage, metal and plastic details, Tichy windows and doors, and Northeastern Scale Lumber.For more information, visit fosscalemodels.com.

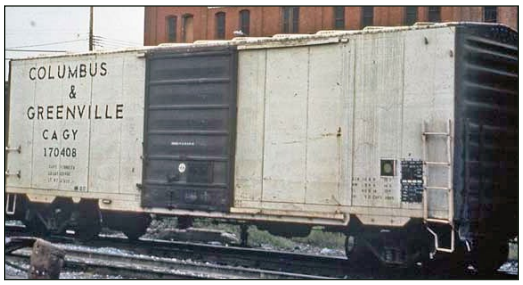
InterMountain Railway has scheduled a mid-summer release for a new

production run of its GP16 diesel locomotive. New road names for the HO scale ready-to-run model will be Genesee & Wyoming-York Railway (above); Aberdeen, Carolina & Western; South Carolina Public Railways; Buckingham Branch Railroad; Pioneer Railcorp; Toledo Junction Railroad; Burlington Junction Railway; Santa Fe-Southern Pacific (Kodachrome scheme); South Central Florida; Palmetto Railways; Trimac Industries; Seaboard System; Family Lines System; RJ Corman Railroad; Indiana Railroad; CSX; Pee Dee River; Louisville & Indiana; Everett Railroad; and United States Army.

Also coming this summer from InterMountain is another release of its HO scale 40-foot PS-1 boxcars. In addition to the New York Central Pacemaker scheme shown here, the ready-to-run model will be available decorated for Santa Fe (Three versions; Grand Canyon, El Capitan, and Super Chief slogans), MKT (large initials), Norfolk Western (black repaint), Mississippi Central, Port Huron & Detroit, Central of New Jersey, Ann Arbor, Lake Superior & Ishpeming, Erie, Lehigh Valley, Louisville & Nashville, Frisco, Chicago & North Western, Green Bay & Western, Columbus & Greenville, New Haven (Alpert repaint), and Chesapeake & Ohio. For additional information on all InterMountain products, contact a dealer or visit intermountain-railway.com.

Kadee's April production schedule includes this Grand

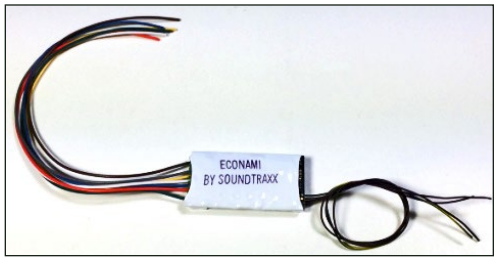
Trunk Western 50-foot PS-1 boxcar with a 10-foot Youngstown door.



Also due in April is a CAGY-Columbus & Greenville 40-foot PS-1 boxcar with an eight-foot six-panel Superior door. Both of the HO scale ready-to-run models represent prototypes that have had their running boards removed and ladders shortened. For additional information, contact a dealer or visit kadee.com.

New this month from **Monster Modelworks** is a three-story storefront structure that features a free custom-engraved cornice inscription. When ordering the kit, the purchaser may select up to 25 characters for the inscription. Additional features include 3D laser-engraved English Bond brick walls, corner sections, and brick overlays; laser-cut peel-and-stick windows, rear door and awning; laser-cut concrete coping; and decorative concrete lintels and cornice. The building is topped with a 3D-printed roof vent. The assembled structure is 5.5 inches high. The footprint is 3.3 x 4.5 inches plus one inch

for the overhanging awning. For more information, visit monstermodelworks.com.



Soundtraxx has added new decoder board formats to its line of Econami sound decoders. New features include 28-function mapping, new Hyperlight effects, Hyperdrive2, selectable exhaust (prime movers in diesel versions and chuffs in steam), selectable whistles, bells, and air compressors.

New steam-specific features are cylinder cocks, selectable steam chuff (light, medium, heavy, and geared), selectable dynamo, separate boiler blow-down sound, and a new adjustable BEMF-driven chuff rate that ensures accurate timing without the need for a cam.

The diesel decoders are loaded with five prime movers (EMD 567, 645-turbo, 710-turbo, Alco 244, and GE Modern FDL-16), selectable air compressors, and a selection of gong bells. The decoder for electric locomotives has settings for a heavy electric loco such as the GG1 (with a GG1-specific horn) as well as sounds for streetcars with functioning brake lights.

The Econami line of Soundtraxx products incorporates a seven-band equalizer, adjustable volume levels for all sound effects with a separate master volume, a multitude of sound effects, and the F11 brake squeal. The new 2-amp ECO-200 is a six-function universal wired sound decoder measuring 35 x 18 x 6mm. It uses the NMRA-recommended JST nine-wire connector suitable for the DCC Quick Harness found in many HO models

as well as Soundtraxx 9-pin-to-8-pin adapter for simplified plug-in operation.

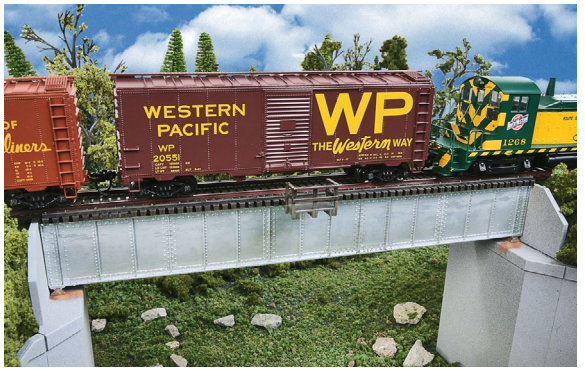
The new Econami ECO-PNP is intended as a one-size-fits-all replacement board. It measures 73.6 x 16.7 x 4.8 mm which is close in size to the existing Soundtraxx TSU-AT1000. This six-function decoder is well suited for many HO scale diesels. For additional information, contact an authorized Soundtraxx dealer or visit soundtraxx.com.

Ted Culotta, owner of **Speedwitch Media,** has introduced a new series of publications that present in-depth studies of specific freight cars including detailed information on creating an accurate HO scale model. Named Prototype Railroad Profiles (PRRP), the monographs elevate Culotta's "Essential Freight Car" articles that appeared in RMC magazine to the next level.

Three titles are available now, including *PRRP-1 Louisville & Nashville ARA Single Sheathed Boxcars,* and *PRRP-2 Milwaukee Road Ribbed-Side Boxcars.*

Also available is *PRRP-3 Northern Pacific 21500 and 39500 series Double Sheathed Truss Rod Boxcars.* In addition to providing a wealth of prototype information including the car's unusual brake arrangement, the 24-page article chronicles

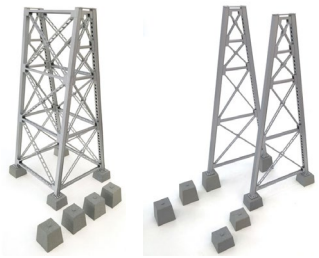
building a Yarmouth Model Works kit into a museum-quality HO scale model of the NP car. Each PRRP is available in Adobe Acrobat PDF format in print resolution at $7.00 each. To order, visit speedwitchmedia.com.



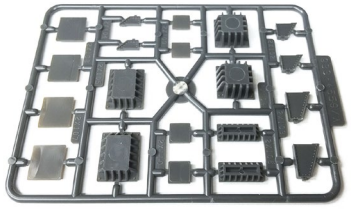
Walthers has developed a group of bridges and bridge components that are being marketed as the Cornerstone Engineered Bridge System. Among the initial release is a 70-foot single-track steel deck girder bridge (above). Individual kits are also available for 30-, 50- and 90-foot deck girder bridges. The kits can be completed with open or ballasted decks. Piers and abutments shown are available separately.

Also new is a 109-foot Pratt steel truss single-track bridge. It measures 15 inches in length.

Additional new items in Walthers Engineered Bridge System include kits for a steel bridge tower (next page left) and a separate kit for bridge bents (next page right). Both are 10



inches tall, and can be trimmed for shorter applications. Each kit includes two sizes of pedestals.



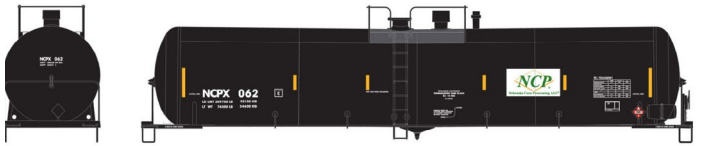
An assortment of bridge shoes, pedestals, and shims is also available as part of Walthers Engineered Bridge System. Shown above is one of four identical sprues in the bridge shoe kit.

The steel structural components and rivet detail on all of the new bridge components appear to be well-rendered. They are molded in dark gray plastic. Availability on the new bridge items is expected late next month. A free nine-page technical planing guide to Walthers new Engineered Bridge System is available at walthers.com/page/EngineeredBridgeSystem.pdf. For additional information on all Walthers products, contact a dealer or visit walthers.com.

N SCALE PRODUCT NEWS

New N scale models coming from **Athearn** next

November include a group of Bethgon Coalporter gondolas. In addition to CSX Transportation version shown here, road names will be BNSF, Canadian National, Citicorp Railmark, Midwest Generation, Norfolk Southern, and Union Pacific.



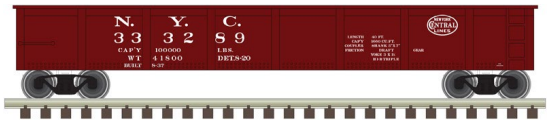
Athearn's November release includes N scale versions of a modern 30,000 gallon Ethanol tank car. Road names will be Canadian General Transit, Midwest Ethanol Transport, Reeve Agri Energy, and Nebraska Corn Processing (above). For additional information about all Athearn products, contact a dealer or visit athearn.com.

Atlas has announced new paint schemes on three N scale models scheduled for release during the second quarter of this year.

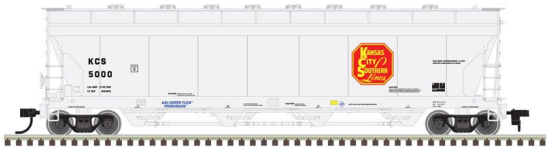
Atlas Master series GP38 locomotives will be decorated for Santa Fe, Central Oregon & Pacific, Vermont Railway, Rail America, and Grand Trunk Western.

Atlas will also release GP40 diesels (first cousins to the GP38 and readily differentiated by a third radiator fan at the back of the roof) decorated for Burlington, Wheeling & Lake Erie, Seaboard Coast Line, Western Maryland, and New

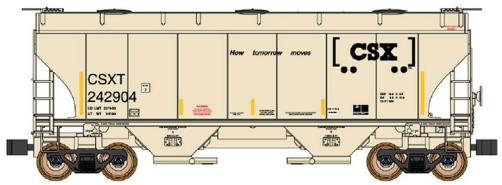
York Central. Dynamic brakes will be included on both the GP38 and GP40 per the practice of the prototype road being modeled. The N scale models will be available for standard DC operation and for DCC with a factory installed NCE decoder.



The second-quarter release includes a Trainman series 42-foot eight-panel steel gondola decorated for New York Central, Alaska, Boston & Maine, Burlington Route, New Haven, and Soo Line. An undecorated version will be available.



Also a four-bay Pressureaide Centerflow covered hopper decorated for Kansas City Southern, ADM (leaf logo), BNSF, CASCO, Elk Point Transportation, Green Mountain Railroad, Norfolk Southern, North Dakota Mill, SCYX-First Union, and TCMX-CIT Group. For more information on all Atlas products, contact a dealer or visit atlasrr.com.



InterMountain Railway has scheduled a summer release for a new N scale covered hopper. The ready-to-run model is based on a 42-foot twin-bay 3281 cu. ft. prototype manufactured by Trinity Industries. InterMountain will offer multiple road numbers for models decorated for Iowa, Chicago & Eastern; Norfolk Southern; Winchester & Western;

Cemex; Chicago Rail Leasing; General American; Suntrust Leasing; Trinity Industries Leasing; First Union Rail; and CSXT. For additional information, contact a dealer or visit intermountain-railway.com.

Kato USA is quoting a June release date for new eight-car set of passenger cars in Amtrak's Phase I/Southwest Limited scheme. The eight cars include an ACF storage mail car, Pullman 11-double-bedroom sleeper "Indian Mesa," Budd 10-6 sleeper "Pine Leaf," ACF 4-4-2 sleeper "Regal Dome," Pullman dome lounge, Pullman dining car, Budd 10-6 sleeper "Pine Dale." and a Budd 10-6 sleeper "Pacific Falls."

Also coming in June are two newly-tooled cars that will be available in both Santa Fe and Amtrak paint. They are identified as a Pullman 11-double-bedroom sleeper "Indian Squaw," and a Budd-built 10-6 sleeper "Pine Dawn." For additional information, contact a dealer or visit katousa.com.

Micro-Trains Line is selling an N scale model of a car specifically designed to transport valuable race horses. The model is based on a 70-foot heavyweight prototype and is available decorated for Pennsylvania Railroad and New York Central.

Also new from Micro-Trains is a weathered version of a Union

Pacific eight-panel steel gondola car.

This 89-foot tri-level closed auto carrier decorated for Burlington Northern is available now. Additional N scale ready-to-run models released by Micro-Trains this month include this Rock Island 50-foot rib-side boxcar with single door and no running board. Also a Norfolk Southern 100-ton triple-bay rib-side coal hoppers that come with a removable coal load. For additional information about all Micro-Trains Line products, contact a dealer or visit micro-trains.com.

Showcase Miniatures is selling N scale kits for a group of flatbed trucks. The kits are composed of white metal castings and include a wood deck, appropriate decals, and a truck-mounted donkey forklift. Shown above from front to back, are an I class truck with a 16-foot flatbed, an FL-M2 class truck with a 20-foot flatbed, and a KW class tri-axle truck with a 24-foot flatbed. The company offers a variety of N and HO scale vehicles. For additional information, visit showcaseminiatures.net.

NEW DECALS, SIGNS AND FINISHING PRODUCTS

Great Decals is the home of more than 80 suppliers of specialized decals of interest to model railroad hobbyists. Hosted by Bill Mosteller, Great Decals provides an international

marketplace for individuals who have developed decals for shortline, traction, and other specialized railroads. Collectively more than 1,000 unique decals in all popular scales are available at greatdecals.com.

ICG Decals has black-and-white lettering systems for Frisco re-weigh data in both Roman and Gothic font. Also new are four versions of lettering for 4180 cu. ft. Airslide covered hoppers: ICG 1966+, ICG 1973+, ICG 1980+, and GM&O 1964+. The final item on this month's release is a decal owner Dan Kohlberg calls his personal favorite: a set of No Trespassing signs for GM&O. For additional information, visit paducah.home.mindspring.com.

Mask Island Decals has new lettering sets for Rock Island 50-foot hide-loading cars. The set includes material to decorate two cars. Lettering for a Southern Railway caboose is also available. For more information, go to maskislanddecals.com.

DISCLAIMER .....

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SELECTED EVENTS

February 2016

(Please note that many events charge a fee. Check individual info website for details.)

CANADA, ONTARIO, BARRIE, February 20-21, Barrie Allandale Model Train Show, at Bradford Greenhouses Garden Gallery, 4346 County Road. Info at barm.ca.

CALIFORNIA, WEST COVINA, February 6, California Mini Meet sponsored by Santa Fe Railway Historical & Modeling Society, at Christ Lutheran Church, 311 South Citrus Street. Info from Gene Rutledge at atsfgene@aol.com.

FLORIDA, INVERNESS, February 20, Model Railroad Workshop, at Citrus County Fairgrounds, Horticulture Building, 3600 S. Florida Avenue. Hosted by Citrus Model Railroad Club. Info available at 352-746-4039 or send inquiry to conductor@citrusmodelrrclub.org.

FLORIDA, THE VILLAGES, February 6-7, Spring Rail Expo Sale & Show, at Savannah Regional Recreation Center, 1545 Buena Vista Boulevard. Info at villagerailclubs.blogspot.com.

KANSAS, WICHITA, February 6-7, Train Show & Swap Meet, at Cessna Activity Center, 2744 George Washington Boulevard. Info from Phil Aylward at aylward1@cox.net.

MARYLAND, TIMONIUM, February 6-7, The Great Scale Model Train & Railroad Collectors Show, at Maryland State Fair, 2200 York Road. Info at gsmts.com.

MINNESOTA, PLYMOUTH, February 27, Railroad Modelers Retreat and Train Show, at Mount Olive Lutheran Church, 12235 Old Rockford Road. Sponsored by the Twin Cities Division NMRA. Request info from Jim Dick at jcdworkingontheenp@gmail.com.

OHIO, GREENFORD, March 17-19, 24th Annual Midwest Narrow Gauge Show, at Greenford Space Center, 7600 West South Range Road. Request info from Gary Kohler at m2fq@aol.com.

WISCONSIN, MADISON, February 7, NMRA South Central Wisconsin Division Meet, at Zor Shrine Center, 575 Zor Shrine Place. fnfo at nmra-scwd.org.

WISCONSIN, MADISON, February 20-21, 49th Annual Model Railroad Show & Sale, at Exhibition Hall, Alliant Energy Center, 1919 Alliant Energy Center Way. Info at nmra-scwd.org.

March 2016

FLORIDA, LAKELAND, March 19, 26th Annual Train Show & Swap Meet, at Highland Park Church of the Nazarene, 4730 Lakeland Highlands Road. Event sponsored by H.B. Plant Railroad Historical Society. For information contact Gilbert Thomas at thomas_12399@msn.com.

IOWA, OTTUMWA, March 5-6, 25th Annual Train Show, at Quincy Place Mall. Sponsored by Great River Railway Club. Info at trc.trains.com/events.aspx?page=info&eventid=15850.

NEW YORK, ROCHESTER, March 5-6, 77th Anniversary Celebration Rochester Model Railroad Club, First Universalist Church (basement), 150 Clinton Avenue South. Not wheelchair accessible. Info at rocmrrc.com.

OKLAHOMA, TULSA, March 18-20, Layout Design & Operations Weekend, hosted by NMRA Indian Nations Division, at Shriner's Temple, 28th & Sheridan. Info at ldopsigmeet.tulsanmra.org.

OREGON, CORVALLIS, March 19, Winterail Railroad Photography Exposition & Railroadiana Show, at 1400 NW Buchanan Ave. Info at winterail.com.

OREGON, ELSIE, March 5, 12th Annual Pacific Model Loggers' Congress, at Camp 18 Restaurant & Logging Museum, 42362 Highway 26. Info at pacificmodelloggerscongress.com.

PENNSYLVANIA, MALVERN (Metro Philadelphia), March 18-20, Seventh Annual Valley Forge Railroad Prototype Modelers Meet, at Desmond Hotel. Info at rpmvalleyforge.com.

SOUTH CAROLINA, COLUMBIA, March 12, Columbia Train Show, at National Guard Armory, 1225 Bluff Road. Info at south-carolinatradeshows.com.

UTAH, OGDEN, March 4-6, Model Railroad Festival, at Ogden Union Station, at 25th Street and Wall Avenue. Sponsored by Hostlers Model Railroad Club. Info at hostlers.info.

Future 2016, by location

CANADA, BRITISH COLUMBIA, SALMON ARM, June 15-19, Selkirk Express NMRA Pacific Northwest Region Annual Convention & Train Show. Info at selkirkexpress2016.ca.

CANADA, ONTARIO, LONDON, April 23, Home Layout Tours sponsored by The London & District Layout Tour Group. Info from Bob Shiell at shiellb@gmail.com.

CANADA, NEW BRUNSWICK, SAINT JOHN, May 19-22, Port City Rails 2016 Model Railroad Convention & Show, at Howard Johnson Fort Howe Plaza & Convention Center, 10 Portland Street. Sponsored by Saint John Society of Model Railroaders. Info at portcityrails2016.org.

CANADA, NOVA SCOTIA, TRURO, June 16, Maritime Prototype Modellers Meet, at Recreation Centre, 40 Douglas Street. Info at facebook.com/MaritimePrototypeModellers.

CANADA, ONTARIO, OTTAWA, May 6-8, NMRA Algonquin Turn, Niagra Frontier Regional Convention, at Algonquin College. Info at algonquinturn.ca.

CANADA, ONTARIO, TORONTO, April 9, Toronto Railway Prototype Modellers Meet, at Humber College, North Campus, Building B, rooms B201-B202, 23 Humber College Boulevard. Info at torontoprototypemodellers.wordpress.com.

CALIFORNIA, RICHMOND, June 18, Bay Area Prototype Modelers Meet, at St. David's School Hall, 871 Sonoma Street. Info at bayareaprototypemodelers.net.

CALIFORNIA, SANTA CLARA, May 5-7, 26th Annual O Scale West and 11th Annual S West meets, at Hyatt Regency Hotel. Info at oscalewest.com.

CONNECTICUT, ENFIELD, June 3-4, New England/Northeast Prototype Modelers Meet, at Holiday Inn, 1 Bright Meadow Boulevard. Info at neprototypemeet.com.

GEORGIA, PORT WENTWORTH (Savannah area), April 1-2, Savannah RPM & Gun Shoot, at Port Wentworth Community Center, 102 Aberfeldy Street. Info from Denis Blake at dblake7@columbus.rr.com.

ILLINOIS, COLLINSVILLE (Metro St Louis), August 12-13, 10th Annual St. Louis Railroad Prototype Modeler's Meet, at Gateway Convention Center. Hosted by John Golden, Lonnie Bathurst, Dave Roeder, and Dan Kohlberg. Co-sponsored by NMRA Gateway Divison. Info at icg.home.mindspring.com/rpm.

ILLINOIS, CHICAGO, October 1-2, Brass Expo, a juried show limited to pre-submitted items including brass models and items relevant to brass models. At The Westin Hotel (Chicago North Shore), 601 N. Milwaukee Ave. Wheeling, IL 60090. Info at brassexpo.com.

ILLINOIS, LISLE, October 20-22, RPM Chicagoland (formerly Naperville RPM), hosted by Mike Skibbe, Sheraton Hotel. Info at rpmconference.com.

INDIANA, INDIANAPOLIS, July 3-10, NMRA National Convention and National Train Show. HQ at Westin Hotel, 50 South Capitol Avenue. Info at nmra2016.org.

INDIANA, INDIANAPOLIS, July 8-10, NMRA National Train Show, at Indiana Convention Center,100 South Capitol Avenue. Info at nationaltrainshow.org.

INDIANA, MARTINSVILLE, April 2, Spring Train Show, sponsored by NMRA Central Indiana Division, at 2182 Burton Lane, in Martinsville Plaza. Info from Dan Goins at santafedangoins@comcast.net or Trevor Jones at trevjn@sbcglobal.net.

MAINE, AUGUSTA, Sept. 7-10, 36th National Narrow Gauge Convention. Info at nngc2016.org.

MASSACHUSETTS, WALTHAM, April 3, Spring TRAINing Model Train Show, at Embassy Suites, 550 Winter Street. Hosted by NMRA HUB Division. Info at hubdiv.org.

MICHIGAN, MUSKEGON, April 24, Spring Model Train & Hobby Show, at Veteran's Museum Ship LST 393, 560 Mart Street. Info at mrhs-online.org.

MICHIGAN, WYOMING, April 9, Spring Train Show sponsored by Grand River Valley Railroad Club at Home School Building, 5625 Burlingame Avenue SW. Info at grandrivervalleyrrc.org.

MISSOURI, JEFFERSON CITY, October 6-9, Missouri Pacific Historical Society Annual Meeting, includes modeling clinics and swap meet. Info at mopac.org/corporate-history/73-missouri-pacific-railroad.

MISSOURI, SPRINGFIELD, April 16, 38th Annual Ozarks Model Train Show, at Springfield Expo Center, 635 St. Louis Street. Info at omraspringfield.org.

NORTH CAROLINA, DURHAM, October 20-23, Mid-Eastern Region Fall Convention, sponsored by NMRA Carolina Piedmont Division, at Marriott at Research Triangle Park, 4700 Guardian Drive. Info at mer2016.org.

OHIO, MARION, April 28-30, Central Ohio RPM Meet, at Marion Union Station, 532 West Center Street. Request info from Denis Blake at dblake7@columbus.rr.com.

PENNSYLVANIA, MONACA, April 3, Spring Model Train Show, at Center Stage, 1495 Old Brodhead Road. Sponsored by Beaver County Model Railroad & Historical Society. Info at bcmrr.railfan.net.

VIRGINIA, FREDERICKSBURG, September 23-24, Mid-Atlantic Prototype Modelers Meet, at Wingate by Wyndham Hotel, 20 Sanford Drive. Info at marpm.org.

VIRGINIA, ROANOKE, April 2, O Scale Narrow Gauge Meet at Lions Meeting Hall, 4801 Merriman Road. Info from Rick Anderson at rickshobbyshop@verizon.net.

WASHINGTON, CHEHALIS, April 2-3, Spring Model Train Show and Swap Meet, sponsored by Lewis County Model Railroad Club at Southwest Washington Fairgrounds, Blue Pavilion building. Request info from tedstrains@lewiscounty.com.

Future 2017, and beyond by location

AUSTRALIA, VICTORIA, GEELONG, April 14-16, 2017, 13th Annual Australian Narrow Gauge Convention. Info at austnarrowgaugeconvention.com.

COLORADO, DENVER, August 30-September 2, 2017, National Narrow Gauge Convention, at Marriott Denver Tech Center Hotel.

FLORIDA, ORLANDO, July 30-Aug 5, 2017, NMRA National Convention.

MISSOURI, KANSAS CITY, August 5-12, 2018, NMRA National Convention. ■

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REVERSE RUNNING

commentary

JOE FUGATE

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STOP WASTING TIME DETAILING

I'VE SPENT COUNTLESS hours detailing my locos and my rolling stock, but not any longer. I'm wondering if all that detail is really needed.

Today's ready-to-run models are so nicely detailed I can just apply a little weathering and put them on the layout. But is all this detail necessary? Maybe all I need is just a notch above the old Blue Box, what I might call Blue Box+.

In this hobby, the models move. Have you tried to count louvers on a loco hood when the loco is moving? Or count the weld seams on a boxcar that's in motion? It's really difficult!

I'm big into realistic ops, and that means a lot of rolling stock and loco maneuvering in a typical op session. We're constantly making up and breaking down trains, or switching cars at industries.

▶ STEPPING OUTSIDE THE BOX WITH A CONTRARY VIEW

At the end of most op sessions, we have some equipment damage – broken stirrup steps, lost brake wheels, or missing coupler knuckle springs. The prototype experiences light equipment damage too – that's why they have the RIP (Repair-In-Place) track. It allows spotting cars that need some kind of light repair before continuing on.

For those of us who operate regularly, there is also the "three-foot rule." The distance from eyeball to track level is at least three feet on a modern walk-around shelf layout. If I can't see the detail clearly at this distance from my train, why spend all that time adding itsy-bitsy details to my cars and locos? What's wrong with reasonable facsimiles instead of insisting on dead-on accuracy at every level?

I've decided one of the best inventions in the hobby is weathering. I can take a Blue Box+ car as to detail level, and take a car that's museum-quality accurate down to the last rivet and weld seam, and weather them both using prototype photos as a guide.

(By the way, if I use a prototype photo to guide my weathering, the car or loco weathering will look more realistic than if I just make up the weathering in my head. Imaginary weathering is called "fantasy weathering" by weathering aficionados because off-the-cuff work doesn't look real unless you're a super-experienced weatherer – but then I'm digressing ...)

Anyhow, when I put a nicely weathered Blue Box+ car next to a similarly weathered museum-level car, at the three-foot distance in a moving train, I can't really tell the difference! Plus rarely do I find any itsy-bitsy details broken off the Blue Box+ car at the end of an op session.

So that's it – I'm going for fleet level Blue Box+ cars on my layout and adding nice realistic weathering using photos. My trains look fabulous using the three-foot rule, plus there's less damage at the end of the op session, and my pocket book is certainly fatter! ☑

DERAILMENTS

Loco crash tests

A series of train crashes by the Dept. of Transportation to measure the effects of different collisions with other trains, trucks and other obstacles. Both regular and slow motion video shown.

For more on this testing, see ...
trainfanatics.com/emd-45-2-locomotives-used-as-crash-test-dummys

BIZARRE FACTS AND HUMOR (SUPPOSEDLY)

Latest in loco hood ornaments ...

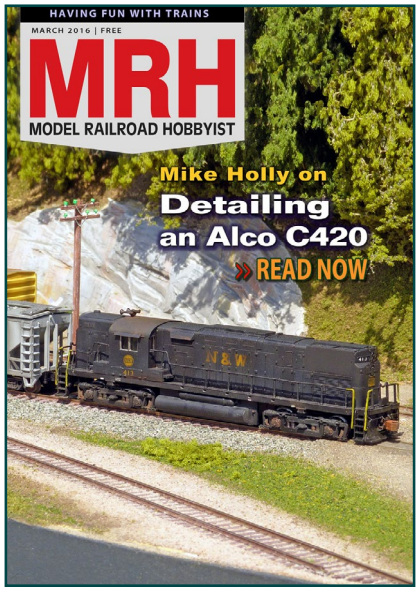
This mishap occurred when switching an open autorack. See: https://www.facebook.com/HeritageRailway/photos/a.283653235072420.54227.139645862806492/639104646193942/?type=1&theater

Get paid ...

If you're the first to submit a bit of good humor or bizarre facts and we use it, it's worth $25! Just send to derailments@mrhmag.com ■

Coming next issue ...

- Mike Holly details an Alco C420
- Scratchbuilding with Monster Modelworks brick
- Modeler's guide to boxcar and reefer doors
- Prototype switching puzzle from a real railroader
- And lots, *lots* more!



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