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Apprentice with savvy modelers



**Charlie Comstock visualizes layout scenes with
Virtual railroad software**

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ALSO in this month's edition:

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- Scratchbuild a small station
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- Update on better track cleaning
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Compiled by JOE FUGATE



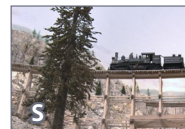
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RICHARD BALE and JEFF SHULTZ

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PUBLISHER'S WELCOME

introduction



MRH Running Extra | February 2020

JOE FUGATE: BETTER TRACK CLEANING UPDATE ...

★★★★★
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1. The La Mesa club uses this track cleaning car arrangement to daily clean their track (they run ~12 hours of trains every day). The lineup consists of one CMX Clean Machine car with mineral spirits solvent and three Centerline cars each with a dry wiper roller to remove the residue.

AFTER MY DISCUSSION OF A SOLVENT'S DIELECTRIC constant indicating its suitability for track cleaning back in the May MRH [mrhmag.com/magazine/mrh2019-05/publishers-musings], it's time for a bit of follow-up.

First, I have updated the table in that issue with some additions listed in red [2]. Next, it's important to discuss a few considerations on how you use these solvents.

In the image above, you see the long track cleaning car string the La Mesa club uses for their track cleaning task. It's important to

You can find an up-to-date shopping list for this article here: mrhmag.com/magazine/running-extra/2020-02/publishers-welcome

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note you don't just loosen the "black gunk" and then simply spread it around the layout. You need to *remove* it.

That's why the Centerline cars follow the solvent car – they're removing the loosened black gunk. If you miss that step, your track cleaning efforts will be a lot less effective!

If you don't want to drop \$500+ on this track cleaning car string, you can go with one or two Centerline cars to economize.

Or for a more do-it-yourself low budget method with some extra elbow grease, you can do what I do: I use gun cleaning Q-tips and clean the rail heads by hand. They're more robust than ordinary Q-tips and have a long wood handle for those hard-to-reach places.

I use one Q-tip dipped in solvent and then follow up with two wipes of a clean, dry Q-tip to remove the loose black gunk.

If you use a low dielectric constant solvent, you'll find you're not cleaning the track as often, like I mentioned in my editorial. The cleaning by hand approach, should be less frequent! ☑

	Solvent	Dielectric constant
BEST	Kerosene	1.8
	Deluxe Materials Track Magic	1.9
	WD-40 contact cleaner	1.9
	CRC contact cleaner & protectant	2.0
	DeoxIT D5	2.0
	Gasoline	2.0
	Neverstall	2.0
	Diesel	2.1
	Mineral spirits	2.1
	Wahl clipper oil	2.1
	Turpentine	2.2
	Carbon tetrachloride	2.2
	No-Ox-IDA	2.3
	Goo-Gone	2.3
POOR	WD-40 (regular)	2.4
	Graphite (microscopic thin layer)	1.8-3.0
	CRC 2-26	4.6
	Automatic transmission fluid	4.8
	Rail-zip	4.8
	Bachmann track cleaner	4.8
	Butyl acetate	5.1
	Butyl cellosolve	5.3
	Ethyl acetate	6.0
	Graphite (thick layer)	10.0-15.0
	Isopropyl alcohol (IPA)	18.0
	Methyl Ethyl Ketone (MEK)	18.9
	CRC QD contact cleaner	20.0
	Lucas contact cleaner	20.0
WORST	Acetone	20.7
	Vinegar	24.0
	Ethyl alcohol (e.g. vodka, wine)	25.0
	Radio Shack electronics cleaner	25.0
	Ammonia solution	31.6
	Propylene glycol	32.0
	Lacquer thinner	33.6
	Glycerine	47.0
	Hydrogen peroxide	60.0
	Water	80.4
	Non-polar	
	Semi-polar	
	Polar	

2. Updated dielectric constants table.

THE LIMITED MODELER

column

Images are from the author's collection, except as noted.

MRH Running Extra | February 2020



JIM SIX REVIEWS PRE-DEPRESSION
ERA PENNSY CABIN CARS ...



LET'S GET STARTED THIS MONTH WITH THE END of the train. A couple of months ago I looked at New York Central cabooses. This month I'll focus on Pennsylvania Railroad cabin cars. Yes, the Pennsy called their cabooses cabin cars. Like steam locomotives, cabooses can be a problem for modelers. It can be difficult to find models representing the railroad you want to model, but it is not as bad as you may think.

Bowser offers all primary classes of PRR steel cabooses, including the N5, N5C, and N8. Walthers offers both versions of the wood N6 class. These complement the Broadway Limited Pennsylvania steam locomotives for a great combination. In addition to these plastic models, many Pennsy cabin cars have been offered in brass, resin, and wood kits to fill the classes not addressed by the Bowser and Walthers models. Is there any wonder why I model the Pennsy?

While wood cabooses were standard on most railroads up through the Great Depression, the Pennsylvania Railroad was among the first to employ steel cabooses. The N5 cabin was

► **DOING MORE WITH LESS**



1. This inspiring photo captures several Pennsylvania Railroad ND class wood cabin cars, and maybe a couple NDa class cars. Many of the early cabin cars were rebuilt into N6 class cars starting in 1914 with the launch of the N6 program. If you are familiar with this image, please share the location and date on the *MRH* Forum.

introduced in 1914, the same year as their wood N6 class cabin cars. The N5 was a long-lived caboose with many in regular service until the end of the caboose era in the early 1980s. Conrail finally put them out to pasture.

Many years ago, an old gentleman told me that "A train with no caboose ain't no train at all." We were standing at trackside in Vermilion, Ohio, watching Conrail trains roll by on the old New York Central main line to Chicago. Cabooses had recently been eliminated and the old gentleman did not like it one bit! For that matter, neither did I. It was sad to see trains without a caboose bringing up the rear markers. I feel no differently today and cannot bring myself to model and operate trains without them.

PRR ND CLASS



2. Cabin car class ND 47508 in its glory. The lettering scheme started appearing in 1926 but is not the earliest scheme. Many of the ND cabins were rebuilt into N6 cars.



3. PRR 476042 is another ND class bobber cabin with the post-1926 lettering. Photo from PRRHO.com website www.prrho.com/cabooses.html

I am stuck in the past. I model American railroading in its prime and am not concerned that much of American railroading has been relegated to the dust bin of history. I like modeling railroads set in 1927, although any year from the 1910s to 1930 probably would work for me.

One of the early PRR wood cabooses was the ND class, a four-wheel bobber-type cabin car [1, 2, 3]. The ND was bigger than many bobbies but certainly not large. These cabins worked across much of the system. While I cannot verify how many were used on Lines East, they were common throughout Pennsy's Lines West (of Pittsburgh). However, at higher speeds four-wheel cabooses were not sufficiently stable. They were also not used ahead of pushers at the back of a train. Something more was needed. These cars were in service from the early 1900s into the 1960s.

The next class of Pennsylvania wood cabin cars was the NDa [4]. These were similar to the ND cars, but with four axles instead of two. These cabins had two trucks, which became common on most railroads before 1900. The NDa cabins were widely used on Lines West with many built in Lines West shops.

Like the ND, the NDa is not available as a plastic model. I believe both were offered in brass many years ago. Gloor Craft offered an NDa wood craftsman kit, but they are long out of production. Funaro & Camerlengo produces HO scale ND and NDa resin kits [5], or you can scratchbuild what you need.



and arch bar trucks.

4. NDa 479815 displays as-built end railings and is painted with the 1926 lettering scheme. Note the K brake system



Funaro & Camerlengo photograph

5. I tweaked the color slightly on this Funaro & Camerlengo HO scale NDa resin cabin car kit. One is on the way to my workbench.

PRR N6 CLASS

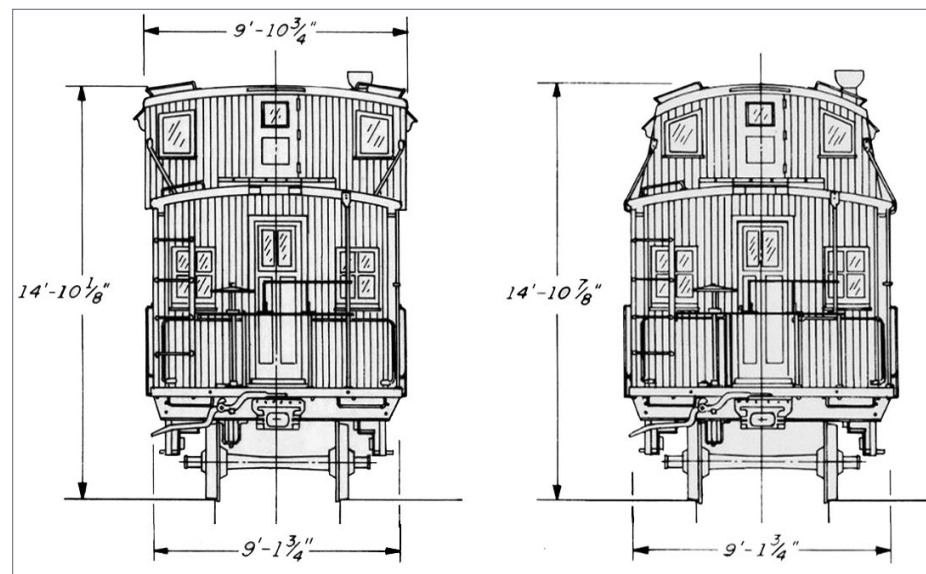
Beginning in 1914 a program was begun at the Fort Wayne, Indiana, shops to rebuild both the ND and NDa cabin cars into the new N6 class. These new cabin cars were rebuilt by stretching the body, adding a new steel frame, and also a new cupola.

The N6 was first built as the N6a, then the N6b was added. More than 1,100 N6 class cabin cars were built by 1923 when the program was discontinued. The N6 was the largest class of cabooses ever constructed in the United States. These cars were the most numerous Pennsylvania Railroad cabin car class and originally worked west of Pittsburgh. By the 1940s, N6b cars were being assigned to Lines East, with many working the New York District.



6. PRR 981774 is an N6B cabin. Note that the cupola sides are sloped inward and the arch bar trucks have been replaced with Pennsy caboose trucks.

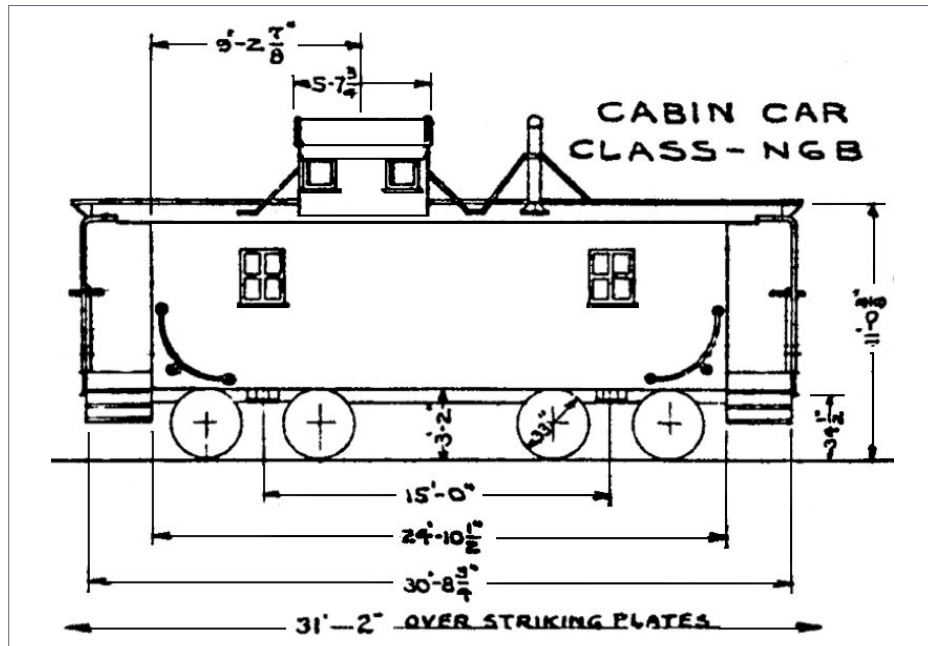
Lettering is the standard cabin car scheme that lasted into the 1950s.



7. This drawing illustrates the cupola differences between the N6a (at left) and the N6b cabin cars. The car bodies were the same. Images from the Whippany Railway Museum website www.whippanyrailwaymuseum.net/exhibits/equipment/cabooses/penn-n6b-cabin-car

There were a few differences between the N6a and N6b classes. The N6a had a “wide vision” cupola [12] whereas the N6b had a narrower cupola for clearance in Ohio and Pennsylvania tunnels [6, 7]. The sides of the cupola on the N6a were vertical whereas the sides of the N6b cupola were angled as they sloped inward from bottom to top [7]. There was also a noticeable arch in the cupola roof of the N6b [6, 9].

The N6a was actually an early “wide vision” caboose design. In subsequent years, most of the N6a cabins were scrapped or rebuilt to the N6b design. By the 1940’s virtually all the N6a cabins were gone from the railroad and the N6b class became the universal cabin car on the Pennsylvania Railroad.



8. This PRR equipment diagram illustrates the basic dimensions an N6b cabin car.

The N6 cabin cars [8] were all built with steel underframes, which were becoming standard on most railroads with pusher service. When the 4-wheel cabin cars were rebuilt, the body was lengthened. In some cases, the body was lengthened only on one end leaving the cupola offset closer to one end of the body [9, 10]. Others had both ends of the body lengthened, which left the cupola centered on the body [11]. Therefore, some N6 cars had a centered cupola while others had an offset cupola.



9. PRR 980804 is an N6 with the offset cupola. The lettering follows the practice that started in 1926 or 1927. Note the arch bar trucks with leaf springs. Photo from

PRRHO.com website www.prrho.com/caboose.html



10. PRR 982209. This photo was probably taken in the 1950s. Note the yellow railings on the switcher coupled to the caboose. The cupola also appears to be painted black.

MODELS

Walthers introduced its Pennsylvania N6 cabin car in HO scale several years ago. It's a nice model that needs little work to make it more realistic. Details include formed wire grab irons, smoke jack, one-piece end railing detail, and detailed corner steps.

Initial Walthers N6b models were the offset cupola version. The center cupola version [11] arrived with the second release. A complaint I heard from SPFs (Slobbering Pennsy Freaks) concerned the frames around the side windows. It was noted the prototype had no such window frames. Review of the prototype photos here will find the complaint legitimate.

I completed my model of PRR 980105 [13] without making any attempt to correct the window frame problem. Fixing this was not worth the effort to me, and it does not bother me much. I have two more offset cupola N6 models and may address the issue as those are prepped for the layout. I may scratchbuild a new cupola to convert one of the models into an N6a with the wide-vision cupola [12].



Donald Papa from the Bob Rathke Collection

11. PRR 981530 displays a later paint scheme introduced in the mid-1950s. This is my only useable photo of a center cupola N6 cabin car. Photograph by



12. Although it is poor quality, this is the only photo I have found of an N6a. Image from the Whippany Railway Museum web-

site www.whippanyrailwaymuseum.net/exhibits/equipment/cabooses/penn-n6b-cabin-car

Instead of complaining about the window problem, I hope Walthers will release the caboos with their very nice caboose arch bar trucks and K brakes. These simple changes would make the model accurate for years spanning 1914 to the early 1950s.

Changing the trucks and brakes is a simple matter. I installed Walthers arch bar caboose trucks on my N6 models, then replaced the AB brake components with Accurail K brake castings. I also repainted the yellow railings to match the body color before weathering [13, 14].

Walthers has offered the offset cupola [15] and centered cupola versions [16] of their Pennsylvania N6b. They are nice models right out of the box and perfect for limited modelers without cash for brass or the time, tools, and skill to paint a brass model.

It would be nice to apply weathering and be done with it, but there's work to do. In order to make the caboose represent the pre-1930 years, the AB brakes need to be changed. I had to break the parts away from the model. Review the underframe to see the AB brake equipment [17] and the trucks. I transferred the metal wheel sets to the arch bar caboose trucks.

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13. Here is my model of 980105 bringing up the rear of a Fort Wayne-bound freight as it rolls through Sturgis, Michigan.



14. Here are the two Pennsy N6 cabin cars I prepared for this month's column. Both are Walthers models upgraded with Walthers arch bar caboose trucks, K brakes, and Kadee #153 couplers. The arch bar caboose trucks make a distinctive change in appearance for my 1920s scene.

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15. Here is the original Walthers Pennsylvania N6b caboose. It has the offset cupola, like most of the prototypes. Note the added guy-rod supports for the cupola and smoke jack. Compare this with the prototype photos [9, 10, 11].



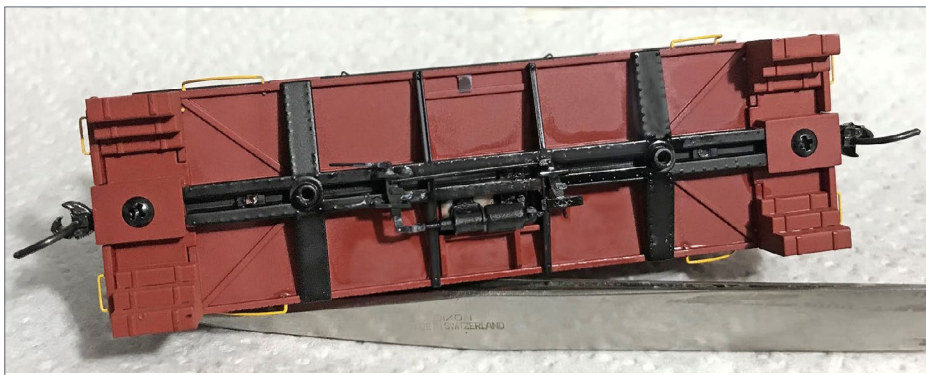
16. The Walthers N6 center cupola model looks good right out of the box. Compare it with the offset cupola prototype [11]. Can you see the window frames in [15]? I prefer the model without the window frames. These models come with the later PRR caboose trucks and not arch bar caboose trucks.

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I upgraded the cabin cars with Accurail K brake components and brake rigging [18]. Many folks ask why I bother to modify these underframe details. Since the rails of my layout are high off the floor, some of these details can be seen. A layout with a lower height would be a different experience.



17. Here is the unmodified underframe of the Walthers N6. You can see the brake components are AB with no brake rigging. I had already installed Kadee couplers before taking the photo.



18. Here's the upgraded underframe. The K brake parts are from Accurail.

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I have been harping on keeping things simple since the column debuted over a year ago. I believe these cabin car upgrades are simple. I imagine most buyers of the models will add weathering and install Kadee couplers. But in my mind, changing the type of brakes is simple and easy. I hope some of you will tackle this detail change and enhancement.

I installed Kadee #153 semi-scale couplers after completing the brake changes. Coupler debates have been going on for years. I experimented with the prototype-size Sergeant couplers. They are too much fuss for me and I could not operate the way I like.

I'm a long-time fan of Kadee couplers going back to the Kadee #5 introduction. I've moved along to the semi-scale couplers as the #5s are close to S-scale. I've had zero issues with the Kadee #153 couplers. I've never had an unwanted uncoupling. I like the short-shank coupler for a closer coupling which better matches the prototype appearance of older freight cars.

After the coupler change out, I installed Walthers arch bar caboose trucks. I painted over the yellow grab irons and railings with freight car red to follow the earlier pre-1940s practices. Let's look at the finished models.

PRR N5 CLASS

The N5 class was introduced in 1914, making it one of the earliest steel cabooses used on a Class 1 railroad in North America. It was the first of a series of steel cabooses that were distinctively Pennsy. The others were the N5c and N8 classes.

The N5 cars were used in regular service until the end of the caboose era in the early 1980s. Many wore the paint and lettering of Pennsylvania, Penn Central, and finally Conrail. Some N5s

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labored in MoW and other special services on Conrail. By any standard, the Pennsylvania RR N5 cabin car was one of the most important cabooses in North American railroad history.



19. The grab irons, cupola guy rod supports, and smoke jack details are factory-installed. The smoke jack is one of the best I have seen in HO scale.



20. The leaf-spring arch bar trucks and K brakes make this perfect for my 1927 setting.

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21. This center cupola N6b is from Walthers second run and does not have window frames. The complaints were taken seriously and the details were fixed. Now I hope they re-release the offset cupola N6b with the fixed windows.



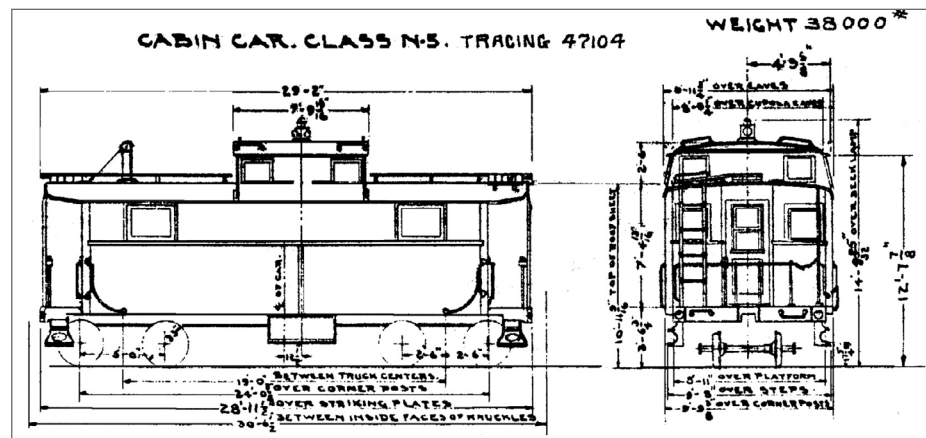
22. Center cupola N6b 982208 basks in the sun in the summer of 1927. I really like the guy-wire supports for the smoke jack and cupola.



23. A builder's photo of PRR 486751, an N5 built in August 1914. Note the arch bar trucks and lack of collision posts. This is the first lettering scheme applied to both N5 and N6 cabooses. *PRR Photo from the 1919 Car Builders Dictionary*



24. Another view of PRR N5 486751 in an early cabin car paint and lettering scheme, introduced on February 20, 1914. *PRR Altoona Shops builder's photo*



25. General layout drawings illustrate several interesting details. This N5 drawing may not be the clearest but it offers basic dimension and other details of the as-built cars. The lantern centered atop the cupola is an early marker light. Part of it can be seen in the prototype image [24]. Later details, like collision posts, are missing from this drawing. *Bob Johnson collection from Rob's PRR Page* pr.railfan.net/freight/PRRdiagrams.html?diag=N5-.gif&fr=cl



26. Pennsy cabin cars got a little grimy out on the rails. We can spot a few changes in this photo from the late 1920s or early 1930s. The original arch bar trucks have been replaced with a cast steel side frame truck. The lettering has been updated to follow a new scheme introduced on December 21, 1926. The X29 boxcar at the left is in like-new condition and someone has taken good care of the Model A Ford at the right.



27. It's a summer day in 1927 as this freight rolls by with an Atlantic Coast Line USRA double-sheathed boxcar and new PRR N5 class cabin car bringing up the rear. I photographed this scene on my layout to demonstrate how these Accurail and Bowser models work for a 1920s scene.



28. Bowser produced a version of the ready-to-roll N5 caboose in an "early" paint scheme. But this is not the early scheme. This model reflects PRR lettering practices that began in May 14, 1926 and were used through the late 1940s. Bowser has not offered the early paint scheme yet. You can see the AB brake equipment and the later cast steel side frame trucks. This is how my model started for this article. *Bowser photo*



29. After I weathered the underframe, it is much easier to see the KC brake system and rigging that was added. The KC cylinder/piston and the brake rods with cranks are Accurail parts ordered from the parts section of their website. Walthers leaf spring arch bar caboose trucks replaced the Bowser components. The Kadee #153 scale short-shank couplers fit perfectly in the Bowser coupler boxes.



The following photos show the model after I made a few detail and component changes. It is factory painted, ready-to-roll, and needs little to make it into a nice prototype model.

I changed out the usual components; brake system, couplers, and trucks. After applying a weathering wash, I noticed other details to change. The earlier smoke jacks were different [23] and I may remove the collision posts since the Pennsy didn't apply them until the 1940s.



30. A few detail changes and some weathering transform a ready-to-run model into one that fits an earlier era. Bowser did a great job on the lettering, which would be new for my 1927 focus. The assignment division stencil was added below the line under the number with the May 14, 1926 lettering revisions.



31. Weathering makes the model for me. No amount of added detail will please me without believable weathering.



32. I will remove the collision posts from the end platforms on my next N5 model. I like these details but they were added late and are not appropriate for 1927.

SUMMARY

You now have the Pennsy cabin car details for modeling the 1910s through the 1930s. The N5 and N6 cabooses were the primary PRR cabooses. Many older NDa and a few ND cabin cars remained in service through the time period, but they were in secondary use and continued to dwindle in number. There are no other classes of Pennsylvania cabin cars that existed in quantity except for a few much older cars.

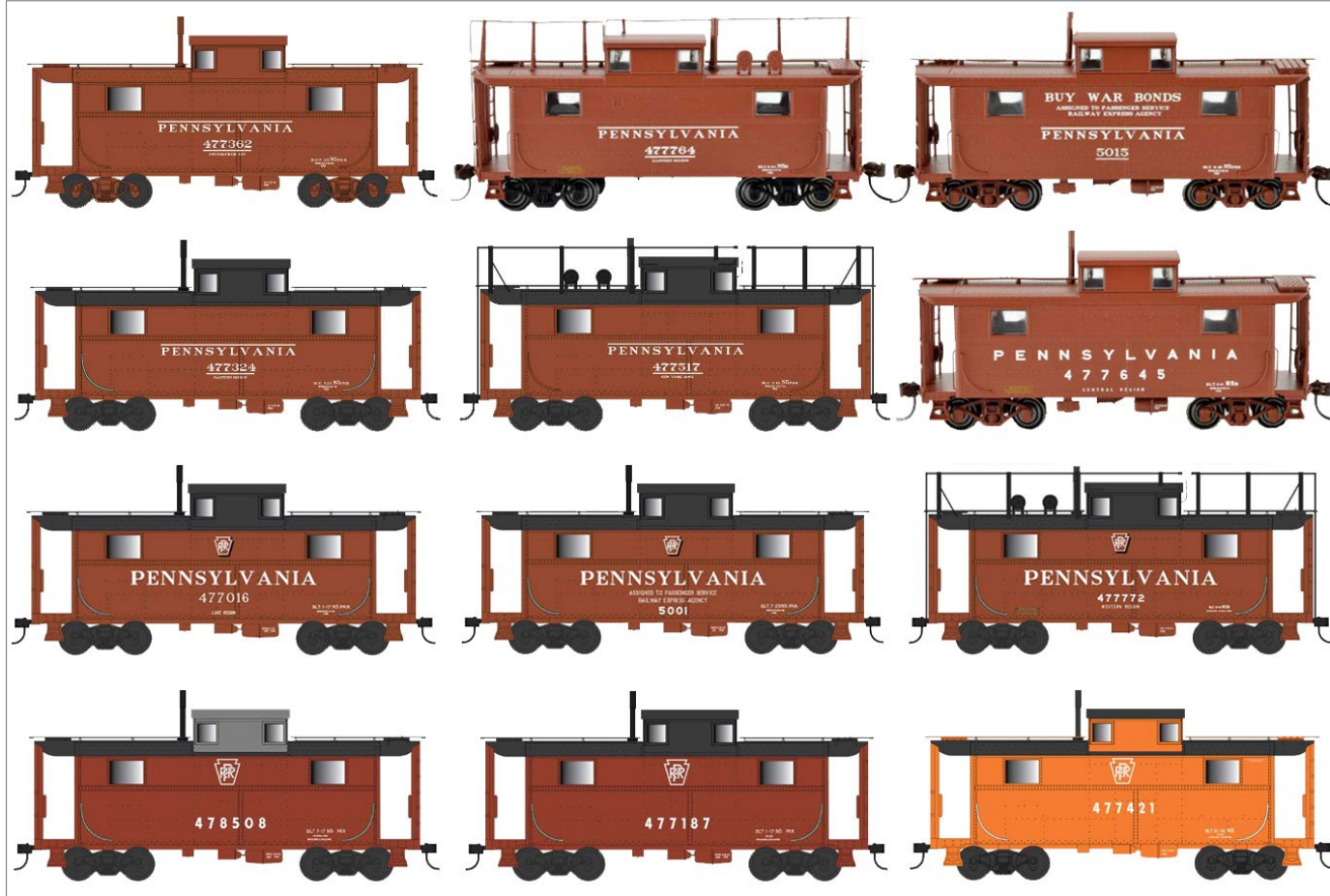
Bowser has produced the N5 class in a variety of paint and detail styles [33]. Bowser has also produced the N5c and N8 classes in a wide variety of options.

Although Bowser offers their N5c and N8 class steel cabooses with a similar selection of paint schemes, they follow later practices beyond a pre-WWII focus. Aside from these paint schemes [32], Bowser has offered the N5 in more than 75 variations. You

can find the earlier versions on eBay and other places on the internet. The same is true for the N5c and N8 cabin cars.

Here are the upgrades I did to my Bowser and Walther cabin cars.

- Kadee #153 couplers replaced the factory couplers



33. These Bowser N5 models are sorted early to late, and do not represent all the variations that have been offered.

- Walther's arch bar caboose trucks replaced the trucks that came with the model
- Accurail K brake components and rigging replaced the AB brakes
- Weathered and placed into service

Bowser offers arch bar trucks, but they are freight car trucks. Caboose trucks were often equipped with leaf springs in place of the typical coil springs. Kadee also offers leaf spring arch bar caboose trucks.



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PRR CABIN CAR PAINT SCHEMES AND VARIATIONS

February 20, 1914 - One stripe scheme

Original "One Stripe" lettering scheme on N5's.

By Jerry Britton

- 7" "PENNSYLVANIA" 10'-7" long, 7-1/2" below bottom of side belt rail
- 1" wide stripe 2-1/4" below road name
- 7" road number, 5" below stripe (20" above side sill)
- Class, build date, and owner in lower left hand corner (2'-10" from end, and 6" above side sill)
- "United States Safety Appliances Standard" in lower right hand corner (2'-10" from end, 6" above side sill) with repack date below that
- 2" high "P.R.R." and road number stenciled above end door
- "COTS" stencil on brake reservoir, as appropriate.

July 9, 1915

"All of the car to be painted Freight Car Color." Although the truck color is not specified on tracing it is assumed that they were painted Black. However, it is safe to assume that sometimes the trucks were painted Freight Car Color, as appears to be the case from some photos.

May 24, 1920

"P.R.R." above door changed to "PENN".

June 2, 1920

"PENN" above door changed back to "P.R.R." (Ties the PRR record for a short-lived scheme!)

May 14, 1926 - Two stripe scheme

"Two Stripe" lettering scheme issued.

- Road name is same size, but 1" stripe is 3" above it

- Road number is 8-1/2" below the road name
- Second 1" stripe is 3" below road number
- Class, owner, build date and repack stencils moved to right lower corner (these were moved in minor unnoted revisions)
- Stencil above end door is unchanged but reporting marks and road numbers added to one side of center sill, and center bolsters of trucks.

December 21, 1926

Division assignment added 2" below lower stripe (2" high letters).

August 27, 1930

Reporting marks and road number on center sill, and road number above end doors, deleted.

Jerry Britton documents and illustrates additional Pennsy cabin car paint and lettering changes on this webpage.

jbritton.pennsyrr.com/index.php/tpm/115-steel-cabin-car-painting-lettering

His website is a great resource for Pennsylvania Railroad modeling.

jbritton.pennsyrr.com 



GETTING REAL

column



MRH Running Extra | February 20120

JACK BURGESS SCRATCHBUILDS A SMALL STATION ...



WHEN I FINISHED MY YOSEMITE VALLEY

Railroad layout in 2011, that also meant that I had no more structures to build, since there were no “stand-in” buildings on the layout to replace, or room for another structure. However, I do have a display case, and decided last year to scratchbuild the four YV stations which existed in 1939 but didn’t have room on my layout to include. I started with the station at the small community of Snelling [1].

I had drawn CAD (computer-aided design) plans for this station back in 2004, but since then I came across a copy of an original construction drawing for the station [2]. I already had a 1914 California Railroad Commission inventory which gave the outside dimensions of the building but the construction drawing gave me more details on the bay window and freight room doors. I also added a new photo to my collection which was an important find [3].

One YV station still exists today. Decades ago, I realized that the windows in this station appeared to be identical to those in two other YV stations. I was able to persuade Dave Grandt of Grandt

► MODELING REAL RAILROADS AND WHAT THEY DO

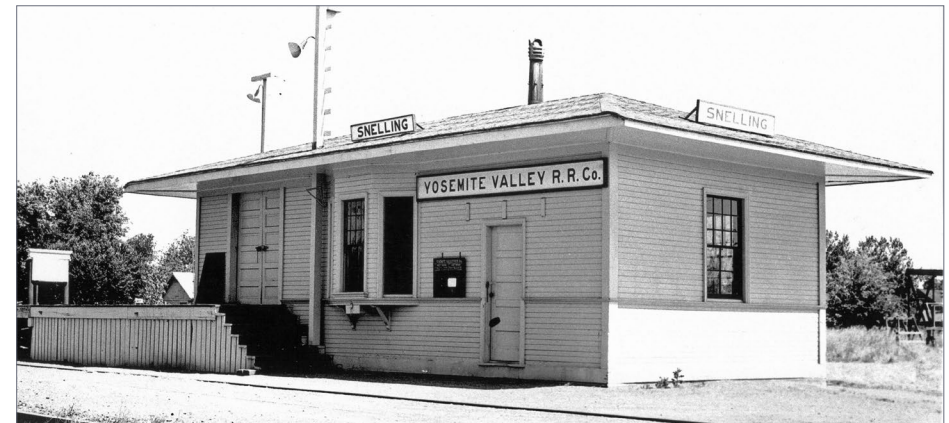
GETTING REAL | 2

Line to add those windows to their line based on drawings that I provided. Although I didn’t have good photos to confirm that the Snelling station used the same windows, I assumed it did and drew my station plans on that assumption. But this new photo [3] proved that the windows in the Snelling station were different, so I revised my drawing to reflect this new information.

CREATING THE BAY WINDOW

Since I couldn’t use the Grandt Line windows for this project, my first step was to draw them in 3D using SketchUp and have them printed by Shapeways, the company I use to 3D-print my parts. I included not only the needed windows but also the doors, a smokestack, and windows used in the bay window.

With the windows drawn, I realized it would easy to arrange the three windows that formed the bay window as a group by adding



1. The Snelling station in 1943. The train order board was removed in May 1941 and the station operated as a non-agency station after that date. Without an agent, items could still be picked up by a train crew for shipment or delivery, but they had to be prepaid. *Harre Demoro Collection*

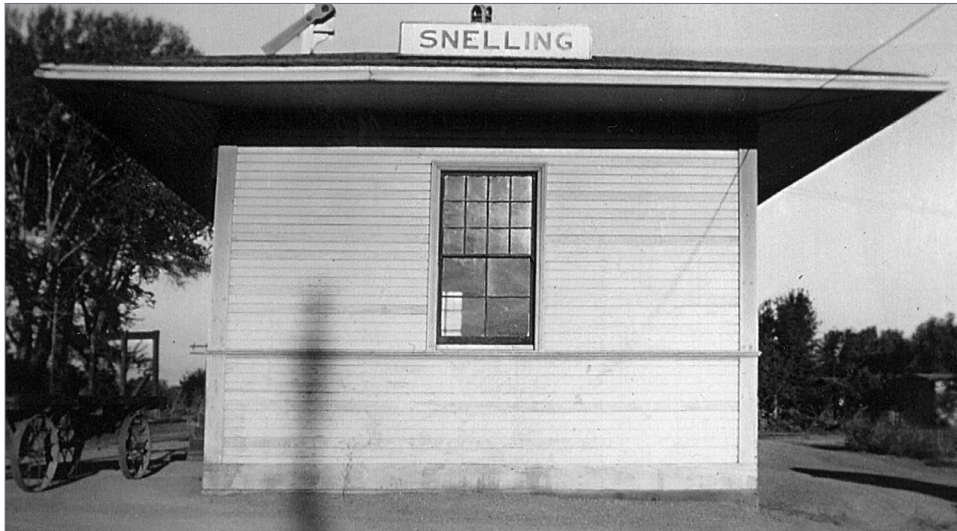


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GETTING REAL | 5

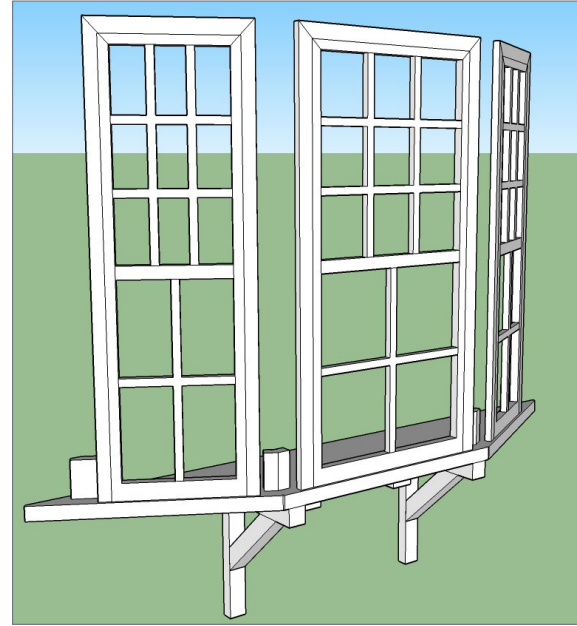
the desk for the station agent [4]. The prototype station had horizontal tongue-and-groove (T&G) siding (to be replicated with Evergreen V-Groove 2050) between the windows and between the end windows and the front wall of the station, so I added some tabs to bond the V-grove styrene to and ordered a 3D print.

I always draw 3D windows as thin as possible to match the prototype windows. For example, I draw window mullions (full size) at 1-1/8" wide, which is the thinnest that Shapeways can print. Parts this thin need extra bracing to prevent warping so I revised my first effort by extending the tabs all the way to a new top piece. A pair of sprues were then added to the top of each window [5]. These printed perfectly [6].

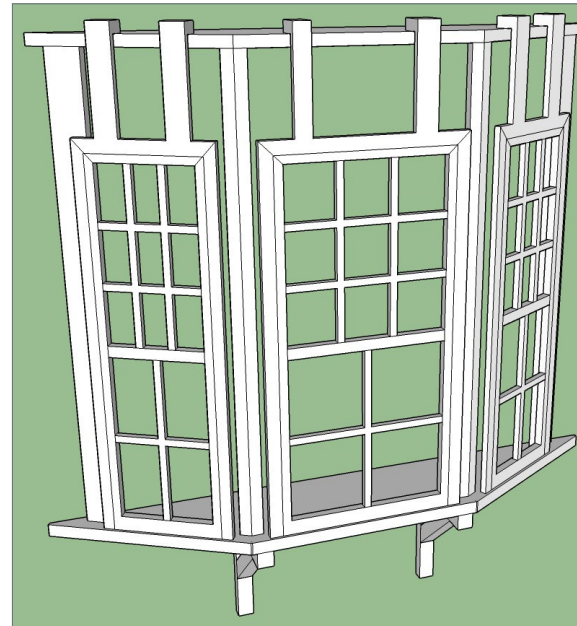


3. This early straight-on photo of the west end of the Snelling station let me revise my drawing to include the correct windows. *Merced County Historical Society*

GETTING REAL | 6



4. My first attempt at a 3D bay window with the station agent's desk being used to properly space the windows.

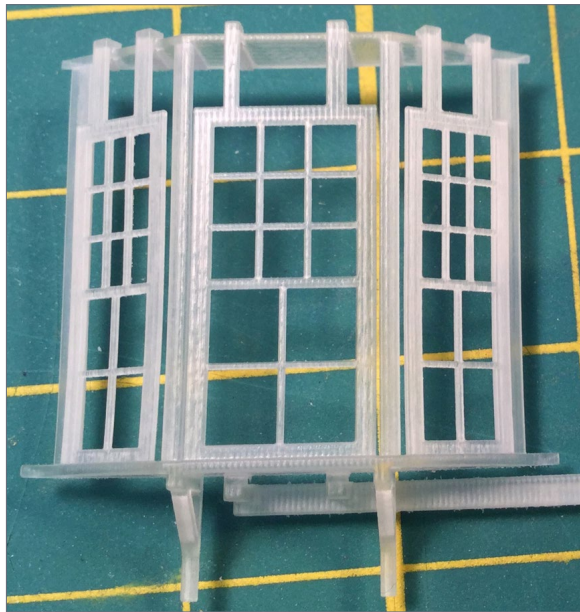


5. This is the revised bay window design with sprues connecting the windows to a top piece.

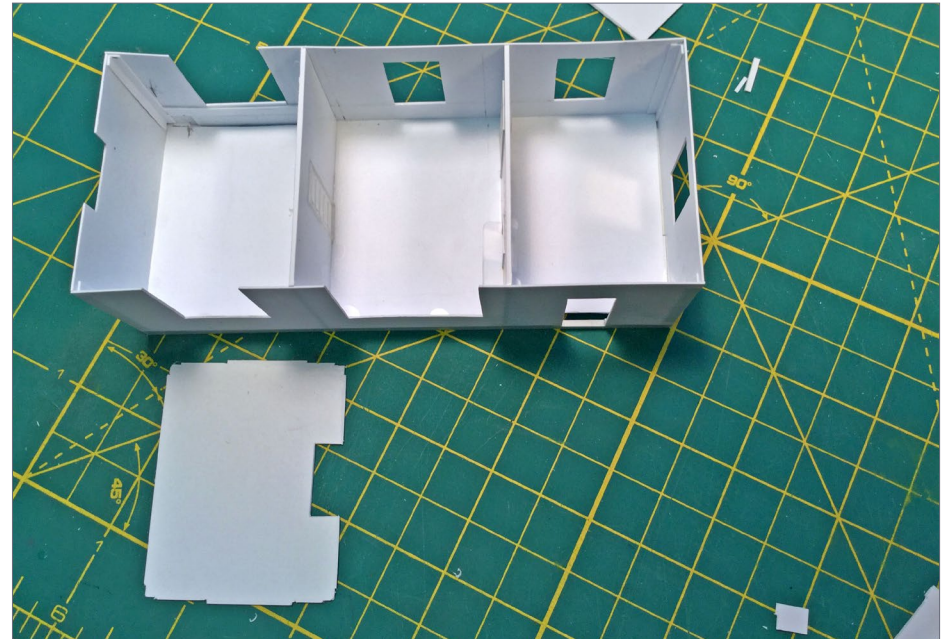
STARTING ON THE BUILDING

With the 3D parts ordered, I used my drawings as templates to cut out the sides of the station. I deleted all the lines representing the building siding and trim on a copy of my drawing and replaced the doors and windows with openings sized for the 3D parts. Since the ends of the building would be between the front and back sides, I reduced the width of the ends by the thickness of those parts. That resulted in the overall width of the structure matching the width of the prototype.

The templates were then flipped left-to-right and printed on sticky repositionable project paper (Avery 3383). Flipping the templates was necessary so that they could be applied to the back side of the styrene. The templates were applied to the V-groove styrene, making sure the bottom of each template was even with the bottom of the styrene, and then cut out.



6. This is the final 3D print of the bay window. The sprue at the bottom rear was to add the doors, windows, and a stove pipe to the bay windows as a single print.



7. Here is the station with the four sides glued to the floor along with the interior walls. The piece in front of the freight room is the raised floor for that space, with a cutout for the stairs that connect it to the station agent's office in the middle of the building.

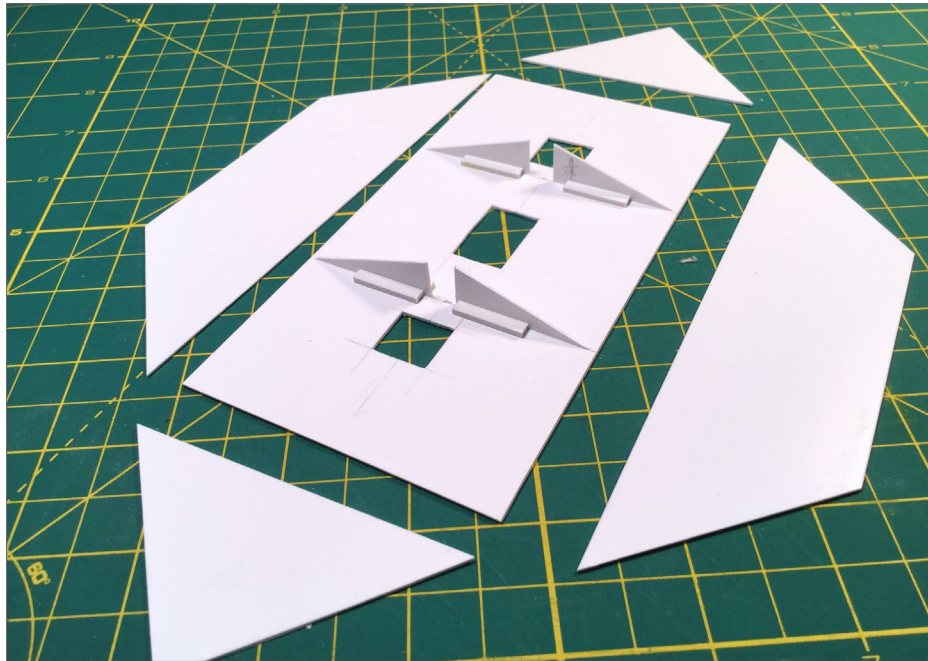
This approach is much easier and more accurate than drawing the layout with a pencil directly on the styrene. Once the 3D-printed windows arrived, I checked the openings in the side of the building to make sure that the windows fit (they did) and glued the building sides together [7].

This building had a hip roof that slopes down from the ridge to the eaves on all four sides. The two end sections are thus triangles, while the side sections are rectangles with angled ends [8]. The roof on the first structure that I built with a hip roof eventually warped a few years after it was finished. To prevent that from

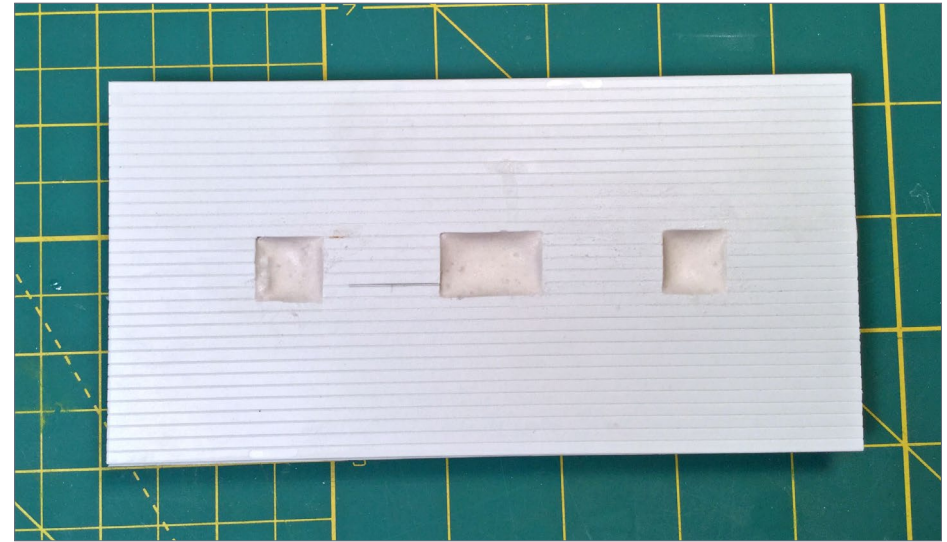
happening, now I cut three holes in the ceiling and, after the roof has been assembled, I mix up some plaster of Paris and pour it into the “attic.” I jiggle the roof after pouring in the plaster to make sure that it gets into the entire “attic” [9].

If you want a removable roof, the holes can be covered with 0.010” plain styrene. I didn’t bother, since I planned to glue the roof in place but I did remember that I could not do that until the window glass was in place.

As mentioned earlier, I used T&G siding between the bay windows as well as between the end windows and the front of the station. Adding the windows and doors to the building was the next step including cutting the Evergreen V-Groove to fit into



8. These are the pieces for the roof with some interior supports already added to the ceiling.



9. This view shows the finished roof upside-down and the attic filled with plaster of Paris.

these spaces. To make that work meant two pieces of siding would be needed to be cut to fit between the side windows and the front of the station.

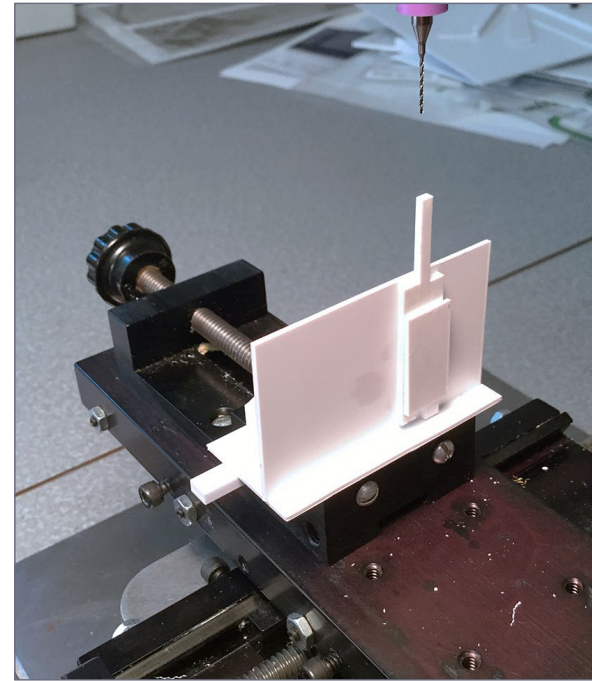
I used my power disc sander (discussed in my article in the July 2019 *MRH*) with the RPMs set very low (to minimize melting of the styrene) to grind one side of two pieces of V-groove for these pieces [10]. The white material you see is the Evergreen V-groove styrene with the grooves on the opposite side. The square block of wood provides a taller support for the piece of 1/8” plywood. The clamp was used to hold the top of the styrene tight to the fence. It was then a matter of pushing the styrene against the disc sander using short applications until the entire edge of the styrene piece had a 30-degree angle. That worked but it would have been better to draw the entire bay window as a single 3D part. While it is possible to draw V-groove siding in 3D, I’m not sure that it can be successfully printed in 3D.

TRAIN ORDER BOARD

The next interesting challenge was the train order board. Like some other YV stations, the train order board passed through the roof eave. So, the problem had two parts. First, the roof of the building needed to be removable until everything was painted in order to detail the interior and install glass in the windows. Second, I needed a very secure way to attach the top and bottom of the train order board to the top of the roof and to the underside of eave. And finally, those two pieces of the train order board needed to line up exactly. The additional issue was that the prototype support was built using a 6x8 timber.



10. Grinding a piece of V-groove styrene to fit between an end window of the bay window 3D print and the front wall of the station.



11. This is the styrene jig that holds each piece of 6x8 strip styrene vertically in my drill press.

(I thought about cutting a 6x8 hole through the roof but that didn't seem practical.)

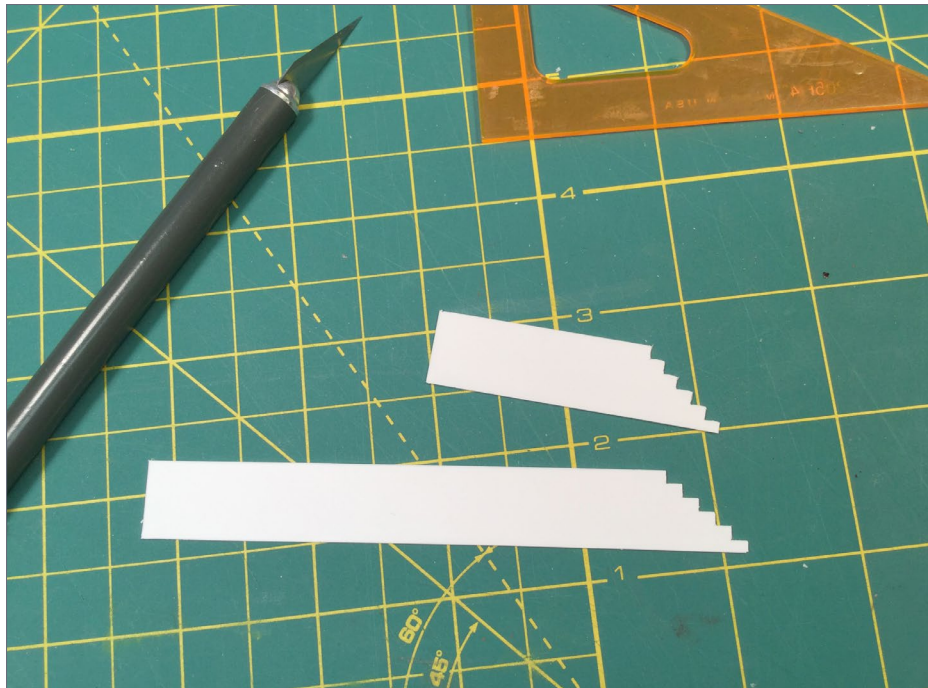
I finally decided to drill 0.028" holes in the bottom of the top piece and the top of the bottom piece. A 0.028" hole through the roof eave would ensure that both pieces were lined up as close as possible but the holes in both pieces needed to match exactly.

I built a jig from 0.040" styrene to hold each scale 6x8 piece while it was being drilled [11]. The bottom piece has a piece of 0.100" x 0.125" styrene glued to it on the bottom so it can be tightly held in place on my drill press X-Y table. The vertical "wall" is an exact right angle to the base. The vertical pieces of styrene were glued in place to hold each 6x8 exactly vertical. This jig let me drill holes in each piece as closely to the center

of each one as possible. A hole was then drilled through the roof to finish the job.

STAIRS

While building bay windows is a hassle, building stairs is also not something that I enjoy. Since getting into 3D printing, I have made all my stairs using that process. After uploading my sprue of parts and ordering them for this station, I wished I had included the stairs up to the loading platform. Then I realized I could cut out a pair of step supports on my Cricut cutting machine. These cutters were originally designed for scrapbookers to cut out paper patterns, but they can also cut 0.020" styrene



12. These are the two stair stringers to build the steps up to the freight platform.



13. This photo from the rear platform on YV Observation 330 shows the Snelling station shingle colors in the early 1940s. *Al Rose photo*

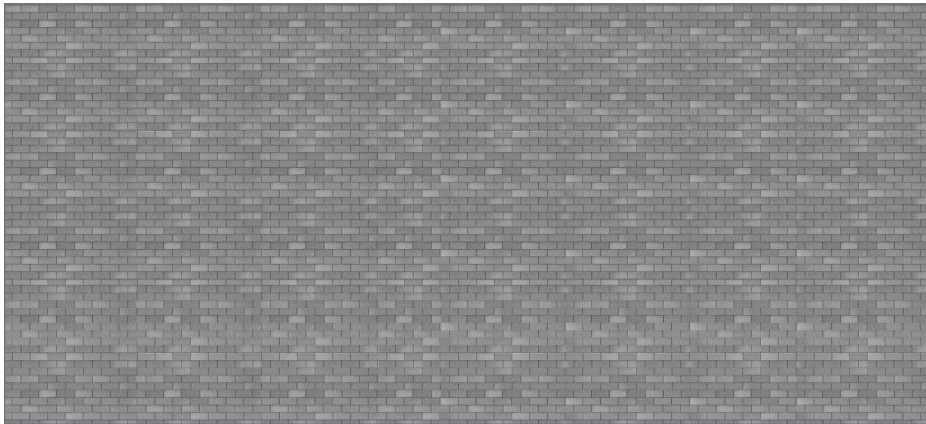
accurately. On the next station I built, I used my Cricut to cut all the styrene for the sides, floors, and roof.

There is a software program built into the Cricut to make simple drawings, and .dxf and .tif files also can be directly loaded. I opened a copy of my CAD station drawing and erased everything but the side of the loading platform, which included the stringer supporting the stairs. I then made a copy and shortened it for the stringer against the station [12]. This worked out well.

At this point, I painted the station and roof (which was still removable) white. When that coat was dry, I masked around the windows and painted them black. The color of the windows was another online discussion on the YV chat list. Another color photo shows that the windows of the nearby station at Merced Falls were gray but B/W photos suggest they were black.

ROOFING SHINGLES

The roof of the prototype station was covered with 3-tab shingles. On previous stations on the layout with such shingles, I used



14. This sheet of shingles is about seven inches wide.

Plastruct PS-112 Asphalt Shingle Sheets. But I had forgotten that fact when I got to this station. I instead downloaded a photo of a real 3-tab shingle roof from Google photos. The 1914 CRC Inventory listed the shingles as green and I actually found a good photo of some green 3-tab shingles online using Google photos. Then I remembered a color slide taken from the rear platform of the YV observation car on an overcast day which showed gray shingles [13]. I couldn't find a sample of grey 3-tab shingles using Google photos so I opened my green shingle sample in Photoshop and converted it to a B/W image (Image/Mode/Grayscale) and reduced it to HO scale. I then copied/pasted it until I had a sheet large enough to cover the long front and back sections of the roof [14].

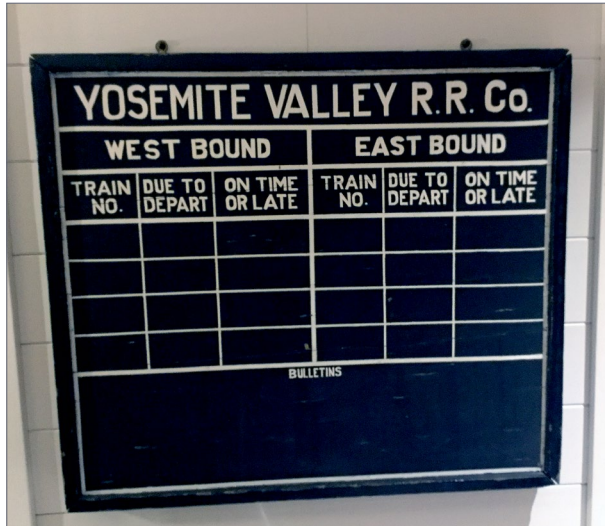
After printing the graphics on the Avery permanent adhesive shipping labels (8165), I used the drawings of the four roof pieces to cut each graphic exactly to size. Applying a single sheet of sticky-back "shingles" to a roof section which is just over six (actual) inches long could be a problem. I removed the backing from the sticky-back and then replaced it so that only a 3/8" wide section was exposed at the bottom. That let me carefully position the sticky portion of the shingles exactly on the roof eave. Once the bottom was attached, I slowly removed the rest of the backing while smoothing it out. I also copy/pasted a vertical roll of ridge shingles and applied them to the ridges.

SIGNAGE

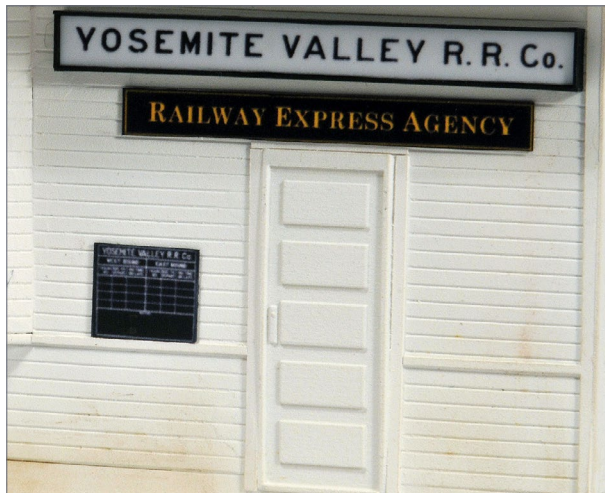
Signs were among the last things to be added to the station. They included the large "YOSEMITE VALLEY R.R. Co." which was on most other stations, as well as the SNELLING signs on the front and sides of the roof. I have a very good photo of a similar sign on

the El Portal station and years ago found a typeface that was very close. That let me make a station sign sheet with all the station signs. The “RAILWAY EXPRESS AGENCY” is from another online Google photo search.

There was also a wood chalkboard Arrival/Departure sign on the front of the station like most other stations. I have access to



15. An actual YV Arrival/Departure sign from the station at Incline. It appears from photos that all the stations on the timetable, except for Merced and El Portal, which were at the two ends of the railroad, had these signs.



16. The Arrival/Departure sign is to the left of the door, while above are the YVRR Co. sign and the Railway Express Agency sign. Also note the station name signs on the roof in [17].

an authentic Arrival/Departure sign [15]. It was simple to take a picture of the sign, reduce it to HO scale, print it on photo paper, cut it out, and mount it on the building [16]. ☒



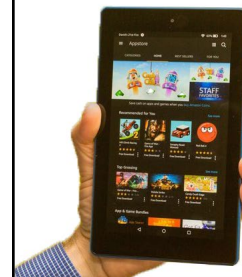
17. The finished Snelling station model.



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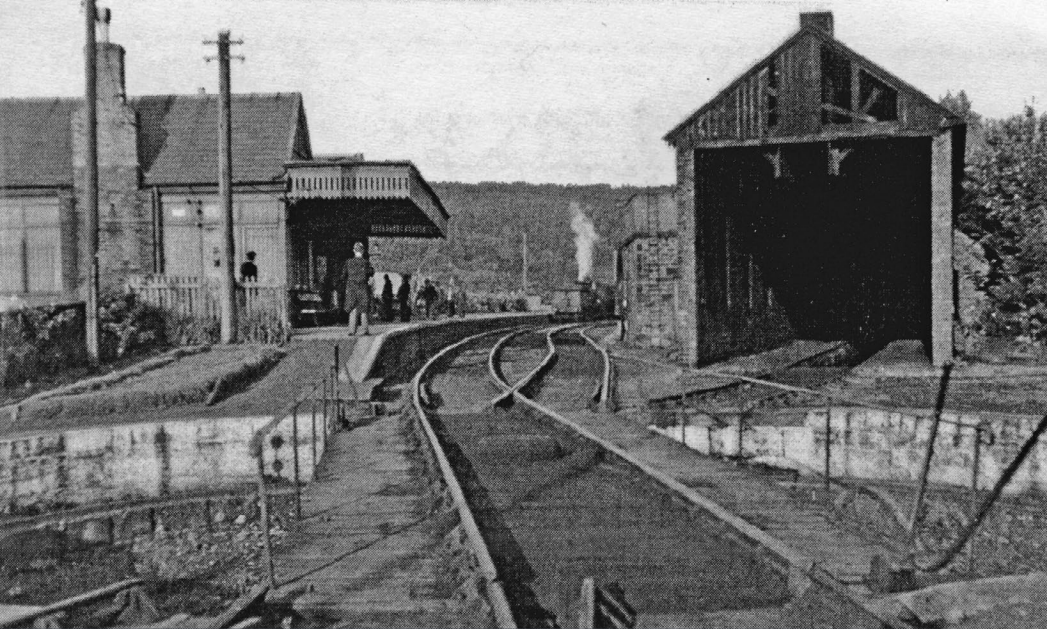


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The UK Rothbury Branch Line

MRH Running Extra | February 2020

STEPHEN SPRY designs a rural single-track layout ...

YOUR JOURNEY TODAY IS ALONG A QUIET SINGLE-track line in the North East of the United Kingdom. My N scale plans represent a 13-mile rural branch line between Scot's Gap and Rothbury [1] in the County of Northumberland. I hope to show how knowing the story behind a line can impact the design of your layout.

My layout design is nowhere near prototypical. I am not aiming for that. I use the research to give my layout more meaning. With

THE UK ROTHBURY BRANCH LINE | 2

1. Rothbury station, 1953.
*Walter Dendy photo from
Rothbury railway station
Wiki [en.wikipedia.org/wiki/
Rothbury railway station](https://en.wikipedia.org/wiki/Rothbury_railway_station)*

★★★★★
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a prototype inspiration, I think my plans come closer to reality than if I tried to just wing it. Being on the other side of the world in Australia, I know very little about UK railroading. The internet can provide enough information to present you with layout possibilities for either a single or double garage.

THE ROTHBURY BACKSTORY

The Rothbury branch line was built by the Northumberland Central Railway. It opened for business in November 1870 and was sold to the North British Railway in 1872. The station was opened as Scots Gap but was renamed Scotsgap in October 1903. Ownership would change again in 1921 when the branch became part of the London & North Eastern Railway. The line closed permanently in November 1963.

The branch ran 13 miles from a connection with the Wansbeck Railway at Scot's Gap. The Wannie line ran about 25 miles from Morpeth in the east to the Border Counties Railway junction at Redesmouth to the west [2]. Originally, backers thought the Rothbury branch could be extended to the north to become an alternate route into Scotland. That didn't happen, and the line terminated at Rothbury.

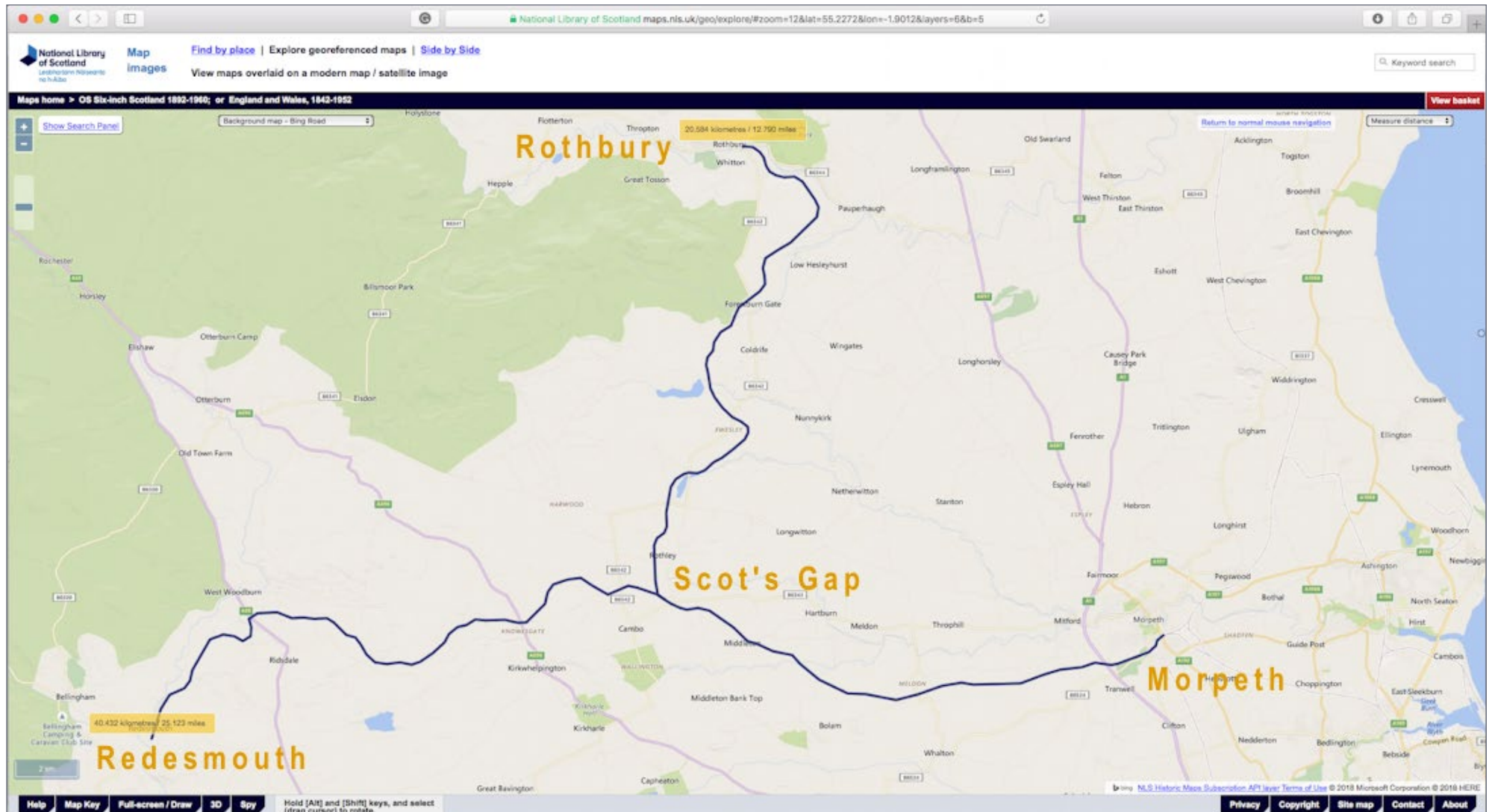
Like many smaller British railway lines of the era, the main Wannie line and the Rothbury branch struggled to remain competitive, especially once road transport took hold following WWII. The railway finally closed to all services in the mid-1960s, along with hundreds of other lines, thanks to the Beeching cuts (see en.wikipedia.org/wiki/Beeching_cuts for details).

THE UK ROTHBURY BRANCH LINE | 3

This area and railroad era of Northumberland is very interesting to model. It is predominantly rural with sheep and cattle grazing. There are also root crops, lots of minerals (coal, lime, sandstone,

THE UK ROTHBURY BRANCH LINE | 4

iron), and regular passenger services that were often combined with freight. It makes for a variety of rolling stock and activity.



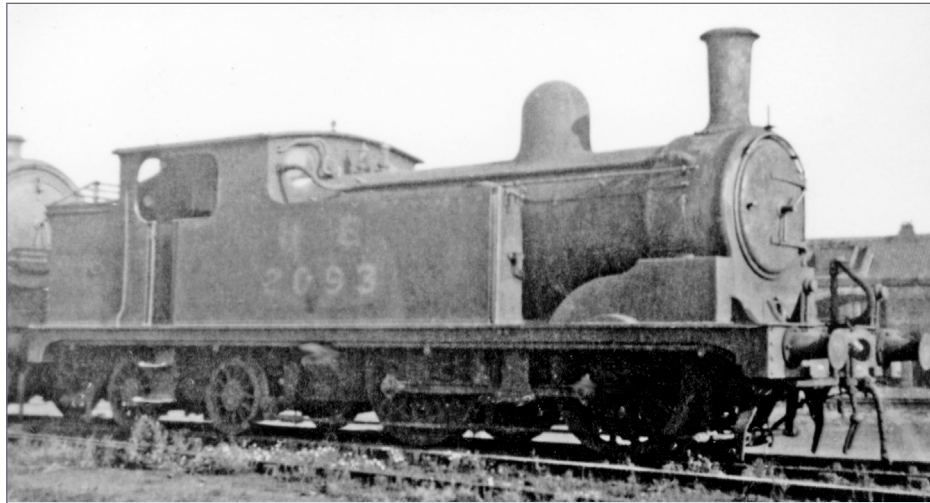
2. Rail connections in Northumberland.

THE UK ROTHBURY BRANCH LINE | 5

The region's gentle rolling hills have lots of green fields and stone fences with a few forested areas. The layout can feature uncomplicated yet pleasant scenery. Many trees will be required to fill the small forests for the timber plantations. There are interesting stone structures and buildings, along with history dating to Roman times.

Being a small branch and main line, you didn't find any big steam here. By the mid-1920s, the line was part of the London and North Eastern Railway (LNER). At that time, two locos were based at Rothbury Shed; a G5 class 0-4-4 tank [3] and a J21 class 0-6-0 [4]. The motive power could haul up to a dozen short wheelbase freight wagons, or one or two 4- or 6-wheel passenger coaches. I haven't found specific N scale model locos, so I'll need to compromise.

As an alternative, you could pretend the line didn't close in the 1960s. A diesel multiple unit (DMU) or two, along with other



3. LNER class G5 0-4-4 in Stratford circa 1938. *Ben Brooksbank photo from NER Class O Wiki* en.wikipedia.org/wiki/NER_Class_O

THE UK ROTHBURY BRANCH LINE | 6



4. LNER J21 class 0-6-0 waiting to leave Wearhead for Bishop Auckland. *Ben Brooksbank photo from NER Class C1 Wiki* en.wikipedia.org/wiki/NER_Class_C1

diesel locos, would not be out of place. A few long consists of bigger freight wagons and longer passenger coaches can be added, but no high-speed trains.

The Rothbury line provides an opportunity to model a single-track rural line with a variety of mining, agricultural industries, and regular passenger traffic. I included some of the Wannie line on a central peninsula on the track plans. This allows for continuous running, a hidden lower-level fiddle yard, and several crossover/reverse sections to keep your operators alert. With no mountains or tunnels on this line, I used scenic dividers and trees to disguise reverse loops and hidden staging areas. Let's begin the layout tour [5].

SCOT'S GAP JUNCTION

Shown at the top of the plans, Scot's Gap station was opened in July 1862. Services included a single passenger platform on



the southern side, two parallel loops and two sidings that served a goods platform and warehouse [6]. A cattle dock led to the very busy adjacent Auction Mart. Even today the Mart has weekly sheep auctions. There was a short spur for a turntable to turn the Rothbury locos, however, many trains continued to Morpeth.

At Scot's Gap construction began on the 13-mile branch to Rothbury in August 1869 and opened a year later. On the track plan, the Rothbury branch is shown in orange and the Wannie in yellow. Yards and sidings are in grey, and reverse polarity sections in light yellow.

The Wannie line had several stops east and west of Scot's Gap Junction. I included Woodburn on the single-car garage plan, and a few more on the larger plan. I eliminated stops to allow for more travelling through the rural countryside.

Let's head out along the Rothbury branch. Take your seat in the Gresley Brake 3rd Coach, and let's go.

5. An N scale Rothbury branch fits into a double garage with room for the Wannie line on a peninsula. The layout space is 719 centimeters (cm) across and 629 cm deep. This is very close to a 24x21 foot garage in the US.

TRAVELING WEST

For the first several hundred yards of our journey on the larger plan, the Rothbury line races westward alongside the Wannie. After passing under a sheep crossing bridge typical of Northumberland, our train veers away to the north through rural landscape and begins a 1.3% grade. We cross over several small streams and catch glimpses of the Rothley Crags, a sandstone outcrop rising out of the farmland. We pass under old stone road bridges before our first stop.

Longwitton Station was originally a private station known as Rothley. It became a public station in April 1875. There were connections to a limestone quarry and a long siding for a tramway to the Longwitton Colliery. An old wooden passenger coach at the southern end of the platform was used for the simple timber booking office and waiting room.

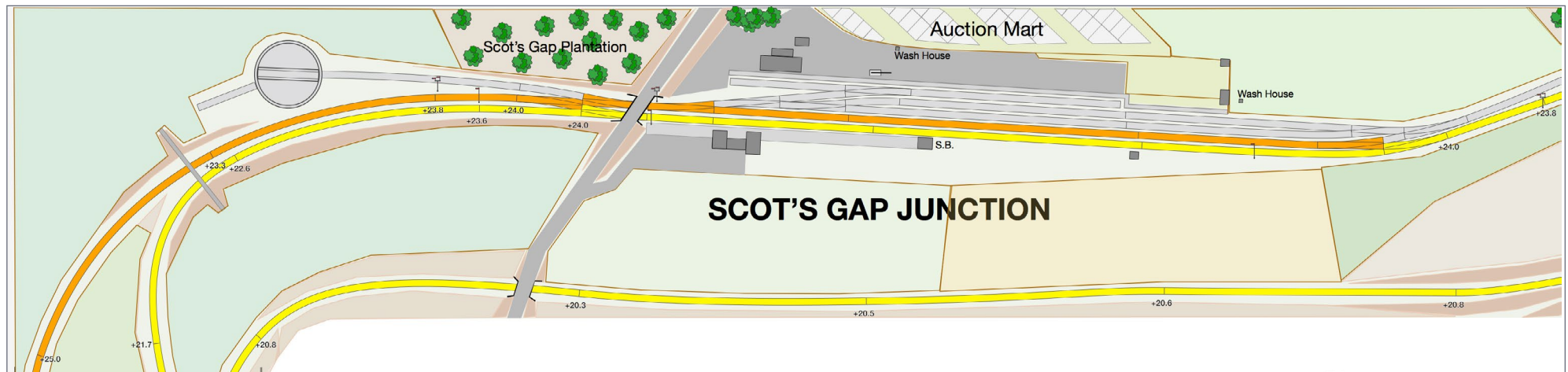
Rothley Lakes are nearby [7]. These were created in the late 1760s as part of Sir Walter Blackett's pleasure ground, which



7. Rothley Lakes looking north. Image from [Google Streetview](#)

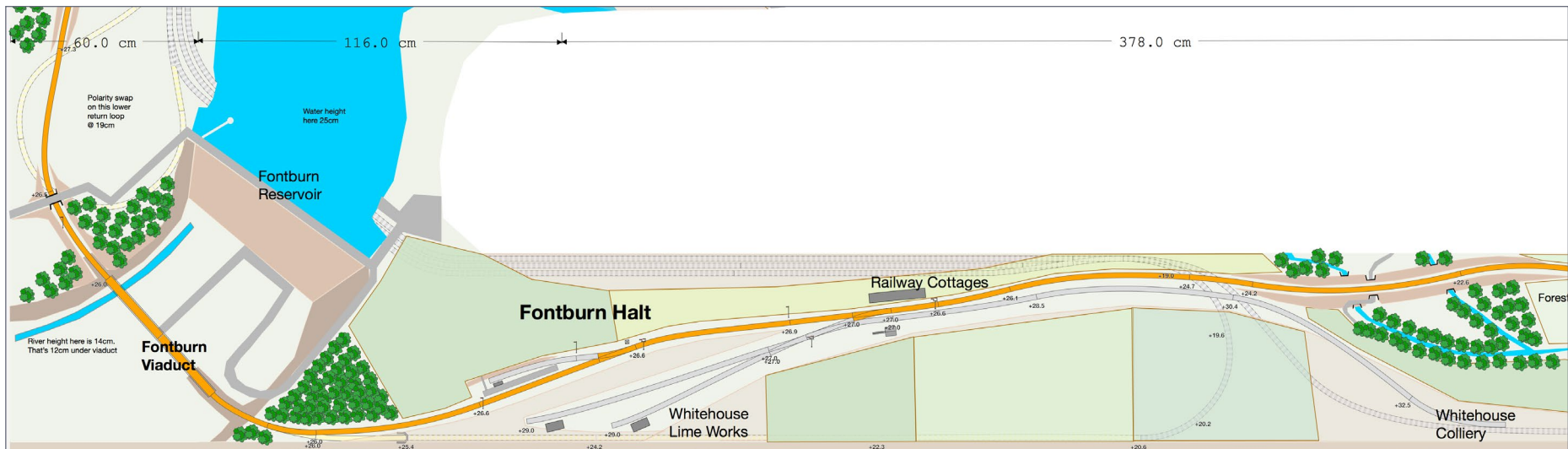


6. A closer look at Scot's Gap Junction on the double garage plan.





8. A view of the Fontburn Viaduct and water treatment facility. Image from www.geograph.org.uk/photo/2139075



also included a folly castle, a fort and a deer park. The UK National Trust now manages this area.

There are many elements to model here, including a large stone-fenced sheepfold in a nearby paddock at the Rothbury end of the yard. The stone road bridge and a stone sheep bridge add to the character. If space permits, the old Longwiton Colliery tramway could also be included.

FONTBURN VIADUCT

The impressive 12-arch Fontburn Viaduct is a scenic and operational addition to the branch [8]. It is approximately 60 feet high and 150 yards long. The viaduct looks over a fisheries facility and the Fontburn Reservoir. An extension of the reservoir is included in the larger track plan.

9. The Fontburn Viaduct and Fontburn Halt section of the double garage plan. Note the lime works and colliery sidings.

Fontburn Halt is adjacent to the viaduct scene. It was established around 1900 during the construction of the reservoir. A goods bay was located behind the platform with a tiny wooden waiting shelter. Just beyond are the sidings serving the Whitehouse Lime Works and Whitehouse Colliery [9].

BRINKBURN STATION

An impressive 1.6 mile-long aerial ropeway transported coal across the River Coquet Valley from Healey Cote Colliery to Brinkburn station for loading. A WW2-era concrete pillbox stands to “defend” the station property if the need arises. The stationmaster’s residence is the only building still standing here [10].



10. Remains of the Brinkburn station in 1965. *Ben Brooksbank photo from Brinkburn railway station Wiki*
en.wikipedia.org/wiki/Brinkburn_railway_station



11. This part of the former Rothbury branch is now a hiking trail. A sheep crossing bridge spans the cut. *Image from*
www.geograph.org.uk/photo/124430

From Brinkburn, our train descends while clinging to the valley side. The River Coquet flows 90 feet below the grade while Mount Healey, the biggest mountain on our journey, towers 200 feet above. Then the line turns to travel through a narrow cut 50 feet deep and several hundred yards long [11]. The deep cut offers a visual block that makes the line seem longer.

On the other side of the cut, our train passes The Thrum, a shallow gorge where the river flows over harder rocks and makes a thrumming sound. The Thrum Mill and water wheel stand nearby and offer another modeling scene [12].



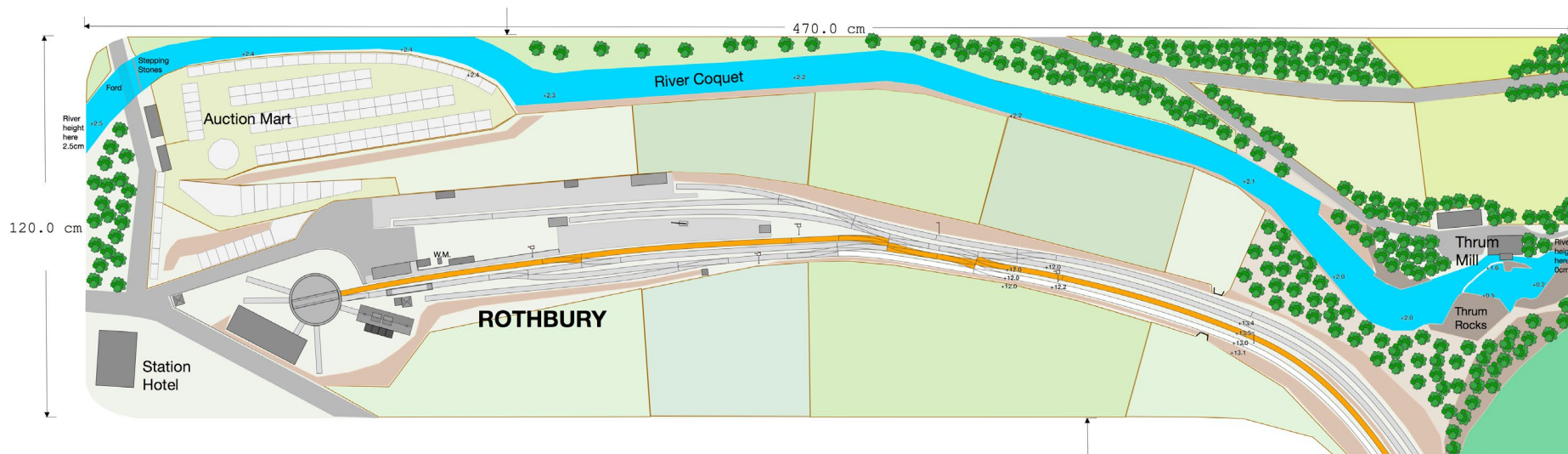
12. The Thrum mill and buildings. Image from www.geograph.org.uk/photo/5593151

ROTHBURY STATION

Rothbury Station features several long sidings that were packed with passenger carriages on Race Days for the popular steeplechase events at the Rothbury Races [13]. They were jammed with livestock wagons on the regular auction days. The busy terminal has tracks for goods platforms, stock unloading facilities, locomotive facilities and some extra space for wagons. Locomotives would be turned here for the return trip.

The only non-station building in my track plan is the Station Hotel, now known as Coquetvale Hotel [14]. The village of Rothbury is on the other side of the river, connected to the station area by a magnificent 15th century bridge.

13. The Rothbury section of the double garage plan. Note the Auction Mart area in the upper left and the Thrum mill scene at the right.





14. The old Rothbury Station Hotel.
Image from www.geograph.org.uk/photo/3642638



15. Stepping stones cross the river near the Auction Mart and would be an interesting addition to a model scene.
Image from www.geograph.org.uk/photo/3644116

16. I also created single garage N scale version. A reduced version of the Wannie line fit onto a peninsula, but other towns on the Rothbury branch were removed. The layout space is 418 cm across by 629 cm deep. This is very close to a 14 x 21' garage in the US.



Two locomotives were based at the Rothbury Shed. Several were stored here during WWII to avoid German bombing!

SINGLE GARAGE VERSION

Not everyone has a double garage space for a layout, so I created another version to fit a single garage. The Scot's Gap Junction area was shortened and a few locations were removed.

Ewesley replaces Longwiton on the single garage plan [16]. The town was built on top of a circular Roman camp that offers historical modeling possibilities. A passing track and short goods siding served traffic here.

The Fontburn scene and station remain in a similar location. Brinkburn and the river gorge are eliminated in favor of the cut and entrance into Rothbury with the Thrum as a background scene.

Around the start of the last century, three single coach trips ran daily to Morpeth, with a daily freight train working in both

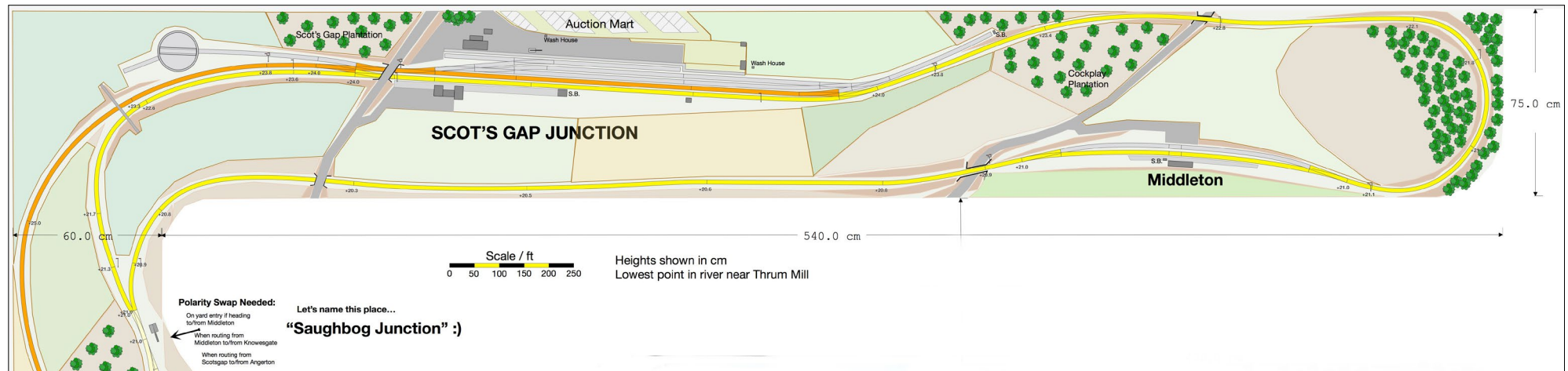
directions. Freight was mainly agricultural with some private mineral wagons mixed in for good measure.

The passenger service was reduced to two trips at the start of WWII, until it was withdrawn in September 1952. The freight service continued until it was withdrawn in November 1963. The Rothbury branch closed completely, along with the Redesmouth to Woodburn section of the Wannie line.

TRACK PLANS

The garage door end of the plans includes an idea I used in the 1980s to create an office in my garage. A full-height framed wall is erected across the width of the garage door and three feet in from the door. Shelves were installed to provide storage. The garage door provides access to the space. The wall reduces dust entering the space and is secure enough to attach layout benchwork.

17. East of Scot's Gap Junction, the Wannie rolls through a turnback loop to enter Middleton.

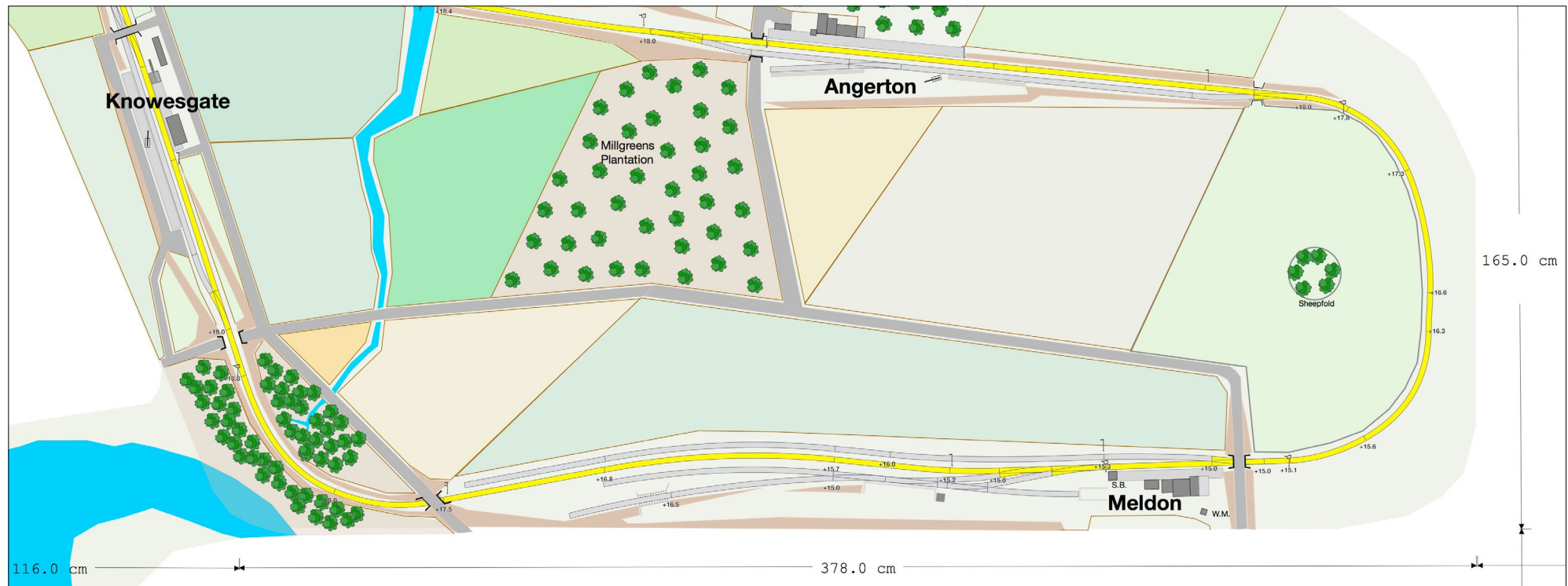


THE UK ROTHBURY BRANCH LINE | 21

Around the garage, open frame benchwork is attached to the walls. Most of this is a minimum of two feet (60cm) wide in most places. Layout height should be set by the builder.

The point-to-point running is complete, with turntables at both Scot's Gap and Rothbury to turn the locos around. Grades are minimal and are representative of the prototype. Track and river elevations are shown in centimeters (roughly 2.5 cm to an inch). Semaphore signals are included where shown on the original 1897 maps, but I am not a British railway signaling expert.

I was able to fit the station track plans at full size wherever possible. I used N Scale Peco Streamline Flex Track and Peco Streamline turnouts in the plans.



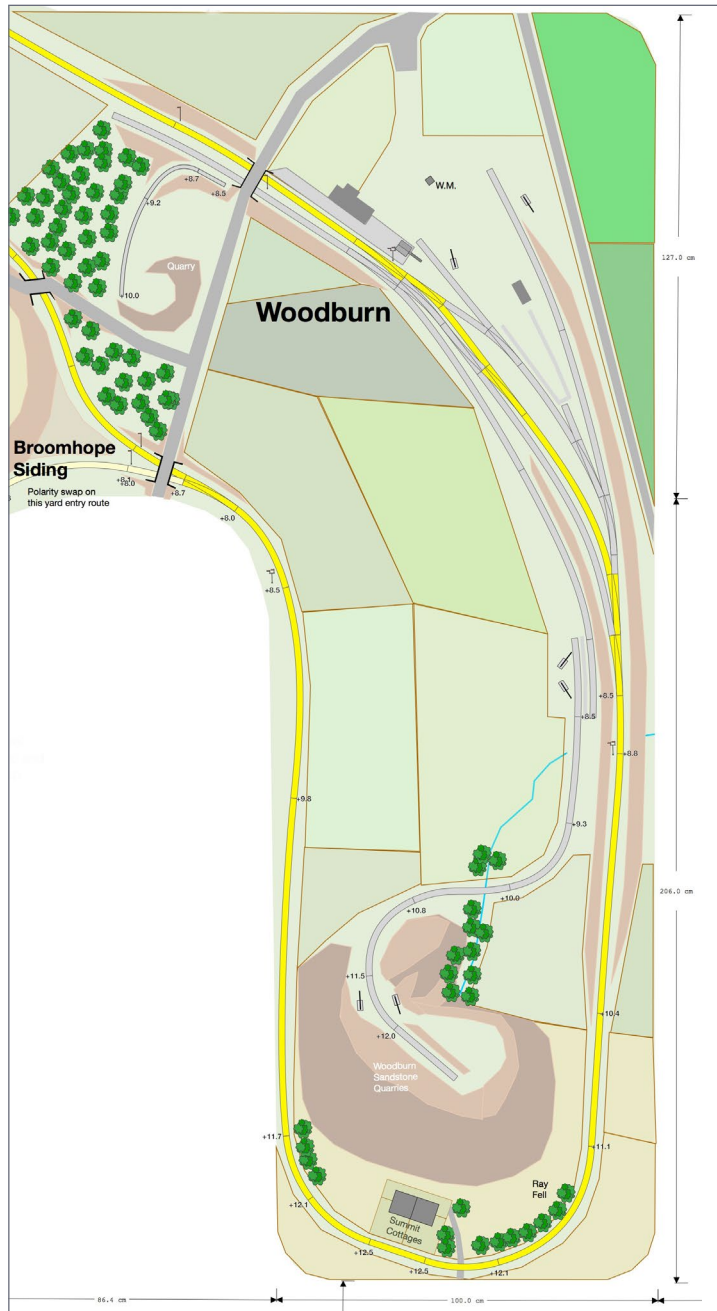
THE UK ROTHBURY BRANCH LINE | 22

WHAT HAPPENS TO THE WANNIE LINE?

I felt something must be included to represent the Wannie line connecting at Scot's Gap Junction. Here's where I got creative by including hidden fiddle yards, loops and a central peninsula.

Travelling east from Scot's Gap, one tight curve brings the main-line back upon itself [17]. The double-garage layout plan includes the station of Middleton, which incorporates a passing track and cattle dock.

18. The double-garage plan affords additional Wannie track-age on the peninsula.



19. While not as large an area, the Wannie has scenic and operational features on the single-garage plan.

This eastbound section rejoins the westbound Wannie line from Scot's Gap Junction at a fictional place called Saughbog Junction. Trees can be used as a scenic divide to make the line disappear under the layout to a hidden fiddle yard, and/or head off onto a peninsula.

From Saughbog Junction, one line enters a hidden yard under Longwitton Station. A return loop under Fontburn Halt on the double garage plan allows for continuous running. This return loop is under the Fontburn Viaduct area on the one-garage plan.

On the single-garage plan, there is a section on a 2.2% rise to join the fiddle yard to the branch line approaching Rothbury. I used a scenic tree screen to hide the tunnel mouth. These hidden yards represent the distant towns of Morpeth and Redesmouth.

I added more of the Wannie line to a peninsula near the middle of the double-garage plan [18] and used modeler's license to make things fit in a mash-up of elements. Continue around the main peninsula in a clockwise direction from Saughbog Junction. I included Angerton Station with its passing siding, Meldon Station with a goods docks and coal unloader, then Knowesgate. There's a possibility for a fiddle yard entry just beyond Knowlesgate with room for a lineside industry.

The connections at Saughbog Junction provide continuous running for the Wannie on the double-garage plan.

WANNIE ON THE SINGLE GARAGE PLAN

The single garage peninsula includes the Woodburn station on the Wannie [19]. The sandstone quarries add a different element and there are moors along the track up to the Summit Cottages. Broomhope Siding provides an entry to the fiddle yard. This could also serve the steel and ironstone industries if you decide to model them.

Depending upon your layout control, watch the electrical polarity as routes go through return loops. With one exception just east of Scot's Gap, I managed to avoid those 360-degree



20. Scot's Gap Railway station. *Ralph Rawlinson photo from Scot's Gap railway station Wiki* en.wikipedia.org/wiki/Scotsgap_railway_station

turns that many layouts have. Even the tighter curves on these plans are reasonable radii for N scale.

Only a limited number of station buildings need to be modeled, and they are not complex [20]. Thankfully, there are no full cityscapes, which would drive me crazy trying to build in N scale and test my eyesight!

I like building scenery and am attracted to this mainly agricultural region. It makes for a project I can easily work with and never feels like it might be too big for me to complete, except for the total number of trees the layout would need.

Unfortunately, I am not looking at a garage-sized empire, not that I could afford it. I am limited in available space to a 2 x 5' area. Maybe that is a doable project for me. Meanwhile, there is something about the Northumberland area that makes it magical. Maybe it is:

1. The gentle rolling hills of rural Northumberland.
2. Lots of green fields full of grazing sheep.
3. Lots of old stone fences and old stone buildings.
4. A history that dates back centuries to Roman times.

5. The small steam locos and small rolling stock used.
6. A line which operated for almost 100 years.
7. Many different opportunities and scenarios for modeling.

All of these intertwine to provide the magic that allows us to recreate part of a bygone era using model railways, no matter how much space we have.

RESOURCES

Almost a lifetime ago in the late 1970s, Ian Futers' writing on rural Northumberland sparked an interest in model railroading. Today, that interest has been rekindled. Online research uncovers detailed maps and hundreds of images for buildings and rolling stock of a specific region.

The 25" Georeferenced 1897 Northumberland series from the National Library of Scotland (maps.nls.uk/geo/explore) allowed me to inspect the entire Rothbury branch and Wansbeck lines.

The Disused UK Stations website (www.disused-stations.org.uk) was an invaluable resource. It features information and images for many small UK stations you might want to model.

Google Images is handy to find photos for the key town and station names. Some results are not particularly accurate, so be wary. Many images were not included here due to copyright issues.

I find these resources can help me create a feel of a time and place. I now have time available to start over with my hobby. Once again, I can revisit this area of Northumberland. ✓

★★★★★
RATE THIS ARTICLE

STEPHEN SPRY



Stephen Spry first ventured into railway modeling in the mid-1980s. His first layout was the proverbial "N scale on a door." After fighting a losing battle with a nest of ants in the door, Stephen did not do much in the hobby until recently. With limited space available, he is planning an even smaller shelf-sized layout about 2 x 5'. In his spare time, Stephen is an almost retired Australian web designer and publisher who has been self-employed since the mid-1990s. ■



21. In this series of videos, Stephen Spry illustrates how he turned his research into a detailed track plan for a layout.



Reweigh Dates on Freight Cars



RATE THIS ARTICLE

MRH Running Extra | February 2020

ANTHONY W. THOMPSON explains the subtleties in the small lettering ...

AN IMPORTANT DETAIL OF FREIGHT CAR LETTERING is the reweigh date. Most modelers recognize its existence but may not understand the subtleties of this lettering.

REWEIGH DATES ON FREIGHT CARS | 2

1. This model boxcar has been re-decaled to indicate a reweigh. Only the last three digits of the load limit and the light weight are changed. Next to the changed numbers are the reweigh symbol, SLO (for San Luis Obispo), and date.

The first point to realize is that many freight cargoes were billed on the basis of cargo weight, which was often obtained by weighing the loaded car on a scale and subtracting the weight of the empty car, called “light weight.” The light weight, in fact, is stenciled on the car side; but it’s obviously vital that this weight be accurate. That’s why cars had to be reweighed periodically, to account not only for repairs which might change car weight, but even wheel wear, drying of wood parts, and so forth.

When first built, a new car was stenciled with “NEW” and the date, next to the light weight value. Periodically thereafter, the car was reweighed, and the location and date of doing so were stenciled on the car, superseding the “NEW” notation. This was done at intervals given in Table 1.

Table 1 shows that rules on how often cars had to be reweighed varied with era. In the time of wood cars, repairs were frequent and reweighing was frequently required. By the time steel cars dominated the freight car fleet, the reweigh intervals were lengthened. These requirements, for any applicable era, can be found in the back of the *Official Railway Equipment Register*, or *ORER*.



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Table 1 - Selected Reweigh

- From 1937 to 1949 - most cars reweighed every 30 months except:
cars with composite underframe or superstructure, to be first reweighed after 15 months
- From 1949 to 1962 - most cars reweighed every 48 months except:
first reweighing in 30 months, and composite cars, first reweigh after 15 months, and composite cars and open-top cars, reweigh every 30 months
- From 1962 to 1967 - most cars reweighed every 48 months except:
ice reefers and LO covered hoppers, first reweigh, 30 months
LO covered hoppers, reweigh every 30 months
- After Jan 1, 1968, reweigh interval extended to 60 months for boxcars, open hoppers, and non-mechanical refrigerator cars, while all other car types were released from the periodic reweigh requirement

In addition to the maximum intervals between reweighing shown in Table 1, it was required that whenever repairs or alterations “materially” altered a car’s weight, it was to be reweighed and restenciled. Thus, major shopping of a car would likely result in a reweigh. And if an empty car were to be reweighed for any reason, and its weight found to differ by more than 300 pounds (500 pounds for refrigerator cars) from the stenciled weight, it was to be restenciled at once. The periodic reweigh requirement, which appears to have been introduced in 1912, remained in



2. When freight cars were reweighed, the new empty weight (or light weight) and the corresponding load limit were lettered onto the car. The load limit was computed by subtracting the light weight from the maximum load on the axle journals, 169,000 pounds in the case shown, which corresponds to the usual Code D journals of 50-ton car trucks (see Table 2). The old values were covered with a patch of paint, and new values were lettered atop it with a short-bristle brush, stiff white “stencil paste,” and individual number stencils. Sometimes the hand-held number stencils were not perfectly spaced or aligned. Photographed at Englewood yard near Houston, Texas, reweigh symbol HO. *T&NO photo, California State Railroad Museum*

force into the 1970s, though reweighing continued to be required after that in case of significant repairs or modifications.

Decal sets have been produced to provide reweigh dates and symbols. Sunshine Models and Champ Decals each had HO scale sets for several American regions. These are no longer available but can be found on resale sites. These symbols designate places with scales where the reweighing could be done. An extensive list of these, for numerous railroads, can be found in the form of a spreadsheet on the Steam Era Freight Car website at www.steamfreightcars.com. To find the list from the home page, click on “Prototype” and then on “reweigh station symbols.”

Perusal of prototype photos suggests that the great majority of reweighing was done on the railroad which owned the particular car. As an estimate, this is true of about 80% of cars seen. The remainder could have happened anywhere in the U.S. for free-running cars such as boxcars, flat cars, and gondolas. Specially equipped, leased, assigned-service, and refrigerator cars, on the other hand, were nearly always reweighed on home rails.

LOAD CAPACITY

It’s important to realize that the values for light weight and load limit of a freight car are linked numbers. They must add up to the load capacity of the axle bearings. Thus, one of these two numbers, light weight and load limit, cannot change without the other one changing also. A list of these load capacities is shown as Table 2. In 1960, the maximum weight values (right column) were increased about 5% [Table 2].

A common result of reweighing was that only the final three digits of the light weight and load limit were changed, so only those parts of the numbers were restenciled [1]. And sometimes if the weight was found not to have changed, the reweigh clerk simply

Table 2 - Axle Size and Car

Axle Code	Journal Size, Inches	Nominal Capacity, Tons	Maximum Weight on Rail, Pounds*
B	4-1/4 x 8	30	103,000
C	5 x 9	40	136,000
D	5-1/2 x 10	50	169,000
E	6 x 11	70	210,000
F	6-1/2 x 12	100	251,000

*equals sum of light weight and load limit

stenciled a new reweigh symbol and date, since the weight values didn’t require refreshing. The ultimate in simplicity was when the reweigh occurred at the same location as the previous one, and the weight hadn’t changed — in that case only the date needed to be renewed to indicate that the check had been done.

The major exception to these rules were tank cars. They carried cargoes which were billed by gallonage, not by weight, so there was no need to reweigh them, and in fact tank car photos sometimes show cars which had been built 30 years earlier, still carrying a “NEW” date, never having been reweighed.

Perhaps the most important implication of reweigh dates is their relation to the date you have chosen to model. If you model June of 1952, for example, no steel car on your layout should have a new or reweigh date earlier than June of 1948. (As mentioned, tank cars are an exception). This example shows one reason it’s difficult to do a convincing job of modeling, say, “the 1950s.” What reweigh dates can you possibly use that would be realistic?

Conversely, consistent reweigh dates help establish the era you have chosen to model.

ADDITIONAL READING

Articles have been published over the years which touch on this topic. Here are two extensive articles.

Anthony Thompson, "The ORER—What it is, what it does," introduction to *Official Railway Equipment Register*, January 1953, reprinted by NMRA, 1996, pp. vi–xiii.

Pat Wider, "Weighing Freight Cars," *Railway Prototype Cyclopedia*, issue 12, 2005, pp. 1–45.

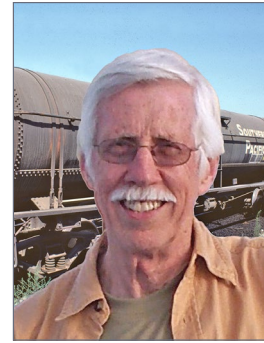
Anthony Thompson, "Reweigh Dates on Freight Cars," *Railroad Model Craftsman*, April 2011, pp. 73-75. 



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ANTHONY W. THOMPSON



A long-time SP modeler in HO and a California native, Tony Thompson is interested in SP history, and has published both magazine articles and books on this subject. He wrote the modeling column in the SP Historical and Technical Society's magazine, *Trainline*, for 25 years, and served over 25 years on the Society's board and five years as its President.

He is retired from a career in university teaching and research, as a materials scientist interested in mechanical properties of materials. For more, go to: www.signaturepress.com/authors/awt.html. He is a partner in Signature Press book publishing. To see their books in print, go to www.signaturepress.com. ■

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The Internet

For model railroaders:3



Running Extra | February 2020

THE MRH STAFF on getting full value from the internet goodies available through MRH Media ...

IN THIS FINAL PART OF THE INTERNET FOR Model Railroaders series, we're focusing on all the internet goodies that MRH provides and how you can benefit the most from them.

In part 1, we talked about becoming generally more web savvy. In part 2, we covered web power user tricks for getting more out of the web and spending less time online in the process. The idea is to get back to your modeling sooner!

In this part, we're continuing that "get more out of less time online" theme, even though this time we're focusing on just leveraging MRH Media web goodies to the fullest extent.

We bet there you may find one or more things we cover here that you didn't know was available. Let's get started!

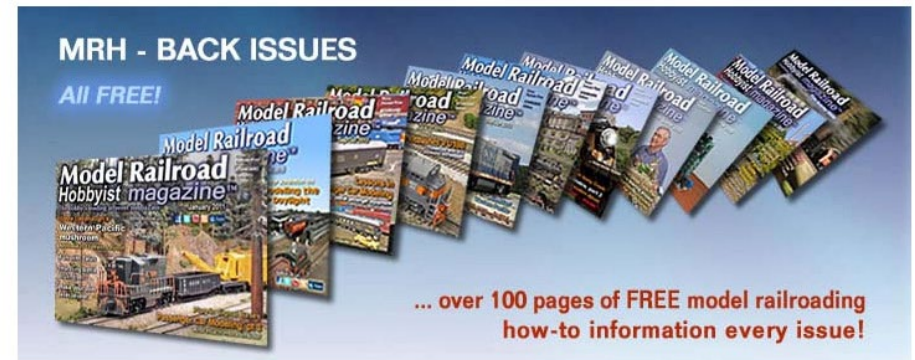


Back issues

Fri, 2016-11-04 23:56 — MRH Other subscriber goodies MRH magazine

Looking for an MRH article?

[Use MRH reader-maintained TOC index](#) - Use this reader-maintained index to find articles ...



MRH Gen4 (Yes, the Flash downloader has been retired)

Back issue	Read online	Read offline
 Dec 2019	View online	Web download 
 Nov 2019	View online	Web download 
 Oct 2019	View online	Web download 

1. As a registered MRH reader, you have unlimited access to all of the MRH back issues. You can scroll down to read or download any issue all the way back to issue 1, published in January of 2009.

DOWNLOADING BACK ISSUES OF MRH

What it is: Unlimited online access to all *Model Railroad Hobbyist* back issues. Most issues can be read online or downloaded as PDFs for offline reading. That's over 20,000 pages of model railroading articles, all free!

WEB: mrhmag.com/magazine/back-issues

How to use: You need to be a registered MRH reader to access the MRH back issues page. Registering is free, you just give us your email.

For more on registering, see the sidebar: "Becoming a registered reader."

Scroll to the back issue you are interested in, then select either the read online option or a read offline option – in other words, do a web download to your computer or mobile device.



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What it is: If you want a visual overview of what's available from MRH, try our hub page. Here's what you get:

- Last three years of MRH magazine with easy access reading
- Visual sampling of recent reader conversations on the MRH website
- Visual representation of what's new on the MRH facebook page
- Visual representation of what's new on the MRH Youtube channel

WEB: mrhmag.com/hub



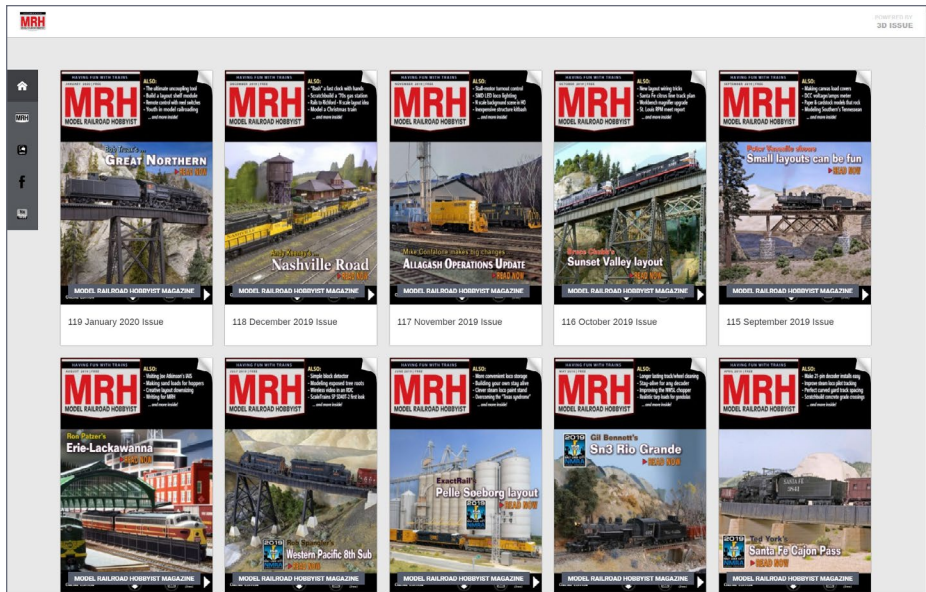
J. Fugate

BECOMING A REGISTERED READER

Registering on the MRH website is free and simply involves you giving us your email. Registering provides you many extra benefits:

- Unlimited access to all MRH back issues
- Ability to dialog directly with other registered readers
- More convenient access to new posts on the MRH website
- Heads up when the monthly MRH issue releases
- Weekly email with hobby tips
- Weekly email sampling of interesting MRH user posts
- Notification of what's new on TrainMasters TV
- Easy web link to featured sponsors' websites
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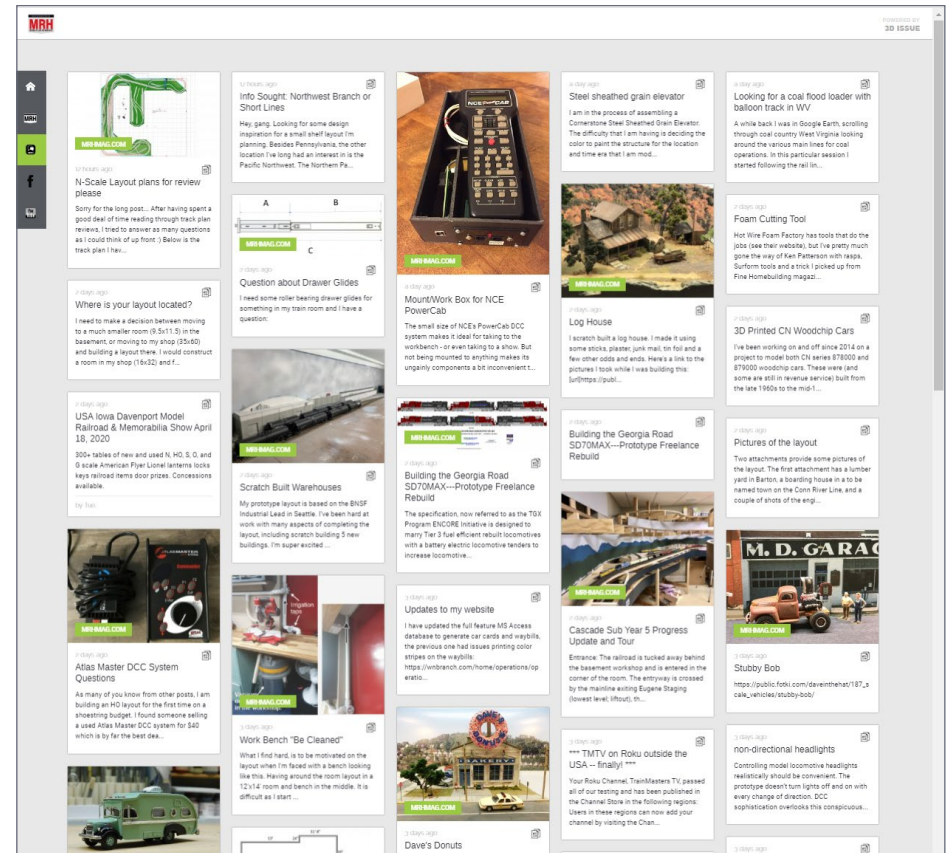
We never sell your email to third parties; we always protect your email and keep it private. If anyone wants to email an announcement to our registered readers, they need to be a paid advertiser with us. You only ever get emails from us as a registered reader. ■



2. The MRH Hub is a convenient and very visual way to view the latest from MRH, which includes the free MRH online version, the MRH forum, our Facebook page, and our YouTube page.

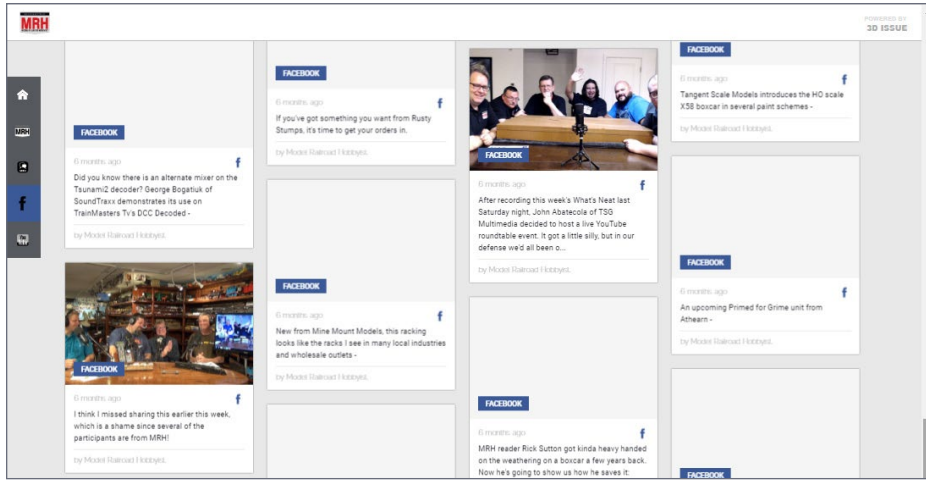
How to use: Visit the web link and select what you wish to view. See screen example [2].

- **MRH magazine** [mrhmag.com/hub/magazine]: Just select the magazine issue you want to read and it will open up in the on-line reader. You can only access issues from the last three years or so on the hub. For older issues, you need to visit the MRH back issues page (see previous topic).
 - **Recent MRH reader conversations** [mrhmag.com/hub/mrh-forum]: You can select the mrhmag icon just below the MRH magazine icon and get this handy visual representation of recent forum threads [3]. Just click on an item of interest to see a larger version of the summary.
- On the summary, select the **+** icon to read the full thread on the MRH website.



3. In the MRH hub, you can get this nice visual listing of recent MRH forum threads. Just select an item of interest to drill down into the full thread.

- **What's new on Facebook** [mrhmag.com/hub/facebook]: Selecting the Facebook icon shows you the most recent posts on the MRH Facebook page [4].
- Unfortunately, the Facebook feed doesn't seem to transmit along many images from our posts over there. However, selecting an item of interest on this page takes you directly to the source referenced in the Facebook post and bypasses Facebook.



4. In the MRH hub, you can also get a list of our recent Facebook posts. Just select one to drill into the details of the item referenced on Facebook.

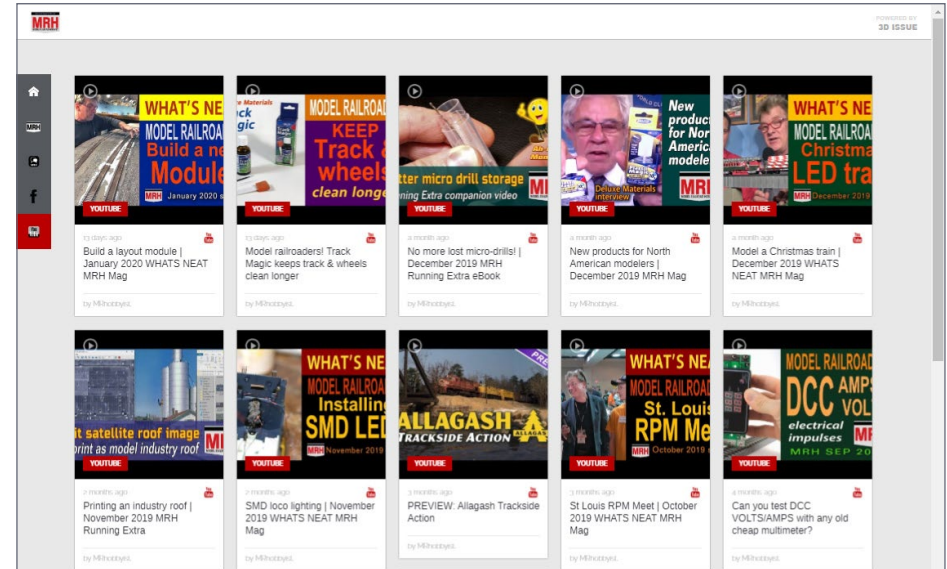
For example, if we feature a new model announced by Tangent, selecting our Facebook item on this page about that announcement takes you directly to the source announcement on the Tangent page, which is handy!

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5. The MRH hub also includes a list of recent videos posted to YouTube. Just select a video of interest to play it right there in the hub window.

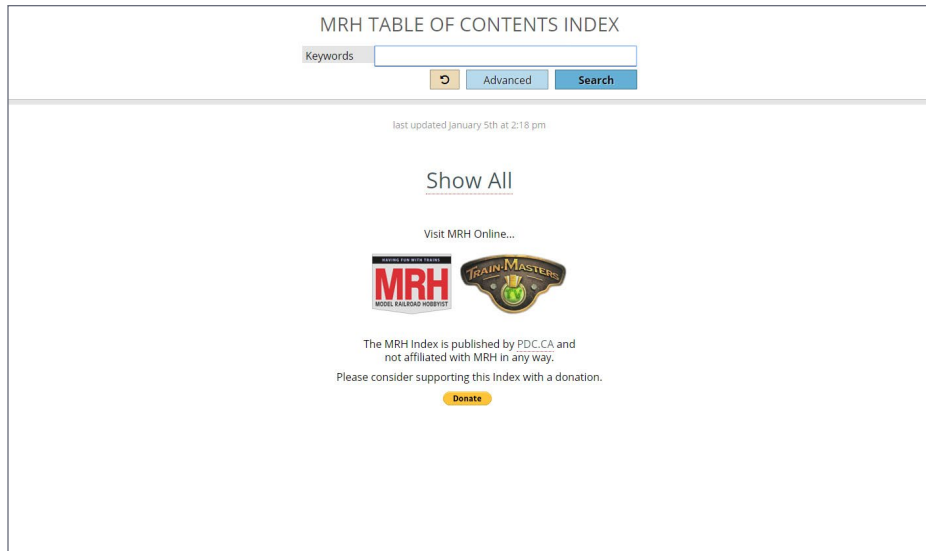
- **What's new on Youtube** [mrhmag.com/hub/youtube]: Selecting the YouTube icon gives you a visual list of our most recent YouTube videos.

Selecting a video of interest lets you watch the video right within the MRH hub, you don't even need to go to YouTube!

USING THE MRH/RE TOC SEARCH

What it is: You can search the table of contents pages across all *MRH* and *Running Extra* magazines with this MRH/RE TOC search [6]. It's very handy for finding articles on topics of interest, or finding articles written by a certain author.

We give a heartfelt thanks to MRH reader Bill Brillinger for his efforts creating and maintaining this invaluable index.



6. Using the MRH TOC search, you can find articles of interest in any back issue of *MRH* magazine or *Running Extra*.

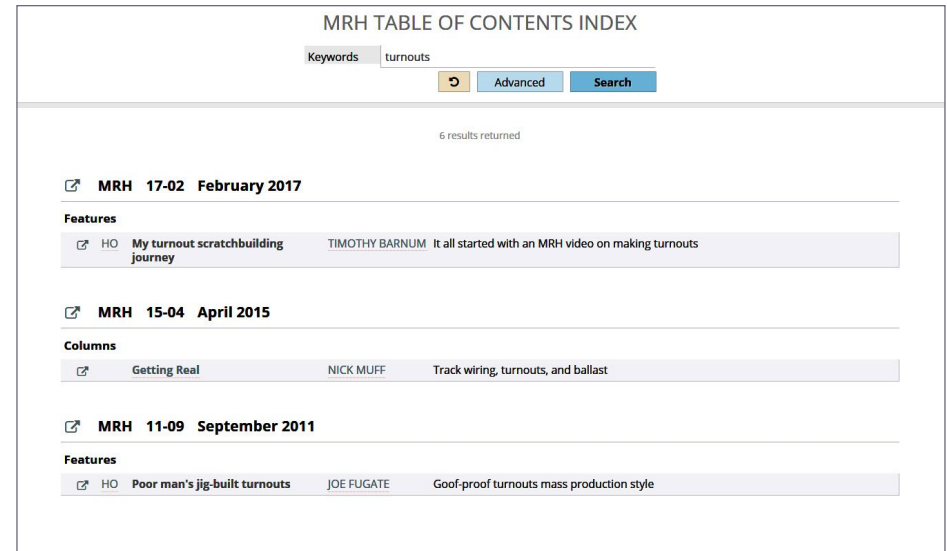
Bill also runs Precision Design Co. which produces a lot of great model railroading products. Find Bill's website at: <https://pdc.ca> ...

WEB: mrhmag.com/magazine/toc-index

How to use: Visit the link, then type in a topic you want to search for in the search box. The search returns all the past table of contents entries that match [7].

On the left of each search results entry, you can use the icon to jump directly to the article comment page for that given article. From there, you can bring up the online edition and read the article.

Example: Let's say I want to search for articles on *turnouts*. I type **turnouts** into the box and press the search button, getting these results:



7. Using the MRH TOC index and searching on the word **turnouts** returns these search results (more matching articles also returned, but not shown).

Advanced: Select the **Advanced** button to create a much more targeted search using filters. You can search for:

- Articles just in MRH or just in Running Extra
- By published date range
- By article category (drop down of column, editorial, feature, ... you can select from)
- Limit to just a given scale
- By specific title if you know it
- By author (drop down of all authors you can select from)

For example, if I want to find all the articles by Charlie Comstock, I press the advanced button and select Charlie Comstock's name from the author list and press search [8].

MRH TABLE OF CONTENTS INDEX

Keywords

Published In [any] ▼

Date [any] ▼ [any] ▼

Category [any] ▼

Scale [any] ▼

Title

Author CHARLIE COMSTOCK

Columns

Up the Creek

Basic Search

MRH 15-11 November 2015

Features

Recessing a Digitrax throttle panel CHARLIE COMSTOCK Protect your DCC throttle panels

MRH 15-09 September 2015

Columns

Up the Creek CHARLIE COMSTOCK Building a bullnose backdrop end

MRH 14-09 September 2014

Columns

Reverse Running CHARLIE COMSTOCK Dead frog society

HO Up the creek CHARLIE COMSTOCK Benchwork, roadbed, track

MRH 14-07 July 2014

Columns

Up the Creek CHARLIE COMSTOCK Laminated backdrop

8. The MRH TOC index allows searching by author – in this example we searched for articles by Charlie Comstock and got these results. Several screens of results came back, this is just the first screen. We use the scroll bar on the side to scroll through all the results.

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Blog	The NKP Freight House Spur in Canton, OH	Free-Mo Tim	101 3 new	9 min 15 sec ago
Blog	MOW Kershaw Ballast Regulator	cr9617	4 2 new	26 min 17 sec ago
Blog	Converted LPG tank car build	mesimpson	12 2 new	40 min 15 sec ago

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9. On the MRH website in the upper right, we provide a search box that does an extensive Google search on just the MRH website.

USING THE MRH WEBSITE SEARCH

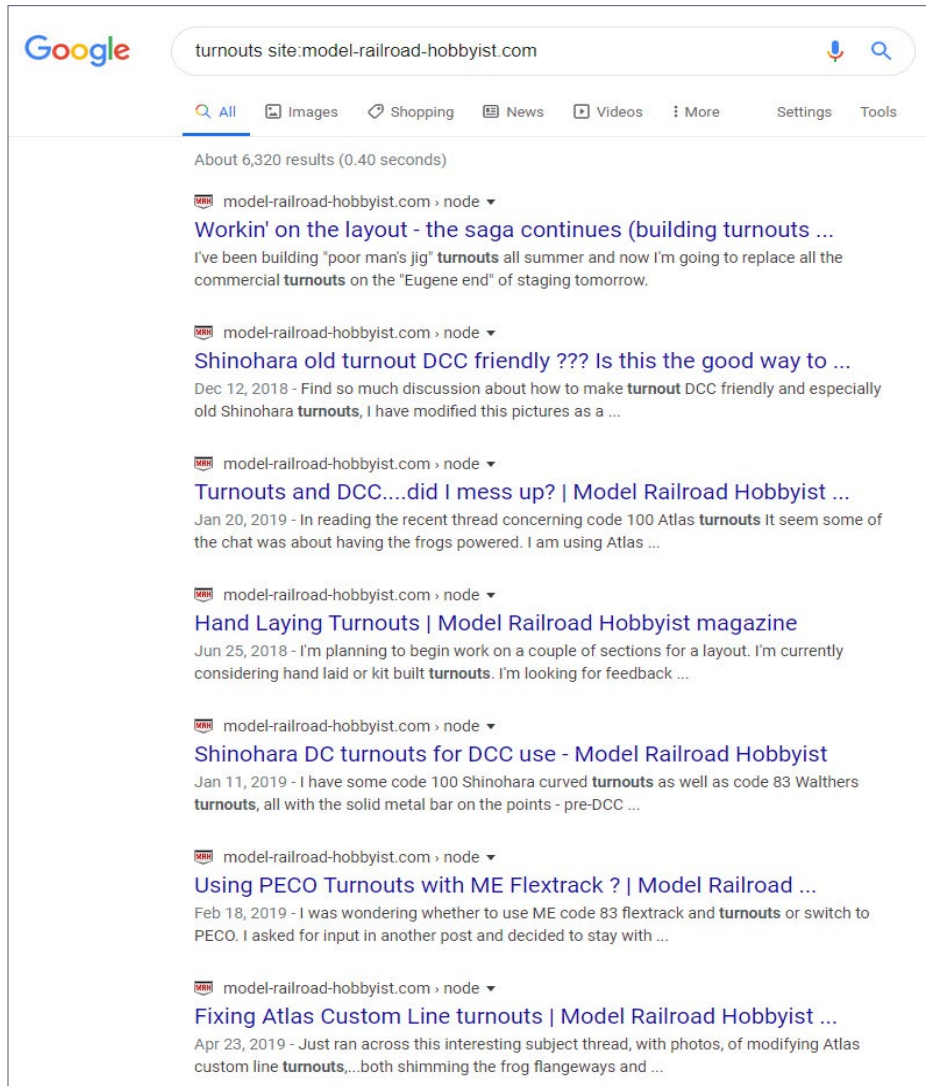
What it is: Search the MRH website and all the reader discussions for a topic of interest.

How to use: You can find this search box on the MRH website in the upper right [9]. Just type your search term(s) in the box and press the search button.

This box uses Google Site search, so any of the Google search tricks you may know also work with this search box.

Example: Let's search for the term *turnouts* ... to do that we type **turnouts** into the box and press the search button, giving the Google search results for that term just on the MRH website [10].

★★★★★
RATE THIS ARTICLE



Google search results for "turnouts site:model-railroad-hobbyist.com". The search returned about 6,320 results in 0.40 seconds. The results list several articles from the MRH website, including "Workin' on the layout - the saga continues (building turnouts ...)", "Shinohara old turnout DCC friendly ??? Is this the good way to ...", "Turnouts and DCC....did I mess up? | Model Railroad Hobbyist ...", "Hand Laying Turnouts | Model Railroad Hobbyist magazine", "Shinohara DC turnouts for DCC use - Model Railroad Hobbyist", "Using PECO Turnouts with ME Flextrack ? | Model Railroad ...", and "Fixing Atlas Custom Line turnouts | Model Railroad Hobbyist ...".

10. Using the MRH site Google search for the term turnout returns these search results. This is just the first page of search results for this term, the search returns 10 pages of search results in all – with 11 years of readers posts on the MRH website, it's a goldmine of insights on just about any modeling topic. It's all at your fingertips with our site search feature.



J. Fugate

MRH'S HUGE LIBRARY OF HOBBY KNOWLEDGE

Do not under-estimate the value of 11 years of reader posts on the MRH website. You will find a ton of insight there.

In fact, I've received calls or emails from readers bemoaning some thorny hobby problem they're dealing with, so I've done a search on the MRH website to see if it holds any insights.

Many times, I've found the very issue they're dealing with described and possible solutions given. Sometimes we get lucky and the person who posted the problem also gives the final solution that worked for them. Paydirt!

Because this search uses Google's powerful search engine to crawl just the MRH website, you can use all of Google's great search features in our site search box. It pays to get familiar with Google's search features because you can zero in on just the thing you want to know and filter out a lot of the noise.

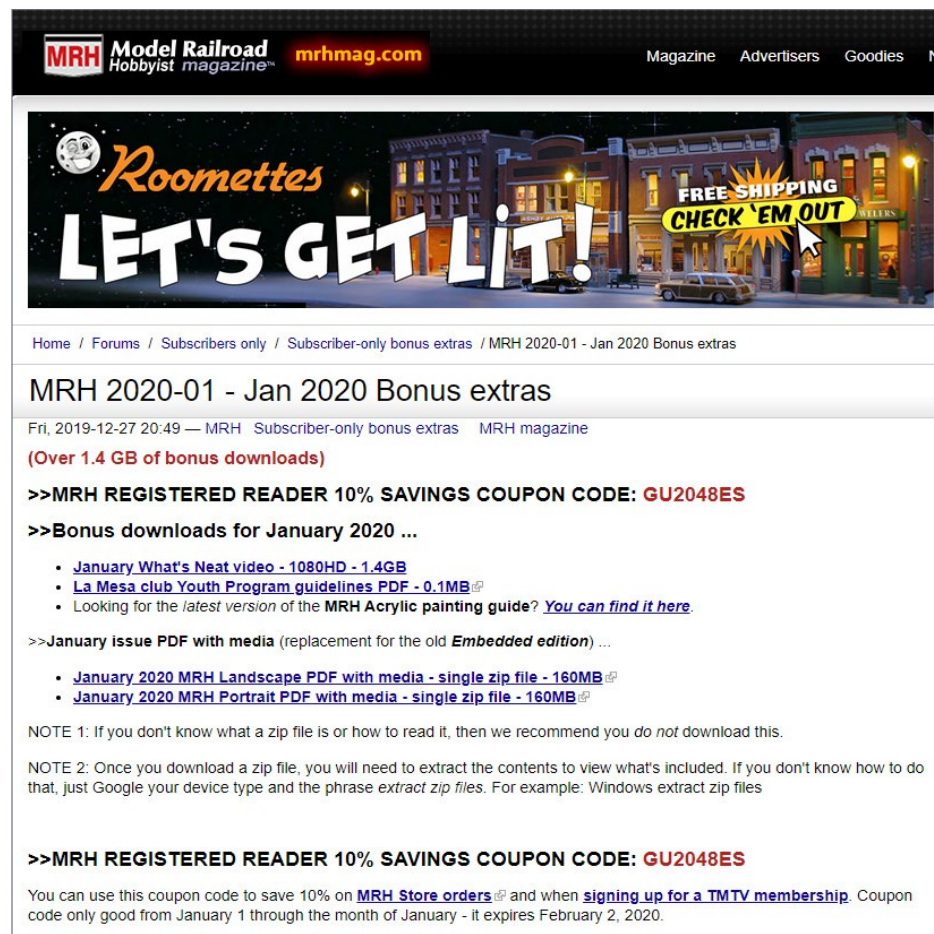
To learn more about Google's power user search features, I recommend you check out part 1 of this series in the June 2019 issue of *Running Extra*, and read the "Search Strategies" section. Learn how to get Google search to return precisely the results you're looking for! ■

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MRH BONUS EXTRAS

What it is: Each issue of MRH magazine may include some bonus extra downloads such as HD video, zoomable track plans, wallpaper images, article extras, or special MRH bonus goodies.



11. Each month, we provide some bonus extras with each issue. If nothing else, visit this page and get the monthly 10% off discount code – it works on the MRH Store and TrainMasters TV to save you 10% off!

This page also has a coupon code good that month for 10% off on the MRH Store or on TrainMasters TV.

You need to be a registered MRH reader to access the bonus extras. See the sidebar: “Becoming a registered reader” for more on registering.

WEB: mrhmag.com/monthly-coupon-code

How to use: Once you’ve become a registered reader, visit the web link and click on a file of interest to download it. Also, copy off the coupon code and use it to save 10% on the MRH Store and on TrainMasters TV.

Bonus downloads can take some time for us to format and collect, so they may not be available until a week or so after that month’s issue release.

If it has been more than 10 days since issue release and you still can’t access the bonus downloads, please use this link to let us know: [contact us](#).

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THE MRH STORE

What it is: We also publish books and videos on various model railroading topics. The MRH Store lists those items for sale [12].

The MRH Store sells downloadable videos, DVDs, eBooks, and paperback books.

WEB: store.mrhmag.com

How to use: Visit the MRH Store link and search through the various product categories as desired. If you find something of interest, you can add it to your shopping cart. Once you're done shopping, just check out and complete your order.

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For paperback books and DVDs, we use on-demand production services. With on-demand, the provider makes one product and ships it to you, the customer.

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What it is: Have you ever wished there was an HGTV for model railroading? Well TrainMasters TV is exactly that! We shoot TMTV so it feels like a network television show, but you stream the video over the internet like YouTube or Netflix.

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WEB: trainmasters.tv

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13. TrainMasters TV is MRH Media's "HGTV" streaming web channel for model railroaders. Produced to look like a network television show, we have almost 1000 video titles now, and we're adding more weekly!



14. TrainMasters TV features a Netflix-style video browser with each line displaying a category you can scroll through to find the video of interest. We have almost 1000 video titles in all. We tell people if you become a TMTV member and watch it 30 minutes a day x 7 days a week, it will take you almost 11 months to watch it all. And during that time, will have added another 50+ new segments!

TrainMasters TV now has almost 1000 titles out there, and if you sign up and start watching TMTV for 30 minutes per day, seven days a week, it will take you 11 months to watch it all! And once you're done, we will have added another 50 new segments in the meantime.

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SUMMARY

We hope this gives you a better idea of all the hobby richness available to you online through MRH Media. We design these resources to help you get the very most satisfaction from your hobby time – and along the way, we also hope to entertain and delight you, our fellow modelers! ✓



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Virtual Model Railroading is Here!

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MRH Running Extra | February 2020

**CHARLIE COMSTOCK CONSIDERS A NEW AGE
OF MODEL RAILROADING ...**

1. Train simulators have come a long way since their early days. Vast spaces are possible and the quality of the rendering of the generated scenery looks almost real.

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“OH MAN,” A TRAIN BUDDY COMPLAINED TO ME, “I really want a layout but I don’t have space for it, and I don’t have the bucks for it, and I sure don’t have the time needed to build it.”

“Strange that you should mention that,” sez I. “I just might have a solution for you.”

IS VIRTUAL MODEL RAILROADING FOR YOU?

I like model railroading. I’ve spent many an enjoyable hour in the basement working on or operating my HO scale Bear Creek and South Jackson, met lots of great people, and had a bunch of fun. However, even at 1100 sq. ft. I sometimes find myself thinking crazy thoughts such as, “The BC&SJ would be better for ops if the runs between stations were longer,” or “the aisles and backdrops sure impose artificial limits on the scenery.” The reality, for me anyway, is that I don’t have the energy, the bucks, or the time to start over.

Late in 2018 I downloaded Railway Empire software into my computer. This inexpensive game is similar to the venerable Sid Meier’s Railway Tycoon but with better graphics. I messed around trying to build some realistic scenes but realized that was a fool’s errand. The track, buildings, and scenery were not realistic-looking and – a killer for me – it was unsuitable for realistic operation.

Years ago, I’d downloaded Train Simulator 2009. While it provided good simulation of the mechanics of train operation, the graphics were utilitarian and boring at best and I quickly lost interest.

I wondered, “Have train simulator graphics improved?”

An internet search revealed a new version of the venerable Trainz simulator was due in late 2018, and a beta version was available now. The screen shots and YouTube previews gave me hope



2. The V scale Bear Creek yard looking east early in the morning.

for state-of-the-art computer game graphics, so I downloaded Trainz Railroad Simulator 2019. (trs19.trainzportal.com)

WELCOME TO V SCALE RAILROADING

Let me present V scale model railroading, also known as virtual railroading or train simulation. Gone are too-small train rooms and lumber/wire/track/buildings/rolling stock/locomotives/signaling systems/throttles stretching the budget too tightly [2].

My immediate reaction? Hey this is cool. Several layouts (or routes as they are called in Trainz) came with the program. I checked out the Canadian Rocky Mountain route. The graphics were stunning and the tracks seemed to go on nearly forever. The program has an easy mode that let me get a train running quickly.

I was hooked into giving V scale a serious tryout. I’m primarily a builder and operator so I still needed to give those aspects a try,

but it looked like V scale would make uncompressed model railroading feasible! Of course, I still had lots of questions.

IS IT SATISFYING?

Looking at one's trains on a screen is different than looking at modeled trains. But it hasn't proven to be a big issue for me, so far anyway. Perhaps this is because the vastness of virtual scenery when compared with even the largest of physical model railroads.

IS INCREASING THE DISTANCES BETWEEN STATIONS A GOOD THING?

For those who like running trains, the longer distances won't be an issue – especially if the route has interesting scenery. However, if you prefer to get there and get stuff done in a hurry, having 10 or 20 miles between stations may not be your cup of tea. Of course, you can always choose a route designed with less distance between stations.



3. The East Breton waterfront.



4. No. 203 between Junction City and Browning on a crisp autumn morning.

DO I HAVE TO DESIGN AND BUILD MY OWN ROUTE?

No, there are lots of routes available, either payware or a free download. A good selection was included with my Trainz membership. Of course, if you have a fetish for a specific period on a particular railroad you may need to give your fingertips some exercise.

IS PROTOTYPE MODELING FEASIBLE?

It turns out that Trainz can work with some other software to create layout topology from Geological Survey maps (or similar sources) permitting highly accurate terrain.

HOW DO ENGINEERS SEE AND CONTROL THEIR TRAINS?

Trainz provides several ways to look at locos and trains. An engineer can select cab view, aerial view, lineside view, or fixed view, and an imminent Trainz Railroad Simulator 2019 patch will provide other view types. Jumping between views is instant (Trainz Plus which is available now for Gold and Platinum users adds several other view modes).

With the cab view, engineers can point and click on levers, switches, valves, or whatnot to control a loco. In full manual mode, steam locos require injectors to be used to add water to the boiler and fuel use regulated to provide steam to operate the engine (but not so much that the safety valves are lifting, wasting water and fuel).

Or there is an easy mode, just twist a (virtual) knob – much like we do on our model train throttles. Oh yeah, the virtual train's sound quality isn't strangled by using tiny speakers. I'm



5. Passing the grain elevator at Browning.

impressed by the quality stereo sound when I'm wearing my gaming headset.

The aerial and fixed views are good when trying to precisely spot a car at the end of a 20-car handle. Or you can use a lineside mode that makes use of preset trackside "cameras" to railfan your train as it passes.

WHAT WILL A SWITCH TO V SCALE COST?

V scale costs fall into three categories:

- Cost of a gaming computer to run the program.
- Cost of the Trainz (or other) program itself.
- Cost of any payware items you optionally chose to purchase.

The cost of a suitable computer is likely to be the most significant. Make no mistake, we're talking hardcore, real-time 3D animation software. You will need a decent graphics card, as computers with graphics controllers built into their CPU are not likely to work well. The more detailed the route and the higher you set the rendering quality settings, the more horsepower you'll need to keep the frame rate up. When the rate at which each frame is displayed gets low, the trains can seem to step or stutter between frames. If it gets really low, they'll appear to "jerk" between frames.

Expect a suitable computer to run from a bit under \$1000 to over \$2500 (if you must have the best, but a suitable used computer might cost half or less than that much). In model railroading terms, this is comparable to the cost of an A-B-B-A set of sound-equipped plastic diesels, 100 pre-built turnouts, or a single modern brass steam loco.

If you are interested in building your own computer there's lots of information on the internet. Here are four YouTube channels dedicated to building gaming computers:

- Jay's Two Cents (www.youtube.com/user/Jayztwocents)
- Linus Tech Tips (www.youtube.com/user/LinusTechTips)
- Hardware Canucks (www.youtube.com/user/HardwareCanucks)
- Gamers Nexus (www.youtube.com/user/GamersNexus)

These sites can be extreme! You will NOT need a fancy custom water-cooled and overclocked CPU and graphics cards to run Trainz 2019. These sites provide tutorials on how to build a basic gaming computer, upgrade a graphics card or power supply, etc.

N3V Games offers Trainz Railroad Simulator 2019 either as an outright license (currently \$70 US but they have sales) or on a subscription plan. I opted for a Gold subscription because of the hundreds of thousands of assets it includes that are useful to route builders.

Payware refers to assets you can purchase (locomotives, cars, buildings, routes) and add to your inventory. These are completely optional and prices vary from \$4 to \$50 (US).

WHAT ABOUT LAYOUT PHOTOGRAPHY?

I like to take pictures of my layout. Will I need to give that up with a V scale layout?

The answer is “no” but...One cannot use a camera to take photos of a railroad that exists only within a computer. Instead you take screenshots or grab video from the computer monitor display.

Photo resolution is limited to the resolution of one's monitor. I have a 4K monitor, so I can take screen shots with a resolution of 3840x2160 pixels or 8 megapixels. This is about the resolution of a 10-year-old DSLR camera, a low resolution compared with today's 20 megapixel and higher cameras.

SOME V SCALE ADVANTAGES

- You'll never need to dust your layout.
- You'll never need to worry about trees and smokestacks casting shadows on the backdrop.
- You'll never have to reach like crazy to re-rail that train that came off the supposedly bullet-proof track that you laid 36" from the nearest human access, even though you knew it was a bad idea.
- You'll never need to 98% selectively compress anything you don't want to compress.
- You'll never see time seem to stop when that \$3000 Big Boy starts to nosedive toward the concrete floor.
- A crewman will never tip over a 24 oz. cup of Sweetzy-Cola on the layout. ■

Does this matter? Yes and no.

Yes, because you cannot perform heavy cropping without resolution issues starting to show up.

No, because 1080p is the standard size (for most people) at which they post digital photographs. The resolution standard is changing to 4K.

Good news is that the shader engine for Trainz has been significantly upgraded for 2019. This means much more realistic shading and lighting effects are possible. This was one of the reasons I started looking at Trainz 2019.

WILL I LOSE THE FUN OF A ROOMFUL OF TRAIN-NERD BUDDIES?

I regard camaraderie as an important part of the hobby. I really like having a dozen-plus crew folks show up at my train dungeon to run trains and give each other a good-natured ribbing.

I've played a few MMO (massively multiple user online) games. My favorite, Naval Action, let me captain an 1800s warship sailing in a fleet with up to 24 other captains, while engaging another large fleet in battle. We communicated using TeamSpeak or Discord (voice-over-internet software).

While it's virtually (pun intended) impossible to step on someone's toes in a crowded aisle at a virtual op session, you won't risk passing out if the guy standing next to you has been derelict in hygiene for the past two weeks. It's possible to talk endlessly to other players, same as a physical op session (in fact that can become a problem). I expect that a virtual op session will be OK in this department.



6. Entering Browning westward.



7. Train 200 getting set to leave Bear Creek yard eastward.

CAN V SCALE SUPPORT MULTI-PERSON OPERATION?

Well maybe... Trainz allows for multiple-person op sessions. However, I've yet to participate in one of these. Trainz op sessions are different from the monthly session of the BC&SJ in my basement. Each crew would each need their own computer and a headset to communicate with other operators. With Trainz, multi-player op sessions involve hosting the route (layout) on a central server with all the operators connecting to that server over the internet.

For the time being I've been having a blast building a V scale BC&SJ which now has 105 miles of mainline. So much so that I haven't checked out the Trainz multi-player op session feature yet.

Trainz does support signal systems. However, I like dark railroads. When running solo signals are optional, but full signaling will be required if AI (computer operated) trains are to be used.

Dark multi-player but no AI trains operation should be possible without signals using TWC or DTC control and gaming headsets instead of radios.

TT&TO will be more complicated. While dispatcher and station operators can talk using gaming headsets there are other issues:

- How does a station agent/operator operate their train order signals?
- Is an annunciator system feasible to notify agent/operator of an approaching train?
- How are orders issued to train crews when crews are in diverse locations (where physically handing orders/clearances to train crews is impractical)?
- What will train order and clearance forms look like?

I believe these areas can all be dealt with. Trainz has a programmatic interface that should allow the creation of annunciators,



8. Crossing high above Browning Creek, just short of Tunnel One.

but I feel a bit like Columbus sailing in unexplored waters. A bigger issue is that posting on the Trainz forum turned up zero interest in TT&TO multi-player operation. However, some of my HO operators have expressed some interest.

WILL IT BE HARD TO GET CREWS FOR A VIRTUAL OP SESSION?

Maybe. The crew pool is no longer limited by driving time and a virtual session makes it possible to draw crewmen from geographically diverse locations.

On the other hand, there will probably be fewer people interested in attending a virtual op session. Model railroaders who have a gaming computer are probably a relatively small group and non-traditional V scale op sessions may take time to catch on.

For those who like to operate on very large layouts, there are limited opportunities to attend a traditional session, and even the largest model layouts are not very large. Attending such sessions can mean travel expenses, a hotel room, and a rental car. Or you could hire-on with a real railroad.

Time will tell if this will be a real problem.

BEGINNING A V SCALE BC&SJ

While Trainz supports modeling many different locales (I've seen routes for USA, Canada, Mexico, Japan, England, Ireland, Germany, France, Italy, South America, etc., with many different track gauges), I'm primarily interested in USA prototype railroading, so that's where I've put my modeling efforts.

After downloading and installing Trainz Railroad Simulator 2019, I discovered the program has a challenging learning curve (not a big surprise, but it's not a learning cliff!). I also discovered the Trainz

forums are filled with knowledgeable people who are willing to lend a hand. The Trainz Wiki (en.wikipedia.org/wiki/Trainz), has a large number of instructional web pages, and there are a plethora of YouTube channels dedicated to Trainz. I subscribe to these Trainz-oriented YouTube channels, but there are others:

- N3V Games (www.youtube.com/user/n3vgames) – the Trainz manufacturer's YouTube channel. Lots of tutorials, information, and press releases.
- Approach Medium (www.youtube.com/channel/UCult-Mra7IvgaqOJT0mj1TA) – a highly useful site with lots of Trainz tutorials for route building
- Horace Fithers (www.youtube.com/channel/UCKkZbM2b7FJAAIj5a6mEjzA?view_as=subscriber) – rail-fanning and tutorials
- Colins Trains (www.youtube.com/channel/UCcHm-MtYuY28LK55xLY6J0iA) – reviews and tutorials
- WIT simulations (www.youtube.com/channel/UCzdmQMXJ-1e77pIISUmPVliw) – tutorials on building routes and ops live sessions for running Trainz as a driver

The Trainz Discussion Forum is also a highly useful source of information (forums.auran.com/trainz/forum.php).

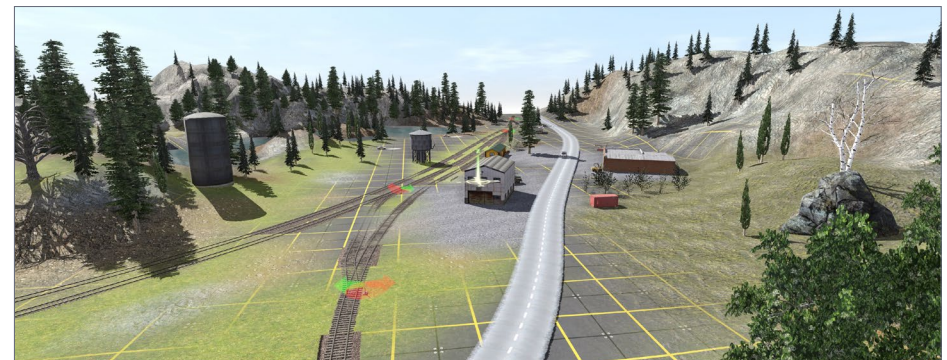
I sometimes prefer to leap before looking, which is NOT recommended when making sawdust and spending money on track, turnouts, rolling stock, and structures. So, I dove in and started recreating the Oakhill area on my layout with Trainz 2019 [9, 10].

At first, I was excited by this version of Oakhill but it became clear to me that I needed to learn a lot more about building V scale scenes. In particular:

- I was still thinking like a model railroader - space is virtually (pun intended) unlimited but I was cramming things together.
- Oakhill is supposed to be in the mountains. These mountains seemed more like bumps than mountains.



9. Oakhill west in my first attempt at V scale modeling.



10. Central Oakhill in my first attempt at V scale modeling.

- There are a LOT of assets (track, buildings, trains, ground textures, etc.) available for Trainz 2019. I needed to find a set that would serve my needs. More exploring needed!

I was advised on the Trainz Discussion Forum (forums.auran.com/trainz/forum.php) that I shouldn't try to build a mountain railroad until becoming more experienced. I took that advice and started over, building a flatland area which I eventually named Lincoln [11]. When I again ventured into the mountains, I took it in easy steps starting with low hills, then bigger hills, and finally mountains.

GOING BIG

The HO scale BC&SJ has been running using Timetable and Train Orders (T&TO) since 2013. I thought a larger layout would be better for TT&TO operations. I came to this



11. Lincoln, based in a flatland area, is some of the earliest scenery on my second shot at V scale modeling. The pundits on the Trainz forum were correct – it's much easier to model on flat terrain than up in the mountains.



12. The V scale B. Josef gravel quarry (they will rock you!), an Oakhill industry, is considerably larger than the HO scale Oakhill quarry. Having virtually no space limits makes building on such a scale possible.

conclusion when Bill Darnaby told Tony Koester he was thinking too small when planning a 10-mile mainline with 10 towns on it for TT&TO.

I decided to expand the V scale BC&SJ beyond the modeled locations in my basement. I also resolved to increase the distance between the stations.

More time between stations gives the dispatcher more time to transmit orders (especially helping orders), and have trains cleared promptly. Even with close to a mile between some towns on the HO BC&SJ by the time the dispatcher sees a logjam coming and starts writing orders, and those orders are cleared and ready, the situation prompting them has likely dissipated by itself.

More time between stations and more stations gives the dispatcher more flexibility. It lets crews run faster than the very low speed limits present on the model BC&SJ. The dispatcher stays

calmer without a never-ending torrent of OS reports (reporting each train as they pass open train order stations).

As this article goes to press in February 2020 the V scale BC&SJ has about 105 miles of mainline between Salem and Pocatello. Mill Bend and South Jackson are still to be added.

STATION LIST

Stations on the BC&SJ mainline (west to east).

Station	HO scale	V-scale	MP	Function
Salem	X	X	0	West end of the railroad
Armstrong		X	8.2	Small agricultural town
Breton		X	14	City with a little industry
East Breton		X	16	Large industrial area and port
Lincoln		X	19	Small agricultural town
Jefferson		X	23	Medium agricultural town
Browning	X	X	30	Medium agricultural town
Albany Jct.	X	X	37	Junction of Toledo branch with mainline
Junction City	X	X	37	Large industrial town
Bear Creek	X	X	44	Division point yard and medium town
Winston Jct.	X		n/a	Junction of Siskiyou line branch with mainline
Hampton		X	49	Siding with water cars
Magnuson		X	55	Siding with log loading spur
Salt Creek		X	58	Siding
Oakhill	X	X	65	Small mountain town, siding, wye, log loading and quarry
Summit		X	70	Small yard, no industry
Roberts Creek		X	76	Siding
Sherman Butte		X	88	Siding, log loading
Deschutes Jct.	X	X	99	Junction of Deschutes branch and mainline
Mill Bend	X	soon	-	Small town, forest products industries
South Jackson	X	soon	-	Junction yard, few industries, and small town
Bond		soon	-	Siding, tiny town
Sheridan		soon	-	Siding, a few forest products industries
Pocatello	X	soon	-	East end of the railroad

[13-21] are screen shots of a virtual station and town areas.



13. Browning on the V scale BC&SJ.



14. Junction City is a medium-size town heavy on industries.





15. Bear Creek is home to a division point yard, several industries, and a medium-size town.



16. Hampton is the first station in the mountains east of Bear Creek. It has passing tracks and spurs to store water cars that are used to wet the tracks in the dry season to reduce the risk of wildfires.



17. Clear cut and log loading spur at Magnuson.



18. The Salt Creek area (loosely modeling the area of the same name on the Natron Cutoff) high in the mountains in late afternoon.



19. Oakhill occupies a high mountain valley. The track plan is similar to the HO version with siding, gravel quarry, wye, log-loading, and team track. Oak Lake is behind the train and in front of the background mountains.



20. Summit is the highest station on the BC&SJ. There is a small yard here used by train crews to set retainers before descending the grades on either end of the yard.



21. Redland on the Deschutes branch.

I'm planning nine new stations/sidings. The HO scale layout has five miles of mainline with another three miles of staging leads and tracks. I expected the V scale BC&SJ to have around 80 miles of mainline. Now I think when complete there might be over 120 miles. There is also a Coast Branch with four towns and another 10 miles of track.

There are two runs between stations on the HO layout of almost a mile, which is long by model railroad standards. The stations on the V scale layout are often separated by five or more miles. As I said, just a teensy bit longer!

Did I mention that the virtual BC&SJ has a coast branch [23]?





22. Sherman Butte (between the summit tunnel and Deschutes Jct.) is one of the additional areas added to the V scale BC&SJ.



23. Making a water stop at Oyster Bay on the coast branch.

★★★★★
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24. The V scale BC&SJ, as of August 12, 2019, has more tracks, towns, and terrain than would be possible with a physical model railroad.

RESTARTING CONSTRUCTION

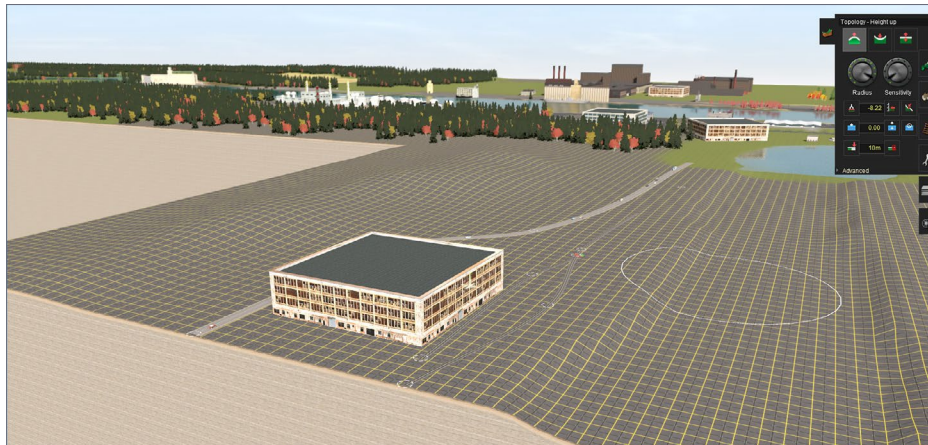
I elected to restart (real) construction between East Salem and Lincoln (even though those locations didn't yet exist). In Trainz, routes (layouts) are built using the Surveyor program, while trains are operated using the Driver program.

A Trainz route consists of squares, which are 720 meters on a side. A square starts flat with an elevation of zero meters/feet. It is gray with a yellow wire mesh texture. The mesh is a 10-meter grid with a five-meter sub-grid). The builder adds squares to their route, lays track on them, alters the geography of the route to make hills, valleys, waterways, etc., paints the squares with appropriate ground textures, then adds assets such as buildings, rocks, grass, bushes, trees, bridges, and roads.

As on a model railroad, adding more details to a scene tends to make it more realistic. However, the builder needs to keep in mind that everything they are adding to a scene will need to be rendered in real time. Going overboard with details will make a

scene render more slowly, causing a slower frame rate. A good rule of thumb is to shoot for a minimum frame rate of 24 fps (frames per second) – the frame rate used in movies. Higher frame rates will make smoother running trains in that scene, but most computer monitors sync at a maximum of 60 fps. Some special (and more expensive) gaming monitors run at 144 fps or higher – if the computer can produce such a frame rate. Conversely, slower frame rates will make it seem that you are viewing a series of still pictures.

Frame rate is also influenced by your computer and the size (in pixels) of your monitor. A fast CPU and dedicated GPU (graphics processing unit) will produce better frame rates. Going to a 4K monitor will increase the number of pixels from 1920x1080 to 3840x2160 (a 4X increase) and decrease your frame rate.



25. The Trainz 2019 Surveyor program (in Topology mode – F1 function key – terrain controls are in the box in the upper right) with a newly added square. You modify terrain, install asset objects, paint terrain with textures, add water, etc., with Trainz Surveyor. The yellow hatching is the default terrain texture.

The Surveyor program has several modes entered by pressing function keys:

- F1 - Topology – Allows creating hills and valleys, filling depressions with water, and adding things like animated grass or random trackside clutter.
- F2 - Texture mapping.
- F3 - Object placing – For single objects and for spline objects (objects like fences, roads, a series of telephone poles with wires automatically strung between poles, etc. are often spline-based and can be stretched to any desired length).
- F4 - Track – Track in Trainz is a spline-based.
- F5 - Tools – Placing of trackside cameras, creating rulers, and copy/paste of scenic areas (a huge time saver when planting massive forests!).
- F6 – Layers allowing the placement of different objects in different layers, such as keeping all roads and highways in a Roads layer.
- F7 – Train placement – Allows placing individual cars and locos or create consists of multiple rolling stock objects (locos).



AVOID THINKING LIKE A MODEL RAILROADER

Model railroad designers are trained to selectively compress scenes. We reduce the number of tracks in yards and their length. Industries are shortened. We leave out large areas of scenery because the six miles between two towns require 360 actual feet in HO scale. We optimize and compress diligently to distill a railroad down to its essence.



A V scale railroader may choose to do the same thing. Several V scale layout designers build traditional model railroads in their computer. This is not required. Assuming your computer has enough memory (16 GB of RAM should be good for most purposes), you can design a Trainz route with full-scale scenery. Electronics are cheap, just add more squares!

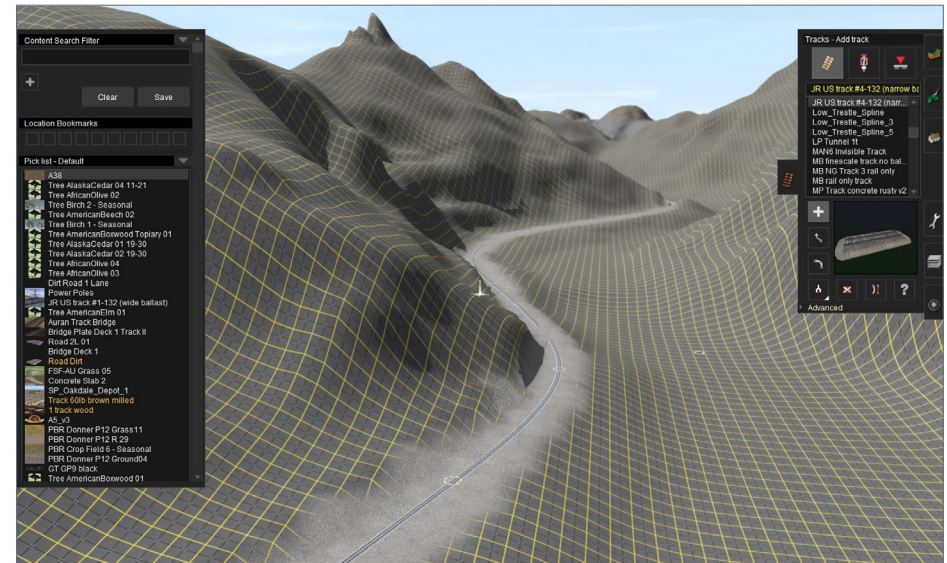
That covers an overview of Trainz Railroad Simulator 2019. Next month I'll feature more in-depth experiences in creating my V

scale Bear Creek & South Jackson. ☒

26. This is a surveyor view of the complex Junction City area. The white circles mark the end of splines (roads, fences, paint stripes, bushes, track etc. are splines). The red/green arrow pairs show which way turnouts are thrown. There are enough assets (objects) in this scene to slow down rendering.

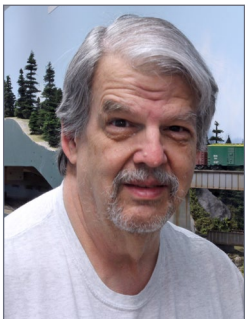


27. This is the future Roberts Creek area on my HO scale Bear Creek & South Jackson. The scene has a depth of about 22" (160 scale feet), necessitating that all scene elements – mountains, creek, and track – be squeezed tightly together.



28. This is the V scale Roberts Creek scene after track installation and basic terraforming. This scene is two squares wide or 1440 meters (about 4800') – almost a mile. This makes a BIG difference in avoiding that crammed-in look and feel.

CHARLIE COMSTOCK



Charlie has been interested in railroads since almost he run over on the Boston & Albany in 1955.

His HO scale BC&SJ layout has been the subject of numerous articles in MRH starting in 2009. He enjoys hosting TT&TO op sessions on his layout and is attempting to teach himself backdrop painting skills.

In December 2018 he became interested in V Scale modeling with the virtual BC&SJ nearing completion.

Charlie lives with his wife near Portland, Oregon. Other interests include photography, computers, and activities at the church he and his wife attend.

Charlie was MRH Editor from February 2011 to March 2012, after which he retired to work on his hobbies and interests full time. ■

THE AH-HAH MOMENT

column



MRH Running Extra | February 2020

DAVID BOTT FLIPS HIS LID OVER
THIS UNLIKELY WORKBENCH TOOL ...

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THE SIMPLEST THINGS CAN BE THE MOST USEFUL

tools. In this case, the lid from a dish I found while cleaning out boxes from my basement. It is now one of my top multi-purpose tools. It's a clear Pyrex 5" diameter lid from a Corning Ware Grab-It bowl. The underside of the lid is a shallow basin, while the top is flat and has a handle. I almost threw it into the donate to Goodwill pile but some models needed to be decaled. I had my Ah-Ha! Moment, and I grabbed it.

Several years later, I bought another Grab-It lid for \$5 on eBay. Search for Pyrex P-150 and/or Pyrex Grab-It. Get a see-through lid for more use options. There are few \$5 tools that help as much in applying decals, weathering, and keeping me from losing small parts.

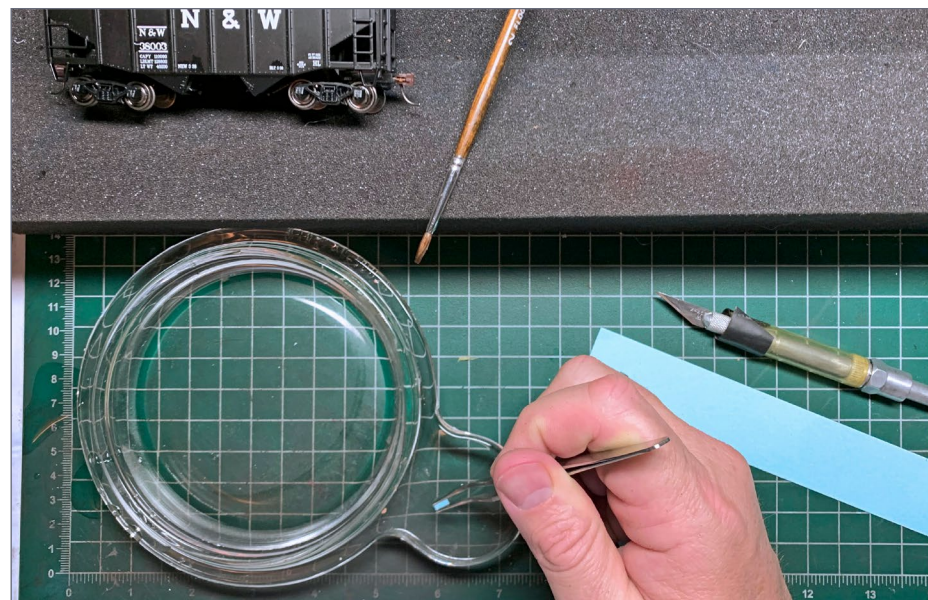
I can fill the cleaned lid with distilled water to wet decals. I set the decals on the flat tab handle in a small drop of water until the decal glue dissolves [1]. The clear glass makes it easy to see the decals. Setting a decal on the handle means that if it soaks too long, the film stays on the backing and doesn't float away in a larger bowl. No more chasing a long road name decal and having it curl around my tweezer tips!

The lid is wide and heavy, so it does not tip. It has a shallow bowl and doesn't require much water to fill. It fits easily on my workbench [2]. The shape and Pyrex glass make the Grab-It lid a true multi-tool. ☑

You can find an up-to-date shopping list for this article here:

mrhmag.com/magazine/running-extra/2020-02/ah-hah-moment

THE AH-HAH MOMENT | 2



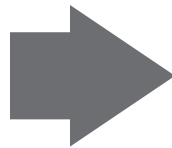
1. The Grab-It lid eases my decal work with the flat dished base and the smooth round handle for decal soaking.



2. The small lid diameter easily fits on the workbench. A second lid in the background holds small parts for in-process models.

Bonus section!

Here are all the pages
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as well!



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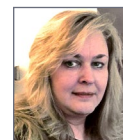
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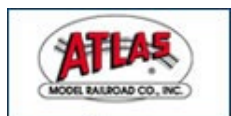
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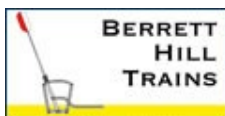
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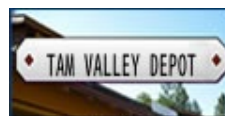
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Model Railroad Hobbyist | February 2020

**JOE FUGATE: SOUND DECODERS ...
AND A REED SWITCH UPDATE**

**RATE THIS ARTICLE**

I'VE BEEN THINKING LATELY ABOUT SOUND decoders as I dive into writing my *Run like a Dream: Locomotives* book. (For those who bought the series, I hope to roll out the first Loco book sneak peek in February.)

To me, the epitome of the hobby for running things like a dream has become sound decoders, momentum, braking, and the Iowa Scaled Engineering ProtoThrottle. It doesn't get any better!

Here's the big fly in the ointment when it comes to achieving this dream (the thing that's seldom if ever talked about): achieving this dream has some seldom discussed truths we need to face.

Put bluntly, you cannot mix sound decoders from multiple vendors on your layout without becoming totally frustrated! Function key mappings vary, braking behavior and momentum effect settings vary. I'm sorry, but trying to consist locos with sound decoders from different vendors just *does not* work!

That means you need to standardize on one vendor's sound decoders and stick with them. Most layouts I've visited have sound decoders from multiple vendors and the layout builders are quick to express their headaches to me. Even getting the

function keys to work the same across multiple sound decoder brands leads to early baldness from all the hair pulling!

So if achieving this dream matters to you, then it's time to face facts and pick *one* sound decoder vendor and go with them.

This means I recommend against buying locos that come with the sound decoder pre-installed. Always get a non-sound loco and install your preferred sound decoder instead.

But what if the loco with the pre-installed sound decoder happens to have your preferred vendor's decoder? Don't do it. I've found vendors almost always ask the decoder vendor to customize the installation with some special features you don't get in the vendor's stock decoder.

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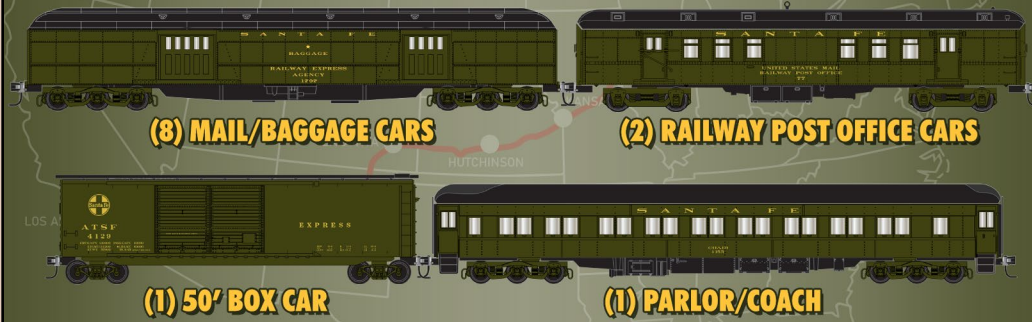
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As a result, the decoder now becomes non-standard, and configuration headaches raise their ugly head. So I avoid locos that come with sound installed by the locomotive make.

This begs the next question – which vendor's sound decoder is best?

I've tried the three biggies: SoundTraxx, TCS Wow Sound, and ESU LokSound. They all have their advantages and disadvantages.

No question SoundTraxx's Dynamic Digital Exhaust is super cool. In effect, the decoder tracks the load on your loco and automatically changes the sound to match.

If you don't like manually fiddling with function keys to get the "correct sound" then this "automatically correct" sound fills the bill nicely. True, nothing automatic is ever 100% perfect, but this comes darn close without all the function key complexity.

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Soundtraxx also has an equalizer, giving you the ability to adjust the bass, midrange, and treble sounds to “sound right” in your layout space. The two other vendors at this writing do not have this feature.

Similarly, TCS WOW Sound has its “Proto” mode where it adjusts the sound based on load. Plus, WOW Sound has many super-detailed adjustment curves on things like acceleration and braking levels. And you can save your settings, making it very easy to restore them if the decoder ever gets its settings scrambled.

Sometimes a major short (not uncommon on a DCC layout) can scramble decoder settings, so being able to restore them easily can be quite handy.

Then there's TCS's audio assist. Some love it, some hate it. I've spoken to many modelers about audio assist and I get mixed reactions. Many think it's great.

Those less enamored by audio assist tell me the idea of your loco talking to you kills the sense of this being a miniature prototype and reminds you this is just a “toy train.”

Then there's ESU's LokSound. Out of the box, LokSound decoders tend to have the most sophisticated motor settings and give very smooth loco performance. Plus you have a lot of options for loading your own sounds. Many modelers who use LokSound tell me they really like the sound recordings in ESU decoders.

What do I use? I have standardized on LokSound, but I recommend you try a decoder or two from each vendor until you find which you prefer.

I know many modelers very happy with SoundTraxx and TCS Wow Sound.

Update on reed switches

Last issue, we ran an MRH Staff authored article on magnetic reed switches.

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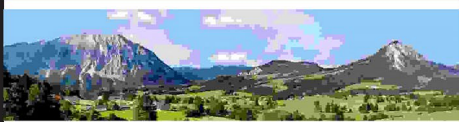
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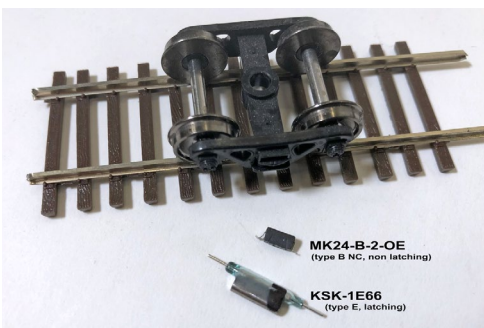
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Unfortunately, the tiniest reed switch, the Digikey MK24-B-2-OE, is no longer available as a type E latching switch.

The smallest reed switch we could find that's latching is now the Mouser KSK-1E66. For more, check out the comments thread on the reed switch article:
mrhmag.com/magazine/mrh2020-01/electrical-impulses

We've updated the shopping list on the website thread to reflect the latest supply realities. Posting the shopping list to the website makes it easy to keep current. ☒



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LAST ISSUE'S RATINGS

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

4.6 Bob Truax's Great Northern

4.5 Youth in model railroading

4.4 PRemote control with reed switches

Issue overall: **3.6**

Please rate the articles! Click the reader comments button on each article and select the star rating you think each article deserves. We depend on these ratings to help us determine which articles to publish, so your rating matters! ■

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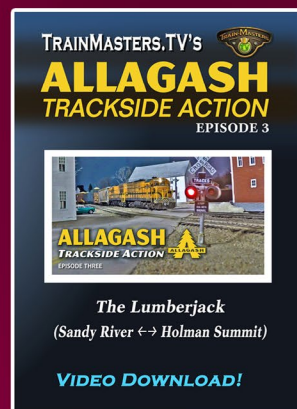
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Going overboard on lumber

Tim Schwartz has a short thread on making wrapped lumber loads for both flatcars and as stacks in a lumber yard:



“Last weekend it was cold outside so I decided to make a few wrapped bundles of lumber to scatter here and there on the layout. I used information from another modeler. [He] posted on his blog [about] cutting pine to scale bundle size, printing some bundle wrapping, and then cutting the paper to size to wrap around the wood. I only planned on doing a dozen bundles, but it was so easy I made a lot more.”

1. MRH forum member **tschwartz** discusses making these wrapped lumber loads in this short MRH forum thread.

Read more on the MRH website by clicking the button below.

Read the full thread on the MRH website

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

Pulpwood loads and jigs

Chris van der Heide writes in his MRH blog about making pulpwood loads using jigs [2]:

“Pulpwood logs are a significant traffic item on my Algoma Central, and a type of load I’ll need quite a supply of for my flatcars and gondolas. I’ve been doing some playing ... and I figure on using anywhere from 15-20 pulpwood loads during a future operating session. These loads can be moved in at least five different types of cars (52’ flatcars, 40’ flatcars, 52’ gondolas, 61’ gondolas, 48’ gondolas), so I need a lot of loads and several different types of loads.

While there are some cast resin or plastic loads you can get ... they won’t fit some of the customized cars I have, and I’ve never really seen one made for a standard gondola. Moreover, just nothing looks as good as a load made of real logs.

Fortunately these aren’t too complicated to make ... ”

For more details, visit the MRH website and read the full thread.



2. Forum member cv_acr shares how he made and uses these pulpwood load jigs in his MRH blog.



3. By using jigs pre-made to match the flatcar fleet, the load fits perfectly!

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

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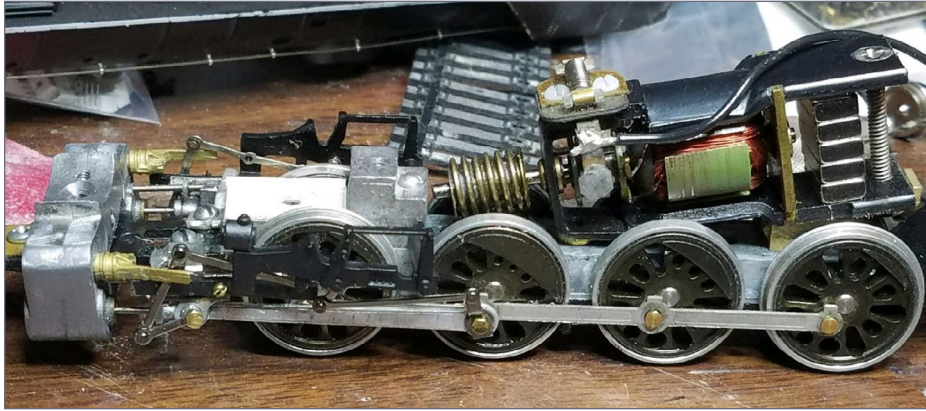
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Bachmann / Bowser 4-8-4 needs help



4. MRH forum member **kirkifer** shared this photo of his steam loco mechanism and solicited some help.

Forum member Kirk Wakefield displayed asked for assistance:

“This is a Bachmann / Bowser retrofit 4-8-4. This happens to be for a Niagara but true to Bachmann form, I think this drive train is used under the UP and Santa Fe loco versions too. Of course, Bowser did not make a different frame either.

I isolated the motor from the frame by using a couple of non-conductive nylon screws to hold the brushes on the motor. It is now sort of DCC friendly.

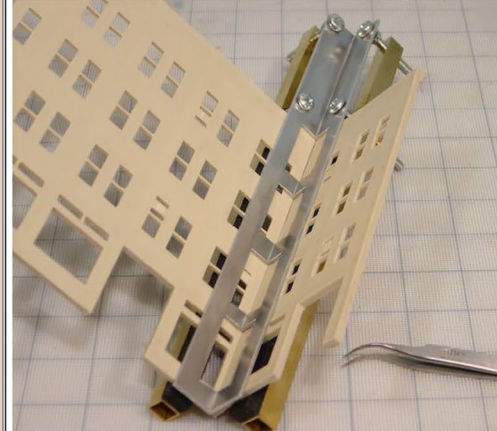
I need help. There is a whole lot of movement in the steam chest and I think the valve gear [is] hitting little brass pieces coming off the steam chest. You can see the one on the fireman's side is bent. I really don't want to cut them off, but they are really in the way. Anyone have any suggestions?”

For more details, visit the MRH website and read the full thread.

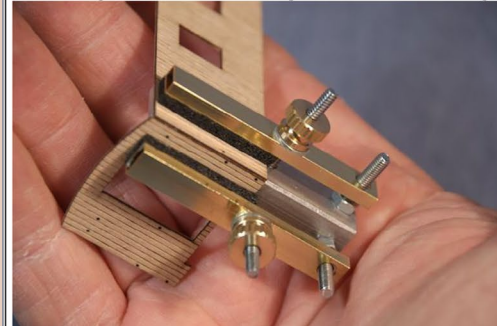
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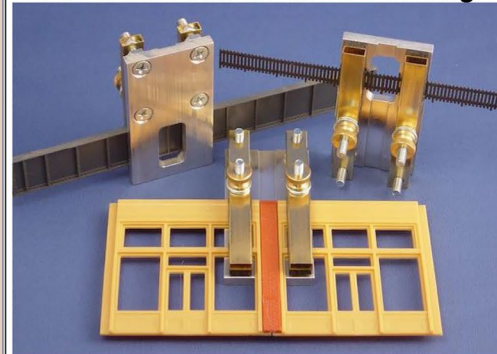
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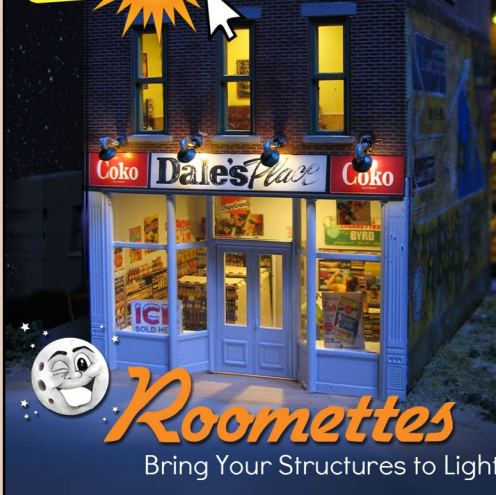
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Visiting the Amherst winter model train show

MRH Staffer Eric Hansmann visited the Amherst model train show in late January and posted a number of new announcements from the show.



This show, which has always been on the last week-end in January for several decades running, has grown to be one of the largest model train shows in the US. It's spread across several buildings at the "Big E" exposition grounds in Springfield, MA. Tens of thousands of model railroaders and the general public attend this show every year. Modelers are known to drive for well over 6 hours to attend this huge show. The show not only includes many vendors, it also hosts dozens of modular layouts.

If you would like to learn more, visit the MRH website and read the full thread.



6. MRH Staffer Eric Hansmann walked around the show and captured many of the new product announcements.



5. The New England Amherst show is one of the largest model train shows in the US.

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

Weekly photo fun thread

The weekly photo fun thread never fails to be a real delight! The most recent one as we're putting this issue to bed already has some great photos [7, 8].

For more, visit the MRH website and view the full thread.

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



7. Jim Six posted some photos of his recent modeling work.



8. Steve Hurt (MRH forum member **Modeltruckshop**) posted some great photos of these Frisco units outside in the snow on a diorama. Sure looks cold out there!

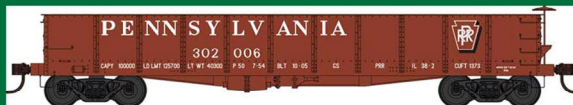


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MRH February 2020 show

► PHOTOS AND VIDEO OF SUPERB MODELING



Campbell Rice shares his technique of processing dry leaves to add to our scenery. We look at two layouts this month, the North American Prototype Modelers layout in Milwaukee and the McReynolds' Santa Fe layout just outside of St. Louis. I also share photography techniques as we shoot a winter landscape photo indoors for Athearn Trains. All of this makes this month's video run at 30 minutes in length.



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Dry leaves as scenery



1. Campbell Rice starts us off by showing how he uses real leaves to make scale looking leaves for ground cover in our forests. The real trick is the blender he uses which saves a few steps by allowing us to grind our leaves without the use of water in the process. The blender, called the Magic Bullet, was purchased online for about \$8. Campbell breaks off the stems and discards them as they are too stout and not what is needed for the final effect.



Also see the "What's neat this week" weekly video podcast!





2. It's the actual leaves minus the stems that he packs into the small one-cup blender.



3. He lets the blender do its job for about a minute of grind time, stopping and shaking the unit during the grinding process. After that, he screens the leaves through a kitchen strainer to sort out the fine material that represents our scale leaves.



4. He separates the fine screened material from the larger coarse chopped material. He saves the rough stuff for future use in scenery areas on the layout.



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5. The finely ground scale material looks very believable as dry fallen leaves under the tree.

6. (Right top) The North American Prototype Modelers layout in Milwaukee occupies about 4000 sq. ft. with long main lines designed with operation in mind. The amazing passenger train station has a head house made from Lego blocks with a full interior and lights. The train shed is also scratchbuilt, with trusses that extend over the tracks and passenger platforms that are fully lit. The layout has very expansive scenery with large naturally flowing scenes modeled.

7. (Right bottom) There are about 28 scale miles of mainline allowing 12 to 15 long trains to be run at the same time. The signaling system is fully functional. The club uses the NCE DCC system to power the layout and uses about 20 radio cabs during an operating session.

The North American Prototype Modelers layout



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WHAT'S NEAT | 8



8. The scenery is generic Midwest, with one section of the layout representing California scenery with snow sheds, mountains and a lot of pine trees made by Timberline scenery products. It is located in the basement of the South Gate shopping center. The club is run by a board of directors. A committee of the board directs scenery and construction projects that follow a pre-determined plan.



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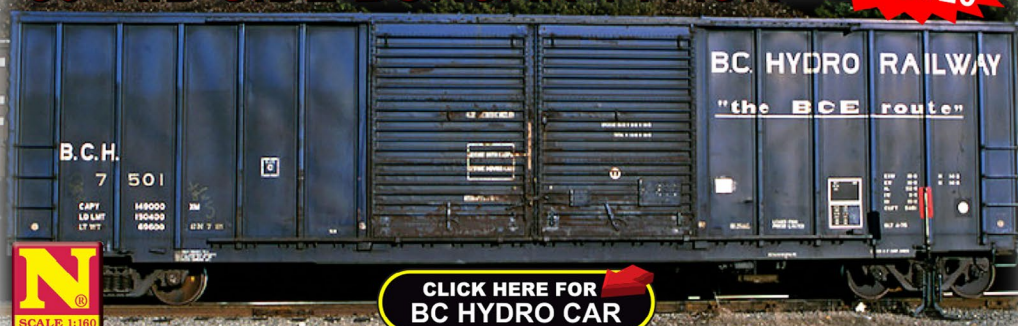
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9. The layout's era covers the '40s through the '80s, allowing a variety of passenger and freight trains that can be run on the layout. The club was started in the 1970s, making the layout about 42 years old. The group is a 501c3 with dues for its members set at \$30 per month. During an operating session the club uses a car card system to handle the cars on the many branch lines all tied together by the 28 scale-mile main lines. The minimum radius of 48 inches allows for very long trains. The benchwork averages about 51" above the floor.

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Don and Chris McReynolds' Santa Fe layout



10. This layout in this month's video is built by a father and son team, Don and Chris McReynolds. They have also had a lot of construction assistance from all the friends who love to operate the layout. Construction started about 10 years ago with a double track mainline that runs through a great deal of industry, warehouses and refineries.

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WHAT'S NEAT | 11



11. Chris says he really enjoys creating scenery and his dad Don loves building structures and bridges. The layout's era is 1970 to 1972 with a large city, grain elevators, and river bridges. Most of the structures are based on Walthers kits.



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WHAT'S NEAT | 12



12. Sonny Sellers is credited with spending many late nights assisting in laying the many miles of code 83 track and turnouts. The curves have a minimum radius of 30" and the benchwork averages 54" from the floor.

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13. This operating layout also uses a car card system to keep track of freight moves during operating sessions that can take 2 to 3 hours to complete. This layout will be featured on the layout tours for the St Louis NMRA National train convention in the summer of 2020, July 12 through 18. See the [Gateway 2020.org](http://Gateway2020.org) website for more information.



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Wintertime train station photo shoot in HO scale



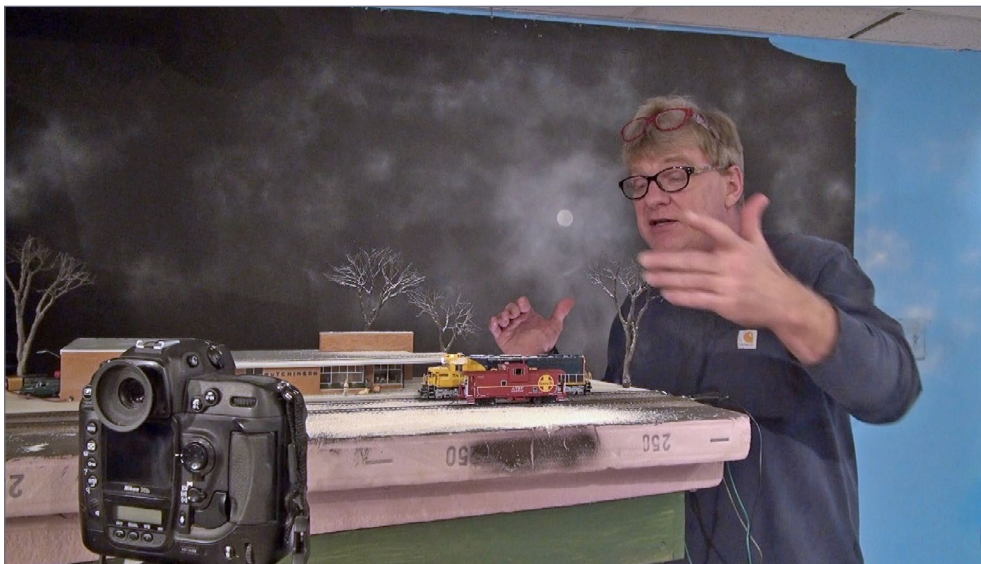
14. This month I share with you how James Regier and myself designed and photographed a winter theme photo shoot indoors, with a full moon and a Santa Fe caboose as the featured model. The setting of the scene is the Hutchinson, Kansas train station. James built the Walthers kit and added 40 or more LEDs to light the interior and station platform. I used simple spray can paint to create the background sky and a full Moon on a sheet of 4X8 foam. Wire trees were used to scenic the area. The locomotive and caboose were also lit, with the entire scene covered with loose plaster to represent snow.



Also see the "What's neat this week" weekly video podcast!



WHAT'S NEAT | 15



15. The exposure took 20 minutes to produce, with the shutter on the camera set to bulb. The photo was shot in total darkness with the moon being lit from the floor with a simple house lamp for about 30 seconds during the exposure process. The camera's f/stop was set to f/22 and the ISO was set to 100 for a grain-free photograph. The train station lights and locomotive were lit for 30 seconds as well. The caboose rear end red light was lit for 20 minutes during the exposure. Chris Palomarez from Athearn used Photoshop to add a little fog to the photograph. Simply experiment with your models and different time exposures during your photo shoot. Trial and error are the best ways to create great looking photos of your models indoors or out.

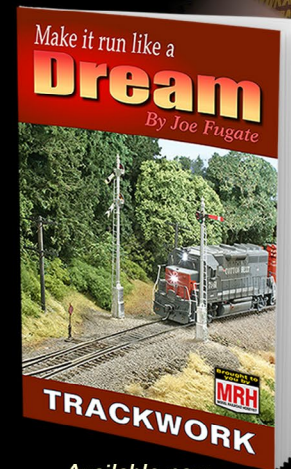
[Click here to see the What's Neat video for February ...](#)



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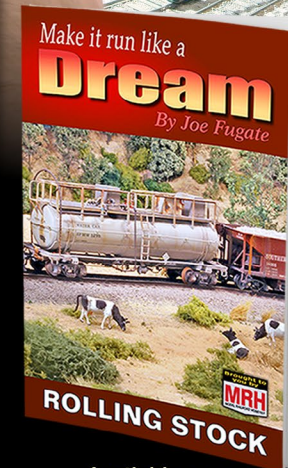
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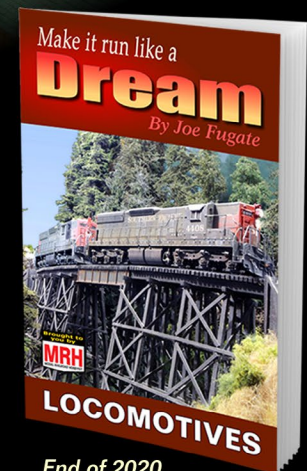
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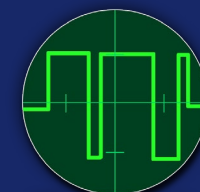
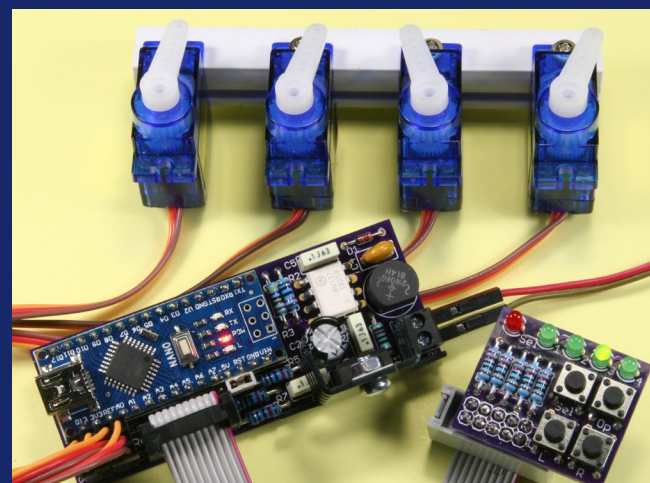


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Quad servo DCC decoder



**Electrical
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Model Railroad Hobbyist | February 2020

1. The Quad Servo DCC Decoder (QSDD) consists of two separate modules: The decoder itself which connects to the layout track and drives up to four servos, and a small detachable keypad used to manually adjust the servo throws and set the speed of servo movement.

TERRY CHAMBERLAIN'S frustrations with commercial decoders led to building his own highly configurable quad servo DCC decoder ...

AFTER DECIDING TO USE SERVOS TO DRIVE THE turnouts on the small HO layout I am planning, I found trials with commercial DCC accessory decoders to be rather disappointing.

I wanted to control the throw of each servo easily and accurately by hand, prior to their installation on the layout, and then fine-tune the servo movements after they were in place.





I found the commercial decoders awkward to use, especially once the servos and decoder were in place under the layout. It was quite difficult to set the servo throws accurately.

Inspired by the work of Geoff Bunza on accessory decoders based on Arduino modules, I decided to build my own, with the capability of setting up and operating four servos.

As a result, I ended up with a DCC accessory decoder that can be built by anyone. All you need are reasonable soldering skills and the basic computer knowledge to load software into an Arduino module. All this for a cost of less than \$20, including custom-designed printed circuit boards!

In [1], I show the entire setup with four servos, the decoder, and a small keypad for adjusting servo operation. The keypad can also be used to operate the servos by hand, using the pushbuttons.

For convenience, you can either plug the keyboard directly into the decoder, or you can alternatively connect the keypad to a ribbon cable up to 40 inches long. This makes it easier to see and set up your turnouts when the decoder and servos are out of sight under the layout.

Once set up, you need not keep the keypad plugged in – you can completely disconnect it from the decoder board.

The decoder drives the connected servos to throw your turnouts in response to standard DCC commands sent from your command station. You can either use a handheld throttle or suitable software such as JMRI Panel Pro running on a computer to throw the turnouts.

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QUAD SERVO DCC DECODER | 3

I use my own A-Track computer application:

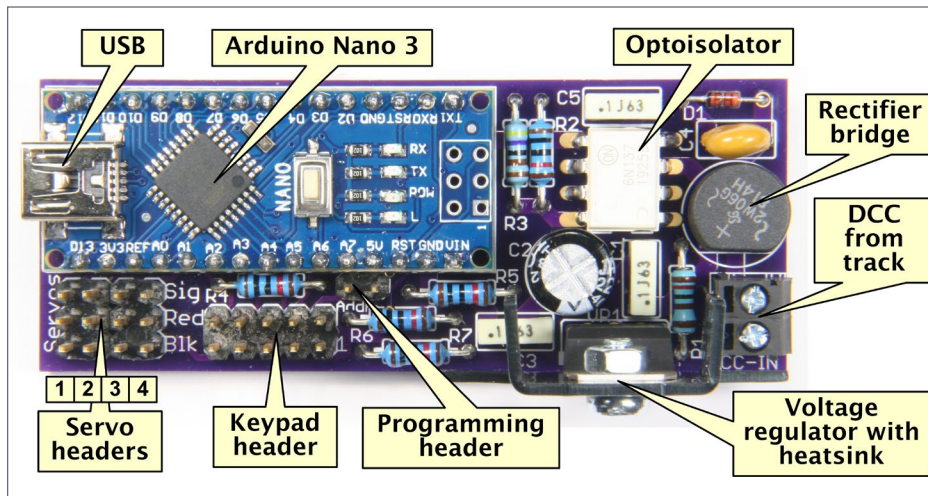
www.a-train-systems.co.uk/atrack.htm

Overview of structure and operation

Connecting the decoder board to the track through its DCC-IN terminal block powers the board. The rectifier bridge and the +5V voltage regulator provide the proper DC power needed for the rest of the board.

The DCC signal, carrying command packets from your command station, also goes to the Arduino Nano 3 module via a 6N137 optoisolator chip – a device that also protects the microprocessor and associated circuits from the potentially destructive DCC track voltage (approximately 14 Volts AC).

As you can see in [2], four three-pin headers provide the connections to small analog servos (such as the Tower SG90), and a dual-row 10-pin header connects to the separate keypad board.



2. The configuration and layout of the QS DCC decoder (QSDD).

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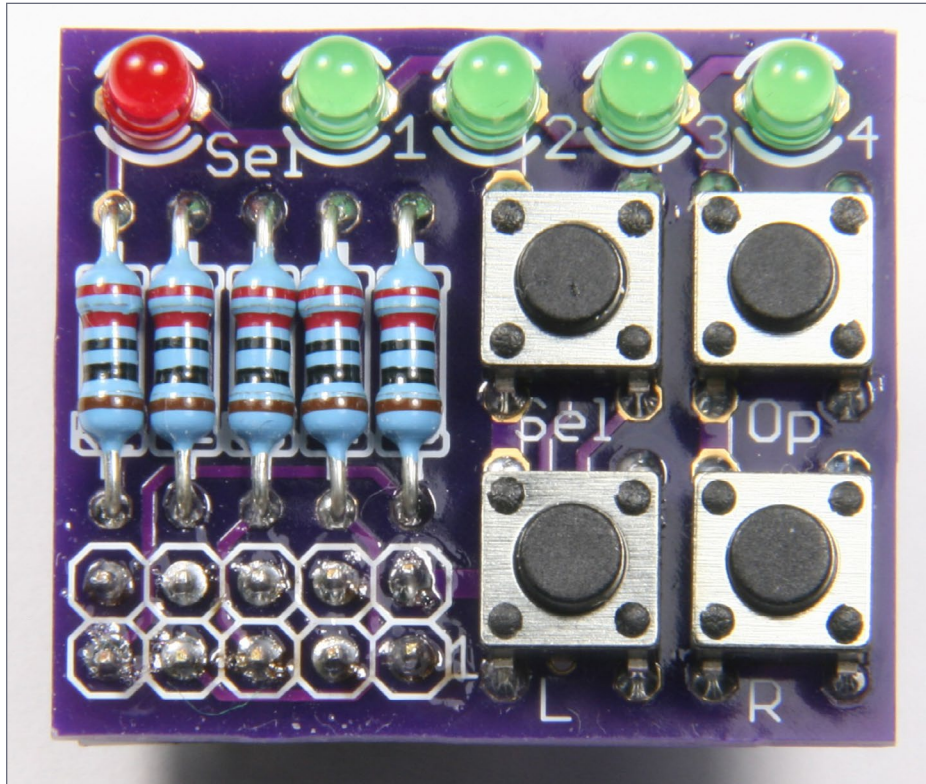
QUAD SERVO DCC DECODER | 4

As mentioned, you only need the keypad to set up the servo operational characteristics.

The board includes a small two-pin programming header (and associated shorting jumper) for use when setting the DCC addresses of the servos. The shorting jumper can be “parked” on one of the header pins during normal use of the decoder.

The keypad holds four pushbuttons:

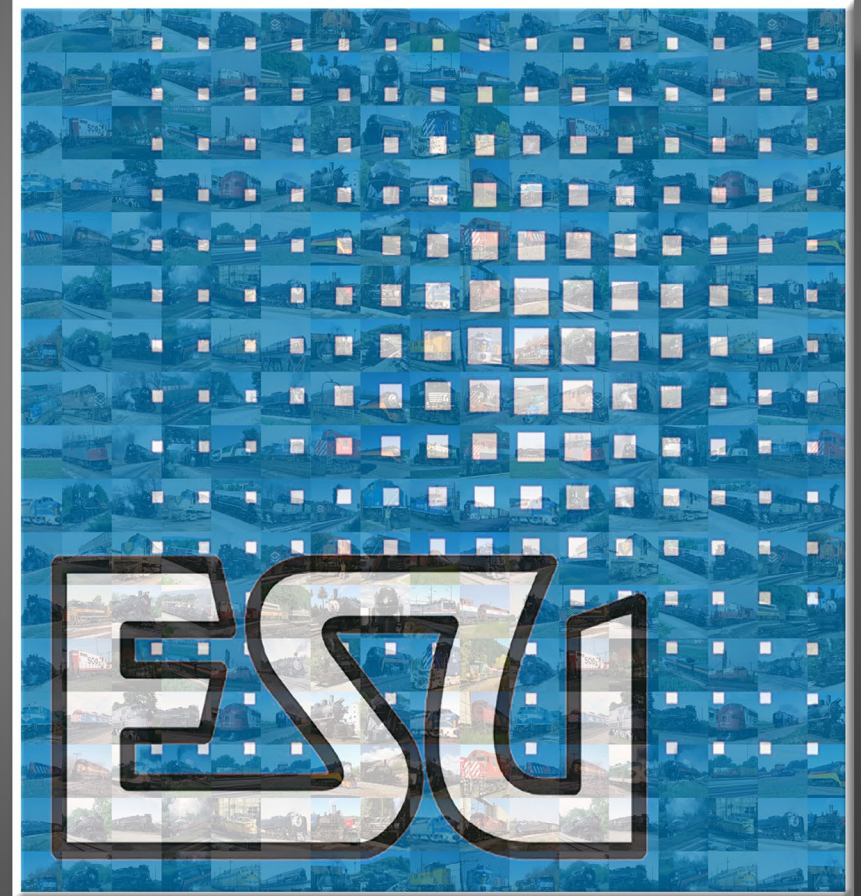
- **Sel** (Select), which is used when setting up servo movements
- **Op** (Operate), which selects which servo to control



3. The servo setup keyboard.

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QUAD SERVO DCC DECODER | 5

- **L** (Left) to make the servo move left
- **R** (Right) to make the servo move right

There are also five light-emitting diodes (LEDs), one red labeled **Sel** (Select), and four green labeled **1, 2, 3,** and **4**, that show the servo selected and indicate the operation in progress.

I will cover the details of keypad use in Part 2 next month.

Building the Quad Servo DCC Decoder

You can buy a pair of printed-circuit boards (PCBs) from OSH Park, a small company located in Lake Oswego, Oregon, to build a Quad Servo DCC Decoder (QSDD). Buy one pair for each QSDD you need: 1 QuadServo-DCCDecoder + 1 Keypad.

They supply the PCBs in multiples of three boards: three decoder PCBs for \$15.45 and three keypad PCBs for \$5.25, including free shipping to any destination worldwide.

QuadServo-DCCDecoder PCB:

oshpark.com/shared_projects/CjngC3qb

QuadServo-Keypad PCB:

oshpark.com/shared_projects/7ATX5aqB

To order a set of PCBs (multiples of three) click the button labeled “Order Board” next to each board. Enter your email address, name, and a password of your choice to establish an account with OSH Park, then follow their ordering process. You can pay with a credit card or via PayPal.

Your boards will be manufactured and delivered within two or three weeks depending on where you are in the world.

Note: Neither A-Train Systems nor I have any connection with OSH Park, other than as a very satisfied customer.



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If you prefer to use an alternative PCB supplier, then instead of clicking “Order Board”, just click on “Download” to download a copy of the relevant file in Eagle board (.brd) format, which you can then send off to your preferred PCB board fabricator.

[4] and [5] list the parts required to build a complete QSDD (decoder plus keypad), including cables.

Decoder parts			
Part description	Reference	Quantity	Value/Nbr
Diode Rectifier Bridge	BR1	1	W005G
Capacitor - Polyester	C1, C3, C5	3	100nF
Capacitor - Electrolytic	C2	1	220uF 35V
Capacitor - Disc Ceramic	C4	1	270pF
Resistor – Metal Film, 1/4 Watt	R1	1	1K2
Resistor – Metal Film, 1/4 Watt	R2, R4 - R7	5	10K
Resistor – Metal Film, 1/4 Watt	R3	1	4K7
Diode	D1	1	1N4148
Voltage Regulator - 5 Volt	VR1	1	LM7805
Optoisolator	OK1	1	6N137
Arduino Module	M1	1	Nano-3
Terminal Block - 3.5mm pitch	DCC-IN	1	1 x 2
Pin Header - 0.1" (2.54mm) pitch	JP1 – JP4	4	1 x 3
Pin Header - 0.1" (2.54mm) pitch	JP5, JP6	2	1 x 5
Pin Header - 0.1" (2.54mm) pitch	JP7	1	1 x 2
Heatsink – to fit TO220 package		1	
USB Cable - A Plug to Mini B Plug		1	

4. Table 1, list of decoder parts. See [6] for distributor stock numbers.



Keypad parts			
Part description	Reference	Quantity	Value
Resistor – Metal Film, 0.25 Watt	R1 – R5	5	220R
Light-Emitting Diode - Red	LED1	1	3mm Red
Light-Emitting Diode - Green	LED2 – LED5	4	3mm Green
Tactile Switch	S1 – S4	4	6mm
Socket Header - 0.1" (2.54mm) pitch	JP1 – JP2	2	1 x 5
IDC Socket Ribbon Cable Connector		1	10-way (2 x 5)
IDC Plug Ribbon Cable Connector		1	Box Header (2 x 5)
Ribbon Cable – 0.05" (1.27mm) pitch		As req'd	10-way

5. Table 2, list of keypad parts. See [6] for distributor stock numbers.

Suggested suppliers for the parts listed in [4] and [5]:

Modelers in the UK ...

RS Components – uk.rs-online.com/web

Farnell – uk.farnell.com

Modelers in North America ...

Newark – www.newark.com (part of the same company as Farnell).

Mouser – www.mouser.com

Digikey – www.digikey.com

Mouser and Digikey prices tend to be a little higher than Newark. Both Mouser and Digikey also have European-based operations, but this also tend to have higher prices than RS Components or Farnell.

The Arduino Nano 3 module can best be obtained from one of the many suppliers operating on eBay, although you will have to make

your own judgment about who will give you the best service, based on their feedback from previous customers.

The tables in [6] give stock numbers for QSDD components from each suggested supplier. The bonus extras for the February issue [mrhmag.com/magazine/mrh2020-02/bonus-extras] provides a PDF listing the parts from each manufacturer with clickable links.

Build Your Own Quad Servo DCC Decoder – Part 1

Suggested suppliers for the parts listed above are RS Components (<https://uk.rs-online.com/web/>) or Farnell (<https://uk.farnell.com/>) for users in the UK, or Newark (www.newark.com/) for users in the USA (part of the same company as Farnell). Mouser (www.mouser.com/) or Digikey (www.digikey.com/) are alternative sources in the USA, although their prices tend to be a little higher than Newark. Both Mouser and Digikey also have European-based operations, but still tend to have higher prices than RS Components or Farnell.

The Arduino Nano 3 module can best be obtained from one of the many suppliers operating on eBay, although you will have to make your own judgement as regards who will give you the best service, based on their feedback from previous customers.

The tables below gives suggested part numbers for each QSDD component from each suggested supplier. Click on the part number to view the relevant webpage with details of the part.

Ref-Decoder	RS Cmps	Farnell	Newark	Mouser	Digikey
BR1	7082668	1861434	70AC6544	625-B380C1000G-E4	B250C1000G-E4/51GI-ND
C1, C3, C5	3121469	2429342	18AC7634	80-R82DC3100AA50J	399-19335-ND
C2	7111264	8126690	62W6211	80-ESK227M035AG3AA	P5166-ND
C4	7167226	2860060	57AC2084	594-S271K43SL0N6TK5R	BC2679CT-ND
R1	1650230	9341226	95W7689	71-CCF071K20GKE36	S1.2KCACT-ND
R2, R4 - R7	1651031	9341110	95W7695	71-CCF0710K0JKE36	S10KCACT-ND
R3	1650319	9341951	95W7764	71-CCF074K70GKE36	S4.7KCACT-ND
D1	7390290	2675146	05AC0533	512-1N4148	1N4148FSC-ND
VR1	7147780	1467758	89K1366	511-L7805CV	497-1443-5-ND
OK1	8051267	2453244	31Y6274	859-6N137M	160-1791-ND
M1	eBay	eBay	eBay	eBay	eBay
DCC-IN	8971332	3882615	68C9065	651-1985807	277-6043-ND
JP1 - JP4	2518632	1593422	08N6751	517-929834-01-24-RK	3M9457-24-ND
JP5, JP6	"	"	"	"	"
JP7	"	"	"	"	"
Heatsink	7124257	1611415	81F046	532-507302B00	HS115-ND
USB Cable	eBay	eBay	eBay	eBay	eBay

Ref-Keypad	RS Cmps	Farnell	Newark	Mouser	Digikey
R1 - R5	1650814	9341528	95W7736	71-CCF07220RJE36	S220CACT-ND
LED1	1780909	1581111	14N9386	859-LTL-4211N	160-1139-ND
LED2 - LED5	1808502	1581114	14N9374	859-LTL-4231N-1	160-1958-ND
S1 - S4	3786476	1555982	95M4260	688-SKHHAM	450-1650-ND
JP1 - JP2	8277728	1593490	08N6807	710-61301021821	S7108-ND
IDC Socket	8323483	2215247	45W6459	517-D89110-0131HK	732-2102-ND
IDC Plug	6741205	4139045	94F7977	710-61201025821	732-5452-ND
Ribbon Cable	eBay	eBay	eBay	eBay	eBay

6. See the bonus extras [mrhmag.com/magazine/mrh2020-02/bonus-extras] for a list of suggested parts from each recommended supplier for the decoder and the keypad as clickable links.

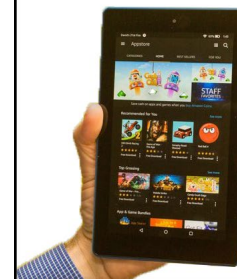
Tables in [6] notes:

1. You may be able to source equivalent parts locally at a lower cost, using the part details by clicking on the links above. This assumes you have sufficient electronics knowledge to understand the specifications. Although eBay can be a good source for components, you need to be wary of low cost parts, since these may be low quality or manufacturers' substandard rejects.
2. The total cost of parts for a single QSDD should be less than \$20 (UK£16), including the PCBs, but could be more if all components are ordered from the major suppliers.
3. Buying electronics components singly or in small quantities is much more expensive than buying in bulk (in quantities of 10 or more), so it is worth considering carefully at the outset how many modules you might build, and then procuring all of the required components in a single purchase. This will also reduce shipping charges.

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Soldering components onto the PCBs

Once you have your PCBs and components, next you need to solder the components to the boards.

If you do not have any experience of soldering electronic components then have a look at one or two of the guides available on the internet:

www.makerspaces.com/how-to-solder

You can find many more “how to solder components on PCB boards” videos on YouTube.

I find nothing beats getting some copperclad PCB material from one of the component suppliers to practice soldering wires and some spare components to it before tackling the real PCBs.

I prefer rosin-cored solder in wire form only. Of course, never use solder with acid flux (as sold for plumbing purposes).

I recommend a fine-tip soldering iron with a maximum power rating of 25 watts. All joints should be made as quickly as possible to avoid damaging the PCB and components. The greatest enemy of electronics is prolonged heat.

The position and value of each component is shown on the diagrams for the decoder [7] and the keypad [8].

Assemble the QSDD board

Fit those components with least height to the PCB first, i.e., the diode (D1) and resistors (R1-R7). Then when you turn the PCB over to solder the component wires on the underside of the board, the components do not fall out of the holes.

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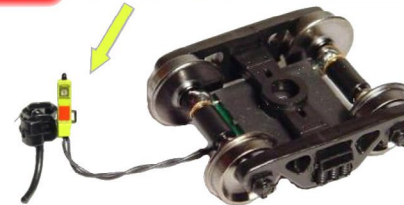
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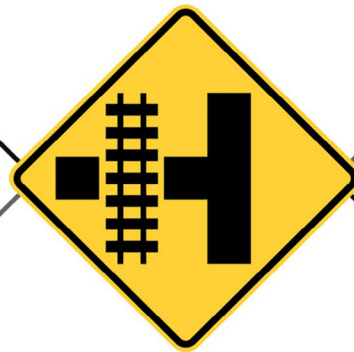
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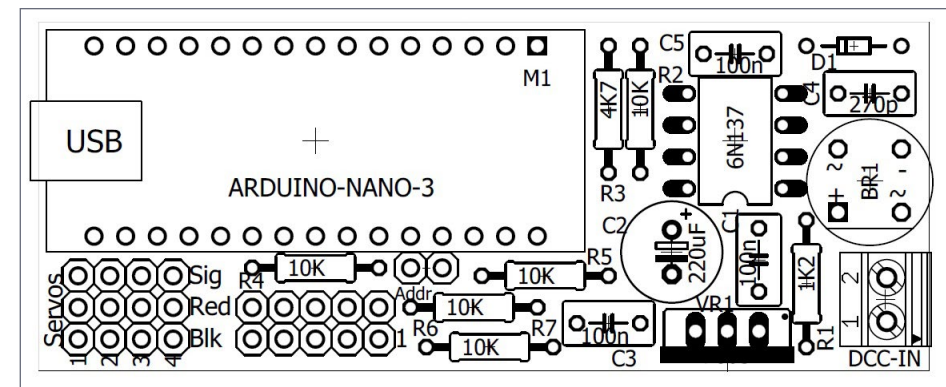
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QUAD SERVO DCC DECODER | 11

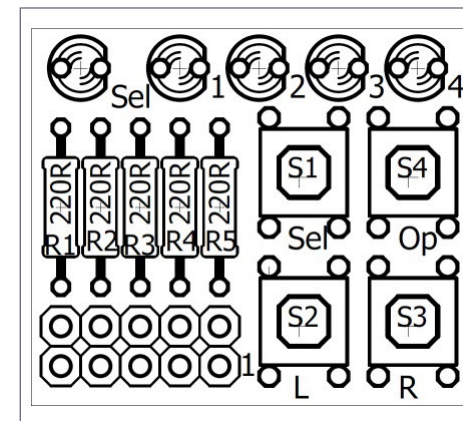
Make sure to fit the diode in the right direction as shown on the PCB markings. It does not matter in which direction the resistors are placed on the PCB.

A tip here: Solder just one wire from each component, then turn the PCB over and check that all components sit flush with the PCB.

If not, make them so by briefly melting the one soldered joint while holding the component flat – but watch your fingers



7. Component layout on the QSDD decoder board.



8. Component layout on the QSDD keypad board.



– soldered wires are hot! Do this before soldering the remaining wire(s) of the component.

Clip the excess component wires flush with the soldered joints on the underside of the PCB using a small pair of side cutters.

When you fit the 6N137 optoisolator, orient the notch or dot at one end toward the center of the PCB. Use the board markings as your guide and make sure all pins went through the PCB holes, with none having been bent under the device.

Solder two diagonally-opposite pins on the chip first, and then check that the device is still flat on the PCB. If not, melt the solder on one corner pin while pushing the device down.

You will need to attach the Arduino Nano 3 module to the supplied pin header strips before fitting it to the PCB [10].

When doing this, solder the corner pins first, then check that the headers fit square and flush with the Arduino before soldering the rest of the pins.

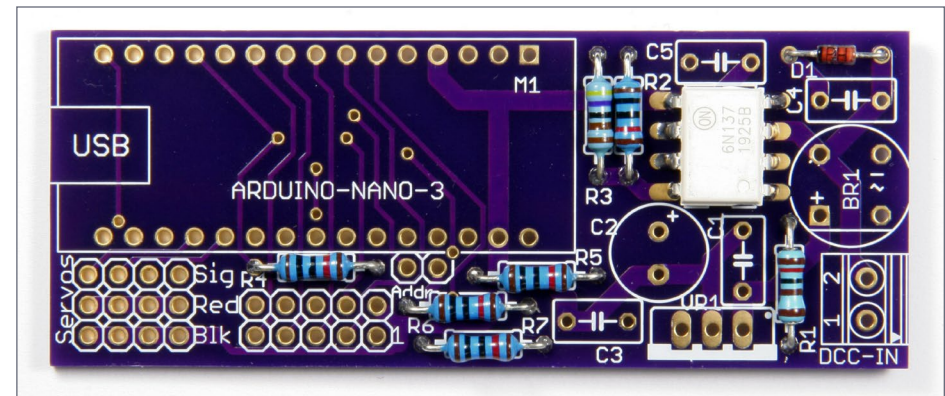
As always, complete the solder joints in as short a time as you can, to minimize the heat applied to the components. Note that there is no need to fit the additional 6-pin header to the end of the Arduino board farthest from the USB connector.

Before you solder the Arduino Nano to the decoder PCB, you can connect it to one of your computer's USB ports using the cable listed in the decoder parts table, and check that the module powers up correctly.

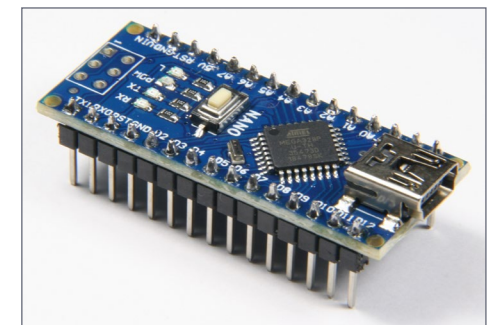
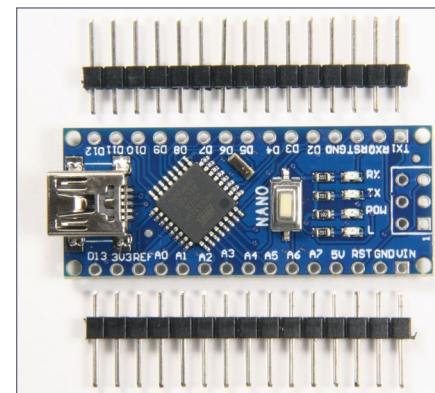
You will normally see two LEDs lit – one constant (labeled POW) and one flashing (labeled L), depending on the current internal state of the Nano module. You do not need to have any of the Arduino software installed on your computer to perform this check.

Fit and solder the Nano module on to the decoder board, making very sure that the module's USB connector is toward the edge of the board, followed by the capacitors (C1, C3-C5), rectifier bridge (BR1), and terminal block.

As the tallest component, fit the 220uF capacitor (C2) last, and ensure you mount it the right orientation, with the stripe indicating the negative (-) terminal toward the nearest edge of the PCB.



9. Partially assembled QSDD board.



10a, b. Attaching the header pin strips to the Arduino Nano 3.

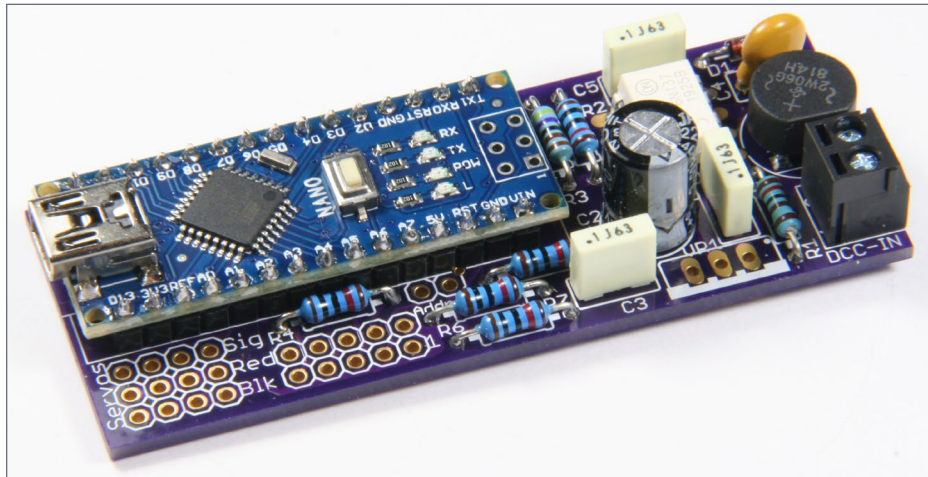
The other capacitors can be installed in either direction.

The flat edge of the bridge rectifier should be next to the terminal block.

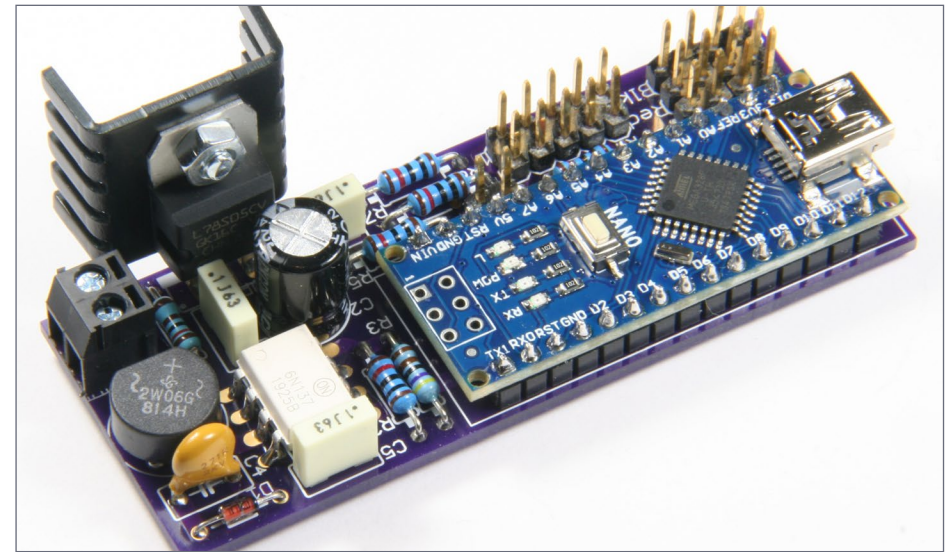
Now fit the pin headers. Although you can buy individual headers to match exactly the sizes used, I find it less costly to buy a single long strip of at least 24 pins, then carefully snap it into the required sizes.

Beware of buying the very cheapest headers on eBay, since the plastic used tends to shatter easily, exposing the end pin and often failing to hold it in position.

Finally, fit the voltage regulator (VR1) with the metal tab facing outward. I recommend adding a heat sink to the voltage regulator (listed in the decoder parts table), to keep its operating temperature at a safe level.



11. Assembled QSDD board, minus the pin headers and voltage regulator.



12. Fully assembled QSDD board with the heat sink facing outward.

The heat sink can be fitted most easily with the fins facing away from the PCB [12]. However, if you prefer something more compact, you can carefully straighten the bottom pair of fins (slowly to avoid cracking the soft aluminum and breaking off the fins), and mount the heat sink with the fins facing inward toward the center of the PCB.

Assemble the keypad board

On the keypad PCB, fit the LEDs [14] with the shortest lead toward the printed captions (Sel, 1, 2, 3, 4). Take care to associate the correct caption with an LED. As seen in [14], the captions are toward the *lower-right* of their associated LED holes. LEDs can be particularly sensitive to heat, especially when fitted flush to the PCB, so do not linger with your soldering iron.

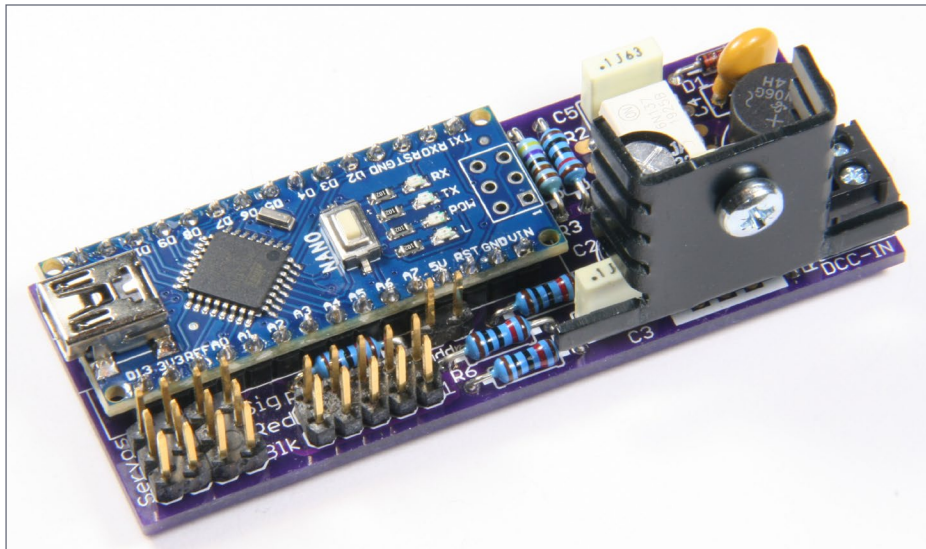
Fit the 2 x 5 socket header after the four pushbuttons, on the underside of the board [15].

Once you have completed the boards, check that all of your soldered joints are bright and shiny, and that the solder wicked through the PCB holes to the component side of the board.

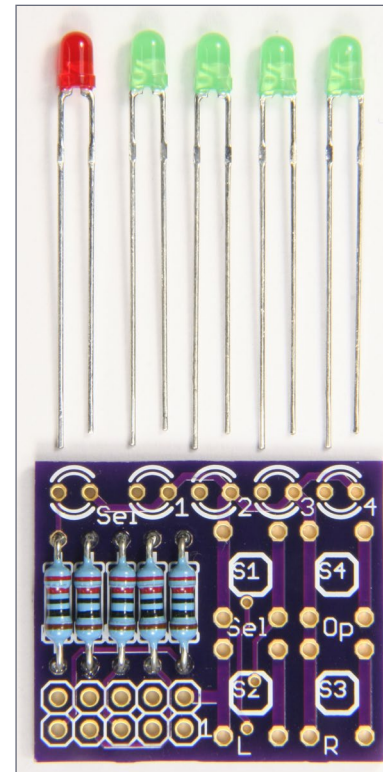
Also look for solder bridges between copper pads or component pins anywhere on either side of the PCB. I recommend using a 5X or 10X hand lens or jeweler's loupe for this inspection.

The keypad can be connected to the decoder board directly or via a ribbon cable. While you can buy ready-made cables, you can assemble your own using the listed components [16].

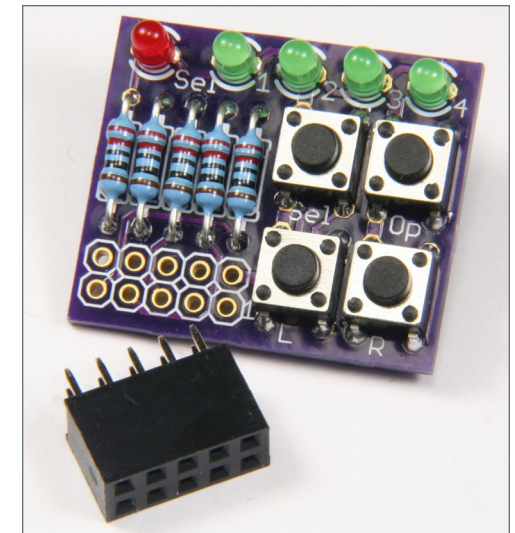
After cutting the 10-conductor ribbon cable to the required length and ensuring the ends are square, place the ends into the



13. Fully assembled QSDD board with the heat sink facing inward.



14. Partially assembled keypad PCB showing proper LED lead alignment.



15. Assembled keypad PCB, with the 2x5 socket header to be installed on the bottom of the board.

insulation-displacement connectors (IDC) as shown. Firm finger pressure will generally be enough to hold the two parts of each connector on the cable temporarily, with the tangs just biting into the cable insulation.

Place each connector between the jaws of a vise and carefully

apply just enough pressure to close the two parts of the connector onto the cable and complete the joint. Finally, fold the ribbon cable back over the top of the socket connector and slide the strain relief into place as shown [16b, c]. The box-header plug connectors do not appear to be readily available with a strain-relief feature [16a].

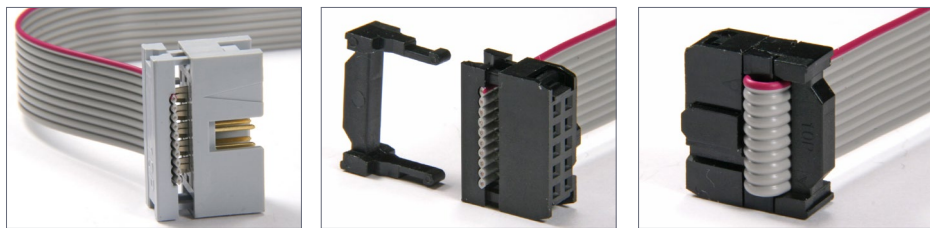
You can now plug the keypad into the 2 x 5 pin header on the decoder, either directly or using the ribbon cable. Connect your USB cable from your computer to the Arduino Nano module.

If everything is assembled correctly, the Arduino Nano should light two of its onboard LEDs, one steady and one flashing, depending on the current internal state of the Nano. That means it's ready to receive its software program called a "sketch."

Software for the Quad Servo DCC Decoder

As I mentioned earlier, Geoff Bunza's article in the *Model Railroad Hobbyist* forum, "SMA20 Low Cost 17 Channel DCC Decoders" (mrhmag.com/node/24316) inspired the development of this decoder.

Geoff's article in the December 2016 issue of *MRH*, "A modeler's



16a, b c. It's easy to add insulation-displacement connectors and make your own ribbon cable.

introduction to the Arduino" provides a very good introduction: mrhpub.com/2016-12-dec/online/html5/index.html?page=132

The files provided in Bonus Extras for the December 2016 *MRH* include a guide to setting up the Arduino Integrated Development Environment (IDE) on your computer: mrhmag.com/magazine/mrh-2016-12-dec/bonus-extras

You also get a link to the Arduino website for downloads: www.arduino.cc/en/Main/Software

And a link to getting started: www.arduino.cc/en/Guide/HomePage

- There are also links to tutorials: create.arduino.cc/projecthub/Arduino_Genuino/getting-started-with-the-arduino-desktop-ide-623be4
- www.arduino.cc/en/Guide/ArduinoNano

I use the Nano here in the QSDD.

Programming the Nano 3

Once you have the Arduino IDE installed and set up on your computer, and you have mastered the basics by working through some of the examples supplied, you need to use the Include Library function from the Sketch menu in the IDE to add an extra library to the system.

Add the NmraDcc library developed by Alex Shepherd, Wolfgang Kuffer, Geoff Bunza, Martin Pischky, Franz-Peter Müller, and Sven (littleyoda) which lets an Arduino system interpret DCC commands: www.arduinolibraries.info/libraries/nmra-dcc

This library can also be downloaded directly from GitHub: github.com/mrrwa/NmraDcc

You can find a lot of examples of the library being used on GitHub.

Now download the sketch for the QSDD from the Arduino download section of my A-Train Systems website to any convenient folder on your computer, and then open it in the Arduino IDE:

www.a-train-systems.co.uk/arduino/download

In addition to the NmraDcc library, the sketch uses the standard Arduino Servo library (already loaded as part of the IDE) to provide servo operations rather than the SoftwareServo library used by Geoff Bunza in his applications. I prefer the Standard Servo library because it provides a greater degree of control over individual servo setup.

A common failing – the majority of example sketches and libraries I have come across contain very little explanation of how they work, or how to use the facilities they provide.

I have included plenty of comments on the purpose of each section of the QSDD sketch, and how the various functions should be used. Also, as I describe in Part 2 of this article, you can use the IDE Serial Monitor to display explanatory messages and confirm your actions as you set up the decoder.

Click the Verify (✓) button on the Arduino IDE toolbar to confirm that the sketch will compile with the included libraries.

Any errors are most likely to be caused by the Arduino IDE failing to find the required libraries where it expects them, or the Board, Processor, and Port settings under the Tools menu are not set correctly.

Assuming that all is well, ensure you have the USB cable connected to your computer, then click the Upload (⬆) button to transfer the compiled sketch to the Nano. You should see the Tx and Rx LEDs on the Arduino Nano light for varying lengths of time as the transfer proceeds.

When the upload completes, all five LEDs on the keypad should light up in sequence, and then go out again in the same order, to confirm that the code has been transferred successfully and has run through its normal initialization process.

Following this, you should see the red **Sel** LED on the keypad light briefly again. This signifies that the default settings for the decoder's configuration variables (CVs) have been loaded into the permanent memory (EEPROM) of the Arduino Nano.

This only occurs the first time the decoder is initialized, or if you choose to reset all CVs to their default values – see more about this in Part 2 of this article.

Once you have uploaded the sketch, the QSDD will retain all of the code even when switched off, so you can now remove the USB cable before connecting up to four servos.

Plug each servo into to one of four three-pin headers on the decoder board, making sure the black or brown wire of each servo goes on the pin nearest to the edge of the board.

Connecting the servo the wrong way round will not do any damage, but the servo will not operate.

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Although the decoder itself can be powered from your computer via the USB cable only, you may have problems if the USB also powers the servos.

Only modern USB 3.0 ports have sufficient capacity to power servos as well – The 5V power on older USB 2.0 ports will likely drop as soon as you start to operate a servo, and the decoder will reset and not move the servos.

It's best to connect track power from your DCC system to the decoder's two DCC-IN terminals. If it is not convenient to power-up your DCC system at this point, then any power supply between 9 and 16 volts, either AC or DC, can be used instead. Even a 9-volt battery will work.

Working with the servos

At this stage, leave the servos out and unmounted, disconnected from whatever linkage you're using to drive the turnouts.

The default servo throw movement left or right in the software will likely not be appropriate to your setup. In extreme cases, either the servo, the linkage, or both, could be damaged.

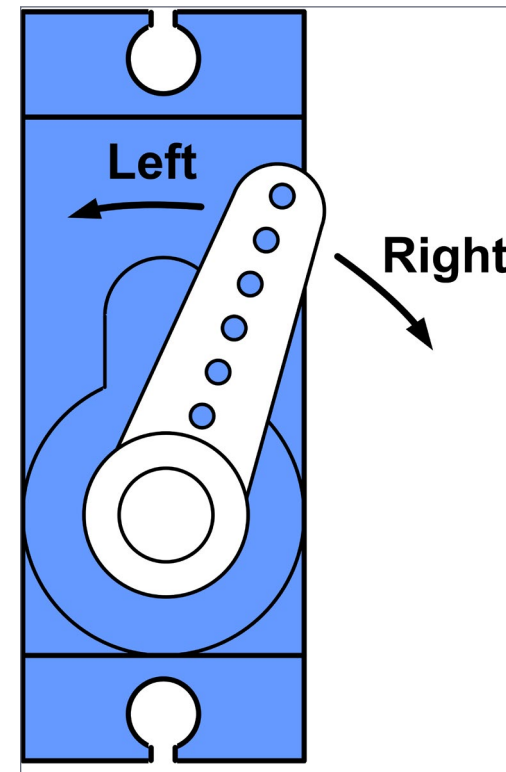
It is safer to start with the servos free to rotate with a basic actuating arm ("horn") fitted so you can easily see the servo position. I describe servo movements as "left" and "right" when seen looking down on the top of the servo, where the actuating arm is fitted, as shown [17].

As soon as the decoder has power applied to it, all the keypad LEDs should light up one after another, and then go out in the same order, and all attached servos should move clockwise to the default right-most position set in the software (20 degrees right of center).

To reset the decoder, you can restart the uploaded program (sketch) again by pressing the reset button on the Arduino Nano. However, with the keypad plugged directly onto the decoder board, the reset button is not easily accessible.

As an alternative, just press and hold down the L pushbutton on the keypad, then press the Op pushbutton – and release both buttons to reset the Arduino Nano.

To operate a servo, press and release the Op pushbutton on the keypad. This will light the green 1 LED to show that servo 1 is selected.



Press the L pushbutton to move servo 1 to its left limit position at the default rate, or the R pushbutton to move servo 1 to its right limit position. No movement will result, of course, if the servo arm is already positioned at the selected limit.

Further presses of the Op pushbutton will light green LEDs 2, 3, and 4, in turn, selecting the corresponding servos 2, 3, and 4. When the relevant green LED is illuminated, the currently-selected servo can then be operated by using the L and R push-buttons, as described.

17. Servo with the actuating arm fitted, showing the left and right movement directions.

A final press of the Op pushbutton will switch all LEDs off, stopping manual servo operation.

You can also operate the servos by sending an accessory command with the appropriate address from your DCC system. With the sketch loaded, the four servos are assigned default accessory addresses of 1, 2, 3, and 4, respectively.

For full details of how to program servo addresses of your own choice into the decoder, and how to tune the servo throws precisely to suit the turnout linkages on your layout see Part 2 of this article.

Meanwhile, you can build your own Quad Servo DCC Decoder this month and be ready to tune the servo throw and set their accessory addresses next month! ☒

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DR TERRY CHAMBERLAIN



Terry Chamberlain got into model railroading almost by accident in the 1990s when he responded to a request from some modelers in California to build a DCC system based around an Atari personal computer – and he had to build a simple layout to prove that it all worked. Eventually the project evolved into A-Track, a Windows application to

provide full computer support for the complete range of NCE DCC systems, with facilities similar to JMRI's Decoder Pro and Panel Pro.

Terry is a professional electronics engineer and spent most of his career in the UK defense industry designing, and managing the development of, large real-time computer systems for the Royal Navy. Now that he has retired he is still hoping to build the logging and mining layout he has been planning for years (after several visits to Colorado) – but keeps getting distracted by new computer and electronics projects for model railroading. ■



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Pete Smith's Loon Lake Navigation & Railway Co.



Also on TMTV!

See Pete's layout at ...



July 12-18



September 2-5

THE MRH STAFF visits with Pete Smith about
*his freelanced Pacific Northwest narrow-gauge
railroad that could have been ...*

1. One thing you notice right away with Pete Smith's Sn3 layout is the abundance of scratchbuilt structures and small details. This signature scene of the port at Rock Harbor greets you immediately as you enter the layout area.



RATE THIS ARTICLE

MRH: SO PETE, HOW DID YOU GET INTERESTED in trains?

PETE SMITH: I grew up in Milwaukee, Wisconsin, around a lot of railroads. I got my Lionel at Christmas time under the tree, the old typical story – and it grew from there.

An interesting sidebar – my father sold addressing machines and two of his customers were Kalmbach and Walthers. So I'd get all kinds of free literature when whenever he went on a business call to these people.

Around age 10 or 12, I went into HO. I sold the Lionel and used the money to buy some Varney kits and a locomotive.

I stayed pretty active in HO until about my sophomore year in high school and then kind of gave up, had other interests coming in. Out of school I went into the Air Force, and for the first five or six years in the service I did not do any modeling.

As I settled in and decided I wanted the Air Force for my career, I came up with a system for carting my railroad along with me between moves. I built a series of 2 x 6' or 2 x 8' modules that I'd package up in a wooden coffin.

I'd go from station to station, unpack the coffins in my new layout area and decide what kind of layout design I could have incorporating those modules.

MRH: So that was HO, how did you end up in S scale?



2. Detailed and believable scenes like this one at Logging Camp 8 abound on Pete's Loon Lake Railway.

Pete: A friend of mine and I went to the Eugene, Oregon NMRA convention in the late 1980s and he convinced me to buy an S-scale PBL boxcar kit. I put it together and I was sold. I went into Sn3 and the rest is history as they say.

MRH: How would you describe what you're trying to create here in your basement?

Pete: I'm trying to recreate a bit of the Pacific Northwest – modeled after both the US and Canada – in the 1938 timeframe. I'm focusing on logging and a little common carrier operation in Sn3.

It's my thing, so I count my own rivets. It's called the Loon Lake Railway & Navigation company.

I tend to get my ideas from other people's ideas. I plagiarize a lot and if I see something I like, I go for it. And of course I take pictures when I'm traveling around.



3. Pete has detailed and realistically weathered all his Sn3 steam loco fleet. They also all have sound decoders, making it sheer delight to railfan this layout!



4. A side view of Shay #6. The cab detail and engineer really heightens the realism.



5. Pete's Loon Lake has many nice bridge scenes like this one between Rock Harbor and Camp 8.

I'm always taking pictures of dilapidated buildings and trash and one thing or another, picking up things and getting color samples. But for the most part I think I really look at other people's work and I get inspired.

I don't want to be held to a specific era or a specific prototype because there's too many things in railroading I like. So I take what I like from whatever railroad happened to have it and put it on my railroad. And the only way I can justify that is to freelance.

MRH: How did you design a layout for that idea here in your available space?

Pete: My layout is in an area perhaps 22 x 20'. I set my average roadbed height to about 52 inches. I've kept my radius fairly tight – about 30 inches in S scale. I've kept my grades at less than 2%.



Loon Lake trackplan.

There's no hidden track. I learned over the years if something's going to go wrong, it's going to go wrong in hidden track.

I have kept the track all within reach, so I don't have to get up on a ladder to reach any particular area. I can reach everything from a standing position.

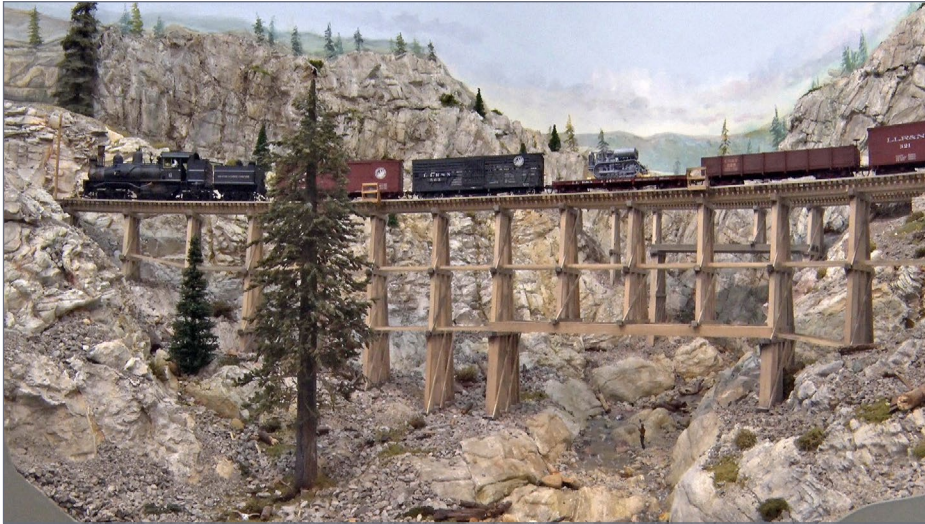
MRH: It doesn't take more than a few minutes looking around your layout to discover one of your passions: structures. Tell us about that.

Pete: My favorite thing is structures – I really enjoy putting together structures.

I should explain that I'm part of a group called the Friday Night Boomers and that's about eight guys who are very good modelers, artists, and they've done a lot of work on my railroad. We rotate around in a round-robin every Friday night and about every six weeks or so they come over to my place and we spend the night building things for my layout.

When I first came to the St Louis area, I had switched recently to Sn3 and met John Kaylin, who was a member of the Boomers. So I joined the Boomers about two years after that. I think the group itself been around for about 50 years. They had their beginnings in the early seventies, I believe. And they've always been a group of narrow gauge modelers.

The group's primary interest is modeling, not operating, but they all are wonderful modelers and they have some beautiful layouts.



6. This curved trestle scene between Camp 8 and Beaver Creek stands out as one of the most dramatic on the entire layout. Also note the superb rockwork!



7. Another view of the dramatic curved trestle scene in [6].



8. A short mixed freight pulled by Shay #6 rolls through Rock Harbor.

The beauty of this group is that we have a couple of artists, a couple of guys that are very good at chasing electrons and most everybody in the group is an excellent modeler – all first rate.

So we rotate around round-robin style and we visit each other's layouts. Not everybody has a layout but about half the folks do. When we arrive at someone's house on a Friday night, the host assigns us a work project.

And since we only get around maybe six times a year to any one member's house, it takes a long time to complete a project, sometimes years. We typically have a building or some type of machinery or such that we're building for that other person.

All our layouts represent the handiwork of the group, as such. We number 10 – 11 people, and membership is by invitation only. We try to limit the number because we don't have many workbench places in each home.

Some of the homes are smaller and it gets rather tight. So that's why we limit the number of people in the group. But it's been a fun group, an interesting group. And its every Friday night for the last 30 years.

What you see on the layout is a combination of my talents and the work of a lot of very talented people that help me through the Boomers group.

Getting back to structures – the brewery is one of the latest structures on the layout and that's kind of an interesting story. We decided we wanted a brewery because I liked reefers and one of the fellows in the unit, Jeff Polk, is an architect.

So I went on the internet and downloaded through a search about 50 photographs of turn-of-the-century breweries, and gave



9. Pete has been part of a weekly round-robin group that calls themselves the Friday Night Boomers. Roughly once every couple months, the group shows up at Pete's to work on projects for his layout. The rest of the weeks, they work on other members' layouts.



10. A small wooden bridge that looks deceptively complex – here the train approaches Beaver Creek. Also note Pete's convincing rockwork.

them to Jeff. Jeff did a composite brewery using all the concepts and ideas and got the general feeling of a turn of the century brewery. He drew up the plans by hand – I did convert them to AutoCAD.

The half that was all wood is the part that Jeff built and the brick portions are the portions that I built. And then subsequent to building the brewery I've built the icing platform, which is to the rear of the brewery.

That was a fun project and something you don't see too often in narrow gauge.

MRH: How has building the layout gone for you?

Pete: It's much easier when you have help like the Boomer's group, particularly when you use everybody's talent. You know,

one guy is a great artist and another guy's an electronics wizard, and a whole bunch are just good modelers. So it works out well.

Whatever your problem is, someone in the group can solve it. So at each of our homes we have a series of workbenches that



11. A mixed freight rolls through Beaver Creek on the main, in tow behind Shay #6. In this direction, we're seeing the Shay's "blank side" ... all the cylinders and gears are on the back side of the loco at the moment. That will change once the train rolls through Cascade and starts the climb up the high line in the back.

everybody can sit down and work at and they all have projects that were assigned by the host. In my case, I have a workbench position for just about everybody in the group.

During a work session, you may also have two or three people

out in the layout doing work. Greg Gray, a friend of mine in the group does the background painting. In fact, Greg's done background paintings all over the United States for various people. He's a really talented fellow.

And in my case, I have a lot of photographs from the Pacific Northwest. I just gave Greg a photograph of an area or a scene and he takes it from there.

MRH: What methods are you using for your fantastic looking rockwork?

Pete: A lot of the rocks come from Bragdon's molds and I've done some urethane work with the Bragdon stuff. But the medium I prefer is plaster.



And most of the molds I've done are molds that I have made or my friends have made. And we change and interchange molds. You take the plaster while it's a little bit green and you do a little carving in between and you get them to match up pretty well.

MRH: One very notable aspect of your layout is that it doesn't consume most of your available basement space and the layout space is clutter-free. There's a lot of "maneuvering room" down here, so to speak.

Pete: I like the layout to feel like it's part of a house. I've tried to keep everything off the floor from under the layout and make it part of an extension of the family room, if you will.

MRH: Your around-the-layout inset fascia shelf is a clever idea. Where did that come from?



12. The mixed freight rounds the loop at Cascade and starts up the high line. We can now enjoy the Shay's "good side" with all the intricate cylinder action.



13. The mixed freight from [10] now rolls by on the high line on a background bridge in Beaver Creek. Now we can see Shay #6's piston mechanism in all its glory.

Pete: That is an invention of a Brian Ellerby. Brian was the founder and owner of the Evergreen Styrene company. He did this on his layout and I decided that this was the answer.

You've got a drink shelf, a tool shelf, and a place for idle hands to sit down instead of on your layout. So it really works out well.

MRH: The layout looks more or less finished. Are you done or do you have any expansion plans?

Pete: The worst thing from my point of view would be a completed layout because my first love is building them and constructing buildings details. I am finishing up two areas: One has a spar pole loader in one corner and I'm putting the finishing touches on the peninsula where the brewery is located.

But yes, the layout looks basically complete from the average person's point of view. But I intend to keep adding more layers of detail to what's already here.

The process is almost endless. I can see where there's going to be, you know, five or six more years of work on this layout. I could spend that much time.

MRH: What about operating sessions?

While this is a folded dog bone layout, I can close down the high-line and run from Cascade, which is the engine terminal at one end to Rock Harbor, the other end where I can turn trains. So it's a point to point back and forth.

We've run a couple of sample sessions and it's been kind of fun. The last session we had as a trial session, there are four cities on this railroad, so four opportunities to stop and switch.

We've set up the criteria where we'd start a train from each end with about a five car train.



14. The mixed freight rumbles along the high line past the cattle pens on the far edge of Beaver Creek.



15. Pete recently finished this logging scene on his layout, located on the high line in the corner between Beaver Creek and Cascade. The scene includes spar pole and steam donkey, complete with all the proper blocks and cable rigging.

The individual operating the train would have to drop a car and pick up a car, his choice at each location. And it took almost an hour to get from one end to the other, which is pretty good considering how small the general area is.

And then every once in a while, we'd run a log train through to confuse things and maybe a passenger train would come through with priority. And so that would cause a little upset and things to slow down.

It's been a fun operation. I think there's some potential in operating on this railroad, as simple as the track routing basically is.

MRH: How have the operating sessions been?

Pete: The layout runs really well and the locomotives are almost flawless. I've spent a lot of time on the track, so the track work is pretty good.

In my past layouts, I had problems. Things would break down, things wouldn't work right. But by and large, this layout really works well and I'm really pleased with it.

MRH: Any nasty surprises along the way with this layout?

Pete: I didn't make any big errors on this one. I learned through 40 years of constructing layouts of what not to do.

If you're fortunate enough to have some good friends that are modelers, man, bring them into your circle and make use of their talents because a lot of this work is theirs and they deserve a lot of credit.

It's been a thoroughly enjoyable experience so far. ☒



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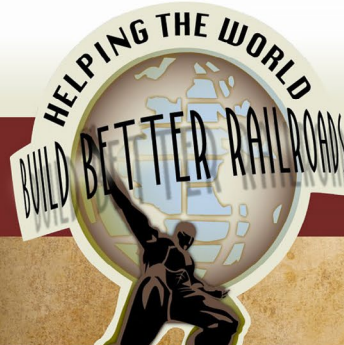
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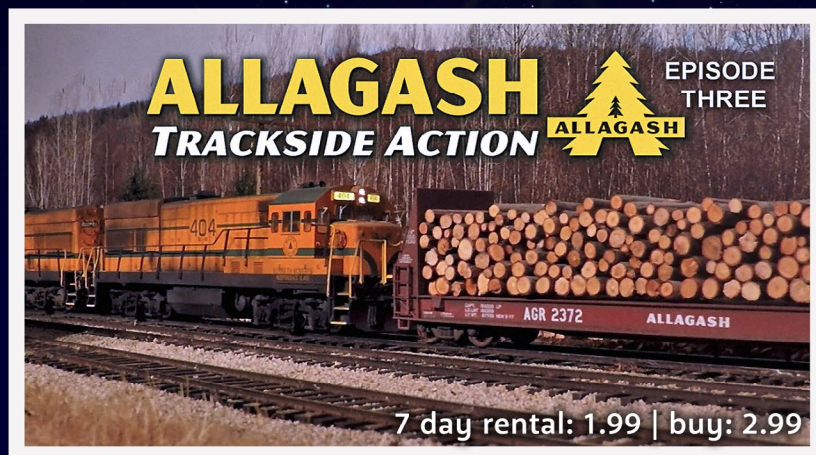
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A small layout with a big feeling



Model Railroad Hobbyist | February 2020

1. Walking into the small room you are surrounded by the wrap-around backdrop, totally immersing you in the environment.

PETER HOFFMAN creates the illusion of space in a very small room ...

AFTER DOWNSIZING TO A MODEST 55+ SENIOR community, our new home had no room for a layout. The only possibility was in the garage.

One of our autos is only 13'-3" long. There was just enough space to build an enclosed room in front of it. The 7x8' foot room that resulted allowed for a 47 sq. ft. layout with a three foot wide center aisle [2].



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I wanted to create an environment isolated from any outside distractions. Being completely surrounded by the layout backdrop helps achieve this feeling.

I placed four can lights in the ceiling and sheet rocked the walls. Later, I added a three-spotlight fixture. For lighting, I used a combination of warm white and natural daylight bulbs, providing a realistic warm and sunny appearance.

I used 2x3" studs to gain the maximum interior space. There remained only a one-inch clearance for the front and the rear



2. The plywood benchwork helped to stabilize the entire structure.



3. I check the realism of my scenes using photographs, which work much better than the naked eye. Woodland Scenics Realistic Water fills the log pond to a depth of 1/2". I poured the water in four equal applications.

of the auto! I attached the framing to the existing walls and ceiling with a few long screws, enabling the structure to be easily removed.

I smoothed and finished the sheetrock to serve as a paintable surface for the backdrop. I rounded the four corners using a flexible sheet of Polywall Utility Panel purchased at Home Depot. I then floated the joints for a smooth transition with the sheetrock.

A dimmer switch allows for twilight operations. I made sure to light all my buildings as well.

Because of the limited space, I decided a logging theme from 1930 to 1940 would be the best fit. For the layout focal point, I chose a lumber mill with an ample log pond [3]. All my locomotives are geared. Three Shays, two Heislors and a Climax allow for steep grades and tight curves.

I finished the backdrop and the upper levels first to allow easy access for construction [4]. I placed one inch thick insulation board on the lower deck to allow excavation of the log pond and to help reduce track noise.

I used thicker insulation board to form the topography, using a hot wire to cut the pieces to shape. Lastly, I covered everything with plaster cloth.



4. I added shelves to one side and the back for the logging camps.



5. Stage 1: Trial positioning.

I use YouTube tutorials to learn how to paint clouds and trees. The process involves a lot of trial and error! Fortunately, mistakes can be painted over easily enough.

I completed the process in three stages:

1. I paint the backdrop to the approximate elevation of the hillsides, which I experimentally fit and temporarily place, then remove after marking the backdrop to complete the painting [5].
2. I then complete painting the backdrop and finish the terraforming. I went with cork roadbed on all plywood surfaces to reduce the noise level [6].
3. The landscaping and trees are my final step. I screen real dirt and use it as a base to cover the ground. I also use the dirt for

ballast, which makes sense for a logging railroad. The shelf section shown measures 6" to 7.5" deep [7].

The switchback spur holds five cars plus the engine. The log loads, permanently assembled, can be placed onto the cars quickly by hand for the trip to the mill. Once there, they can be removed and the empties returned to the camp [8].

After I completed the switchbacks and landscaping, I positioned the mill and sawdust burner. I scratchbuilt both using discontinued Suydam metal kits (still available on eBay) for the wall framing. I cover the exterior with pre-stained lumber strips. I made the corrugated roof from the unused wall and roof materials and cut into individual pieces using a paper cutter with a jig [9].



6. Stage 2: Backdrop painting finished.



7. Stage 3: Landscaping completed.



8. A spar tree with heel-boom at Camp One loads cars for the trip to the mill. The unfinished backdrop and branch line interchange is just visible (under the hand). Note the glued-up log loads.

I built the sawdust burner using a kitchen strainer [10] and a styrofoam base wrapped with heavy construction paper [11]. The burner and the mill both took First Place in the Structure Class at the Pacific Model Loggers Convention in Oregon.

The two-stall engine house also incorporated Suydam parts [12].



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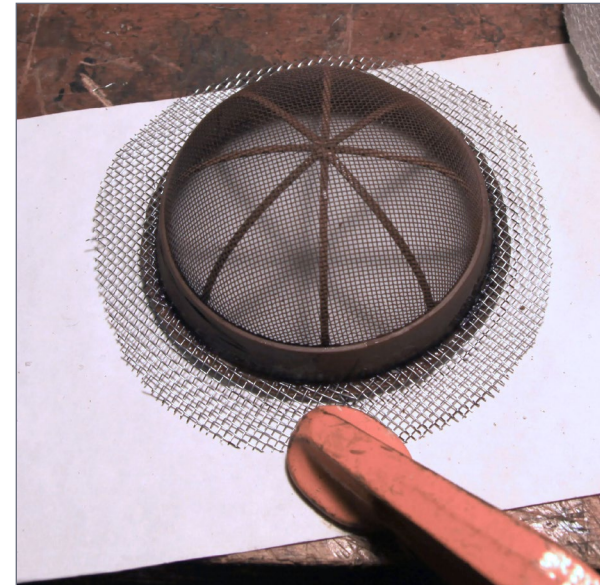
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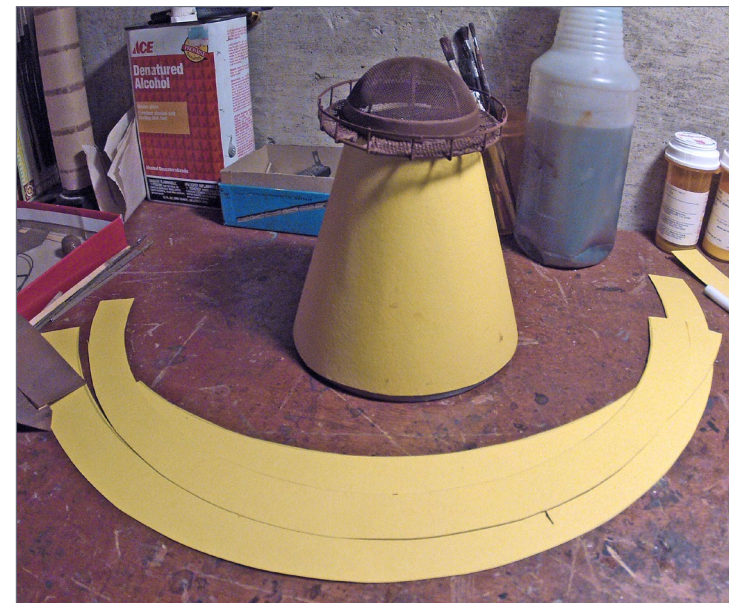
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9. The mill's placement was experimental and I repositioned it many times until finding the optimum location. With that done, I determined the layout of the yard.



10. Common kitchen strainer. I added struts to act as supports.



11. I cut concentric construction paper into strips and overlapped to make them appear as sheets of metal siding.

One of the more taxing projects was the trestle. After forming the mountain, I placed the trestle deck and laid the rails. I spaced the bents equally and cut every leg on each bent to conform to the hillside [13] and [14].

I use two varieties of trees. I built the 8" to 12" inch Douglas firs using kits from Coastmans Scenic Products (www.coastmans.com). I also use these kits to make the logs, which I cut to lengths that fit the cars and distressed them. For smaller evergreens I use ready-made trees by Moose Creek.

For the track I go with Micro Engineering Code 83 weathered flex track and BullFrog Manual Turnout Control kits to operate the switches. I make the short flat cars using Bachmann Old Time Water cars, removing the water tanks, changing the couplings, and weathering. Perfect for a logging operation [15].



12. Along with the mill and sawdust burner, I scratchbuilt the engine house which sits at the end of the mill yard. Smoke exhaust stains must still be added above both engine stalls.



13. I purchased the trestle bents pre-assembled and cut them to fit. After installing them, the bottom of any inaccurately cut posts could be hidden with foliage.





14. Fortunately, the finished trestle didn't collapse under the first load of logs.



15. An inexpensive flat car conversion using Bachmann Old Time Models.



16. Climax No. 2 pushes a string of empty skeleton cars up the 4.5% grade after clearing the first switchback.

Safety procedure requires locomotives to run on the downside of all trains when on the steep grades to prevent run-a-ways.

Two engines must take the train to the first switchback, one on each end. The engine on the rear then returns to the mill yard while the second engine pushes the train up the grade.

I reverse this operation when returning with loaded cars [16].

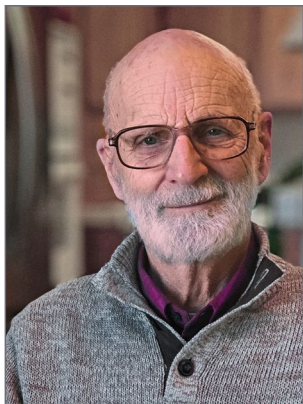
Even though the operation may be limited, I find it provides enough activity to last for most of an hour.

Finishing the lower backdrop and the branch-line interchange is my next project. Detailing work will go on indefinitely. It's a small layout with more than just a big feeling -- it immerses you in another world [17]. ☒



17. Climax No. 2 pushes a string of empty skeleton cars up the 4.5% grade after clearing the first switchback.

PETER HOFFMAN



Peter has been a railfan for 75 years. His grandfather was Superintendent of Telegraph for the Southern Pacific and his father Superintendent of Car Service for Pacific Fruit Express (PFE). He started modeling only a few years ago.

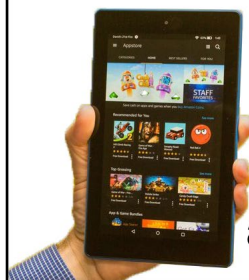
After moving to Oregon, he became enthusiastic about logging railroads. He enjoys a wide range of photography and taking pictures of his layout.

An avid bridge player, now 83, he lives with his wife in Galt, California. ■

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LOOK column

Model Railroad Hobbyist | February 2020

DAVE KILBORN looks at Rapido's new 4-6-4 Royal Hudson ...

RAPIDO TRAINS ANNOUNCED THE *ICONS OF Canadian Steam* back in October of 2015 with the Royal Hudson as the first model in the line. The Royal Hudson was delayed several times, but finally released in 2019.

Rapido's HO scale model is that of the 45 4-6-4 Hudsons Montreal Locomotive Works (MLW) built for CP between 1937 and 1940. 30 class H1c (numbers 2820-2849), 10 class H1d (2850-2859) and 5 class H1e (2860-2864) were built over that time period.

The class H1c and H1d locomotives were coal-fired, while the later class H1e were oil-fired.

Sixteen coal burners were later updated to burn oil around 1950. All classes had 75-inch drivers with 45,300 lbs of tractive effort. The locomotive weighed 324,000 lbs, and the tender an additional 133,000 lbs.

The stack had several variations over the years, and there were two different types of trucks on the tender (Commonwealth or Buckeyes).

FIRST LOOK | 2

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The Royal Hudson was perhaps the most popular locomotive with engineers and the CPR overall. It was very reliable and was at home in passenger or freight service from Montreal to Vancouver.

The "Royal" moniker was bestowed following the 1939 visit by the King and Queen. A single locomotive (#2850) took them across Canada, and the King was very impressed with its



1. Number 2850 with a Royal Crest on the tender and Crown on the running board.



2. Number 2860 with the CPR herald on the cab and Crown on the front of the running board.

performance, even riding in the cab on occasion. With the King's blessing, the Hudsons were designated "Royal Hudsons."

I ordered the Royal model, number 2850 – as well as number 2860 which was used in excursion service during my era.

Included inside the package are some detail parts, including a set of driver wheels, two spare rubber tires, and a scale-size, non-functioning coupler for the front if you want to replace the functional one with something to scale.

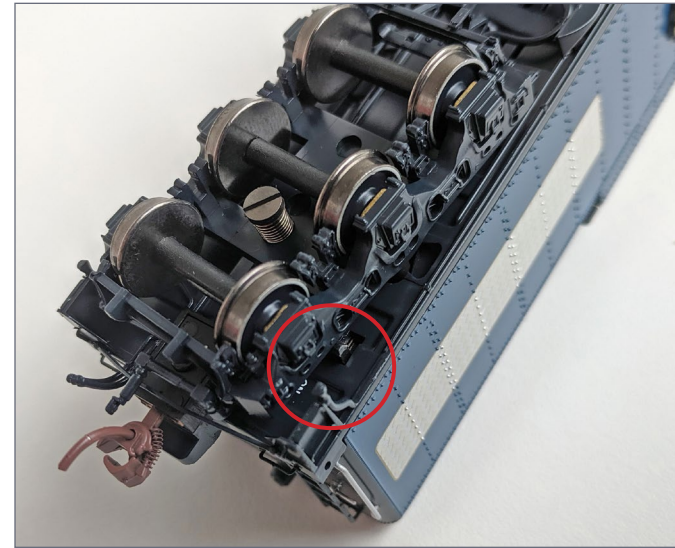
There are also the appropriate name plaques that go on the front of the locomotive ("Canadian Pacific" for the Royal Train and "British Columbia" and "Canada" for 2860). It also comes with a parts map, detailed instruction manual, and a couple of advertisement fliers.



3. Nose of 2860 with name plates installed.



4. Back of tender.



5. Speaker switch on tender.

The manual is also typical Rapido with a lot of silliness. Although some find this off-putting, I quite enjoy the humor and extensive detail – to me a welcome relief from bland, brief (or non-existent), and sometimes poorly written manuals.

My models are equipped with DCC/Sound, but they are also available in DC (DCC-ready) versions. The DCC/Sound-equipped models include an ESU LokSound 5 decoder with two speakers – the primary one in the boiler and a secondary one in the tender that you can turn on and off using a tiny switch underneath the tender [5].

The second speaker significantly increases the volume but then the sound "appears" to come more from the tender than the engine.

The tender attaches to the engine via an 8-pin plug. You just need to line them up and push them together. There is a distinct click when the plug engages, but it takes a bit of practice to get them lined up correctly.

The Royal Hudson includes road number-specific details:

- Appropriate stack type
- Correct tender and tender trucks
- Heavy diecast weight over the drivers
- Working headlight and rear light
- Classification lights (white, green, and off)
- Marker lights (although they don't work on models with twin markers on the stack)

The model also features a detailed interior with gauges, a cab light, and a fire box flicker [6].

While there is no smoke unit, Rapido made a space for one; you just need to remove a weight to install it. There is a warning, however, that installing a smoke unit may throw off the balance of the loco.

The chuff is synchronized with the drivers using a cam. I've heard reports that they are not well-synched, but I found the synchronization to be accurate on both models.



6. Cab interior detail and tender/cab connection.



7. Number 2860 from above.

The engine itself weighed about 580 grams (about 20.5 ounces) and the tender weighed about 180 grams (just over 6 ounces). The weight in the loco is also centered over the drivers to gain maximum tractive effort. The drivers are geared, so the rods are there only for looks, which should provide better reliability.

In operation, both of my locos (2850, 2860) ran well on speed step 1, achieving just over two scale miles per hour. I calculated maximum speed at about 55 scale miles per hour.

Without a way to definitively demonstrate pulling power, I hooked up 14 boxcars (about the limit for my small loop) to one of the locos, and it easily moved them around the track. My test loop has an 18" radius that the loco navigated with no difficulty at all.

In all, I ran each loco about an hour around the track without a single issue, though obviously they would look a lot better on a broader radius.

This first release in the *Icons of Canadian Steam* line should increase excitement for the models yet to come. The next in line is the CPR D-10.

Rapido has stated they hope to offer the matching passenger cars to go with the Royal Hudsons, but if this happens, it will likely be a long way down the road. ✓



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8. Number 2850 from above.

DAVE KILBORN



Dave Kilborn has been a member of the MRH forum since 2008. His main modeling interest is Western Canada in the late '70s/early '80s.

Outside of modeling, Dave enjoys composing and arranging music, and playing bass.

Dave lives in Saskatoon, SK, Canada with his wife, Sandra, two grown children attending a university, his mother, and two toy poodles. ■



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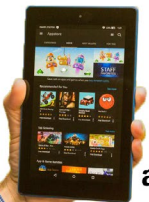


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Easy tall grass tufts

YouTube modeler **TheTerrainTutor** shows how to tame Woodland Scenics tall grass so you can trim it to length and keep it under control while you add glue to it. Watch this quick six minute video to see the entire process demonstrated for you. You don't even need an expensive static grass applicator to make use of this method! ■



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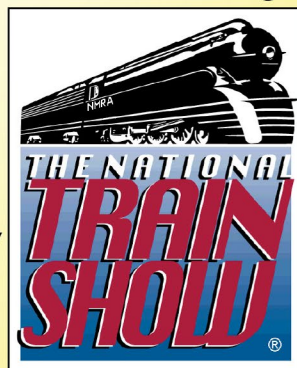
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FEBRUARY NEWS

column



Model Railroad Hobbyist | February 2020

RICHARD BALE and
JEFF SHULTZ report the
latest hobby industry news

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NEW CLUB CARS



Custom-decorated HO and N scale 40-foot boxcars commemorating the 2019 Trainfest are available from the **Burlington Route**

Historical Society. The N scale version is a ready-to-run model manufactured for BRHS by Micro-Trains Line.



The HO model is a kit with trucks and couplers produced by Accurail. For information visit www.burlingtonroute.org/store.

▶ THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

NEW PRODUCTS FOR ALL SCALES

Deepwoods Software has again updated its Model Railroad System software with the release of version 2.1.44. This update primarily consists of bug fixes, but also updates its LCC support and documentation. The entire software package includes libraries for communicating with Chubb (C/MRI) and Lenz XPressNet networks, a driver for the Rail Driver control console, libraries for working with XTrkCAD files, and assorted utilities including ones for creating time tables and forwarding freight cars via a switch list. For information visit the Deepwoods Software website at www.deepsoft.com/ModelRailroadSystem or www.facebook.com/ModelRailroadSystem.



Model Train Technology has released a 16-port LED Lighting controller that is plug compatible with the Woodland Scenics' Just Plug® Lighting System. Capable of both independent and DCC control, the LED Lighting controller

includes 100 pre-configured special effects and can individually adjust the brightness of each port. Up to 64 LEDs are supported per controller. A version with screw terminals and switchable resistors is also available. For more information visit model-traintechnology.com.

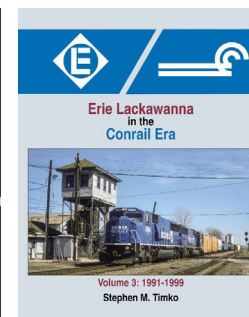
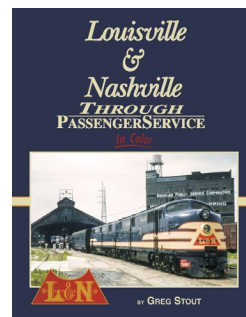
The Missouri Pacific Historical Society is taking pre-orders for a book on the Missouri-Illinois Railroad by Charlie Duckworth. The book, with an expected arrival in August 2020, will be hard bound and feature approximately 700 photographs and maps in an anticipated 368 pages, including 16 pages of color images. The



book will cover the Missouri-Illinois and its predecessor railroads, including the Mississippi River & Bonne Terre, Illinois Southern, and Centralia & Chester.

Information in the book will

include stations and depots with photos of almost all of the depots and interlocking towers covered, steam and diesel locomotives and gas-electrics; rolling stock, wrecks and accidents, employees, customers served, railroad car ferries used to cross the Mississippi River, and lanterns, locks, and keys used by the M-I and predecessor roads. This is a fund raiser for the MPHS archives to support scanning costs, materials for storage, monthly rent, etc...The author is doing this as a volunteer effort. For more information visit www.mopac.org/store/m-i-book.



One of the latest hard cover books from **Morning Sun** is *Louisville & Nashville Through Passenger Service*, by Greg Stout. Old Reliable's passenger service was neither deluxe nor state-of-the-art, and its feature trains all originated on someone else's

railroad. However, the Louisville & Nashville offered a comfortable, friendly service that provided major gateways from the South to the East and Midwest.

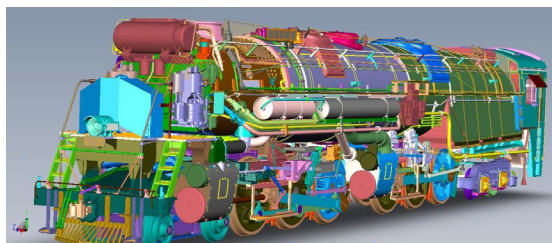
Also new from Morning Sun is *Erie Lackawanna in the Conrail Era: Volume 3 1991-1999*, by Stephen M. Timko. This is the final edition in this book series that roams across the old Erie Lackawanna

system viewing former EL property and equipment and operations from CP, NYS&W, and Ohio Central. For information contact a dealer or visit morningsunbooks.com.

O SCALE PRODUCT NEWS



Challengers. Seven versions of the locomotive will be available representing prototypes that received different paint and lettering schemes during their short lives.



www.3rdrail.com/reservation.html#L105.

3rd Rail Division of Sunset Models has scheduled the release of a handcrafted O scale model of Denver & Rio Grande Western class L-105 4-6-6-4

This computer rendering shows the individual brass parts that will go into fabricating the O scale model. For additional information visit www.3rdrail.com/reservation.html#L105.



Train Troll is selling an O scale kit that assembles into a well-detailed buggy. Train Troll also sells a broad selection of wagon and cart wheels. For additional information visit traintroll.com.

HO SCALE PRODUCT NEWS



ACF built in the late 1960s.



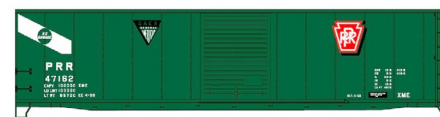
Pullman Standard built the prototype version in the summer of 1979. Accurail is offering the kit singly and in a 3-car set with different road numbers.



The D&SL Railway had failed to reach its Denver to Salt Lake City goal when it was acquired by D&RGW in 1931. Among the rolling stock that went with the acquisition was this 36-foot double-sheathed wood boxcar Pullman Company built in 1913. Accurail's HO model has prototypically-correct steel ends and a straight steel underframe.



type ACF completed in March 1983.



Here is a preview look at an ACF twin-bay Center-Flow covered hopper coming from **Accurail** later this year. The HO scale kit is based on a 2970 cu. ft. prototype

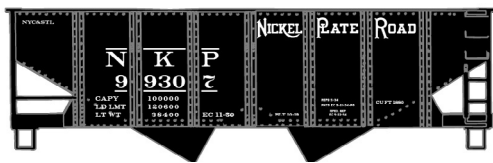
New HO scale kits from Accurail include this Illinois Central Gulf triple-bay covered hopper.

The D&SL Railway had failed to reach its Denver to Salt Lake City goal when it was acquired by D&RGW in 1931. Among the rolling

Accurail's HO scale kit for this Ashland Chemical triple-bay Center-Flow hopper is based on a proto-

Accurail is selling HO scale kits for this 1950s-era General American 50-foot steel boxcar

in three different road names; Rock Island, Pennsylvania, and Chicago, Burlington & Quincy. The models are available individually and in a special three-car set.



This Nickel Plate Road USRA twin-bay open hopper is available as an HO scale kit from Accurail. The model is based on an 1880

cu. ft. prototype built in 1919. Accurail sells the kits individually and in a three-car set with different road numbers.



Accurail has released an HO scale kit for this Chicago, St. Paul, Minneapolis & Omaha (CStPM&O) 36-foot Fowler single-sheathed wood boxcar.



Accurail is a 41-foot Chesapeake & Ohio AAR steel gondola. The kit is available singly and in a three-car set with different road numbers. All Accurail car kits include appropriate trucks and Accumate knuckle couplers. For additional information contact a dealer or visit accurail.com.

New **Athearn** items scheduled for release this month include HO scale bay-window cabooses, 40-foot Fruehauf Z-Van trailers with smooth sides, 20,900 gallon tank cars, and SD70ACe, SDP40F, SD90MAC-H Phase II, ES40DC, and ES44DC diesel locomotives. Check with your dealer for availability of specific road names.



Athearn plans to release a new group of HO scale cabooses in June. The Genesis models are based on prototypes built by International Car Company beginning in the late 1950s.

The release will include Santa Fe class CE-8 and CE-11 cupola way cars. Bay-window cabooses will be available for Southern Pacific, Cotton Belt, Baltimore & Ohio, and B&O Chessie System.



Details include illuminated marker lights, overhanging X-panel roof, and

roller-bearing caboose trucks with axle driven generators. The models feature interior details, see-through steps, flush window glazing, formed wire grab irons, machined metal wheelsets, coupler lift bars, trainline and brake hoses, and full underframe detail.



Sound equipped cabooses feature a Soundtraxx Tsunami SoundCar decoder with air horn or trainline air whistle, rail joint clickety-clack with optional wheel flat spot sounds,

brake set/release sounds including brake squeal, emergency brake application sound, and adjustable flange squeal.



Newly announced Athearn models scheduled for release in December 2020

include a Genesis HO scale GP40-2 diesel locomotive. Road names will be Union Pacific, Southern Pacific, Western Pacific, Boston & Maine, Canadian Pacific, and Norfolk Southern.

FEBRUARY NEWS HO SCALE | 8



The Genesis series models will be available with numerous road specific details.

WP and UP units will have a large plow, late grille and Q fans, and a nose-mounted gyalright. SP versions also have the late grille and Q fans, a modified L window and a brake wheel located on the nose. The NS locomotives have a small plow and front and rear ditch lights. The CP and B&M units will both have Blomberg M trucks. All of the Genesis GP40-2 models will come with a DCC decoder with SoundTraxx Tsunami2 sound.



Also coming from Athearn next December is a new

release of ES44AC locomotives. The selection will include three BNSF models with number-specific details, and Canadian Pacific units both as delivered with steerable trucks, and a 2010 version with high-adhesion trucks.



Union Pacific versions of the ES44AC will be available in

standard paint, faded paint without the flag, and in faded paint with a replacement nose door. All Athearn Genesis locomotives feature an onboard DCC decoder with SoundTraxx Tsunami2 sound that functions in both DC and DCC environments.



Athearn's December 2020 delivery schedule includes a 50-foot 5344 cu. ft. boxcar

based on a prototype built in the 1970s by Pullman Standard. In addition to the Rock Island scheme shown above, road names will

FEBRUARY NEWS HO SCALE | 9

be Hartford & Slocomb, Golden Triangle, Corinth & Counce, BKTY, Bangor & Aroostook, Terminal Railway Alabama State Docks, and Montreal, Maine & Atlantic.



Features on Athearn's HO scale Ready-to-Roll model include separately applied brake wheel, end ladders

and grab irons; etched metal end platforms, and appropriate trucks with 33-inch nickel silver wheelsets.



This HO scale 2970 cu. ft. twin-bay covered hopper is included in Athearn's December 2020 release. In

addition to Missouri-Kansas-Texas, road names for the Ready-to-Roll model will be Burlington Northern, Burlington Northern Santa Fe, CSX, Rock Island, Union Pacific, and two Great Northern schemes.



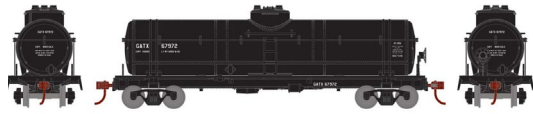
Road specific details include round or trough hatches. Additional features include an etched-metal

roof walk, separately applied wire grab irons, stirrup steps, and brake wheel; detailed discharge outlets, and screw mounted trucks with machined metal wheelsets.



Roundhouse brand models coming from Athearn next December include a 50-foot exterior

post hi-cube per diem boxcar. Road names for the HO scale model will be Arkansas-Oklahoma Railroad, Canadian National, Canadian Pacific, Kansas City Southern, Missouri Pacific, Dansville & Mount Morris Railroad, and Wisconsin Central.



A non-insulated single-dome tank car based on a prototype introduced in the 1930s will be

coming from Roundhouse this December. Decorating schemes will be Chicago Great Western, CSX, CP Rail, North American Car Corporation, Santa Fe, General American Transportation, and Rock Island Refining Company. A Southern Pacific tank car in faded Primed for Grime paint is included in the release. Roundhouse models come with knuckle couplers and appropriate trucks with machined metal wheelsets. For information on Athearn and Roundhouse models contact a dealer or visit athearn.com.



R. Bale

NP NORTHERNS

The American Locomotive Company (Alco) delivered the first of 12 new 4-8-4 locomotives to the Northern Pacific Railroad in late 1926. The intent of the design was to have sufficient power to eliminate the need to double-head fast passenger trains and to accomplish the task while burning low-grade lignite coal from NP's own mines in Montana. Nicknamed Northerns, NP's new 4-8-4s had 73-inch drivers and a 4-wheel trailing truck with 45-inch wheels to support an exceptionally large firebox. The 4-8-4 wheel arrangement exceeded expectation and was quickly embraced by most major North American railroads with an eventual total of 1,115 being built. The last new 4-8-4 was delivered to the Norfolk & Western in 1950.



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Broadway Limited Imports' production schedule for this spring includes Northern Pacific Class A-3 4-8-4 steam locomotives. The HO scale

models replicate the first Northerns built for NP in 1926.



BLI will offer the HO scale model in the original decorating scheme (top photo),

with a gray boiler, as an unlettered model painted brass, and as Spokane, Portland & Seattle No. 700 as modernized for excursion service (below).



The locomotive and tender have brass bodies with diecast chassis. All versions include Paragon3 sound and operation, includ-

ing Rolling Thunder for operation in DC and DCC. A minimum radius of 22 inches is required. For information contact a dealer or visit broadway-limited.com.



Intermountain Railway has released a new run of HO scale 4785 cu. ft. PS2-CD triple-bay covered hop-

per cars in eight decorating schemes. Multiple road numbers are available for Staley, Penn Central, Norfolk Southern, CSX, Milwaukee Road, and three Conrail decorating schemes.

The HO scale ready-to-run models have etched metal roof walks, machined metal wheelsets, and metal knuckle couplers.



The Staley unit has an early end frame. All other models in this release have the late end frame with the inverted-

J end sill plate and side ladder arrangement. For information contact a dealer or visit intermountain-railway.com.



Coming soon from **Kadee** is a New York Central 40-foot PS-1 steel boxcar with six-foot seven-panel Superior sliding doors. The HO scale ready-to-run model is

painted in the original boxcar red scheme as delivered to NYC in 1948. Details include full-height ladders and a see-through running board.



A virtually identical PS-1 boxcar decorated for Santa Fe is also scheduled for release this month. The ATSF car promotes the Grand Canyon Line on one side and carries a Ship and Travel All

the Way slogan on the opposite side. Both models come with Kadee metal knuckle couplers and self-centering trucks. For information contact a dealer or visit kadee.com.



Lines West has released three new limited edition Milwaukee Road Thrall cabooses. Seen left is #02134 with dual 3M Thermal Generators and a wagon wheel antenna. The model, limited to a run of 50 cars, includes a 1970s detailed body shell with blanked

louvers, Miner brake wheels, drop center MILW design trucks, and Duryea cushion draft gear underframe.

Milwaukee Road #992149 is a 1970s detailed body shell equipped with painted toilet window, extra plates on the generator access panels, Equipco brake wheels, the correct smoke jack, and drop center MILW design trucks with a truck mounted generator on one truck.

Milwaukee Road #992175 is a 1980s detailed body shell with blanked windows, platforms with end rails, Miner brake wheels, drop center MILW design trucks, and a Duryea cushion draft gear equipped underframe. It is lettered to match the prototype with the herald under the side window instead of on the bay.

All three cabooses include etched roof walks, Tangent 33" machined metal wheels, Kadee #153 couplers, uncoupling levers, and marker paddles with decals as a user installed item. For information visit lineswestproducts.com.



Maple Leaf Trains has introduced two sizes of eye bolt lift rings. The available ring sizes are .037 and .045" which are approximately three and four inches in HO scale. The rings are available in packages of 10 and 50 rings. For additional information visit mapleleaftrains.com.

Mine Mount Models has released Sunrise Warehouse, an HO scale craftsman kit featuring laser-cut doors and roofing



materials, Mt. Albert Scale Lumber siding materials, Tichy doors and windows, BEST Trains metal castings, a jib hoist, a rafter/joist/stairs assembly fixture, and a variety of loading docks. The footprint

of the finished model is 10 ½ x 8 ½". For more information visit minemountmodels.com.

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Monashee Laser Engineering has released four new HO laser-cut station kits, two for the Canadian National Railway (CNR) and two for the Canadian Pacific Railway (CPR).



The first is a CNR Third Class Station with wood/shingle siding, of which hundreds were built across Canada. All parts to complete the kit are included – laser-cut floors, walls, windows, doors, roof,

trim, shingles, and chimneys. Stripwood to build the platform is included. An assembly manual is included. An optional interior finishing kit with laser-cut interior walls, staircase, railing, ticket counters, and doors is also available. Finished size of the building is 7 ¾ x 7" including the platform, but not including the eave overhangs.



Next is a CNR Fourth Class Station, representing approximately 20 prototypes in Ontario, Manitoba, Saskatchewan and Minnesota.

As with the Third Class Station, all parts to complete the model are included, and a manual including over 50 photos. The building footprint is 8 ½ x 6 ¾" including the platform but not including the eave overhangs.



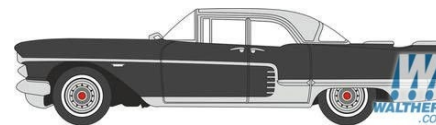
A CPR #4 Standard Station is the fourth kit released and features an extended eave over the platform. As with the other Monashee Laser Engineering

kits, all parts to complete the station are included, as is a manual with photos, drawings and templates. Footprint of the kit is 7 x 4 5/8" including the platform but not the eave overhangs.



The last station is the CPR #5 Standard Station with gable dormers, widely used in central Canada. All parts to complete the station are included, along with an instruction manual. An

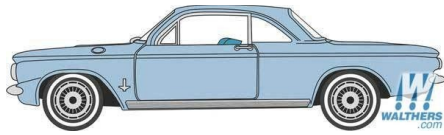
optional interior finishing kit with additional laser cut interior walls, staircase, railing, ticket counters, and interior doors is available. The model's footprint is 7 x 5 ¼" including the platform but not including the eave overhang. For information on all Monashee Laser Engineering products, visit www.monasheelaserengineering.ca.



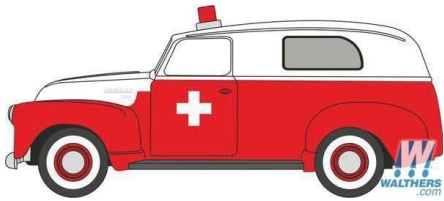
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Oxford Diecast has released four newly-tooled 1:87 scale American vehicles including this 1957 Cadillac Eldorado

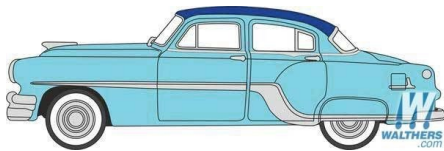
Brougham four-door sedan. Spotting features include a silver over black paint job, a beige interior, elaborate tailfins, and thin white wall tires with red-center hubcaps.



This satin blue 1963 Chevrolet Corvair Coupe has a medium blue interior.



Oxford has decorated the initial release of its new 1950 Chevrolet Panel Van as an ambulance. Details include silvered side windows and an emergency light on the roof.



Like the prototype it models, this 1:87 scale 1954 Pontiac Chieftain four-door sedan is painted Mayfair Blue over a lighter San Marino Blue.

Interior details are tan. For additional information contact a dealer or visit walthers.com.

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R. Bale

ROHR RTL TURBOLINER

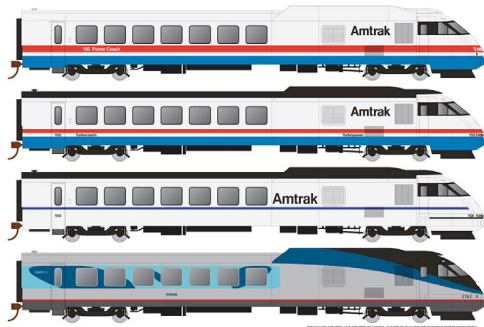
In the 1970s Amtrak operated French-built RTG Turboliners in the Midwest. They were considered successful, however, the fixed five-car consist precluded adding more coaches during periods of peak traffic. Shopping for more flexible Turboliners for the New York Empire Corridor, Amtrak turned to Rohr Industries in San Diego. Entering service in September 1976, the Rohr RTL Turboliners proved their value. Decorated in Amtrak's red, white and blue Phase III paint scheme, the RTL Turboliners, equipped with conventional passenger couplers and third rail shoes for operation in Grand Central Terminal and Pennsylvania Station, operated on most Empire Corridor lines out of New York City into the early 2000s. They also saw occasional service between Montreal, Buffalo, Detroit, and Toronto. These were the final gas turbine trainsets purchased by Amtrak since new Amfleet equipment pulled by conventional diesel locomotives proved cheaper to operate.



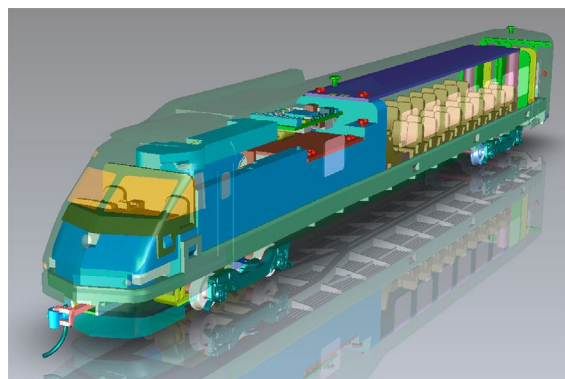
Rapido Trains has completed preliminary work on an HO scale Rohr RTL Turboliner, the gas-turbine trainsets Amtrak operated in the northeast, including Canada, in the 1970s. The next step

however, committing to production tooling, is dependent upon the receipt of sufficient advance reservations to justify completing the project. If the model enters production, the four paint

schemes shown below will be included in the initial release. The deadline for reservations is March 17, 2020.



The HO scale model will be available as a five-car train set with additional coaches available. A special set decorated in Phase V is also planned, along with a set of power cars decorated for the X2000 demonstration trainset.



Rapido has released a preliminary computer rendering of the RTL Turboliner Power Car. Designed from original blueprints plus extensive field measurements, Rapido's HO scale version will feature tinted windows,

complete interior details, interior lighting, newly designed trucks with third-rail pickup shoes, working marker and headlights, and cab-mounted strobe lights. DCC models will have authentic sounds sourced from original videos of the prototype.

Also under development at Rapido is an HO scale GMD F59PH diesel locomotive. The F59PH was designed by General Motors Diesel Division in the 1980s for GO Transit. The production run of 73 locomotives was split between Toronto's GO Transit and Southern California's Metrolink. Subsequent owners include AMT/EXO (Montreal), Metra (Chicago), TRE (Dallas), and NCDOT (Raleigh). Rapido will offer the HO scale model



Photo courtesy Stephen Gardiner

decorated for GO Transit, Metra, Metrolink, AMT, TRE, and ex-GO Lease Scheme.



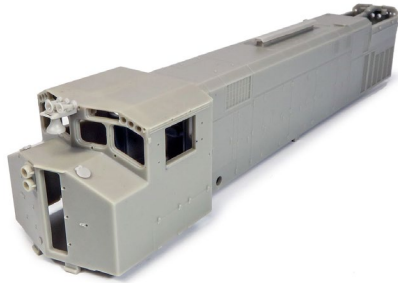
Preproduction test samples of the Los Angeles Metrolink (left) and Chicago Metra F59PH are coming this fall. Features of Rapido's HO scale version include metal end handrails with plastic stanchions, complete underframe detail including traction motor cables and numerous individually

applied parts; etched-metal grilles, separate stamped-metal grab irons, and full cab interior. Lighting features include operating headlights, rear light, and ditch lights; operating ground lights, step lights, and tri-color classification lights or red markers as appropriate to the prototype road being modeled. E-bell and horn combination will be included on GO Transit units. Models with DCC/Sound will have an ESU LokSound decoder.



A third new HO scale locomotive under development at Rapido Trains is an HO scale MLW M420. The M420 was a 2,000hp AC locomotive of Alco design built under license by Montreal

Locomotive Works from 1973 to 1977. Spotting features include the four-piece windshield assembly and full-width Safety Cab, aka Canadian Comfort Cab.



This preliminary test shot from the M420 tooling shows the M420 project is moving forward on schedule.

Rapido engineers used a 3D scan of a real M420 in developing their new HO scale model.

Features will include straight

metal side handrails with plastic stanchions, complete under-frame detail including traction motor cables, detailed cab interior with optional open front door, heavy diecast chassis with a new coreless motor fitted with dual flywheels, operating headlights, rear lights, tri-color classification lights, and an illuminated cab control stand. DC units will have a 21-pin socket for installation of an aftermarket decoder. DCC Sound models will come with a TCS decoder featuring sounds recorded from a prototype M420. The order deadline is March 31, 2020, with delivery of the M420 planned for this fall. For additional information contact a dealer or visit rapidotrains.com.



sels scheduled for release in September 2020. Roads will include Burlington Northern, BNSF, Union Pacific (Fast Forty scheme), and the one-of-a-kind Conrail unit with special 1992 Altoona Olympic Bicycle Trials scheme.

ScaleTrains.com has expanded the selection of road names for its HO scale EMD SD40-2 die-



Western, CSX, and Chessie System.



information visit scaletrains.com.

Multiple decorating schemes are planned for Dakota, Minnesota & Eastern; Chicago & North

SD40-2s with high nose hoods will be available for Norfolk & Western and the Southern Railway. For



Showcase Miniatures has released an HO scale kit for a two-track signal bridge. Additional spans are available to expand the bridge for more tracks. The kit is composed of wood decking and etched stainless steel parts that assemble using tab and slot construction. For additional information visit showcaseminatures.net.



Jim King has announced that **Smoky Mountain Model Works** will produce another run of HO scale kits for Southern/NS/N&W GS50/G82 large wood chip hopper cars. Components in the kit will include a one-piece cast urethane body, brass weight, etched brass crossover platforms, Kadee shelf couplers and 36-inch code

88 wheelsets, Intermountain truck side frames, and detail parts (brakes, stirrups, wire, styrene strip). Assembly instructions, prototype photos, and decals complete the kit. For additional information visit smokymountainmodelworks.com/HO_rolling_stock.html.



Tangent Scale Models has introduced a new concept for HO scale 100-ton Barber S-2 trucks with options for the wheelsets, roller-bearing end

caps, and brake beams. The Barber S-2 side frame includes detailed lettering showing that it was cast at ASF's Granite City, IL foundry.



Options for the 36-inch machined metal wheelsets include standard .110-inch width tread (NMRA RP-25) either blackened or nickel plated.

Wheels with .88 semi-scale treads are available nickel plated ready for painting or weathering leaving a prototypically shiny tread. All of the options include wheels with contoured faces on both the front and back sides.



The trucks are available with Timken (left) or Brenco (right) rotating roller-bearing end caps. Additional end caps are available in packs of 12.

Separate brake beams are available for cars equipped with a brake cylinder and body-mounted brake linkage. Tangent offers a second style of brake beam for truck-mounted brake cylinders. Tangent will continue to sell its 100-ton ASF N-11 truck with non-rotating bearing caps. For additional information contact tangentscalemodels.com.



Walthers has released a group of Mainline GP9 diesel switchers with high, short hoods. The HO scale model is based on Phase II units EMD delivered from 1955 thru 1957.



Road names for the ready-to-run model include Santa Fe, Boston & Maine, Illinois Central, Precision National, Rock Island, and New Haven.



A group of chopped nose GP9 Phase II diesels is scheduled for release later this month. Road names will be CSX, Canadian National, Chessie System, Chicago & North Western (with employee-owned logo), Conrail, Illinois Central, Montana Rail Link, and Soo Line.



The economy priced Mainline series diesels use the same drive system as WalthersProto locomotives. Drill starter points molded into the plastic body aid modelers wishing to add grab irons, which are sold separately in GP9 Phase II Diesel Detail Kit #910-258.



Also scheduled for release later this month is an EMD SD60M with a two-piece windshield. In addition to Union Pacific, Walthers HO scale ready-to-run model will be available decorated for Burlington Northern, BNSF, CSX, and Norfolk Southern.



Walthers is quoting a late March release date for a Proto series 50-foot bulkhead flat car based on a Canadian Car & Foundry prototype. CC&F introduced

the cars in the late 1970s to handle pulpwood, wrapped lumber, and similar building materials.

Road names will be BC Rail, Canadian National, and Ontario Northland. The Proto series model has separately applied ladders and grab irons, metal knuckle couplers, and appropriate trucks with 33-inch metal wheelsets.



Also due from Walthers late next month is an HO scale 60-foot NSC 5150 cu ft. triple-bay covered hopper. Walthers based the Mainline series

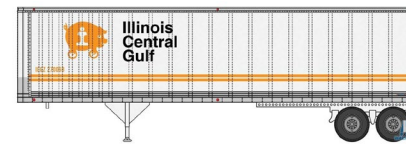
model on a 1996 prototype designed to handle a wide range of edible grains.



The car will be available decorated for ADMX Archer-Daniels-Midland, Canadian National, Canadian Pacific, FURX-First Union Rail, WFRX-

Grain Connect Canada, Illinois Central, and Union Pacific. Details include raised weld beads on the side panels, trough-style roof hatches with handles, detailed discharge outlets, thin-profile roof walk, end ladders and platforms; metal knuckle couplers, and 100-ton roller-bearing trucks with 36-inch machined metal wheelsets.

Walthers has set a June 2020 delivery date for a group of four 40-foot Trailmobile trailers. Details include side rivet detail,



Trailmobile units will be sold in two-packs of identical trailers.



New HO scale UPS equipment coming from Walters late this month includes a white International box van, and a 35-foot fluted side trailer.



To haul the UPS trailer Walthers will have both single and double-axle semi tractors.



The semi tractors are HO scale versions of International 4900 series

trucks introduced in the late 1980s.



Walthers plans to release a group of contemporary service and delivery vans in late March.



Decorating schemes will be FedEx, Homemade Bakery Shop, Bel Aire Flowers, Speedy Movers, Teusink Plumbing, U.S. Postal Service, Fire &

Rescue, and Ambulance.



Walthers has announced three new Cornerstone 1950s-1960s structure kits including a two-story motel, a motel office, and a restaurant. The structure

kits are scheduled for release in late March.



Also due for release in March is a Walthers Cornerstone kit for a suburban train station. Details include a ticket vending machine, platform access ramp, gas meter, electrical panel, and rooftop vents and air conditioner. The station has a footprint of 5.75 x 3.625-inches. For additional information on Walthers products contact a dealer or visit walthers.com.

N SCALE PRODUCT NEWS



Athearn's has scheduled the release of this N scale bay-window caboose for December

2020. The ready-to-run model features newly tooled trucks with an axle-mounted generator, separately applied wire grab irons, walkway tread on the end platforms, and clear window glazing.

Road names will be Southern Pacific, Baltimore & Ohio, Northern Alberta Railways, Rock Island, Chessie System, SSW-Cotton Belt,

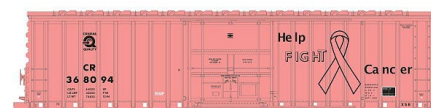


and two Union Pacific paint schemes. For additional information contact a dealer or visit athearn.com.



Here is an early look at two 50-foot X-series boxcars coming later this year from **Eastern Seaboard Models**. Both the

Penn Central ex-PRR patched scheme and the Conrail car decorated for cancer awareness will be applied to ESM's N scale X58 boxcar.



The ready-to-run model will come with body mounted Micro-Trains couplers and M-T trucks with metal wheels. For additional information visit esmc.com.



The **Electric Wallpaper Co.** has released three new laser-cut Roomette interior kits for popular N scale structures. Crafton Avenue Service Station (above) is a two-room kit for City Classics Crafton Avenue Service Station. Additional laser-cut

card stock kits include Grafton Hotel that fits Woodland Scenics/DPM 10-room Hilltown Hotel. Also new is a Storefront Assortment that includes detailed interiors for upper level rooms and 10 street level interiors for eight different Woodland scenic/DPM storefront kits. Roomette kits include LEDs with plugs that are compatible

with NCE and Woodland Scenics Just-Plug lighting systems. For information visit www.roometteslighting.com. To view a video describing Roomettes go to youtu.be/etudHFMi6-M.



Pacer Stacktrain and both classic and new logo variations for BNSF and TTX. Each three unit set of well-cars will come with six 53-foot ribbed side magnetic containers.



visit katousa.com.

Kato is preparing a mid-summer release for another run of N scale MAXI-IV well-cars and containers. The cars will be decorated for

The containers will be decorated for CSX, UMAX, Green HUB, Red HUB, and Pacer Stacktrain. For more information contact a dealer or



well-known railroads. The model of a Denver & Rio Grande car is painted classic Pullman green while a Pennsylvania Railroad version is painted Tuscan red with a black roof.



Micro-Trains Line has released an N scale version of a 70-foot heavyweight RPO mail/baggage car decorated for two

Both cars ride on six-wheel passenger trucks with plain bearings.

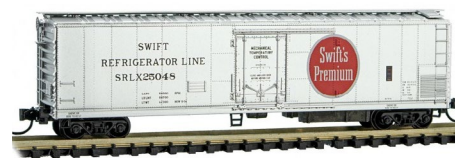


Features on the N scale model include riveted sides with plug doors, full height ladders, and roller-bearing trucks.



This brown 89-foot Southern Pacific tri-level enclosed autorack rides on a yellow TTX flat car. Micro-Trains N scale version is equipped with Barber roller-bearing trucks.

Among the earliest mechanical refrigerator cars produced in volume was the prototype of this



51-foot Swift reefer that was built in the early 1950s with riveted aluminum sides. Contact a dealer for information about

Micro-Trains models.



Pacific Western Rail System plans to release a Canadian National Railway 40-foot boxcar in June. The N scale model, custom made for PWRS by Micro-

Trains, is based on cars built by National Steel Car from 1944 to 1962. Like the prototype, the model will be painted boxcar brown with a green maple leaf herald and yellow doors indicating its assignment to newsprint service. For additional information visit www.pwrs.ca/announcements/view.php?ID=15832.



Showcase Miniatures has released a new kit for a postal delivery vehicle. The N scale vehicle mirrors a Grumman L1V delivery truck. The kit features a resin body, cast pewter frame, etched stainless steel doors and mirrors, and laser-cut window glazing. Detailed instructions

and water-slide decals complete the kit. The doors can be positioned opened or closed. For additional information visit showcaseminia-tures.net.

NEW DECALS, SIGNS AND FINISHING PRODUCTS



Photo courtesy of Jim Parker

Black Cat Decals has HO scale water-slide decals for Canadian National mechanical refrigerator cars. The decals are designed for orange cars leased by CN in 1962. For additional information visit www.blackcatdecals.com.



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! BRIEFLY NOTED AT PRESS TIME ...

New **Atlas** Master series locomotives under development include an N scale GP40-2W based on the initial 1974 production run of EMD GP40-2s built with full-width comfort cabs, and an HO scale General Electric U28C including the U28CG passenger hauling variant introduced in 1966. A 3rd quarter 2020 release is planned ...

Broadway Limited Imports expects to release a new run of N scale EMD F3 A and B diesel units late this month. Road names will be ATSF, B&O, CGW, DLW, NYC, PRR, WP, C&O, SOU, SP, and UP ...

Moloco is selling an HO scale Denver & Rio Grande Western 50-foot insulated boxcar with a Hydra-Cushion underframe based on a prototype built by General American beginning in 1962. The assembled model is available in three numbers. More info at molocotrains.com ...

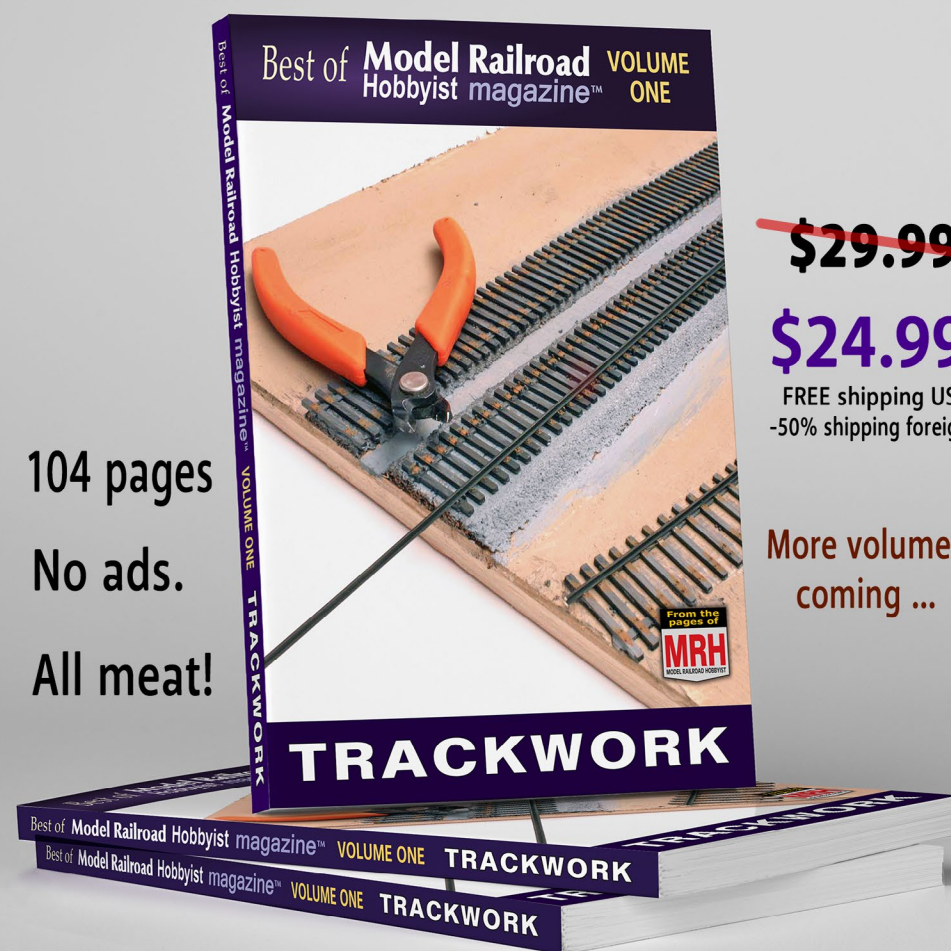
Woodland Scenics will soon announce a system of prewired single and double crossbar utility poles and transformer sets that promise to simplify modeling realistic commercial and residential power lines. The system will be available for N, HO and O scales ...

ExactRail is planning a late summer run of HO scale 54-foot Thrall coil cars with a Coilshield and Protector ...

Tangent has released a new HO scale International Car Co. class I-18 steel bay-window caboose decorated for B&O (blue) and five Chessie System variations with lighting, full interiors and numerous era-specific details ...

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SELECTED EVENTS



Model Railroad Hobbyist | February 2020

FEBRUARY 2020

(Many events charge a fee. Check individual info website for details.)

KANSAS, WICHITA, February 1-2, Train Show & Swap Meet at Cessna Activity Center, 2744 George Washington Blvd. Request info from Phil at aylward1@cox.net.

KANSAS, LAWRENCE, February 8-9, 19th Annual Train Show and Swap Meet, sponsored by Lawrence Model Railroad Club, at Crown Toyota, 3400 Iowa Street. Info at lawrencemodelrailroad-club.org/TrainShow.html.

MARYLAND, TIMONIUM, February 1-2, Great Scale Model Train Show at Maryland State Fair, 2200 York Road. Info at www.gsmts.com.

MICHIGAN, BLISSFIELD, February 8, Open House sponsored by Blissfield Model Railroad Club at 109 East Adrian Street (US223).

SOUTH CAROLINA, EASLEY, February 7-8, Great CRMHA Model Train Expo hosted by Central Railway Museum at Rock Springs Church Impact Center. Request info from John Johnston at jwjohnston@crmha.org.

WEST VIRGINIA, St. ALBANS, February 22-23, Model Train & Craft Show sponsored by Kanawha Valley Railroad Association, at The Event Center, 6400 MacCorkle Avenue S.W. Info at kvrail-road.org.

SELECTED EVENTS | 2

WISCONSIN, MADISON, February 15-16, Mad City Model Railroad Show & Sale, hosted by NMRA South Central Wisconsin Division at Exhibition Hall, Alliant Energy Center. Info at nmra-scwd.org.

WISCONSIN, STEPHENS POINT, February 1-2, 23rd Annual Model Railroad Show, sponsored by Central Wisconsin Model Railroaders at Holiday Inn Convention Center Hotel, 1001 Amber Avenue. Request info from Jim Miller at jimb67@gmail.com.

March by location

CANADA, ONTARIO, TORONTO, March 21, Railway Prototype Modellers Meet, at Humber College, 205 Humber College Blvd, North Campus, Building B, Rooms B201 and B202. Info at torontoprototypemodellers.wordpress.com.

CALIFORNIA, REDLANDS, March 28-April 5, Train Days 2020, sponsored by N-Land Pacific, at San Bernardino County Museum, 2024 Orange Tree Lane. Request info from Chuck Coker at chuck@ix23.com.

FLORIDA, SARASOTA, March 21-22, 43rd Annual Real Rail Train Show at Bradenton Convention Center, 1 Haben Blvd, Palmetto. Request info from David Fontaine at davidf34205@yahoo.com.

INDIANA, INDIANAPOLIS, March 7, Train Show sponsored by Naptown & White River Model Railroad Club at Emmerich Manual High School, 2405 South Madison Avenue. Info at naptownrr.org.

INDIANA, NAPPANEE (Metro Elkhart), March 21, 15th Annual Train Show sponsored by Elkhart Model Railroad Club, at Claywood Event Center, 13924 North 1100 West (County Line Road). Info at www.emrrc.com.

KENTUCKY, LOUISVILLE, March 21, NMRA Division 8 Mid-Central Region Train Show and Sale, at Holy Family Parish Saffin Center, 3938 Poplar Level Road.

NEW YORK, BATAVIA, March 29, Great Batavia Train Show, sponsored by Genesee Society of Model Engineers at Genesee Community College, Richard Call Arena. Info at www.gsme.org.

NEW YORK, ROCHESTER, March 7-8, Open House sponsored by Rochester Model Railroad Club at 120 South Clinton Avenue. Info at RocMRRC.com.

OHIO, GREENVILLE, March 1, Swap Meet sponsored by Darke County Model Railroad Club at Darke County Fairgrounds Youth Building, 800 Sweltzer Street. Info at model-railroad-hobbyist.com/sites/model-railroad-hobbyist.com/files/webform/news/2020dcmrr_swap_meet.jpeg.

OREGON, PORTLAND, March 14, Swap Meet sponsored by Willamette Model Railroad Club at W.D. Jackson Armory, 6255 NE Cornfoot Road. Request info from Brigg Franklin at wmrc-swapmeet@gmail.com.

PENNSYLVANIA, MALVERN (Valley Forge), March 27-29 2020, Railroad Prototype Modelers Meet, at Desmond Hotel. Info at rpmvalleyforge.com.

VERMONT, ST. ALBANS, March 14, Vermont Rails Model Railroad Show at Collins Perley Sports & Fitness Center, sponsored by the Northwestern Vermont Model Railroad Association. Info at www.nwvrailroad.org.

WISCONSIN, CEDARBURG, March 8, 25th Annual Model Train Show & Swap Meet, at Circle B Recreation 6261 Highway 60. Info at www.metrorrclub.org.

Future 2020, by location

AUSTRALIA, SYDNEY, ROSEHILL NSW, June 5-9, 34th National Model Rail Convention. www.nmra.org.au/conventions/index.html.

CANADA, ALBERTA, CALGARY, April 18-19, Supertrain 2020, Genesis Centre, 7555 Falconridge Blvd NE. Info at www.supertrain.ca.

CANADA, BRITISH COLUMBIA, BURNABY, May 22-24, 2020, 5th Annual Railway Modellers Meet of BC, sponsored by Burnaby Railway Modellers at Simon Fraser University's Burnaby campus. Info at www.railwaymodellersmeetofbc.ca.

CANADA, ONTARIO, FENWICK, April 19 and 26, Open House sponsored by the Greater Niagara Model Railroad Engineers at 1141 Maple Street. Info at www.gnmre.ca.

NEW ZEALAND, CHRISTCHURCH, April 10-13, National Model Railroad Convention. Info at www.modelrailcon.co.nz.

NEW ZEALAND, DUNEDIN, MOSGIEL, May 9-10, Model Train Show at Taieri Bowling Club, 12 Wickliffe Street. Request info from Trevor Buchanan at dunedinmodeltrain-show@gmail.com.

ARKANSAS, JACKSONVILLE, August 22-23, 10th Annual Jacksonville Train Show, sponsored by Tuscarora Lumber Company at Jacksonville Community Center, 5 Municipal Drive. Request info from Daryl Conner at 501-982-6835.

CALIFORNIA, OCEANSIDE, April 11, Train Show & Swap Meet sponsored by North County Model Railroad Society at Heritage Park. Info at swapinfo@ncmrs.org.

SELECTED EVENTS | 5

COLORADO, COLORADO SPRINGS, April 17, Tracks to Success Leadership Program, held in conjunction with the TECO Train Expo. model-railroad-hobbyist.com/sites/model-railroad-hobbyist.com/files/webform/news/tts_sparkplug_flyer-karen_2.pdf. Request info from Al Hovey at alhovey@comcast.net.

COLORADO, COLORADO SPRINGS, April 17, Track to Success Train Show, held in conjunction with the TECO Train Expo. Request info from Al Hovey at alhovey@comcast.net.

FLORIDA, TALLAHASSEE, June 27, 26th Annual Model Railroad Show & Sale at Forth Florida Fairgrounds. Info at www.facebook.com/events/564525630749478.

ILLINOIS, EAST PEORIA, May 14-17, NMRA Midwest Region Convention, at Holiday Inn, 101 Holiday Street. Info at www.peo-riarocket2020.org.

INDIANA, FRANKLIN, (Metro Indianapolis), April 4, Franklin Spring Train Show, sponsored by NMRA Central Indiana Division at Johnson County Fairgrounds, 250 Fairground Street. Info at www.cidnmra.org.

IOWA, DAVENPORT, April 18, Model Railroad Show at Mississippi Valley Fairgrounds, 2815 W. Locust Street. Request info from Roger Kujawa at AGWRailway@gmail.com.

MISSOURI, ST. LOUIS, July 12-18, 2020, NMRA National Convention and National Train Show. HQ at Hilton St. Louis at the Ballpark. Info at gateway2020.org.

MISSOURI, ST. CHARLES (Metro St. Louis), September 2-5, 40th National Narrow Gauge Convention, St. Charles Convention Center/Embassy Suites Hotel. Info at www.40nngc.com.

SELECTED EVENTS | 6

MONTANA, HELENA, April 26, 40th Annual Helena Railroad Fair, at Helena Civic Center, 340 Neill Avenue. Info at rrfair@mt.net.

OREGON, ELSIE, April 4, 16th Annual Pacific Model Loggers' Congress, hosted by Lon Wall and Jeff Johnston at Camp 18 Restaurant and Logging Museum, 42362 Highway 26. Info at www.pacificmodelloggerscongress.com.

TENNESSEE, NASHVILLE, May 31-June 6, National Garden Railway Convention, at Gaylord Opryland Resort. Info at ngrc2020.com.

VIRGINIA, FISHERSVILLE, May 17, 34th Annual Shenandoah Valley Model Train & Railroading Show, sponsored by Augusta County Model Railroad Club at Augusta Expo, 277 Expo Road. Info at www.acmrrc.org.

Beyond 2020, by date

CALIFORNIA, SANTA CLARA, 2021, NMRA National Convention and National Train Show.

ENGLAND, BIRMINGHAM, 2022, NMRA National Convention and National Train Show. www.nmra2022.uk.org. ■



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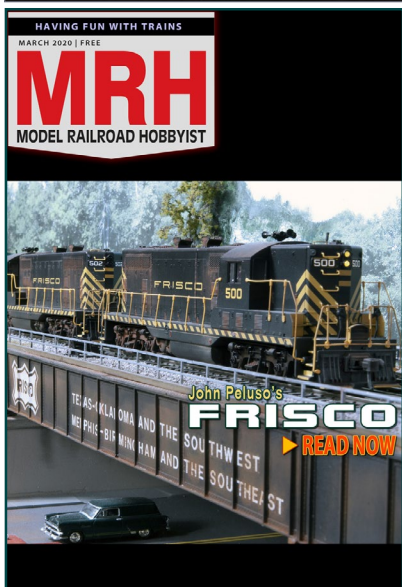
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