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Apprentice with savvy modelers



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- Attaching scenery to spline
- Amtrak interior upgrade
- Two kinds of layout fascia
- New model railroading museum project?

... and much more inside!

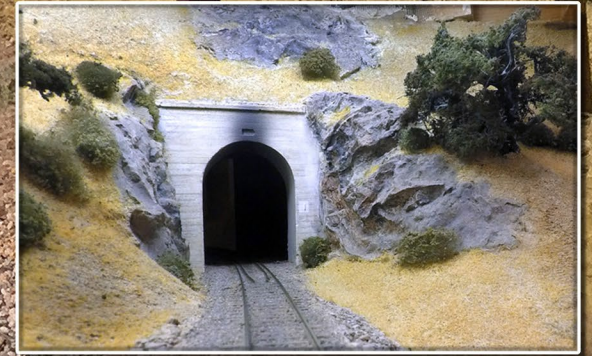
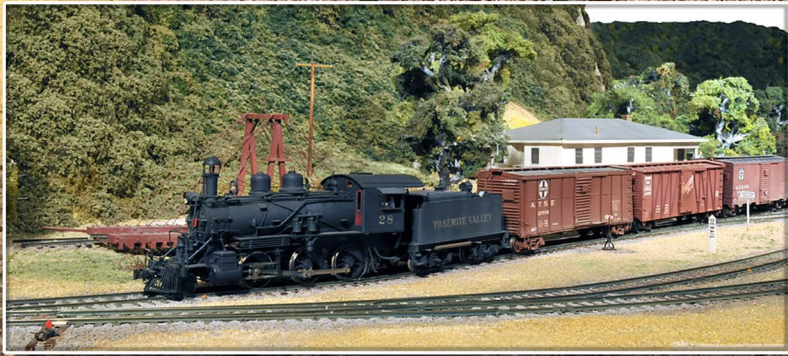


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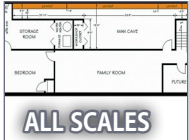


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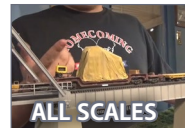
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PUBLISHER'S WELCOME

introduction



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JOE FUGATE: ATTACHING SCENERY TO SPLINE ...



I LOVE SPLINE ROADBED. IT FORMS SMOOTH flowing natural easements and it's stiff enough in the vertical direction to keep you from adding excessively aggressive vertical curves.

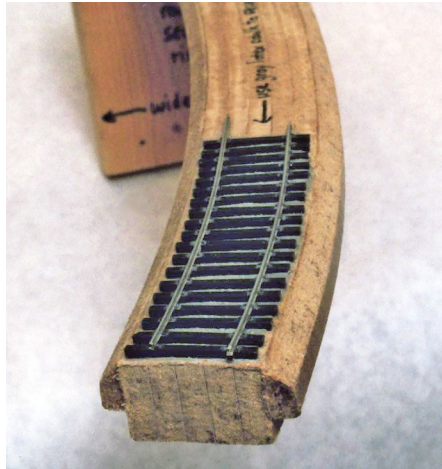
However, I've seen a number of questions online about how to make it easier to ballast and add scenery around spline roadbed.

On my Siskiyou Line 1 layout, I used 1/4" masonite hardboard spline. I added ballast shoulders by ripping one spline down the middle at a 45 degree angle, giving me two pieces of sloped ballast shoulder – one for each side!

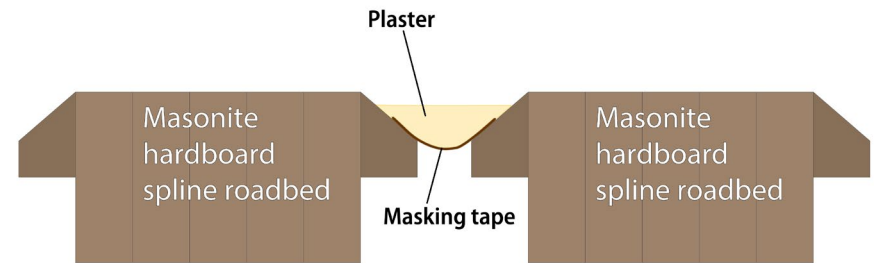
I attached flex track to the spline with gray latex caulk, since that's roughly the color of the ballast and it holds the track down to the spline quite well.

Once you've added this ballast shoulder, it's fairly easy to attach some sort of scenery base to the edge of the roadbed. I used cardboard strips and hot glue to add my "scenery webbing" contours around my spline.

After adding the cardboard strips, I applied 1.5" wide masking tape over the cardboard strip webbing to give me a base on which to apply the scenery plaster.



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1. On double track or passing sidings made with spline, I just add some masking tape to the ballast shoulder on each spline, then pour in a soupy mix of plaster and let it set up. Voila – the gap gets easily filled and ballasting becomes quite simple to do.

Obviously, the plaster would just drip straight through the cardboard strip webbing.

Using masking tape over the webbing goes quickly and it's very effective. To add some tooth to the tape, I painted it with some dirt colored latex paint. In a pinch, the brown painted masking tape works as a great stand-in for the later more finished scenery.

After adding the rough scenery, I typically added the ballast next. The spline's ballast slope gives the ballast a naturally sloping base, which makes ballasting flex track laid on my Masonite spline quite easy to do.

When I had some parallel track on spline such as at a passing siding, I filled in the gap between the two sets of spline with some masking tape. Then I made a soupy mix of plaster and poured it between the spline onto the masking tape to fill in the gap somewhat. By using a very soupy plaster mix (don't make it thick), it's easy to pour in just the right amount of plaster to fill in the ditch up to just the proper level.

After this, ballasting the side-by-side spline locations becomes quite easy as well. ☑

THE LIMITED MODELER

column



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JIM SIX CHOOSES A NEW SETTING ...



I HAVE BEEN SEARCHING FOR A NEW PROTOTYPE

setting that meets my desires. Quite a few places have been suggested and reviewed. One has caught my attention.

Worthington is a small town in southern Indiana. At one time both the New York Central and the Pennsylvania railroads passed through town. They paralleled each other like a multi-track railroad and crossed. The NYC came from the northwest and ran to the southeast. The Pennsy ran from the northeast to the southwest, but paralleled tracks through town. This is an ideal situation allowing me to fit both railroads on a straight narrow shelf layout.

I have pointed out in past “Limited Modeler” columns that I am removing my layout and building a new one. The layout had been an around-the-walls shelf layout, typical of what many folks build. However, the entire train room is dedicated to the layout, which leaves little space for anything else. Since I am not the only one living in the house, I must consider the needs of others. I am the only model railroader, so I am minimizing the layout.

► **DOING MORE WITH LESS**

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A NEW PROTOTYPE SETTING

Worthington, Indiana, lends itself to a long, straight shelf layout. I have abandoned all earlier layout plans. I have given up on Sturgis. I will build a long, straight shelf layout, about 56 feet long and 16 inches wide. My basement is 60 feet long, but there is an electric panel in one corner. This leaves me with 56 feet of wall that I can build the shelf layout [1]. That's a long run by any standard.

With a shelf width of 16 inches, I can have a nice one-town switching layout while leaving most of the remaining space in the room for my man cave. Another advantage of the 16-inch width is how it divides evenly into the 48-inch plywood width. I can cut three 96-in x 16-in strips from a 4x8 sheet of plywood for the layout deck, minimizing the scrap.

BASEMENT SPACE USAGE

The basement will have a room for my wife, a furnace room, a wide, deep closet for my workbench, and a large man-cave. The remainder of the basement already includes a finished bedroom and family room. A future bath and another storage room will be added. You can never have too much closet and storage space in a home!

Looking at [1], you can see the basement floor plan and how little space the layout will use. The 56-ft shelf will provide a nice long one-town layout. A bonus is that the basement will be climate-controlled with the house heat and air conditioning.

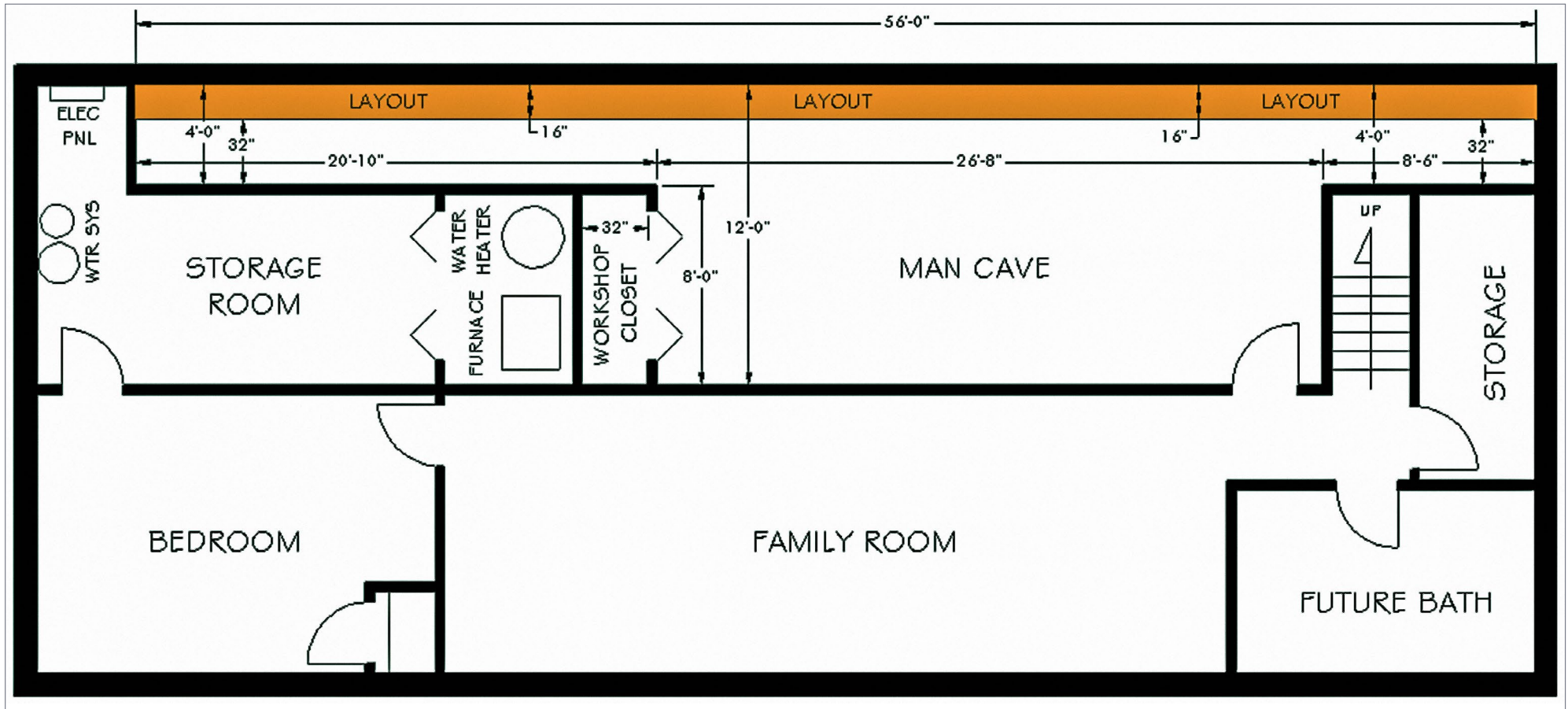
I have known many model railroaders who want to fill an entire basement with a layout. I was one of them for many decades! Today, model railroading remains important to me, but I have other interests and considerations. My goal is to minimize the layout impact while maximizing the enjoyment I will derive from

it. I want to complete the layout within a few years. I will not take on more than I can do in this time.

We all face challenges with available layout space. Some are lucky and can use as much of the basement as they want. [Ed note: Some don't have basements!] Others like me have a specific space for the layout. We each decide what to do with our available space. I've chosen a layout plan that will take up minimal room area with ample 32-inch-wide aisles for easy access.

WHAT TO DESIGN?

The question facing me now is what kind of track design to do with the 56 feet of narrow layout area? Do I plan for a 10-foot staging yard at each? This would leave 36 feet of actual finished layout. Another option is to make the entire length the finished layout. I would have to stage my trains directly on the finished layout for operating sessions. While unconventional, this method of staging has been done for many years.



1. The floor plan with Jim's layout space highlighted in orange.

This is my plan. I will make the entire narrow area a finished layout to suit my “givens and druthers” best. There will be only two trains running in an operating session. One will be an NYC local freight and the other a PRR local freight. Most operating sessions may see only one or the other of these trains.

I’ve set up a PRR local freight staged on my present layout [2] waiting for the operating crew to run into town with switching chores. This is the type of staging I will do on the new layout. It is more realistic for me to start a train on a scened section of layout than in a hidden staging yard. This sets “the mood” right from the get-go. I have run local freights on my present layout. Each freight started near the end of the layout and have worked out very well. These test sessions have convinced me that this will work on the new layout.

While I could add hidden staging yards on each end, this would affect the use of the storage areas. I won’t be able to represent through trains that enter from one staging yard and run to the other staging yard. I am not willing to sacrifice the home storage space for staging areas to store trains. It makes more sense to fit the layout into my home space than to adjust the home space to



2. A staged coal train awaits a crew.

accommodate the layout. These are part of my “givens and druthers” for this next layout.

My life does not revolve about model railroading and my layout. The hobby is just one of many things I enjoy. I see the present basement plan as a compromise that makes the best use of the area for our needs and wants. The defined space will provide plenty of layout for years of fun and satisfaction.

THE PROTOTYPE

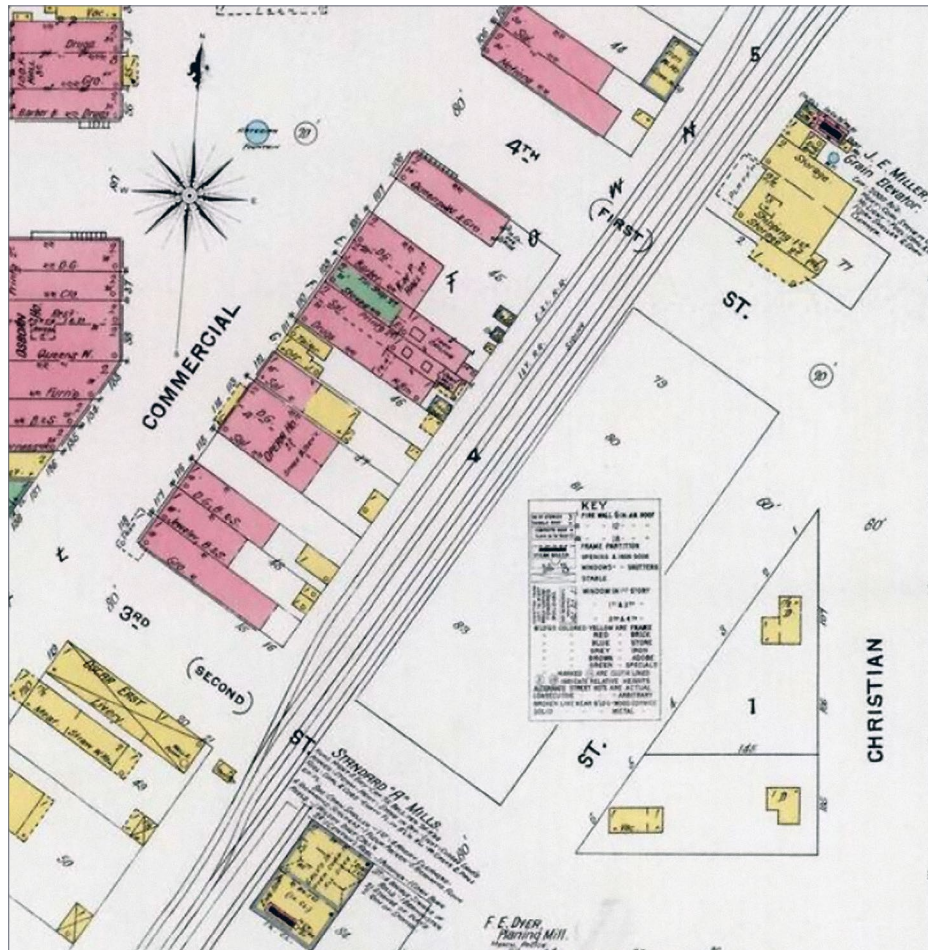
I have been a prototype modeler since the late 1970s. At least, I claim to be. I model prototype railroads in ways that work for me. I frequently ask myself if I’m attempting to recreate the prototype or if I’m attempting to build a layout that is fun to operate. This



3. NYC 1924 is former New York Central & Hudson River 1891. It was built in August 1900 by Alco in Schenectady and rebuilt in 1919. It was renumbered in 1936.

Ray Breyer collection

question is wrestled by many prototype modelers. In my case, the answer is both. When it comes to locomotives and rolling stock, I do my best to match specific pieces of prototype equipment. I am currently planning to rebuild a Bachmann Mogul to follow a New York Central prototype [3]. However, I will make many compromises when it comes to layout building.



4. An edit of a 1900 Sanborn Fire Insurance map.

Purely modeling the prototype can be boring. Some locations may not have enough industries or opportunities to make satisfying operating sessions. Modelers with large layouts get around this issue because they operate multiple trains between locations. Those of us building smaller layouts typically face challenges finding a prototype location that will provide fun and satisfaction. This is my situation.

With my previous Sturgis, Michigan, layout I worked to match the prototype in track arrangement, rail-served industries, prototype names of the industries, and even the types of locomotives and freight cars that operated there. Due to water damage to the basement walls, I am removing the Sturgis layout and rebuilding parts of my basement so my wife and I can have a nice living space, and space for a new layout.

WORTHINGTON, INDIANA

As much as I like Worthington as a modeling subject, it does not have everything that I want. My Worthington Sanborn maps and other information is pre-1900. I do not yet have data for the 1920s, particularly for 1927, that I need to model. I will probably add some industries and maybe modify prototype track arrangements to meet my needs.

I plan to retain prototype online customer names served by the railroad. I will have to make up names for the industries I will add to create the railroad traffic I want. I plan to retain much of the prototype track arrangement. The shared main track ran only a short distance through town [4]. Note all the rail-served industries are on the east side of the tracks, which makes the west side convenient for the aisle. I will not need to model the retail city buildings along Commercial Street.

For my layout purposes, I'm planning to run the shared track most of the town length. This will make operation a bit more challenging, while also reducing my cost and using less space. I'm planning for only 16 inches between the fascia and the backdrop wall. When I'm done, nobody will know what matches the 1927 prototype. Please step forward and make my day if you have the historical information to share.

The 1890-era Sanborn maps do not show any factories, only poultry, grain, feed, and lumber businesses. I will need more local industries to fill my 56-foot shelf layout. I want to add one or two small factories but I have no data of any factories in Worthington. I'll just have to do it "my" way.

This is where I part with true prototype modeling. If the prototype doesn't meet my needs, then I will "adjust" it. In modeling



5. Commercial Street in downtown Worthington, circa 1915.

Worthington, I plan to add a furniture factory and a manufacturer of farm implements. Both are plausible for this southwest Indiana community. I will also add coal and oil dealers, and a busy team track. All the industries will be served by both the New York Central and the Pennsylvania. The additional customers in this setting will provide the base for my local freight trains.

The scene in [5] would have changed a bit by 1927. Many car models would be updated, and there would be fewer horse-drawn wagons. But I won't have to model this specific scene as it was on the west side of the railroad and would be off the layout in the aisle. The rail-served customers were all on the east side, which will be my modeling focus. While this is a neat scene of a town center, I find this is just an expensive distraction that eats up money, time, and layout space.

I do value this photo as it provides the feel of the town, especially the rural nature with horse-drawn wagons and early automobiles. It shows an active, vibrant community and helps me set the "mood" of the time I am modeling.

FREIGHT CARS FOR THE 1920s

One of the things that sets the time period of a layout is the freight cars employed. Take a close look at [6]. Note that all the trucks under the cars appear to be an arch bar type. The image is dated January 24, 1913, and all the boxcars are 36-foot, double-sheathed wood prototypes. The lettering scheme of the Big Four boxcar did not last much beyond 1920. The freight cars are very dirty. No rust streaks either, as these boxcars are wood!

I am often asked what freight cars I use to model the 1920s. I get the feeling most folks think modeling the pre-diesel era is difficult

because it requires scratchbuilding and resin kits. This just isn't so. In fact, modeling in the era before diesels is easier now, particularly if you are modeling the 1910-to-1940 span. Modeling before 1910 is doable but presents more of a challenge, and it becomes more challenging the farther back you go.

I model 1927. The 1920s were a time of transition as wood boxcar designs gave way to newer, steel-sheathed designs. I believe the largest obstacle in modeling these earlier times comes with understanding the equipment of period railroading. I had to re-learn lots of rail and industry details of the earlier era since I had previously modeled the 1950s, and before that the 1980s. I am still learning. I suspect we are all learning, regardless of what we model. This is one of the satisfying aspects of our hobby.



6. A 1913 photograph documents a special movement in the P&LE Rankin Yard. Long steel plate is loaded on two flat cars and a gondola. *P&LE Company Records collection*

When I switched to modeling the 1920s, the first issue I encountered was a limited number of plastic models representing wood-sheathed freight cars of the time. There were certainly not enough for my liking. About the same time, Accurail announced HO scale kits for 36-foot, double-sheathed boxcars. These new kits would be suitable for modeling prototypes from the very early 1900s into the 1950s.

I worked with Ray Breyer to provide many early freight car prototype photos for Accurail to consider producing. Ray is a veritable encyclopedia on these boxcar designs and he provided railroad roster data so Accurail could produce many different paint and lettering schemes.

One of the most common 36-foot, double-sheathed boxcar prototypes of the 1910s and 1920s was a large group of NEW YORK CENTRAL LINES cars. Accurail has produced four versions of these wood-sheathed prototypes.

- Fish belly frame with steel ends
- Fish belly frame with wood ends
- Straight frame with steel ends
- Straight frame with wood ends

Many railroads had similar prototypes. Add these kits to the many resin kits available for prototypes of this era, and we minimize the excuses for not modeling the classic steam era of railroading.

THE PROTOTYPES

As a New York Central modeler, I am very happy about these Accurail 36-foot boxcars. Several kits have already been issued that follow paint and lettering for New York Central Lines prototypes.

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These kits will be the core of my freight car fleet. Accurail offers decal number sets to alter the models for individual car numbers. Several of these models are on my workbench. As I complete them, I will share them with you in upcoming columns.

One of the primary New York Central Lines routes between New York and Chicago was the Lake Shore and Michigan Southern as it ran from Buffalo to Chicago, across northern Ohio and Indiana. Comparing [7] and [8] illustrates Accurail's lettering accuracy. The model has details following mid-1920s practices. I have only one of these models as most had been relettered from LS&MS to NYC by my 1927 modeling time.

The as-built prototypes did not have a grab iron on left end of the car side wall or a ladder on the right end. They also lacked a stirrup step on that left corner. The 1911 Safety Appliances Act amendment would push for installation and standardized location of these features on prototype freight cars through the 'teens. The Accurail model represents the updated details, but it would be simple to remove them if you wanted to back-date your model to the as-built prototype.

Photo [9] shows the NYC prototype after it was rebuilt in the 1920s. You can see a reweigh date of 1/22 on the car at the lower left. This is the common paint scheme for my 1920s NYC boxcars. The Accurail model [10] is a good representation of this prototype.

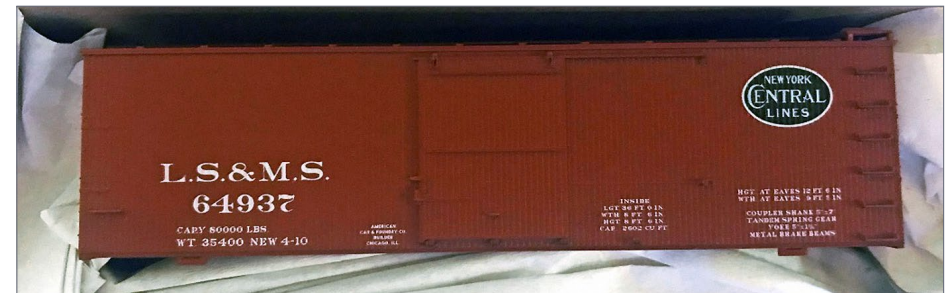
Another New York Central Lines car is this vintage Big Four boxcar [11]. The lettering on the model reflects the 1912 prototype. Note the prototype car has the grab iron and stirrup step on the near end, and ladder grabs on the far end. All newly built freight cars needed to comply with the 1911 Safety Appliances Act amendment.

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Also note the NEW 5-12 stencil beside the weight [11]. This is representative of a car fresh from the builder. In a couple years, the boxcar would be reweighed and a new stencil with updated details would be applied with the date of action. Journal lube dates were also stenciled onto the car sides, typically above the



7. An April 1910 AC&F builder photo documents one of 1000 cars built for the LS&MS. *Westerfield AC&F collection*



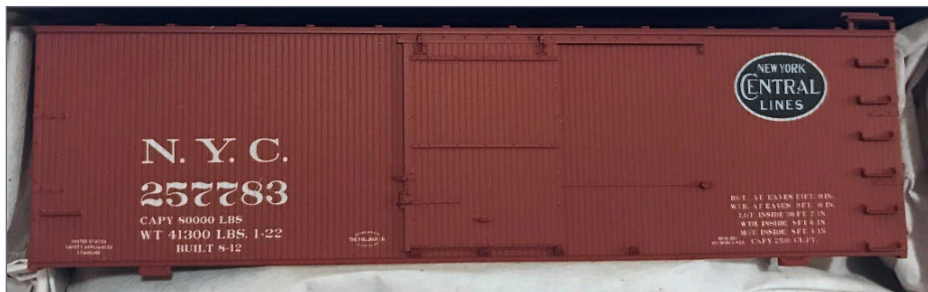
8. The LS&MS/NYC 36-foot, double-sheathed boxcar kit has a fish belly underframe and wood ends similar to the prototype [7].

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right truck. Compare [11] and [12] with [13] and [14] which show the CCC&StL scheme that followed.



9. This car was built in 1912 by the Pressed Steel Car Company for the LS&MS. But this is a 1922 photo documenting a rebuilt car with new steel ends and a new NYC car number. *Ray Breyer collection*



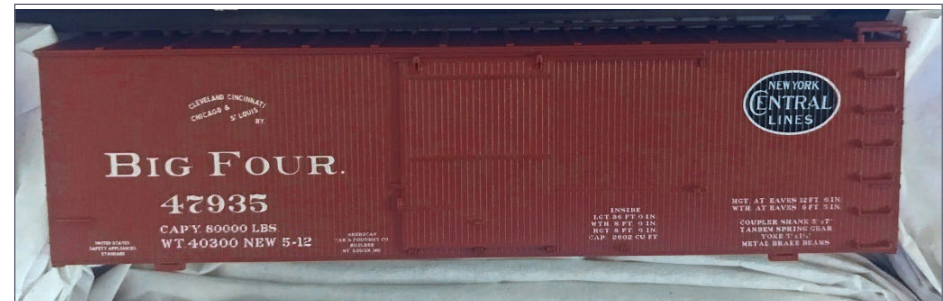
10. NYC 36-foot, double-sheathed boxcar kit has the fish belly underframe and 7/7 steel ends similar to the prototype [9].

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Accurail also produced the slightly later CCC&StL paint scheme. The prototype in [13] was built in 10-14, while the model has a



11. Another AC&F product in a May 1912 builder photo. 1500 cars were in this Big Four order. *Westerfield AC&F collection*



12. CCC&StL (Big Four) 36-foot, double-sheathed boxcar kit reflects the prototype [11] with fish belly underframe and wood ends.

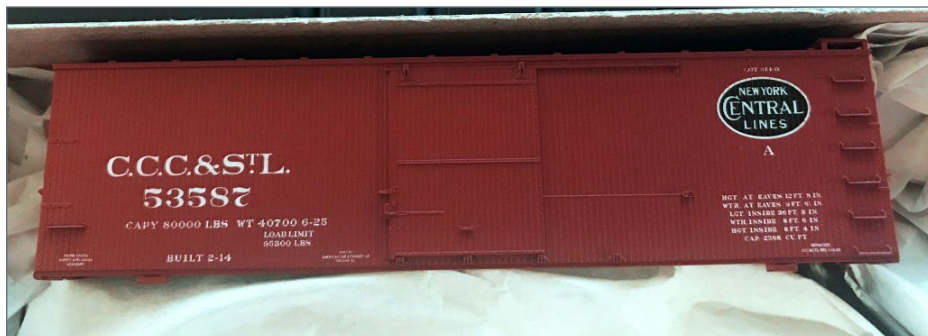
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2-14 stencil. It is dated correctly for the car number but came from a different AC&F batch than the prototype car [13].

One detail difference between the prototype [13] and model [14] is a ladder on the right side of the prototype car. The model has individual grab irons for ladder rungs. I will notch the ends of



13. This October 1914 AC&F builder image illustrates an updated Big Four lettering scheme. *Westerfield AC&F collection*



14. CCC&StL/Big Four 36-foot, double-sheathed boxcar model with lettering reflecting the prototype [13]. It also has the fish belly underframe and 7/7 steel ends.

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these grabs and fit two small strips of styrene to represent the ladder stiles on my model. It's a simple and effective fix.

The New York Central Lines had several subsidiary railroads, including Michigan Central, Pittsburgh & Lake Erie, Toledo & Ohio Central, and more. I plan to have my freight car roster reflect these different NYC companies.

OTHER RAILROADS

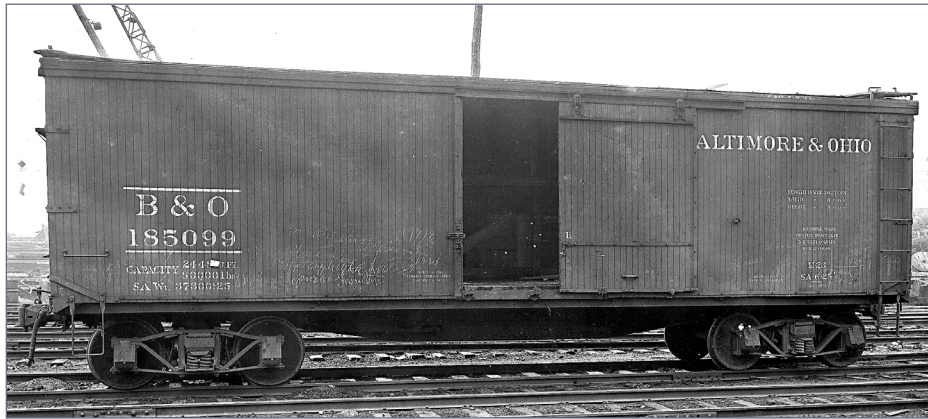
Let's look at other cars I have added to my collection of "to-be-built" models. They will help round out my 1927 setting. Accurail has produced the 36-foot, double-sheathed boxcars painted for many other railroads. Here are a few I have acquired.

Starting in January of 1915, 500 boxcars were built for the Cincinnati, Hamilton & Dayton [15]. These went to the B&O [16, 17] in December 1917 when the CH&D was acquired and became B&O class M-23.

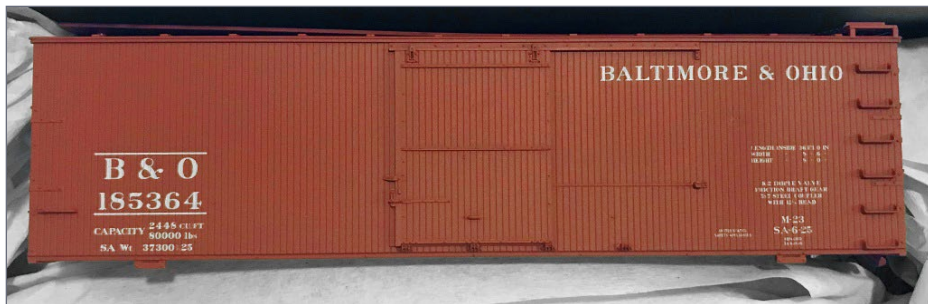


15. A new Cincinnati, Hamilton & Dayton boxcar poses in a 1915 builder photo. *Westerfield AC&F collection*

I would be remiss if I did not bring up the Nickel Plate Road, as it had 1000 36-foot, double-sheathed boxcars identical to those of the New York Central Lines [18]. The Nickel Plate was one of the New York Central Lines' railroads until it was bought by the Van Sweringen brothers in 1916. These prototypes were ordered while the Nickel Plate was under NYCL control, but delivered after the line became independent.



16. By 1925, the B&O had re-lettered many of the CH&D boxcars. *William B. Berry, Jr., photo, NPS Steamtown collection*



17. The Accurail model follows the prototype [16] for the B&O 36-foot, double-sheathed boxcar with wood ends.

40-FOOT BOXCARS

Let's not overlook the slightly longer 40-foot boxcars. Accurail has produced single- and double-sheathed versions. Several early 40-foot boxcar designs appeared in the 1900s and improved designs were built in the 'teens. B&O, NYC, PRR, and the Harriman Lines (IC, SP, UP) all rostered thousands of 40-foot boxcars, so I can't ignore these longer cars.



18. An AC&F builder image shows this Nickel Plate car with a NEW 10-16 stencil. *Westerfield AC&F collection*



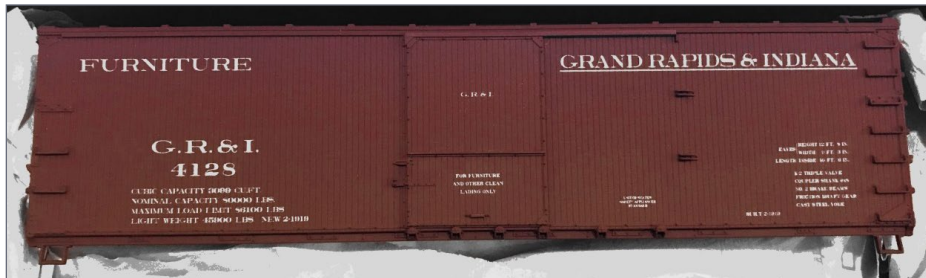
19. Digital Fox Services did a custom run of the Accurail models following original NKP lettering [18].

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The Michigan Central [23] and the GR&I [21] models pictured here are examples. Some of the Accurail 40-foot boxcars are painted in the post-1936 NYC scheme with a New York Central System oval herald and lettering. I am expecting Accurail will produce some following earlier lettering schemes.



20. Some larger boxcars were used in furniture and automobile transport, as seen in this vintage colorized postcard. The interiors would often fill before these loads reached a weight capacity. *Ray Breyer collection*



21. The NMRA North Central Region offered a custom decorated Accurail 40-foot USRA double-sheathed boxcar for their convention. It was available in three numbers.

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Another New York Central Lines subsidiary was the Michigan Central that ran between Detroit and Chicago. This was a very busy line with lots of boxcars to serve the auto industry. MCRR 80131 [22] is a USRA design boxcar built in 1-19. While the Accurail model [23] is like the USRA prototype, these models do not follow the USRA single-sheathed boxcar design. But they're close enough for me.



22. A Michigan Central USRA single-sheathed boxcar in original paint and lettering with a NEW 1919 stencil. *Ray Breyer collection*



23. Accurail applied the prototype MCRR lettering to their 40-foot, single-sheathed boxcar with wood ends. Some details aren't quite the same as the prototype in [22].

FOWLER 36-FOOT, SINGLE-SHEATHED BOXCARS

Accurail made a surprise product announcement at Trainfest in November 2017, when they unveiled a Fowler-type, 36-foot, single-sheathed boxcar kit. There were more than 100,000 prototype cars built to this design, or a slight variation on it. These Fowler cars were one of a handful of “iconic” boxcar types missing from most steam and transition-era modelers’ fleets.

The Nickel Plate Road never bought Fowlers. However, they did



buy the Clover Leaf (TStL&W) which had 1000 of these cars [24]. The Nickel Plate bought the Clover Leaf in

24. A very rare prototype image of a Clover Leaf Fowler boxcar. Notice the fresh paint under the recently applied weigh stencil near the lower left corner of the car side. *Steve Grigg collection*



25. An Accurail TStL&W 36-foot, single-sheathed, Fowler design boxcar.

1922 and assumed control in 1924, at which time the Nickel Plate began repainting and re-lettering the cars. Accurail offers their Fowler model lettered for both the TStL&W [25] and the NKP [26].

This brief look at the early freight cars in Accurail’s line should give you a good idea of how easy it is to model the 1920s. These models are available painted for many other railroads. My selection of New York Central Lines is biased because I primarily model this railroad. Many of these same models can be used to model the 1910s, and even the 1930s. Don’t believe that modeling these early times presents a problem finding freight cars. Modeling the pre-WWII years is much easier thanks to Accurail.

Bowser and other manufacturers also produce models following earlier prototypes. Eric Hansmann, MRH Editor-at-Large, has compiled a guide to 1920s-era HO scale plastic freight cars as a resource on his blog designbuildop.hansmanns.org/a-guide-to-1920s-era-ho-scale-plastic-freight-cars. ☒



26. A Nickel Plate version of the Accurail Fowler boxcar.

Creating one scene at a time

JACK BURGESS COMPLETES ONE SCENE AT A TIME — SINCE 1980 ...

1. Extra 26 rolls past a chaparral covered hillside and over Bridge 64A.

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GETTING REAL

column



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MRH Running Extra | September 2019



AS LONG AS THERE HAVE BEEN LAYOUTS BUILT

by model railroaders, there has been a “rule” that no layout is ever finished. There is always track that needs ballast, new buildings to replace stand-ins, details to add, better kits to replace earlier attempts, and it continues on forever.

I never gave that opinion much thought. Instead, when I started construction of my layout in February 1980, my goal was to finish my layout – just that simple.

My layout fills a 20x20-foot garage in California and is multi-deck, resulting in a 235-foot-long mainline [1]. I completed all of the benchwork within four months of starting construction.

At that time, I could not afford “flex track” so I hand-laid all of the track and turnouts, including hidden tracks. The mainline was completed within a year but I recall that I didn’t add guardrails to the turnouts for several years – if the lead rails align exactly with the frog and everything is in gauge, I discovered that you don’t really need guard rails.

I did eventually add guardrails for appearance purposes. I finally finished all of the passing tracks and yard tracks in 1989, nine years after starting work on the layout.

► MODELING REAL RAILROADS AND WHAT THEY DO

GETTING REAL | 4

As track was laid, I followed up with basic scenery. The first one-third of the prototype Yosemite Valley Railroad is through grass-covered foothills. By August, the month that I model, that grass has turned a golden yellow.

As the YV tracks begin following the Merced River the rest of the way to the terminus of the railroad at El Portal, those foothills turn into mountains still with yellow grass now spotted with trees. The eastern slopes of the mountains were typically covered with chaparral, a dense collection of shrubs a few feet high.

The required scenery meant a lot of grass! Current-day electrostatic grass had not yet been invented, but a product using that name was available in 1976 although it used a plastic squeeze bottle to “shoot” the grass onto white glue painted onto the scenery surface.

The colors were limited to light and dark greens, yellow, brown, red, and grey. I had no option but to use the yellow product, but it had to be airbrushed with the appropriate yellow color after drying.

I ordered a large box of the “yellow” electrostatic grass direct from the manufacturer which I figured would be enough to cover all of the required areas of my layout. It did.

Since I couldn’t mix paints to match a particular color (and still can’t) and I knew that I would be painting grass for a couple of decades or more, I decided to use interior house latex paint.

I selected a paint manufacturer which I felt would be around forever since “paint matching” hadn’t been invented yet. Fortunately, the company lasted long enough for me to airbrush all of the grass on my layout before it went out of business [2].

TREES

Along with yellow grass, the higher elevations of the layout were home to live oak trees. At the time, small sagebrush branches were a favorite source of tree material.

However, I felt that sagebrush was too smooth to represent live oak trunks and, to my eyes, too obviously sagebrush to be used for trees. Fortunately, a longtime friend and the author of the first book on the Yosemite Valley Railroad was also a model railroader who loved to make trees.

He told me how to replicate live oak trees using small branches from the bitterbrush plant which, in California, grows on the eastern side of the Sierra Nevada mountains and elsewhere.

So, after a field trip to the far side of the Sierras, I had enough material to make the dozens of live oak trees that I needed.

But after installing those trees, I was less than satisfied with their appearance. Fortunately, about this time I met a modeler who



2. The grass at the Edendale siding only needed barbed wire fences, telephone poles, a milepost sign, and a station sign to be finished.

was making various California trees commercially using thick cotton string mixed with white glue to make tree armatures. And his efforts looked a whole lot better than mine.

So, I started buying “live oak” trees from him at Great Train Shows as well as occasionally at the local hobby shop.

My wife became frustrated with my slow pace and suggested “Why don’t you just order all of the trees that you need?” What a concept! I took a clipboard and carefully surveyed my entire layout, recording locations (such as near Bridge 64A or east of Incline) and the size needed (small, medium, or large). The result was over \$400 of trees! Her response was “Just order them!” which I did. Once installed, that “suggestion” by my wife resulted in the rest of the scenery being mostly complete [3].

As an aside, the next time I was in the local hobby shop I actually bought another tree but when I got home, I couldn’t find a spot to plant it. I still have it and occasionally use it as a photo prop, a trick that I learned from noted layout photographer, Lou Sassi.

STRUCTURES

Roughing in the scenery was easy but to complete a layout one needs a “plan.” Probably the biggest issue is not scenery but structures. So, decades ago, I developed a list of all of the structures that I wanted to build for my layout.

Over the years, some structures were deleted from that list due to lack of prototype information or insufficient space, while other buildings were added after more information became available.

The end result was that my layout now includes just over 100 scratchbuilt buildings along with 10 scratchbuilt bridges.

As the construction of a structure or bridge was completed, I installed it on the layout and always went a little further ... I also

finished the scenery surrounding that structure or bridge. That might include additional trees, small bushes, etc.



3. The trees on the right side of the swale are homemade from bitterbrush branches, while the ones on the left are commercial trees representing live oaks.

In addition, I added all the details that were shown in prototype photos of that structure or that seemed appropriate. For a bridge that might include a section of the river, retaining walls seen in prototype photos, and rock talus [4].

For the tunnels, I cast tunnel portals based on original construction drawings I had. I then added the rock formations around that particular tunnel [5 and 6].

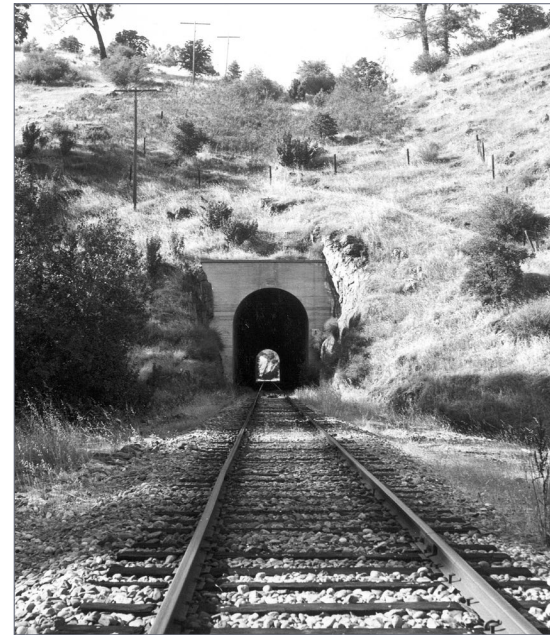


Finishing a structure was fun because I then added the details that I saw in the prototype photos of that structure [7 and 8]. One structure at Incline was especially rewarding because I knew one of the persons shown in the prototype photo [9 and 10].

I worked through my list of buildings based on what I felt like building—something simple or tackling a more difficult project.



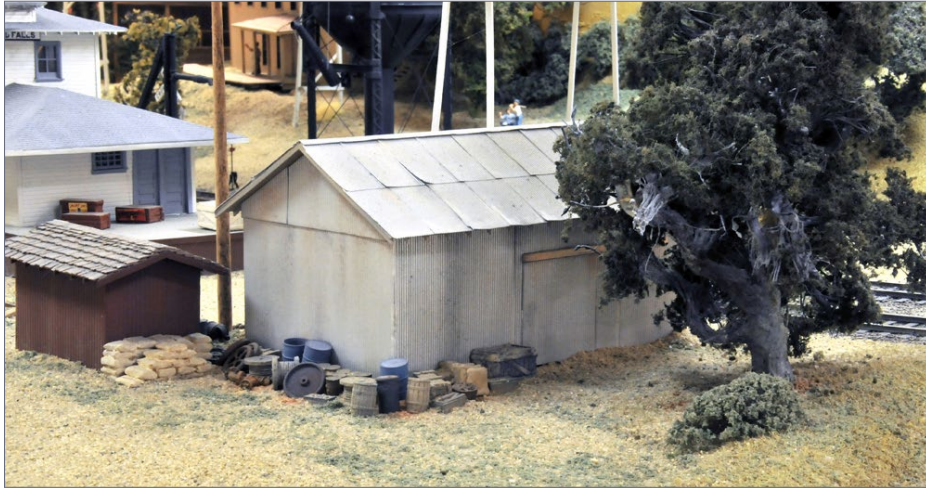
4. Bridge 64A is an 80-foot-long HO representation of the prototype 160-foot-long trestle. Like the prototype, I included a dry-stone retaining wall at one end of the bridge. The railroad commonly used these retaining walls along the upper end of the line. The prototype constructed these walls from slabs of rock four feet deep, set perpendicular to the tracks and running 6-8 inches thick. I built up my wall from individual pieces of Jonny Cat Litter glued in place with white glue. I made the talus close to the river with the same material.



5. The railroad built Tunnel 1 as the first of four tunnels in the early 1920s. They did this as part of a track relocation project to allow for the construction of a large dam on the Merced River.



6. For my model of Tunnel 1, I used cast portals and used strip-wood forms to replicate the cast concrete of the prototype portals. I also tried to replicate the rocks that were blasted to give clearance on the tunnel approach.



7. These two small buildings are the repair shop and hose house shown on a Sanborn map of Merced Falls. They show up in the background of a prototype photo. The details around the buildings are typical of similar rarely-used buildings in the same general area of the sawmill.



8. The roundhouse and paint shop in the Merced yards. Details in this area duplicate details in prototype photos. The M-of-W car on the left was the steel crane tender. The crane is still on my to-build list.



9. This 1929 photo shows the winch house at the bottom of the 8,300-foot-long logging incline at Incline. The men were (left to right) Jim Law, foreman; Lawrence Phillips, brakeman; and Harry Hudson, brakeman. I met Jim Law in the early 1970s and visited him regularly over the next 30 years to discuss the YV and associated logging railroads.



10. My model of the winch house includes the broken batten (lower right corner of the building), a readable warning sign, and the empty milk bottles to the left of the building.

Sometimes I might look at a station area or other location and realize that I only needed to build one or two buildings to declare that location completely finished.

That was the motivation needed to build those last buildings.

THE LAST STRUCTURE

The very last structure remaining on that list was the water tank at Merced Falls [11]. The water tank was completed in January 2011. At that point, I realized that I was very close to finishing the layout.

I took a clipboard and carefully walked around the entire layout looking for things that I needed to fix, upgrade, or complete. That list



11. The last structure to be built was this water tank at Merced Falls.

included replacing polyfiber that had been knocked off by visitors, painting chips in some of the scenery and rock castings, and so on.

Additional motivation came from the fact that the 2011 National Model Railroad Association Convention would be held in nearby Sacramento in July of that year and my layout was on the list of layout tours.

Over the next couple of weeks, I fixed/replaced/corrected all of the items on the list. When the last item was checked off, I realized that my layout was actually *done*!

That was on June 11, 2011— just over 31 years after I started construction.

With the layout complete, one of the first things that I did (maybe only to confirm that it was actually done) was to go through my “stockpile” of scenery detail parts that I had purchased over the decades with the intention of adding them to the layout.

I had been buying detail parts at NMRA conventions and other venues for years. Some of these parts ended up on my layout but most didn’t so they were thrown away.

I suggest you think about “finishing” scenes as you install buildings on your layout. Finish the scenery around that building and add the appropriate details. Hopefully that will inspire you to continue “finishing” scenes.

The layout photos with this article might inspire you to adopt this path to layout completion.

THEN WHAT?

What did I do when I declared the layout complete? Most layout owners would spend more time running trains.

But many of you might know that I don’t operate my railroad. I have formal operating sessions every two years as part of a local

Railroad Prototype Modelers invitational operation event called BayRails. That demands that I clean track every two years.

I continue to build models, my true passion. Along with that list of buildings that I needed to build for my layout, I also developed a list of all of the YV locomotives, cabooses, freight cars, passenger cars, and maintenance-of-way equipment on the YV in 1939 that I wanted to build.

The locomotives are done as well as the cabooses, log cars and rock (hopper) cars (as many as I can use in operations on the layout), flat cars, stock cars, ballast cars, and all but one of the M-of-W cars. I have some more box cars to build and some passenger cars to do.

What will I do when that equipment is built? I have a stash of about 45 resin freight car kits to build. While I don't need more freight cars for operation, I'd like to swap out some of the older cars which have been on the layout for 30 years or more.

I also decided to build the four YV stations and freight houses that I didn't have room to add to the layout. They will instead go directly into a display cabinet. Two of those buildings have already been finished [12].

Then what? I want to build the three early locomotives (one is completed) and the early cabooses (six needed) which will all go directly into display cabinets. I'm guessing that this will take me a number of years. What if I get those all built and I still have the ability to build things?

A couple of decades ago I scratchbuilt a YV log car in Proto:48 which was both a challenge and a very satisfying project. That was followed years later by a Proto:48 diorama featuring the YV weed burner and several other associated pieces of equipment.



12. Two of the four stations or freight houses that I am building.

Recently, I was talking to a longtime friend who owns and is restoring the actual wooden YV observation car 330 built in 1907. The car originally had a writing desk in the first-class section of the car and he wants to build it and the display cabinets which were above the desk.

We spent part of an evening talking about what might be displayed in those cabinets. He has always wanted to display a scratchbuilt HO model of the 330 that I built back in 1976 which won a couple of first place awards at NMRA events. But I told him that it is probably too small to be easily seen by passengers.

So, instead, I suggested that maybe I could build the 330 in Proto:48 scale for display.

He needs to finish that display cabinets first, but I have already ordered the Proto:48 wheelsets for my 330 model. ☒





Simple Amtrak interior upgrade

1. On the outside, these Kato Amtrak Superliner cars look great, but Kato just put bland tan plastic interiors on the inside. Cars with paying passengers in them look a lot better – so Dirk opted to paint some simple details and make the passengers look right at home.

Running Extra | September 2019

★★★★★
RATE THIS ARTICLE

DIRK REYNOLDS improves the interior of a Kato Amtrak Superliner car ...

KATO HAS RELEASED SOME FANTASTIC AMTRAK passenger cars. However, like many passenger cars on the market, they lack interior decoration. Kato molded the car interiors in a light tan color, which is all you see when looking through the nice windows [1].

We usually want paying passengers in these cars, but it's rather distracting to just seat them in a blah interior. I decided to try my hand at decorating the interior of the Amtrak Superliner Lounge car.

Attempting something like this always starts with research. Photo [2] is a picture of a Superliner Lounge car interior I found on Wikipedia here: [[commons.wikimedia.org/wiki/File:Amtrak Superliner II Sightseer Lounge Car - Coast Starlight.JPG](https://commons.wikimedia.org/wiki/File:Amtrak_Superliner_II_Sightseer_Lounge_Car_-_Coast_Starlight.JPG)].

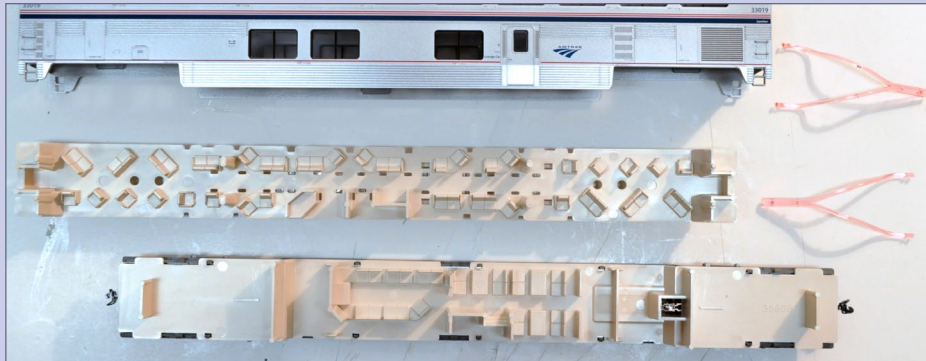
If you do some Google searching on *Superliner Sightseer Lounge Car* you can find plenty of photos to work from as a guide.



2. Dirk used this shot of a Superliner Lounge car interior as the guide for his detailing efforts. *Wikipedia photo*

STEP 1: DISASSEMBLE THE CAR

I began my project by disassembling the car. It came apart quite easily. Of course, reading the directions that came with the car helped as well!



3. Dirk started by disassembling the car and separating the upper and lower floor interior inserts from the rest of the car.

STEP 2: APPLY A BASE WHITE COAT

I took both floors to the spray booth and airbrushed them with Testors Model Master semi-gloss white (4701) acrylic as a base coat. Always remember to start with the light colors first and then proceed to the darker ones.

I allowed two days for the white paint to dry and fully cure before proceeding to the next step.



4. Dirk airbrushed the interior castings with Testors Model Master semi-gloss white acrylic.



STEP 3: PAINT THE DETAILS

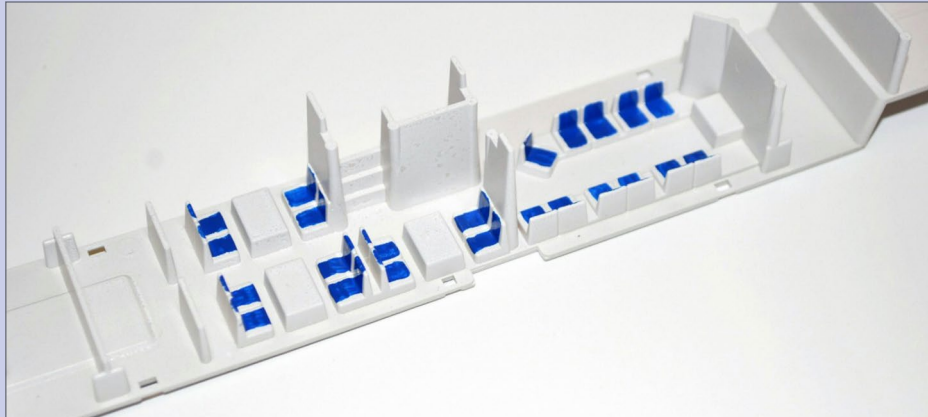
I studied photos I found online and compared them to the cast interior details to see what is painted Amtrak Blue.

The seats themselves appear to be blue foam cushions on white backs. The carpet on the floor is the same color as the seats. There seems to be very little wall decoration.

I believe the center of the floor in some cars (see the online photos) has a simulated wood floor covering, but I chose not to model that.

For the blue color, I used Testors Model Master flat Cobalt Blue (4612) acrylic.

I used a steady hand and a magnifier to paint all those seats and the blue carpet.



5. After the white coat of paint fully cured for a couple of days, Dirk painted the seat cushions blue.

STEP 4: ADD FIGURES TO THE INTERIORS

I added figures to the interior castings after the blue accent paint had dried.

I noticed a distinct difference in seat area and the size of the figures. Preiser figures are usually a good match, but some of them did not fit the seats very well, so I had to pick and choose. I also had to trim down some figure bottoms for a better fit! Just think in terms of sinking down into the seat cushion, and you get the idea.

I used gap-filling CA to hold the figures in place.

When you place your figures, always think of a scene. Perhaps two passengers meet and talk while surveying the countryside, or another passenger is reading a book.

Scenes always enhance the modeling and give it more life.



6. Dirk added figures to the two decks after painting the seat cushions and carpet.

STEP 4: ADD FIGURES TO THE INTERIORS *CONTINUED ...*

7. A closer view of the upper level with the figures placed – note the blue carpet down the aisle.

THE RESULT

I found this upgrade fairly simple to do, and I think the result is a much better looking interior [8] that appears to have more detail than it really does. Now when you look through the lounge windows, you can see passengers [9] in a much more realistic interior!

Compare the final shot of the train [10] and diesel heading north on the Fountain, IL bridge with the first photo without the interior upgrade [1]. Big difference! ☒

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8. After completing this simple detailing work, here's the result when the car is backlit. Now the interior looks like it has plenty of detail – and it wasn't that hard to add!



9. Here is the entire car under the layout lighting with the interior detail added.





10. Here is the newly detailed car back in the train on the layout (same scene as [1]).

DIRK REYNOLDS



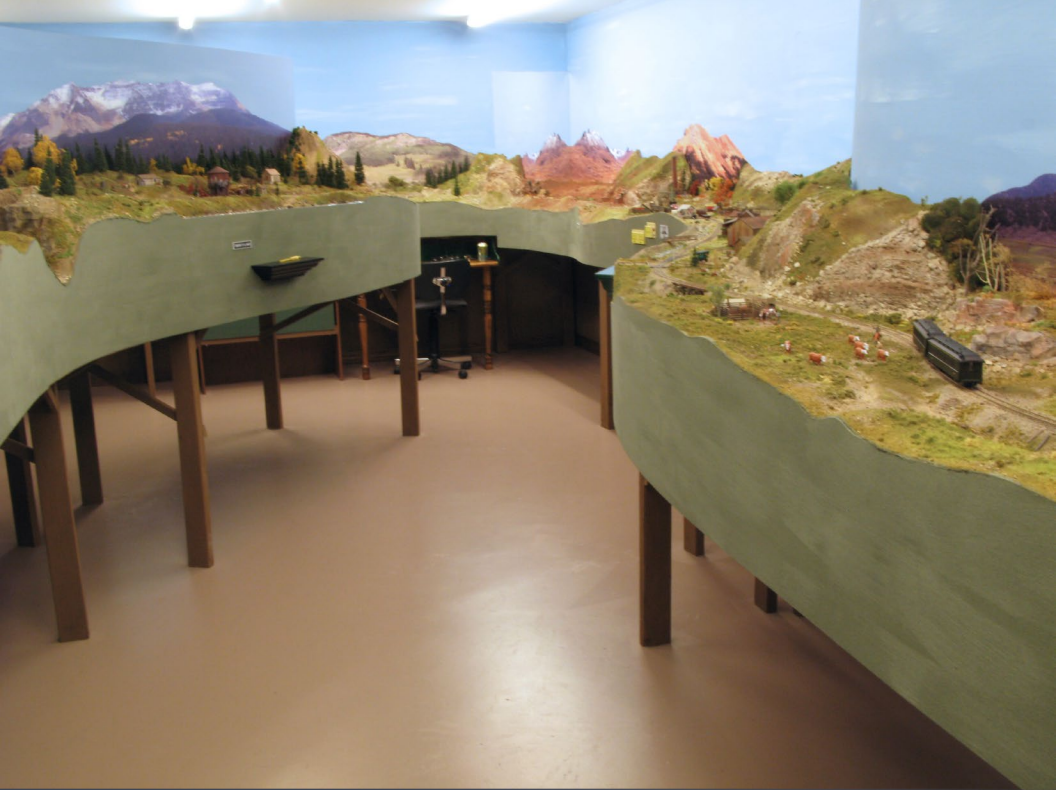
Dirk Reynolds has been model railroading for over 35 years. His family comes from Dupu, IL, and his grandfather engineered the “doodlebug” motor car that ran from St. Louis, MO to Marion, IL.

Dirk also runs his own hobby business under the name of Dirk's Trains in Columbia, IL and attends all the local train shows.

Contact Dirk at comptrain2002@yahoo.com. ■

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a phone
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spam filters
eat our email
response)**





Two kinds of fascia

Running Extra | September 2019



J. Fugate

TWO KINDS OF FASCIA

We had two authors tag-team two different ways to do layout fascias. First Gregg Condon tells his method for constructing a traditional seamless textured hardboard fascia.

Then Tim Moats describes making a carpeted fascia that's built with a bottom-recessed layout – the ideal location for bump-proof layout controls.

TWO KINDS OF FASCIA – SEAMLESS | 2

1. The fascia on Gregg's layout extends for 175 feet without a seam or fastener showing anywhere.



DR. GREGG CONDON, MMR on how he does his hardboard fascia so it has no visible seams ...

FASCIA IS TO A MODEL RAILROAD WHAT MATTING is to a framed picture. Continuing that analogy, if the fascia forms the matte, then the room itself must be the frame of the layout “picture.”

While the appointments of the train room help present the model railroad in the best light (pun intended), I'm focusing here on the fascia.

WHY FASCIA?

Most obviously, fascia serves to cover the benchwork that supports the finished surface of the layout.

On some of my layouts, the track surface is half-inch Homasote atop half-inch plywood supported by a framework of one-by-four lumber set on edge. My fascia has always been built at least to the bottom of the one-by-four framing.

Better yet, I have built fascia that extends a couple of inches below the framing so the “backless” area can be used for installation of things like electrical switches.

Mostly though, I built any necessary control panels out of styrene sheet and mounted them on the fascia or have used “experimenter boxes” from places like Amazon (see [amzn.com/B07RTYYHK7?tag=mrhmag-20](https://www.amazon.com/B07RTYYHK7?tag=mrhmag-20) for an example). Most of my layouts have had fascia that is about six inches tall.

TWO KINDS OF FASCIA – SEAMLESS | 3

On my current HOn3 layout, I built the fascia a constant 32 inches from the floor all the way around the layout, with the top edge of the fascia undulating with the varied mountain scenery.

The fascia on my layout runs from 10 inches tall to 22 inches tall. As a personal preference, I like this deeper fascia. It creates a large non-distracting frame along my peripheral vision when I'm looking at the layout.

WHY SEAMLESS?

To build this fascia, I laminate two layers of Masonite. I prefer this for these reasons:



2. Gregg fastened the first layer of Masonite in place, then cut the second layer to match. Using Liquid Nails, Gregg laminated the two layers together and held them in place with clamps (this photo). As you can see, you need plenty of clamps with this technique!

TWO KINDS OF FASCIA – SEAMLESS | 4

- The screws and nails that fasten fascia to benchwork attract attention in a negative way. Some layouts even have noticeable paint runs below these obtrusive fastenings!
- By using two laminated layers of Masonite, the top layer hides the fasteners on the first layer. Stated simply: it looks good!
- Laminating two glued layers of Masonite gives a very strong fascia. This especially helps when the fascia follows free-flowing curves along the aisle and may not be continuously supported by benchwork behind it.

HOW TO BUILD IT

My seamless fascia method is simple to construct, and uses materials commonly available at reasonable cost. Here's how I do it.

1. Determine how tall the fascia needs to be. This depends on such factors as single or double deck, the need to access things under the layout, and so on.
2. Cut fascia strips of Masonite to the desired width (i.e., the height of fascia). If the layout is a flat-top, the fascia strips can have parallel edges easily cut on a table saw or with a circular saw.

It is best to cut Masonite outdoors or in a dedicated workshop, as the fine dust can be a real problem in the house – and especially in a train room. If you have areas where the upper edge of the fascia will undulate with the contours of the scenery, then you have two choices: visualize the finished scenery and cut the fascia with a jig-saw in advance, fasten it in place, and build your scenery to match the fascia.

For the other option, build the scenery first – perhaps by carving and laminating sheets of insulation foam. Then temporarily clamp

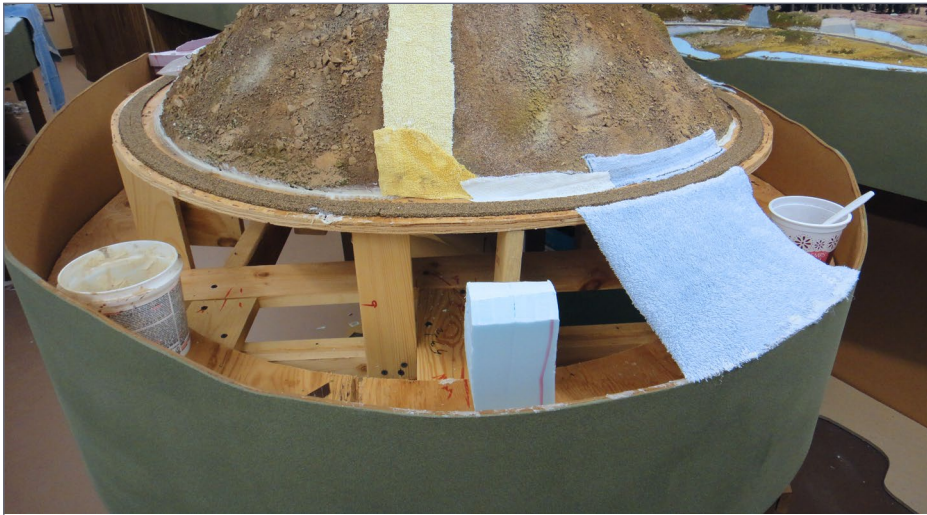
TWO KINDS OF FASCIA – SEAMLESS | 5

the wide fascia in place, mark the scenery contours on it with a marking pen, then remove the excess by cutting it with a jigsaw.

3. Fasten the first layer of Masonite fascia to the benchwork with flathead screws (best) or nails (if you prefer). For a free-flowing fascia, I make sure it's well-supported by adding a piece of one-by-four every linear foot or so. The first layer of unsupported fascia will be extremely flimsy, but after gluing on the second layer, the resulting laminate becomes very rigid.

Still, adding support every foot acts as good insurance against future damage if an unthinking visitor leans on the layout.

4. Temporarily clamp the second layer of fascia to the first, and mark the irregular contour of the first layer on the second layer



3. Gregg has cut the laminated seamless fascia to shape and then applies the scenery material. Gregg uses a "clothshell scenery" technique that involves fabric spread with a construction adhesive.

TWO KINDS OF FASCIA – SEAMLESS | 6



4. This is the same scene as [3] but now finished. The seamless fascia gives a nice clean look to the layout.

with a marking pen. Remove the second layer and cut it to shape with a jigsaw.

With a layout that already has scenery contours in place, it can be better to cut the two laminated layers to final shape *after* getting them both in place. To minimize the dust annoyance, I prefer having another person follow the saw blade with a shop-vac hose.

5. Apply beads of a caulk-gun glue to the first layer of fascia. I use either Liquid Nails for Projects or Loctite. You can find construction adhesive in plastic buckets too, which can be a cost-effective and easy-to-use option.

I space the beads of glue two inches apart, and it's best to keep the outside beads no closer than an inch to the Masonite edges. Glue from plastic buckets can be applied with a putty knife. The

TWO KINDS OF FASCIA – SEAMLESS | 7

final outcome seems to be the same either way – I have used both methods.

6. Apply the second layer of Masonite fascia and clamp it to the first layer with plenty of clamps. I find it helps to have two people do the clamping process. “Plenty” means one clamp every few inches [2]. I typically use 30 clamps for an eight-foot section of fascia – 15 on the top, 15 on the bottom. Sharply curving fascia needs clamps right next to each other. I allow the glue to dry for 24 hours.



TWO KINDS OF FASCIA – SEAMLESS | 8

7. Remove the clamps and inspect the butt joints where one piece of fascia meets the next. If the joint looks continuous and tight, perhaps it needs only light sanding to be seamless.

If an inadvertent gap shows up, fill it with spackle. I prefer Red Devil One Time Spackle for its ready-to-use features. It spreads like cookie frosting, cleans up easily, has no odor, and takes paint the same as Masonite. After the spackle has dried for 24 hours, it can be lightly sanded – again in quest of that seamless appearance.

It's easy – I find the goal of “seamless” can readily be attained.



5. This view of Vance Junction on Gregg's layout shows a Masonite fascia that easily includes a telephone, fast clock, throttle plug-in, and station signs all securely screwed directly to the fascia.

8. Finally, paint the fascia. Masonite soaks up paint, so I typically apply two coats minimum. While your personal preference can come into play here, I like a flat paint in a medium shade of green.

I use Dutch Boy Granite, which contains fine granulations to give it a lightly textured surface. The light-green shade has a slight olive tone to it and I am pleased with it. I feel it complements the earth-tone colors of my model railroad scenery.

I am quite satisfied with the seamless fascia I get using this method. The double-layer approach not only results in a strong free-flowing fascia, the extra thickness provides plenty of material for screws to bite into when fastening things to the fascia, as shown in [5].

I do hope you find this method of building fascia to be as useful as I do. ✓

GREGG CONDON



Dr. Gregg Condon is retired from a career as textbook author, convention speaker and emcee, college professor, and business owner.

At age 11 Gregg declared himself to be a serious scale model railroader and has never had a day away from the hobby in the 60 following years. He has completed eight room-size layouts, bringing them to

what he calls “photo-finish.”

Layouts five, six, and seven were in *Great Model Railroads* 2007, 2013, and 2019 respectively. He has authored numerous articles in the model railroad press; this is his first *MRH* byline. ■



A bump-proof recessed layout fascia

TIM MOATS builds a carpeted fascia with a recessed lower layer for controls ...

THERE IS SELDOM ONE RIGHT WAY TO DO ANY facet of model railroading – dare I say many times there may not even be a best way

Gregg Condon presented his seamless fascia method in the previous piece. I’m presenting a fascia method that’s quite different, but we do agree on one thing: we feel both our fascia methods yield excellent results.

In constructing my freelanced Wisconsin Western HO layout, I had three big objectives for the fascia. I wanted it to:

1. Present a “residential-friendly” finish by using a carpeted surface.
2. Provide a bump-proof lower fascia section by recessing it.
3. Provide helpful illumination of the layout controls mounted on the recessed section.

RECESSING A PART OF THE FASCIA

While taking part in operating sessions at other layouts, I’ve often seen operators brush against the fascia. I’ve seen broken control knobs, and I’ve seen turnouts switched inadvertently.

The main fascia on my layout is six inches tall where the layout ground level is flat. That covers the one-by-four joists, along with



the the plywood and Homasote providing the layout surface. In places, of course, the fascia undulates with the contours of the scenery, both above and below track level.

For the visible surface of my fascia I used carpet, but on the lower recessed fascia I applied the carpet to eighth-inch Masonite. I fastened this base Masonite to the ends of the framework joists with countersunk wood screws.

I recessed the lower fascia behind the upper fascia just enough to prevent control knobs from protruding into the aisle. On my layout this ended up being 2-3/4 inches in from the upper fascia.

I attached the lower fascia to the layout with L-shaped mounting brackets from a hardware store, informally called “angle irons.”

I screwed one surface of the right-angle bracket to the bottom of the joist, and I screwed a piece of scrap wood (a one-by-two or anything larger) to the vertical surface of the angle bracket. I then in turn screwed the Masonite fascia to the wood scrap.

The height of the recessed fascia isn’t critical. It should simply be tall enough to accommodate the largest piece of hardware that will be mounted on it. In the case of my Wisconsin Western Railroad, that is Digitrax throttle plug-in plates.

My recessed fascia also has push-rods with spherical knobs to activate the Blue Point switch machines.

1. The lower-level recessed fascia is tall enough to accommodate all the control devices that mounted on it. The indoor-outdoor carpet provides a warm “finished look” to the layout.

CARPETING THE FASCIA

My introduction to carpet-covered fascia came from Allen Keller's V&O DVD in which Allen McClelland demonstrated his technique. I liked it and adopted it as the standard for my new layout.

Fascia color is a matter of personal judgment. The few colors of indoor-outdoor carpet limits color choices somewhat. I wanted a dark green color but I thought too bright a green would attract attention and black would be too stark.



I chose a gray/green which I feel nicely complements the layout scenery.

I measured the amount of carpet I needed for the entire railroad and bought it all at once, just in case the color might be discontinued before I finished the layout.

The carpet comes in 12-foot-wide rolls. I bought it in 6-foot lengths and then rolled those pieces crosswise from the way they had been on the store roll. In other words, I ended up with a roll 6 feet wide and 12 feet long. I did this while I was still in the store.

I did this for a couple reasons: first, I could carry a 6-foot roll alone, and it fit in my car.

I had space enough on the floor at home, which is where I cut it. It yielded pieces six feet long and the width of my fascia, making it quite manageable for one person to install.

And, the grain of the carpet – a very fine corduroy – runs vertically, which makes the butt-joint from one piece to the next match perfectly.



2. One piece of indoor-outdoor carpet has been installed on the Masonite backing for the lower-level recessed fascia.

I installed the carpet on the sub-fascia with Loctite glue. It comes in caulk-gun tubes, and I was able to smooth the beads easily with a putty knife. It also comes in plastic buckets which I found *even more convenient* to use.

I started out trying to use carpet glue, but that just made a terrible mess with the results no better than using Loctite. The glue should just cover the surface of the Masonite; applying it thick gives no extra advantage.

Some Masonite has one side that's rough. On general principles, I would guess that the rough side holds glue better, but I have glued carpet to both smooth and rough Masonite with no difference in results that I can see.

I installed the carpet in 6-foot sections. I stopped applying glue about an inch short of the end. When I installed the next piece, I raised the end of the previous piece and applied glue under it along with the next 6-foot section. I let the glue dry for 24 hours.

Where the carpet had to be cut to a final scenery contour on the fascia, I mounted the carpet and let the glue dry. Then I used a hook blade in a carpenter knife. I just walked along with the knife and cut the carpet quickly, easily, and perfectly in one pass.

At first, I applied Velcro to the backs of my throttles and stuck them onto the carpet when convenient. Soon I noticed that the carpet was becoming frayed in areas of frequent Velcro use, so I stopped the practice. The carpet is very durable – I find no fault with it – but it wasn't intended to be used to hold Velcro.

I cut the bottom fascia carpet piece to the exact width. The upper piece is either the exact width (where the layout surface is flat) or ever-so-slightly taller than the highest scenery contour.



3. White control knobs reflect the light from colored LEDs to indicate turnout position. Green represents normal (generally the straight route), while the red represents a reversed turnout (the curved route).

LIGHTING

I mounted spherical knobs at the end of wood dowel push rods on the recessed fascia. I attached the push rods, in turn, to Blue Point switch machines that control the turnouts. I painted the knobs white.

I added colored LEDs directly above the knobs, so the colored light reflects off the knob and creates the impression that the knob itself is illuminated. In person, it looks fantastic! But, I've yet to find a camera that captures the look of it to do it justice. The photos here give only a general idea of the effect.

I mounted red and green LEDs side-by-side directly over the control knobs and as close to them as possible. I use white LEDs to illuminate throttle plug-in plates. People standing in the aisles can't see the LEDs.

Installation is simple. I place the LEDs side-by-side at one edge of the Masonite; the hookup wires protrude through to the other side. I glue the light assembly to the back of the upper fascia with hot glue. It only needs to be held in place for a few seconds to become permanent.

I don't label the controls. I put the turnout knobs directly in line with switch points to make using them intuitive. I install indicator LEDs above all turnout control knobs.

I'm thinking I may disconnect the lights from all but the main-line knobs, so an engineer can see at a quick glance how the turnouts are lined for his route.

Here are the components I used for recessed-fascia lighting, all from Digikey:

- 67-175ND 5mm round green LED
- 67-1610ND 5mm round red LED
- 67-1691ND 5mm round white LED
- F14580RCT-ND 680 ohm 1/4-watt resister

CONCLUSION

Carpet-covered recessed fascia is just what I wanted for my Wisconsin Western Railroad.

Everything remains conveniently in place on the fascia and nothing is harmed when people brush against it. My three-foot aisles are actually *three feet wide* – no shelves or controls protrude into the aisle space.

The recessed fascia serves its purpose with no controls ever having been damaged or turnouts inadvertently switched. Layout

builders have several great choices for constructing fascia; my method is one that works well. ☒



TIM MOATS



Tim Moats is a lifelong model rail-roader and railfan. He built starter layouts as a high-schooler, but as an adult, the Wisconsin Western is his first basement-filling

layout. The WW is a present-day “might-have-been” portrayal of a railroad in his home region.

Since writing this article, Tim suffered major flood damage which filled his train room with nearly eight feet of water. It is common to hear layout builders say, “If I had it to do again.” Tim has to do it again! He is now optimistically building “Wisconsin Western, Version 2.0.” When not bailing flood waters, Tim works in the printing industry. This is Tim's first model railroad article. ■

1. The photo that inspired this loco project. *Kent Cochrane photo, collection NHRHTA Inc., used with permission*



Fortunately, Life-Like produced the RS-2 factory-painted in this livery in the early 2000s as part of their Proto 1000 line. Unfortunately, it had no details! No grab irons, no lift rings (all of which are pretty standard on models nowadays), and of course no “New Haven specific” details.

I took these photos of a friend’s unit to show you what I mean [2-4].

The factory paint job was too good to pass up, so I decided to try to add all the details without stripping the shell.

A DERS-2b for the Valley Local

Running Extra | September 2019

CHRIS ADAMS super details a factory painted New Haven Alco RS2, step-by-step ...

SOMETIMES, JUST ONE PHOTO CAN INSPIRE A whole new modeling project. Such was the case with this photo of New Haven Railroad DERS-2b (Alco RS-2) #0503 on the Air Line Local in Middlefield, Connecticut. After seeing this photo, I wanted one for my model of the Valley Local, which interchanged with the Air Line in Middletown, Connecticut.



2. Note the absence of hood grab irons. The pilot detail is cast on, or in the case of air hoses, missing altogether.

Read on to see how you can learn techniques and make some tools to super detail a factory painted model without damaging the factory paint.



3. No lift rings anywhere on the top of the hood, and there's only one horn.

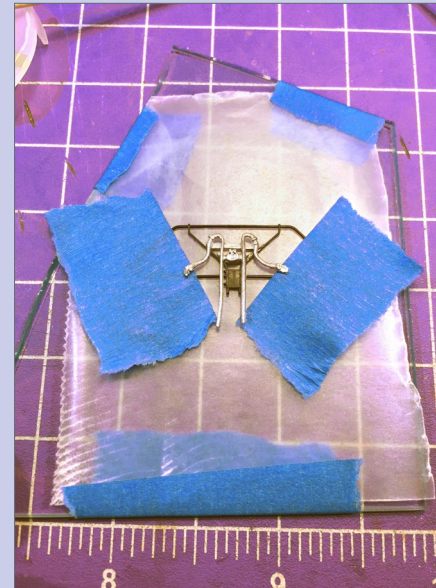
4. The top of the short hood needs at least a horn and lift rings. Then there are the steam generator details that these New Haven engines had.



STEP 1: THE MU STAND

While mustering up the courage to attack the beautiful new shell with my pin vise, I decided to start by adding MU stands to the end railings.

Problem is, the part (CF #347) is diecast metal while the end railings are made of a Delrin-type plastic – not two materials likely to stick together easily. So I decided to innovate a bit.



5. I aligned the cast metal MU stand over the Delrin hand-rails I had taped down to waxed paper.

First, I taped the end railing down to waxed paper to hold it in place and keep it from sticking to anything I didn't want it sticking to [5].

Then I positioned the MU stand, noting where it would touch the railings (primarily where the crosspieces touch the inside of the railing's "V"). I had to file the crosspieces on the metal stand a bit to get things to fit snugly inside the "V".

Now that I knew I had a good fit, I removed the metal casting from the handrails.

STEP 1: The MU STAND *CONTINUED* ...

Next I put a large drop of contact cement in a water bottle cap and used a toothpick to apply it to the contact points on the railing and on the stand. Just a little will do – you don't want too much gooping up and looking nasty.

I waited at least 15 minutes for the contact cement to set up, then I carefully put the stand in place – as above [5]. Since it's contact cement, I had only one good try to get it right, so I worked slowly.

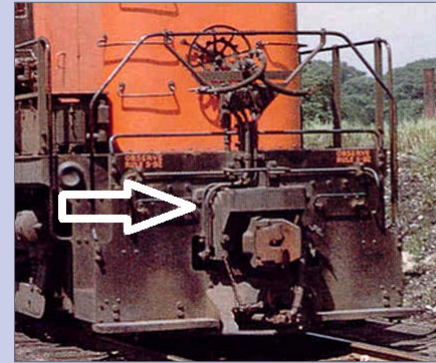
Once it's fully cured, it forms a strong bond. How strong? Well, I haven't tried to separate the parts, but I can tell you that I bent the pipes while holding the stand/railings with my fingers and nothing broke free.



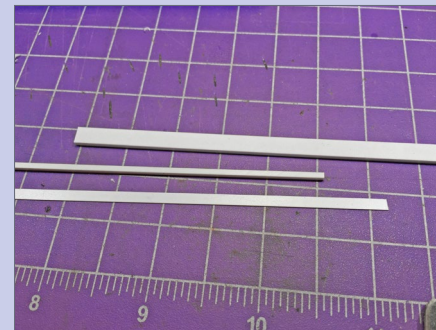
6. Cast metal MU stand securely held in place with contact cement.



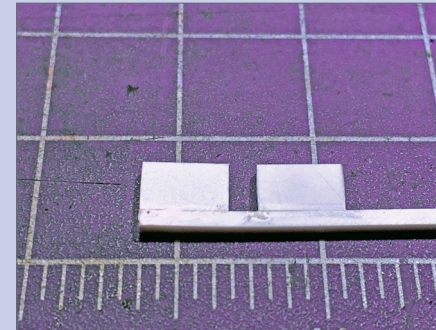
STEP 2: PASSENGER CAR DIAPHRAGM BUFFER



7. Next, I decided to get rid of the bulky stock coupler box and replace it with a Kadee coupler box and a scratch-built diaphragm buffer, since no proper detail part is available.

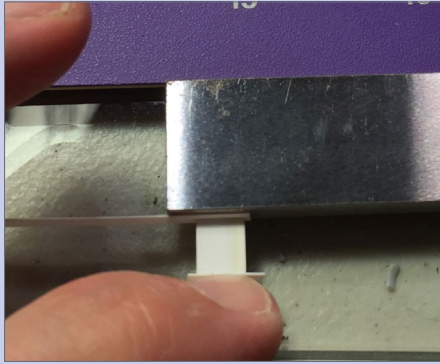


8. I started with a strip of 0.060" x 0.188" for the top part of the buffer and HO scale 1x10 (0.011" x 0.112") for the sides. I quickly discovered that 0.188" wouldn't get me out past the end of the coupler box, so I had to lengthen it with a strip of .060" x .060" styrene [9].

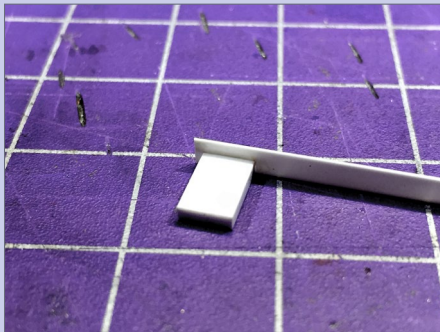


9. It's easier to use a long strip as a handle, gluing to both buffers at the same time, which I did on a piece of glass to make sure everything was flush. Then I trimmed it to fit. The buffers are 0.31" wide to allow the sides to clear the sides of the KD coupler box. Next time I'd start with a little

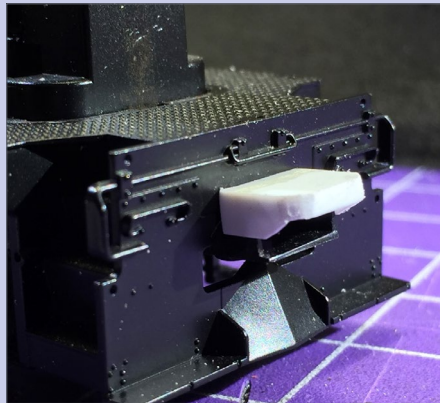
larger strip, more like 0.060" x 0.250" instead.

STEP 2: PASSENGER CAR DIAPHRAGM BUFFER *CONTINUED ...*

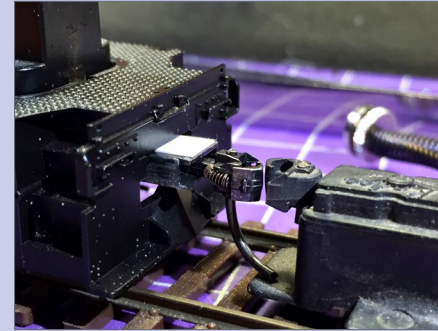
10. Next, I added the sides as above. In addition to the perfectly-flat surface of the glass, I made sure the side was perfectly vertical by pressing it against a machinist's square as I added liquid styrene cement with a Microbrush.



11. This is the result. Repeat three more times. Or make some extras and pick the best.

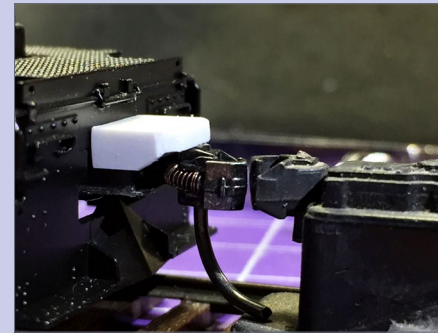


12. I sanded and filed the corners of the main buffer, then trimmed the sides and cut the corners off at an angle to match prototype photos.

STEP 2: PASSENGER CAR DIAPHRAGM BUFFER *CONTINUED ...*

13. Once I placed the buffer on top of the Kadее coupler box, I discovered the buffer was too low, preventing the coupler from moving freely. I fixed this by adding a 0.010" shim between the top of the coupler box and the frame/buffer. And as a bonus, this put the coupler at exactly the

correct height! (It had been ever-so-slightly high before, like say about 0.010" too high ...)

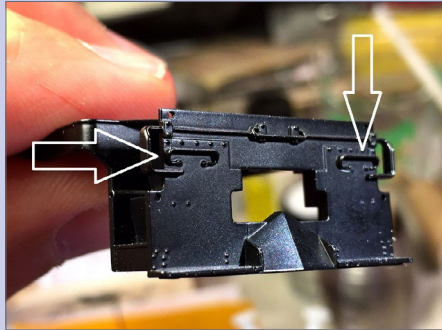


14. The coupler still rubbed on the buffer a little, but I filed a little material away from the underside end of the buffer until the coupler swung freely.



STEP 3: PILOT DETAILS

I had planned to replace the molded-on coupler lift bars and pilot grabs with wire. Detail Associates makes the right bar though the mounting brackets aren't correct for my prototype. But who makes these crazy grabs?



15. These grabs seem common on the prototype, and very distinctive with those double bends. I figured I'd need to make some sort of jig to bend wire, but as I was rummaging through some stuff looking for something else, I found a Kato handrail set [16].

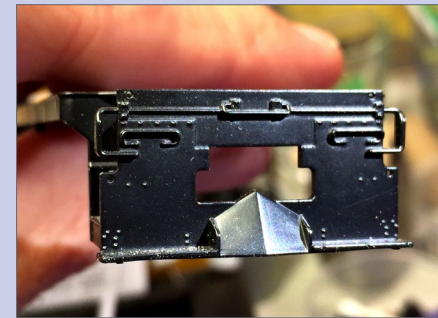


16. I found the hood grabs to be too oversized for my taste, but this package included not only the funky pilot grabs, but also coupler lift bars with the proper mounting brackets!

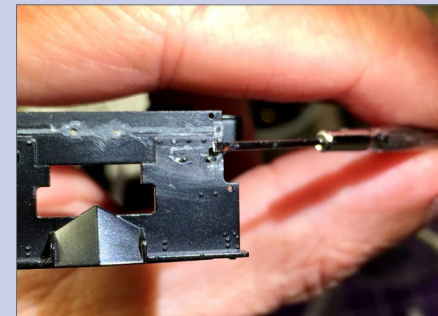
STEP 3: PILOT DETAILS *CONTINUED ...*

Although these particular details are plastic rather than wire, I can live with the extra few thousandths of an inch difference in thickness to save the effort of scratchbuilding these parts.

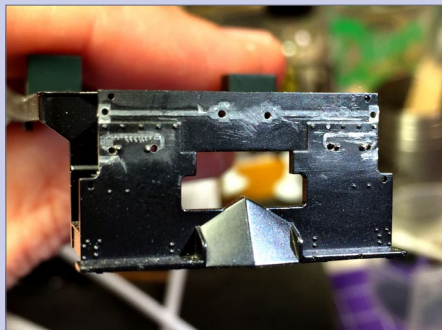
Before I could install the new details, I had to remove the old ones. Since I wanted to preserve the rivets and nut-bolt-washer (NBW) detail, this turned out to be more difficult than expected.



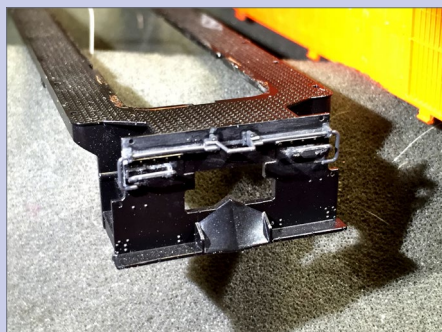
17. Here's what I started with. I used flush-cutting sprue nippers to cut away as much detail as I could. Then I used a small chisel (Micro-Mark #80893) which worked well until I had to remove the grabs. I found the area I needed to carve down to be just too tight and narrow for the chisel.



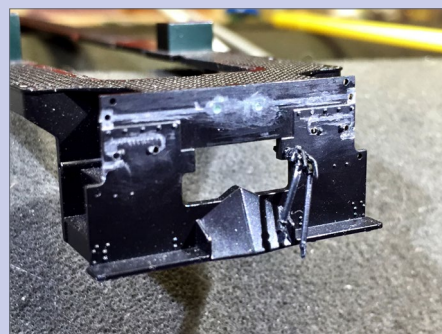
18. Since I have a number of cheap little screwdrivers, I decided to sacrifice one by filing the tip down to make a very narrow chisel (above). I took extra care to do a good job chiseling away detail. With time and patience, I did get everything off while preserving the surrounding detail.

STEP 3: PILOT DETAILS *CONTINUED* ...

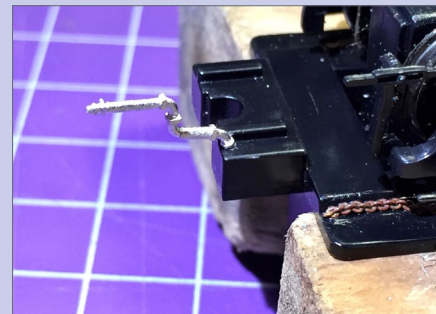
19. Here's the result with all the molded-on detail removed. The rivets and NBW castings survived and holes have been drilled to accept the Kato details.



20. The Kato details just press-fit into place, which is why the left grab is droopy. We'll fix that later!



21. In addition to the air brake hose (KD #438), I also added additional details specific to passenger service, including a signal hose (HTD #6039).

STEP 3: PILOT DETAILS *CONTINUED* ...

22. I also added a steam heat pipe (CF #336) to the left of and below the coupler. Like the other details, I drilled the hole to test-fit the part and set the part aside for painting later.

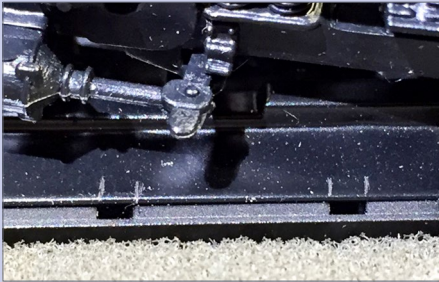
STEP 4: HAND BRAKE CHAIN GUIDES

I continued detailing the frame by adding a speed recorder and chain guides for the hand brake. There's a chain guide on each side of the locomotive at the short-hood end where the brake wheel is.

When you apply the hand brake, it pulls on these chains, which in turn pull out the brake pistons and applies the brake shoes to the wheels. It's not a detail that's typically included on models, but once you know what's supposed to be there, you notice when it's *not there*.

The parts I used (CF #147) consist of a main guide and a roller. The guide aligns underneath the handrail stanchion closest to the cab, with the roller a little further toward the end of the walkway.

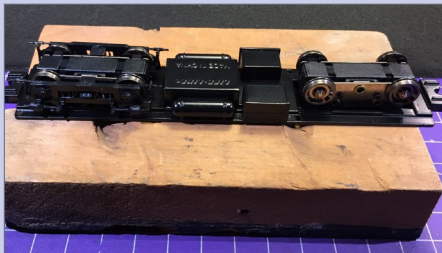
The problem on the Proto1000 RS-2 model: how do I actually mount the parts?

STEP 4: HAND BRAKE CHAIN GUIDES *CONTINUED* ...

23. The underside of the frame on the model (shown here in an extreme closeup with the underside of the frame facing up) consists both of the model's metal chassis (on top, here) and the plastic walkway (underneath in this photo). The

slots you see above in the plastic walkway align with the tabs on the bottom of the handrail stanchions. The chain guide part is slightly wider than the walkway portion of the under-frame, so I could not just mount the part on the underside of the plastic walkway.

Mounting the part on the plastic walkway would put it too far "outboard" and, more importantly, I wouldn't be able to remove the walkway because the part would keep me from lifting the walkway off the metal chassis. I decided to mount the part *on the metal chassis* and marked the locations of the plastic walkway stanchion slots with notches on the metal chassis as you see above [23].

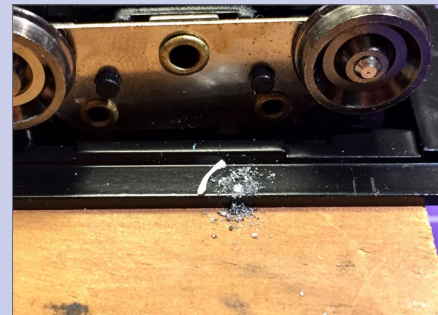


24. Before drilling the mounting holes, I got a couple of pieces of 2x2 to make a sturdy cradle for the chassis. The side of the metal frame (that supports the walkways) just rests on the wood, which provides

strong support for drilling.

STEP 4: HAND BRAKE CHAIN GUIDES *CONTINUED* ...

25. Here are the 2x2s from the other side, with the loco frame guts sandwiched in between. The 2x2s keep the delicate decoder wires from resting on anything while drilling.

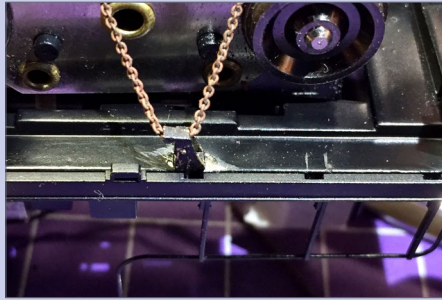


26. With a sturdy base, I marked and drilled the mounting holes as close to the edge of the metal as I could, being careful to keep the bit lubricated often with bar soap since I'm drilling through metal. A motor tool flex shaft and foot pedal control

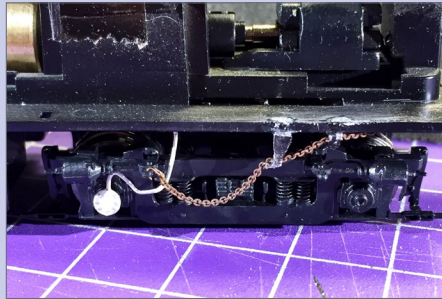
make this job much easier.



27. The part is supposedly cored for a 40 links-per-inch chain, but I had to ream out the hole to allow A-Line chain to pass through. I used canopy glue to attach the part to the frame.

STEP 4: HAND BRAKE CHAIN GUIDES *CONTINUED* ...

28. Here's how it looks with the plastic walkway in place. Ideally, the chain guide would be mounted over the joint between the walkway and chassis, but that would prevent removal of the chassis.



29. Even though the chain guide runs slightly inboard, it still looks good. I drilled a hole in the end of the brake lever and attached the chain using a fine wire hook. I also added the speed recorder on the fireman's side truck (DW #SR284).

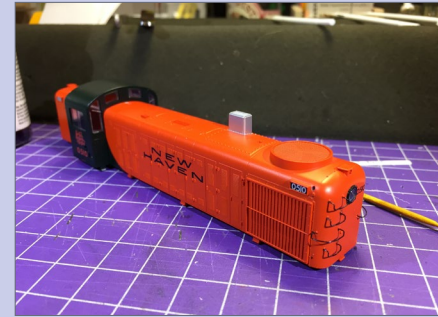
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STEP 5: HOOD GRAB IRONS AND MARKER LAMPS

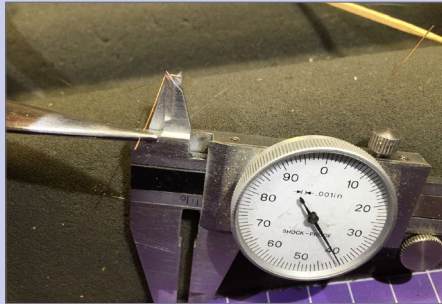
After completing the detailing from the walkways down, I finally got enough courage to tackle the factory-painted body. Thankfully, the NBW detail for the grabs cast into the shell helped me know exactly where to drill.



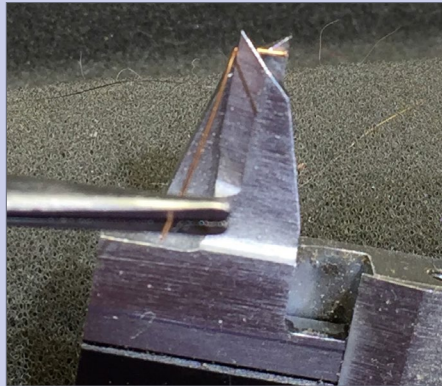
30. I drilled mounting holes for the markers centered above the electrical socket castings and eyeballed the locations for the holes for the top grab, drilling on the molding seam and straddling the right side of the NBW castings.



31. For the remaining hood grabs, I wanted to use Custom Finishing #205 curved grabs for RS units, but discovered they were straight rather than drop grabs. I used Cal-Scale grabs (#190-533) instead, but I still had to form the long curved grabs from scratch. The Cal-Scale "RS Corner Grabs" (#190-529) don't work – they're too long for where the NBW castings are on this model.

STEP 5: HOOD GRAB IRONS AND MARKER LAMPS *CONTINUED ...*

32. I use a dial caliper to bend wire at precisely the right length. To make the long curved grabs, I needed to make a bend at exactly 0.040" – so I set the caliper at 0.040" and used the internal jaws to make my bend, as you see above.



33. I set the end of the wire at one side of the jaws and used the other jaw to make my bend.

Once I had the long grabs bent to shape, I "painted" all the grabs with a black Sharpie marker and glued them from inside the shell with CA.



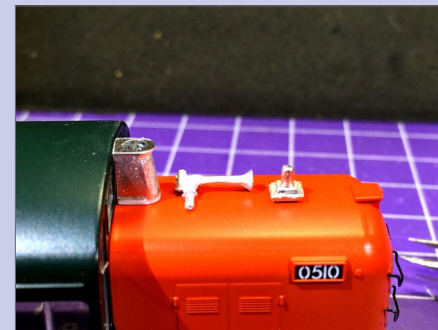
STEP 6: SHORT HOOD DETAILS AND LIFT RINGS

Like many railroads, the New Haven used Alco RS units in both freight and passenger service, so I needed to add steam generator detail. Since the bottom of the steam generator exhaust stack (CF #151) is flat, I needed to curve it to match the profile of the hood to eliminate any gaps at the bottom.



34. I sanded the bottom of the detail to conform to the curve of the hood. I used some plastic wrap between the car body and the sandpaper to protect the model's finish. I held it and the sandpaper tightly to the curve. I just moved the detail back

and forth to sand the curve into the base. It took some care and patience, but it worked well.

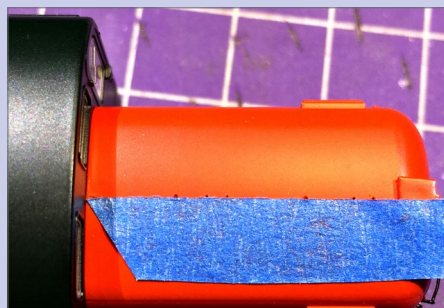


35. Extra details placed temporarily for location on a pristine short hood top, including the steam generator intake (CF #346). I replaced the model's horns with the proper Wabco "E" type horn the New Haven used (DW #AH-174).

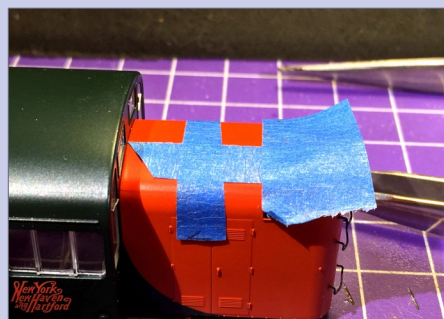
STEP 6: SHORT HOOD DETAILS AND LIFT RINGS *CONTINUED ...*

While I found placing the stack to be straightforward (back of cab between the windows), all of the remaining details need to be placed without the benefit of NBW castings or locating dimples.

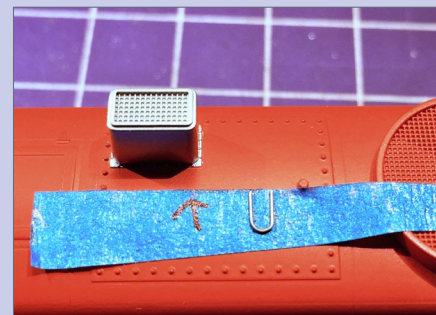
I needed to figure out a way to mark the model to locate where to drill all the holes for the extra details. The solution: masking tape.



36. I use the factory edge of the tape instead of marking a line. Here, I used it to mark a center-line for the details on the short hood.

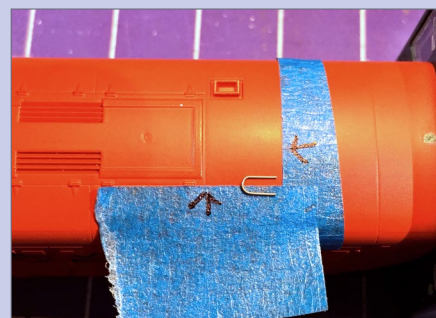


37. To get the fore-aft placement, I used crosspieces of tape lined up with features on the sides of the hood, in this case between a door hinge & louver and the end of the number board. I just marked and drilled in the corners. You can see the holes I drilled in [36]. I enlarged the holes as needed to dry-fit the parts for now.

STEP 6: SHORT HOOD DETAILS AND LIFT RINGS *CONTINUED ...*

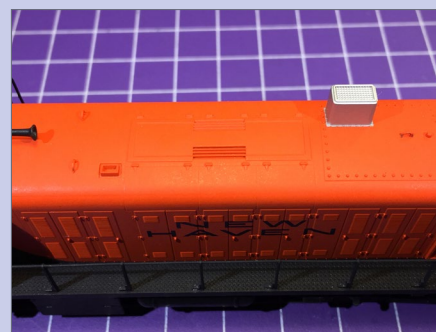
doors from the front.

38. I used a similar technique to locate the holes for the lift rings on the long hood (DA #1107). Using prototype photos, I determined that the frontmost lift ring gets mounted longitudinally with the front leg in line between the first and second hood



factory (straightest) edge is.

39. The lift rings toward the cab get mounted cross-wise with the inner legs in line with the edges of the top access hatch, and the rings themselves in line with the front edge of the second hood door from the cab. The arrows remind me where the



40. And here's the result. Like the grabs, I painted the lift rings before gluing them in.

STEP 6: SHORT HOOD DETAILS AND LIFT RINGS *CONTINUED ...*



41. The last, and easiest, detail to add turned out to be the brake equalization valve (CF #308), mounted behind the cab on the fireman's side. This view shows the valve, along with the other details prior to final touch up painting.

STEP 7: PAINTING THE REMAINING DETAILS

Painting is one of those things that I always dread, which is why I started with a factory painted model in the first place! But the process is easier if you have some helpful tools.

Here are a couple you may not know about ...



42. This engine has a lot of details that need to be painted before they're applied. And many of those details are so tiny. I use old clothespins with the jaws reversed to make handy holders. On the parts, I just pinch the mounting lug that doesn't need to be painted anyway. I also used masking tape to hold a couple of details that didn't have anything to clamp on to.

STEP 7: PAINTING THE REMAINING DETAILS *CONTINUED ...*

I also wanted to spray some Dullcote on the truck side frames, fuel tank, and water tank prior to weathering with chalks and/or PanPastels.

The Dullcote not only tones down the glossiness of these parts as they come from the factory, but it will provide "tooth" for applying the powders.

The problem: I *really* didn't want to remove the truck side frames since I'd already attached the brake chain guides and speed recorder details. Next time I'll Dullcote them first.



43. Dullcote solution for targeting only some parts of an already painted model: I make a quick mask from cardstock. I placed it behind the side frames and used a pencil to mark where I needed to cut notches to allow it to nest down nicely over the axles and behind the wheels. This protects all the mechanical bits (motor, decoder, wires, trucks/gearing) but also keeps too much overspray from getting on the wheels, although I clean the wheel treads later with lacquer thinner. I use the 2x2 wood cradle to hold the chassis without damaging the decoder wires, see [24, 25].

I allowed everything to dry and cure completely over a couple days and then just glued the details from within the shell and put everything back together. Here's how it turned out [44, 45].

STEP 7: PAINTING THE REMAINING DETAILS *CONTINUED ...*

44. New Haven DERS-2b fresh from the shop, idling at Rocky Hill, CT.

Don't let the fact that a model is already painted deter you from adding details. As you can see from this project, it's not too difficult provided you take your time. And hopefully some of the tips and techniques here will encourage you to try it for yourself. Be sure to let us know if you do! ☒



45. Just needs to do some work to get dirty.

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LIST OF DETAIL PARTS ADDED

A-Line

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190-533 RS End Drop Grabs (2 pkgs)

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147 Handbrake Chain Guides

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308 Brake Equalization Valve

336 BARCO Steam Heat Pipes

346 Steam Generator Intake

347 MU Stand/hoses/plugs

Details Associates

1107 Lift Rings

Details West

AH-174 Wabco Type "E" single chime air horns

SR-284 Speed Recorder

Hi-Tech Details

6039 Signal Line Hoses

Kadee

438 Air Hoses

Kato

952061 Kato RS-2 Railing Set (for coupler lift bars and pilot grab irons)

Miscellaneous

Passenger Car Diaphragm Buffers (scratchbuilt from strip styrene) ■

CHRIS ADAMS



Chris Adams has been into model railroading, off and on, for almost 35 years after having "borrowed" the train set his kid brother got one Christmas after his brother got bored with it later that day.

Chris is primarily into the historical research side of

the hobby, using his layout to create a "time machine" back to the New Haven Railroad of the late 1940s. When he's not in the basement, he enjoys cycling, reading, and maintaining a website dedicated to railroading in the lower Connecticut river valley at www.thevalleylocal.net.

He also volunteers as a photo archivist for the New Haven Railroad Historical & Technical Association (NHRHTA), works full-time as a legal counsel for the Connecticut General Assembly, and occasionally as a steam locomotive fireman and student engineer at the Valley Railroad in Essex, CT.

Chris lives with his wife Debby in Old Saybrook, Connecticut, within ear shot of the steam trains on the Valley Line. ■





Also on TMTV!

New national model railroading Museum project



JOE FUGATE spoke with **Bruce Chubb** about his new model railroading museum to be built in Grand Rapids

1. I spoke with Bruce Chubb recently (standing behind me in the dark blue shirt) about his new model railroading museum project. Bruce hopes to display the Sunset Valley along with two other large layouts in a new model railroading museum to be built in Grand Rapids, MI.

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MRH Running Extra | September 2019



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I FIRST MET BRUCE CHUBB IN PERSON IN

1993 when he invited me to stop over in Grand Rapids on my way to the NMRA National Convention in Pennsylvania.

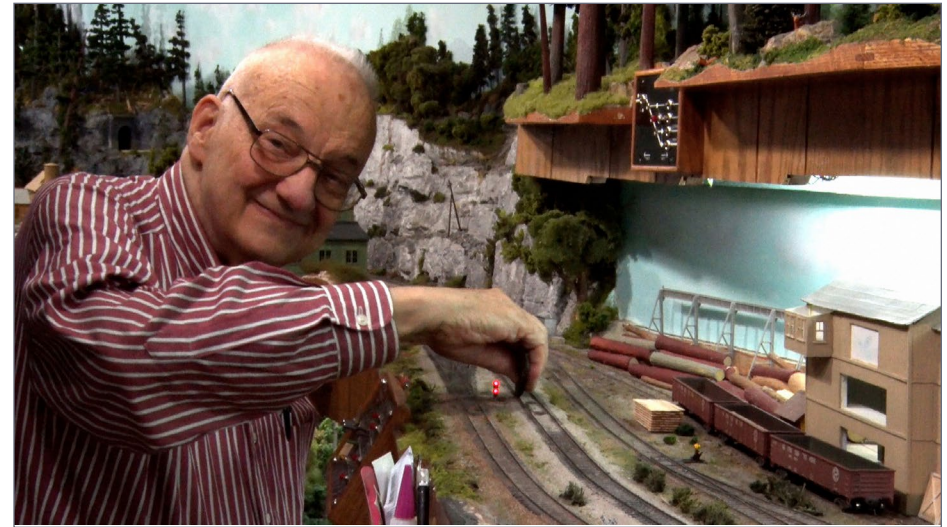
Bruce had moved and begun planning his new Sunset Valley. He wanted the new Sunset Valley to be based in Oregon as a proto-freelanced version of the Southern Pacific following the route of the SP's secondary Siskiyou Line in southern Oregon. Given that I model the Siskiyou Line, Bruce eagerly wanted to speak with me in depth about the Siskiyou Line.

Bruce and I have remained good friends through the years and the fact we're both modeling Oregon means we have a lot in common with what we're modeling. A few years ago when visiting the Sunset Valley, Bruce shared with me his intention of building a model railroading museum to house the Sunset Valley for posterity.

In the last year or so, Bruce has put some legs on his dream and started the process of making this museum a reality. With this news, I just had to go visit Bruce and get the inside scoop on this exciting dream of a new national museum celebrating the hobby of model railroading, with the Sunset Valley as its centerpiece.

THE BEGINNING: PERMANENT HOME FOR THE SV

When I spoke with Bruce about his museum dream, he told me he's always intended that the Sunset Valley to somehow outlive



2. Bruce wants the Sunset Valley to outlive him as a key layout on display in a new model railroading museum project he has spearheaded. The project is in the planning stages now with a board of directors, architect plans already drawn up, and 501(c)(3) funding underway.

him. For that reason, he built the SV to be modular and easy to move. As Bruce explains ...

I felt this layout to be my lifetime dream and I'm going to spend a lifetime doing it, so I want to make it modular. Then if and when I have to move, the layout can come along because it's modular. So that's always been my goal.

The whole thrust for my life has been the Sunset Valley and making it a museum-quality, world-class model railroad, worthy of preservation.



Model Railroad Magazine. Used by permission.

THE ORIGINAL TOMA MODELER?



J. Fugate

Ironically as I got into the details of this museum project with Bruce, I discovered Bruce is the *original* TOMA modeler! That's right, Bruce was advocating and practicing **The One Module Approach** over 45 years ago – and he's on record because he wrote about exactly that in the hobby press!

In his "Pieces of Sunset" article back in the November 1973 issue of *Model Railroader*, Bruce advocated building your layout piecemeal in another location outside the layout room. He recommended you build each section all the way to completion in a space specifically dedicated just to layout construction.

This way, Bruce suggests, you can work in comfort and do your best work. That also keeps the mess out of the layout room!

Once complete, bring the finished module section into the layout room and add it on to the rest of the layout, also built as module sections.

Wow.

There's no two ways about it, Bruce was advocating what MRH now calls TOMA!

And more than merely advocating this approach, Bruce *lived* doing TOMA because that's exactly how he has done the Sunset Valley. Thanks to this approach, Bruce has been able to move the Sunset Valley wholesale to a new house and seriously kickstart a larger layout by adding on to the original module sections with more new module sections.

Bruce can now seriously pursue moving the Sunset Valley wholesale into a museum space. Thanks to the TOMA-like modular methods Bruce adopted way back when, his layout can now easily be relocated, even to the point of outliving him. Wow.

That's a pretty powerful testimony for the value of using TOMA on a home layout.

For a bibliography of MRH's TOMA coverage, see the link below.

WEB: mrhpub.com/2017-08-aug/online/?page=22



Also on TMTV!



RATE THIS ARTICLE

Bruce is clearly a visionary model railroad layout builder, foreseeing the value of TOMA home layout building methods more than 45 years ago! (See “The original TOMA modeler? Sidebar.)

Building the layout in sections outside the layout room has paid off – Bruce can now explore moving the Sunset Valley wholesale into a museum. Building the layout from day one to be relocated en masse does one thing superbly: it preserves the thousands of hours of work that Bruce put into his layout.

TEAMING UP WITH A RETIRED ARCHITECT

Bruce has teamed up with model railroader and retired architect Ralph Moxley to finally get serious about his model railroad museum dream. Ralph explains ...



Bruce



Ralph

3. Bruce has teamed up with model railroader and retired architect Ralph Moxley in order to finally put legs on Bruce’s dream of preserving the Sunset Valley in a model railroading museum.

About two years ago, Bruce and I started talking about developing a facility to relocate his Sunset Valley railroad to somewhere here in Grand Rapids. Bruce’s layout is really a world treasure. People literally come from all over the world to see the Sunset Valley and we get tons of visitors to operating sessions on a regular basis. We’d hate to lose all that at some point.

Bruce, like all of us, is not going to be around forever and we really want to preserve what he has done here.

We started talking about how might we make this an ongoing, long lasting thing? We looked at setting up a Michigan 501(c)(3) and setting up a board of directors. I ended up the president of the board of directors. Currently we have nine members on the board.

We also felt we needed to make this a tax-deductible organization so that we can accept donations from whoever’s interested in helping us out. So we did a 501(c)(3) application with the IRS and that’s approved.

We meet on a monthly basis now as a board of directors to talk about where we can go with this. We definitely want something right here in Grand Rapids. The closer to the Chubb residence it gets located, the better as far as I’m concerned.

It started out with just Bruce Chubb’s Sunset Valley in about a 17,000 square foot facility.

As Ralph explained, the project started out with just Bruce’s Sunset Valley, but they’ve now expanded beyond that.

THE DALE BERGER THREE-RAIL LAYOUT

About a year ago, a prominent local businessman, named Dale Berger, passed away. Grand Rapid residents know the Berger car dealership well, but Dale also ardently collected O scale high-rail model trains. Dale also built a nice layout for running and displaying the trains.



4. Recently deceased Grand Rapids businessman Dale Berger collected O scale three rail trains and built a nice layout to display them. Ralph and Bruce hope to preserve Dale's memory and collection in the new model railroading museum as well.

With the passing of Dale Berger, Bruce realized this could be an opportunity for the model railroading museum and a fitting way for the Berger family to preserve Dale's memory and share his model train passion for all to enjoy.

I realized, hey, there is another world-class model railroad in Grand Rapids area, an O gauge three rail layout and collection of MTH and Lionel that is one of the best in the world. That's the layout and collection of Dale Berger, a leading car dealer and statesman in the Grand Rapids area who recently passed on.

Ralph continues ...

I contacted the family and told them we'd love to preserve what Dale has created here because it's so unique. It's just a beautiful model railroad in O scale.

And more than that, his collection must include over 2000 cars and engines – many of which have never even been run. They literally line all four walls of the Berger layout room. The family seems quite interested in having this layout preserved.

We came in and figured out how to run the Berger layout. They didn't even know how to run the trains, so we showed them how to do that.

Bruce adds ...

That O scale three-rail railroad could almost be a museum in itself. Many of us model railroaders had our foundation with three rail Lionel railroads around a Christmas tree.

So people can go back and enjoy the history that's a founding element of the whole model railroading hobby. We are preserving that memory as a national treasure.

I put that on an almost equal basis of preserving the Sunset Valley as a national treasure. Both of these model railroads will be tremendous draws and both of them are world-class in their own right.

But having now two model railroads – one modeling 1950s Oregon in HO and another displaying the hobby's roots in O scale three rail begs the question for a Michigan museum about model trains.

What about rounding everything out by also modeling modern day Michigan railroading?

N SCALE MODERN MICHIGAN LAYOUT

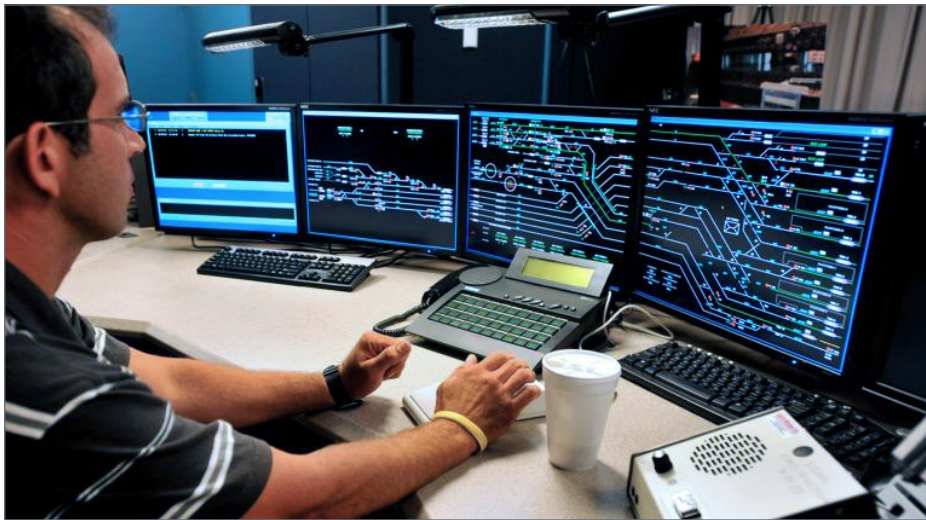
After some discussion, the board decided the museum still seemed to be missing something. Bruce elaborates ...

MUSEUM PROJECT | 11

The Sunset Valley models Oregon in 1955 during the heyday of private rail transportation before the government and Amtrak came in and before a lot of railroads consolidated.

The O scale Berger railroad shows the hobby's roots with highlights from all North American railroads. But the museum will be in Michigan, so I'm sure some will ask, what about today's railroads in Michigan?

We also need to model modern-day railroading with high-speed Amtrak, long intermodal trains, and with scenery dominating the railroad. We decided we should model lower Michigan and



5. The model railroading museum board also wants to add a sizeable contemporary N scale layout to round out the layouts on display. As a contrast to the Sunset Valley's 1950s buttons and levers CTC dispatching, the N scale layout will use modern-day computer touch screen dispatching not unlike what you see in this photo here from Wikipedia.

MUSEUM PROJECT | 12

show the three major rail lines that go across lower Michigan, but do that in modern times.

So we elected to devote over 2000 square feet to an N scale railroad, which is equivalent to almost my present basement, some 2,600 square feet in HO. In N scale, 2000 square feet is a monumentally huge railroad.

All dispatching of trains all be modern touchscreen computer graphics. This will provide a great contrast to our lever type machines in the 50s. We expect it'll be a huge attraction, so that's our longer-range goal to add in the N scale layout.

First we'll set up the Sunset Valley and the Berger layout, and then we'll work on the N scale layout. We expect the N scale layout to be open throughout the construction period.

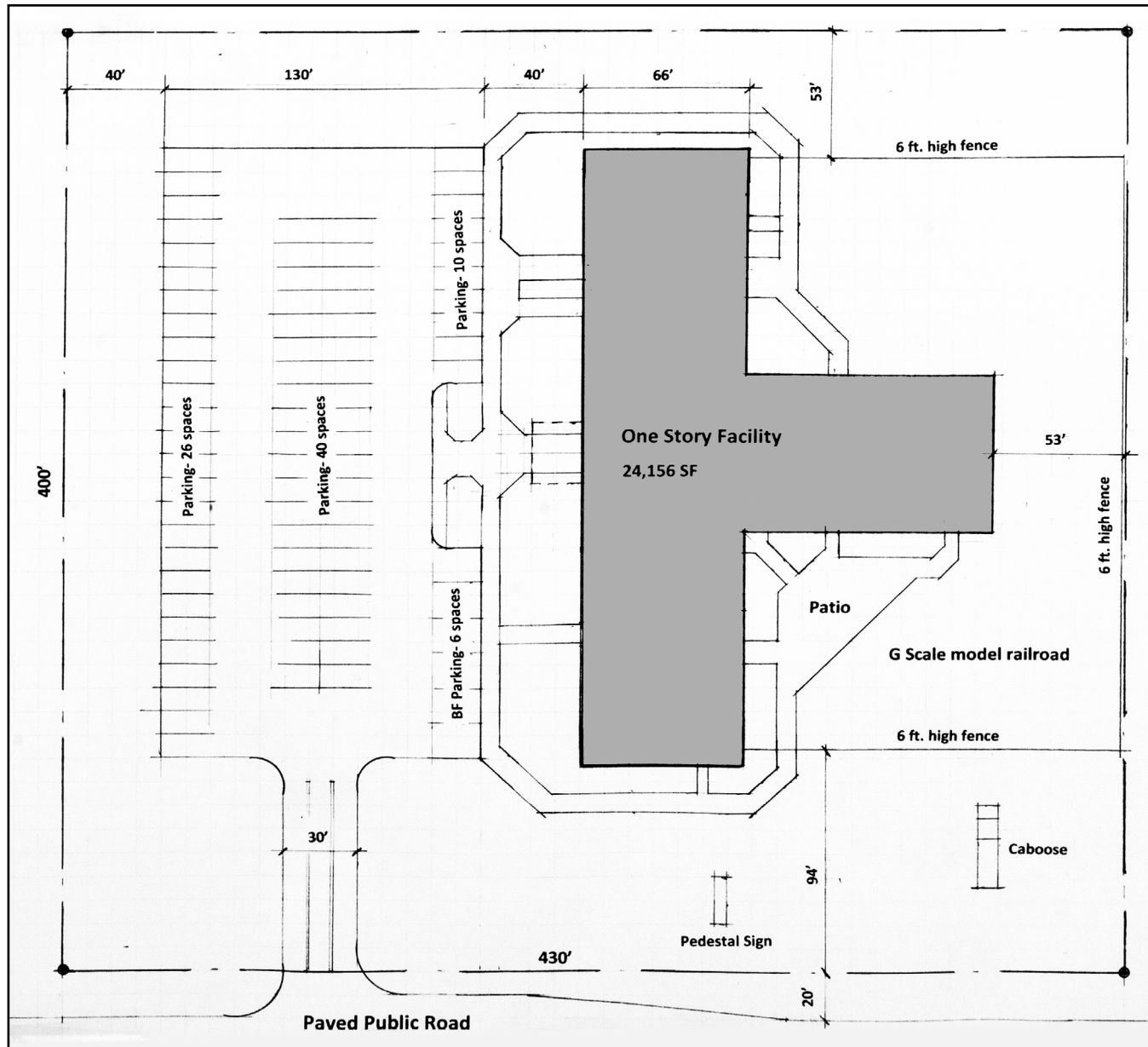
People can see it get put together with a goal of modeling major landmarks we can fit in from Grand Rapids, Holland, and Lansing.

Ralph continues ...

We've spent a lot of time thinking about the design of the building. I'm on my third design right now. It started out with just Bruce Chubb's Sunset Valley, then we shifted gears to add the Dale Berger O scale and now the contemporary N scale operation, along with the Sunset Valley.

Ralph's museum design features a large one-story T-shaped building on a 4-acre plot. Ralph says ...

The proposed Grand Rapids model railroad museum will be about 24,000 square feet. We want to keep it one story. No stairways, no elevators, no steps, no ramps, just keep it as simple as possible.



We kept it a simple T shape, with the main entrance centered on the front elevation. We have a side entrance also and an exit to the patio area in the back. The Sunset Valley will be located in approximately 7,600 square feet, which will allow for wide public aisles of approximately eight feet wide.

The T-shaped building also has the O scale Dale Berger layout down at this end of the building. And that's 52 by 42, or about 2100 square feet.

And at the opposite end we have the N scale modern Michigan operations, which is 64 by 32 feet, or 2048 square feet.

The site plot will be approximately four acres total and allow for about 80 cars of parking with six barrier free spots near the front door. We'll have sidewalks all around the building to allow access into the different layout rooms to bring in modules or whatever equipment we need to.



6. The model railroading museum design features a T-shaped one-story building on a 400' x 400' plot of land.



Also on TMTV!

MODEL RAILROAD MUSEUM

SCALE: 1" = 16'

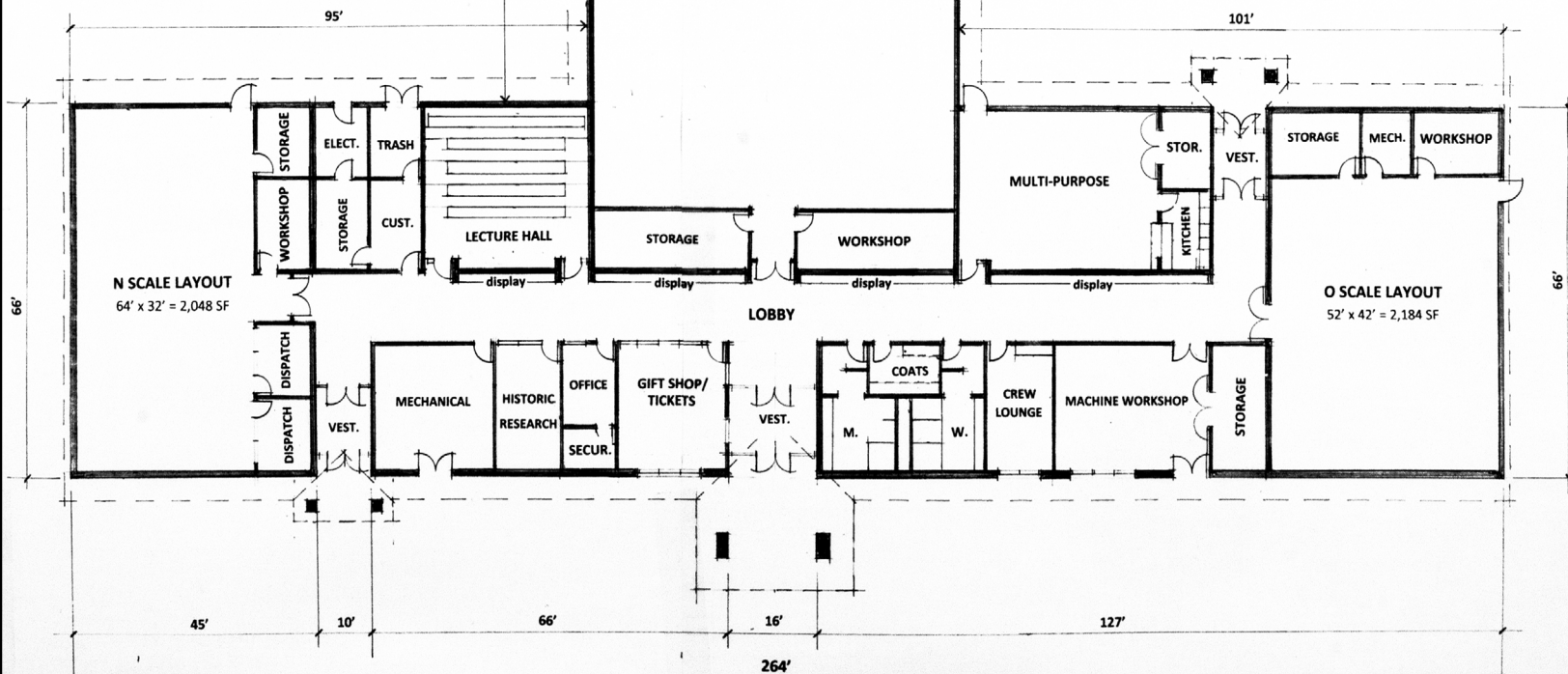
March 22, 2019

Grand Rapids, Michigan

GROSS AREA: 24,156 SF

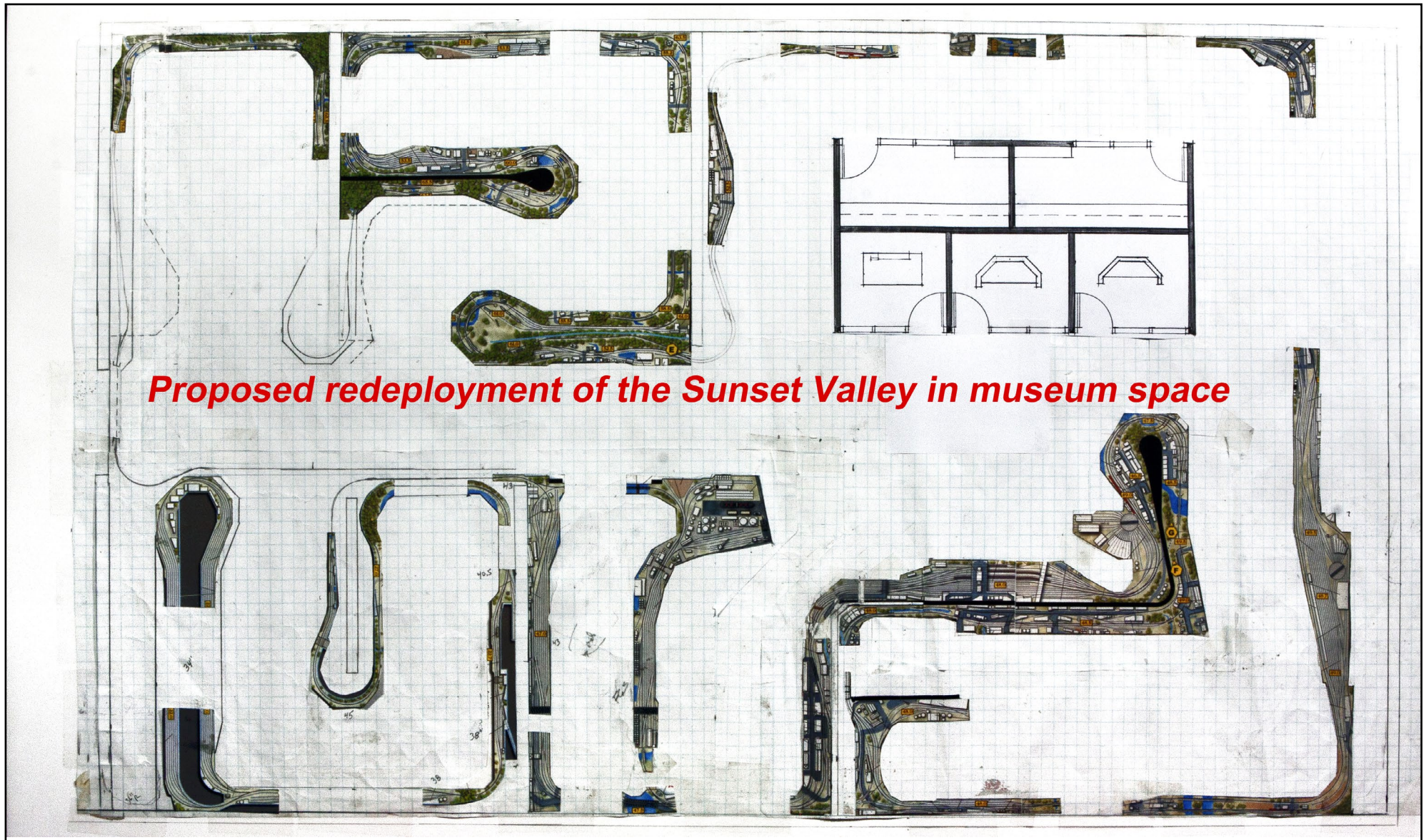
HO SCALE LAYOUT

66' x 116' = 7,656 SF



7. The inverted-T shaped museum will contain three layouts, one in each wing.





8. Redeploying the Sunset Valley into the much larger 7000 square foot museum space may look something like this proposed plan. Some key goals of the redeployment include

putting the current multi-deck layout all on one level and incorporating 8-foot aisles for easy public viewing.

We will have it landscaped so that it looks like it's been here for a long time. We hope to have it close to a public road with a sign out front indicating it's the Grand Rapids Model Railroad Museum.

We plan on having a caboose sitting out front, crossbucks and railroad signal lights to get the attention of the people driving by.

Our goal is to find a site that has public sewer and water and at least four acres. We're looking at some options right now.

A KEY MUSEUM GOAL: EDUCATION

As a 501(c)(3) non-profit corporation, the model railroad museum specifies a key mission goal: education. Bruce elaborates ...

S - Science
T - Technology
E - Engineering
M - Math

Adding ART makes it ...

S - Science
T - Technology
E - Engineering
A - Art
M - Math

9. Educators advocate STEM training as critical to educating the next generation properly for our modern high-tech society. Bruce and the board like a recent trend to add Art to convert STEM into STEAM, a rather fitting railroad term!

There is a great deal of emphasis now in public education and charter schools on STEM, standing for science, technology, engineering and math. These four disciplines are key ingredients of the sciences so vital and important to our modern world. And it highlights the core areas where our education system has fallen down compared to other countries that have emphasized the sciences.

You go to our engineering schools and most all the students are foreign. They come here to learn and then go home to their own countries. So our education system has started a STEM program to promote those vital disciplines.

I think we can qualify for all the STEM requirements right within our museum, but we can go one step further and bring in art, because art is such a big part of model railroading.

Not only does model railroading involve 3D scenery, there's rock carving and how to simulate to different brands of trees, how to model sand for sand dunes – it's art through and through. Let's not forget the 2D your background painting and then the trick of how you blend 2D and 3D together so you can't tell the transition point.



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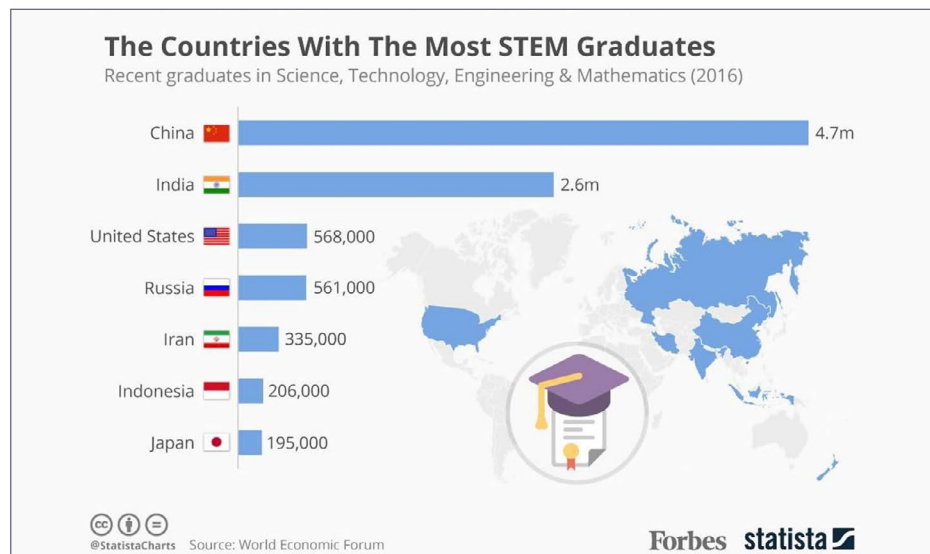
MUSEUM PROJECT | 21

If we add Art to STEM, we get STEAM, which is a railroad term and very fitting. And if you read a lot of the current education literature, it is also beginning to feature STEAM. So I look at us as being one of the pioneers to promote STEAM as well.

Ralph relays an interesting true story on how the Sunset Valley actually helped one young fellow get a railroad job.

There's also what this means to young people as well as retired people. I think STEM/STEAM motivates a lot of people.

We see young people who really don't have a lot of focus in life, but once they get into model railroading and see the electronics involved and the mathematics involved and the



10. The US is falling down on the job when it comes to graduates educated in the STEM subjects. The Model Railroading Museum hopes they can encourage youngsters to get excited about STEM, and also incorporate Art into the mix to make STEAM.

MUSEUM PROJECT | 22

electronics involved, they see you really learn something valuable here.

I just talked to a young fellow the other day at Michigan University. He just got a job with Union Pacific as a dispatcher next summer, and he's been doing dispatching on Bruce's Sunset Valley for the last year. This model railroad exposure can literally be job training for people who want jobs on real railroads!

So it's a learning experience for all of us and I think it's an especially good training experience for young people. We're seeing more young people come in and join with us on this adventure.

As for retirees like myself, it really gives us something to do during the day – not only in terms of learning new skills such as how to landscape things or learning electronics. It's also just relaxing to come in and talk to people who share a common interest. You get to know each other rather than just sitting home watching TV, drinking beer – we don't need that.

All the volunteers that work on this layout want to preserve it because this is a one-of-a-kind effort. You just don't see home model railroads with this size, detail, or kind of operational capability much at all. It's really a unique experience. ✓

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11. We're excited at the thought of seeing Bruce Chubb's Sunset Valley preserved as a national treasure. We're also thrilled to that model railroading may get honored for its place in the history of the nation and to be encouraging future generations to learn useful life skills from the hobby. Next month, we're featuring a layout tour of the Sunset Valley as the MRH cover story.



Also on TMTV!

★★★★★
RATE THIS ARTICLE

THE AH-HAH MOMENT

column



MRH Running Extra | September 2019

JOE FUGATE: BETTER FIGURE FACES IN SMALLER SCALES ...



RATE THIS ARTICLE



1. HO figures unaltered.



2. Facial shadows added.

NOTHING DISAPPOINTS ME MORE THAN TO SEE A NICELY detailed model railroad photo be populated with people wearing featureless faces like department store mannequins [1].

Once you know the trick, in the smaller “indoor” scales (O to Z) it’s not too tough to get people that look far more natural, as in [2].

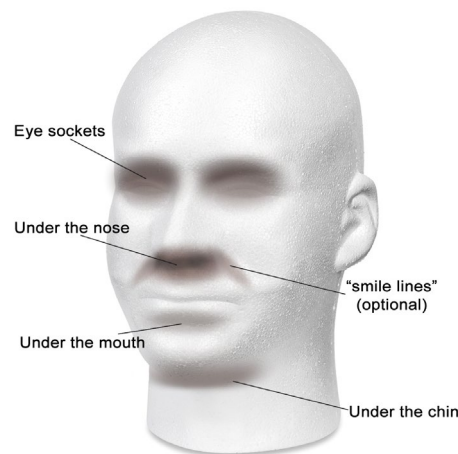
For starters, look at photo [3] of some people outside. Look at [4] where I’ve pixelated out the details so you can see just the pattern of light and dark. Notice the shadows around the eyes, under the nose, and under the chin. Often, the “smile lines” or nasolabial folds from the nose to the corners of the mouth also have shadows.

It can be tricky to add these teeny shadows with a brush, so I like to use a brush pen [6] with a fine tip because that gives me more control. One useful trick is to dip the tip of the pen in some wet water first because that softens the application. With these basic shadows added, your figures will look much better from a couple inches away.

THE AH-HAH MOMENT | 2



3, 4. Make note of the facial shadows you see here. I pixelated the image on the right [4] so the shadow patterns look more like what we need to roughly emulate to get more realistic model figure faces.



5. Make the eye sockets and the central nose shadow the darkest. Make under the chin less dark. Keep the shadow under the mouth even softer. If you do add the optional smile lines, also keep them soft.

Be careful to not overdo this effect and make it too dark – otherwise your people will look like zombies! Practice on some scrap figures first. If you do accidentally get it too dark, not to worry. Just mix up a flesh tone wash and apply that over the too-dark shadows. ☑

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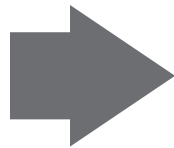
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6. I like this brush pen set from Amazon - it’s got a lot of great earth and flesh tone colors in the set.

Bonus section!

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



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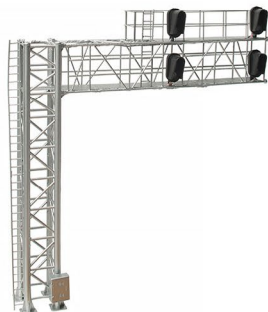
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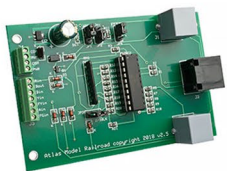
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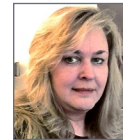
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(Updated 09/06/19)

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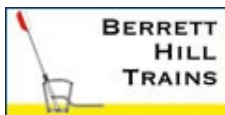
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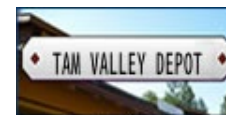
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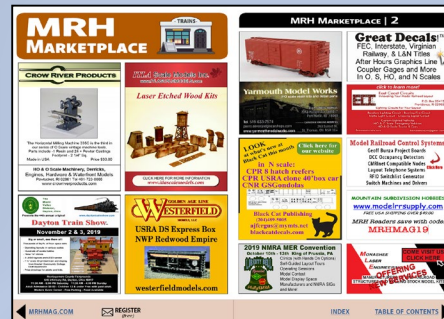
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PUBLISHER'S MUSINGS



Model Railroad Hobbyist | September 2019

MIKE MUSIK (GUEST): THOUGHTS ON
BUILDING A DREAM LAYOUT ...



ME: "HI. I'M MIKE, AND I'M BUILDING MY DREAM LAYOUT."

Group: "Hi, Mike!"

Model Railroader Anonymous meetings aside, it seems more than a few model railroaders aspire to building a larger dream layout.

Some see this as dreaming the impossible dream, as rather unrealistic, and beyond the reach of mere mortals. But there can be compromises able to bring the grandiose layout vision back into the achievable realm.

What about mainline modeling?

The rush to call the dream of a larger personal layout impractical or impossible presupposes "small operation" thinking. Not everybody's idea of the railroad experience will be satisfied depicting shortlines, bucolic branchlines, industrial switching, or a couple highly compressed vignettes in a loop.

What if your life interest in railroads runs more along the lines of heavy Class I action? Layout-sized trains with lots of power in front can feel awkward on a smaller layout.

Three, four, or five locomotives on the point of a 15-car train just doesn't properly satisfy the "big operations" itch.

Limiting layout execution and operation to social modules such as N-Trak or FreeMo frequently comes with many compromises. Outside of a home layout built in this manner, for many the take-your-modules-to-a-train-show approach implies little if any train operation outside of events.

Likewise, clubs can be a challenge for rail model hobbyists not living in or near major metro areas where it's easier to find other modelers with comparable interests.

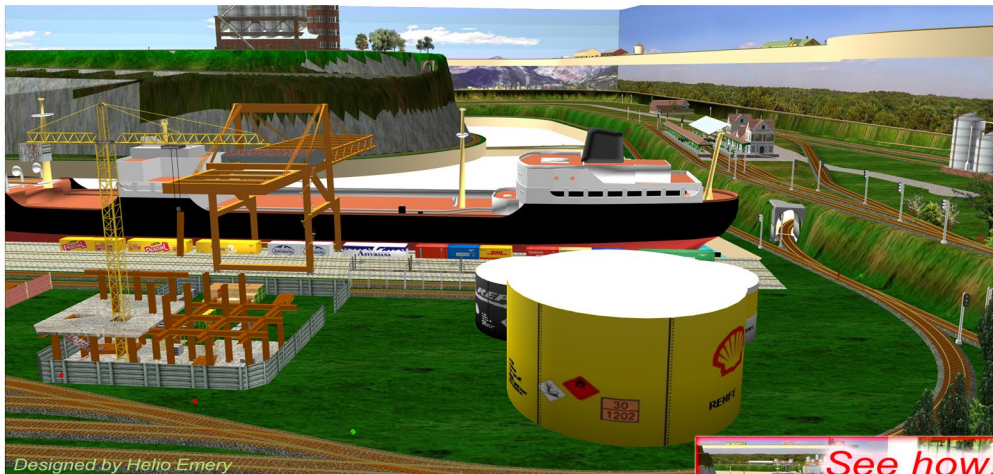
Then what about operating sessions? My experience with a train show modular layout has been that it's impractical to have organized realistic operations for the most part.

The public wants to see trains run, not puzzle over an obtuse strategy game characterized by lots of small back-and-forth movements.

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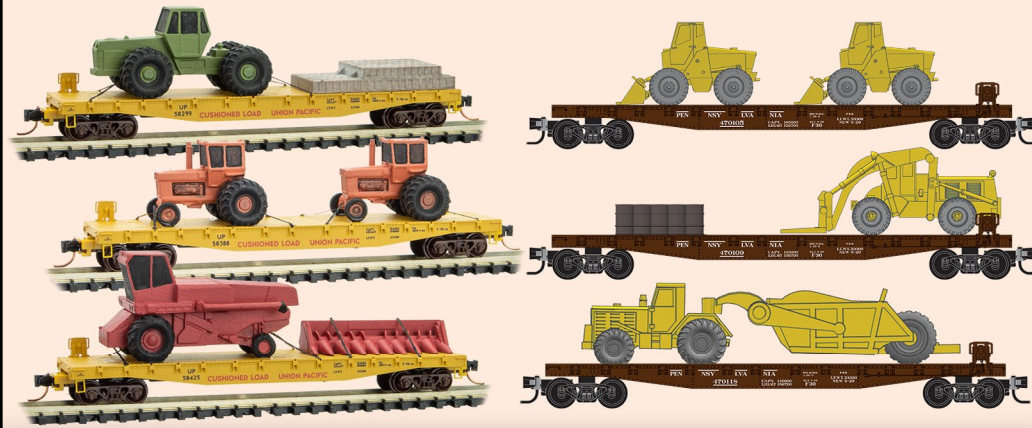
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PUBLISHER'S MUSINGS | 3

The key to a successful large layout project comes by:

- Thoughtful design and planning (not happy accidents)
- Minimizing construction / maintenance setbacks
- Managing the layout environment
- Setting realistic goals and milestones
- Adjusting where necessary as you go along.

Phased construction

As observed in the June MRH guest editorial, many larger layout projects get in trouble building for years (sometimes a decade+) with little or no operation until *everything* is done.

It's also true there are plenty of layouts that rarely make it past the "Plywood Pacific" stage. Building the benchwork for the final layout

**On30
SCALE**

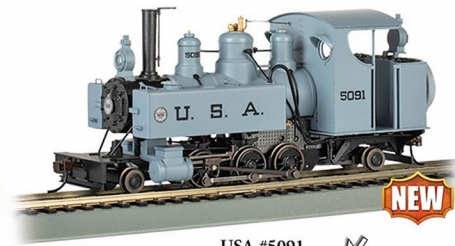
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PUBLISHER'S MUSINGS | 4

all at once may cause burnout as one realizes they've bitten off too much. Breaking a larger layout project into logical chunks can yield an operable and enjoyable layout sooner.

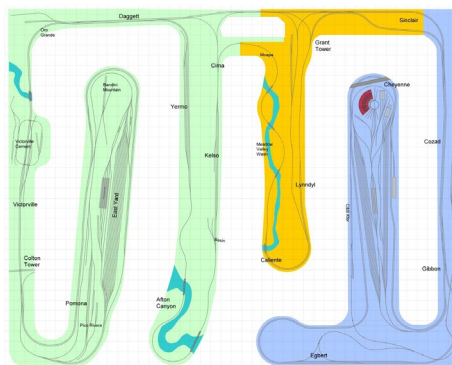
Temporary loopbacks with the emphasis on "temporary" can be inserted with careful planning. Don't be afraid of demolishing these temporary sections. In fact, they can be most useful for testing ideas and refining techniques.

Engineer the benchwork to be semi-modular: cut what's on top over the joint, unbolt, and add the new construction.

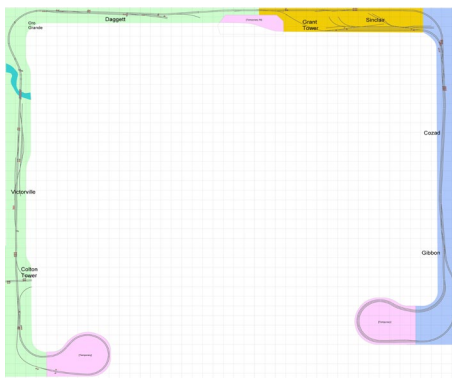
Modular construction on a personal layout has merits, but it takes thoughtful planning if you want continuous running during the build-out. Making the "phases" too small can make it difficult to insert a common loopback module, forcing the one-module-at-a-time layout to remain stub-ended until done.

Have a plan

I believe it's crucial for phased construction to have the full plan



Original concept.

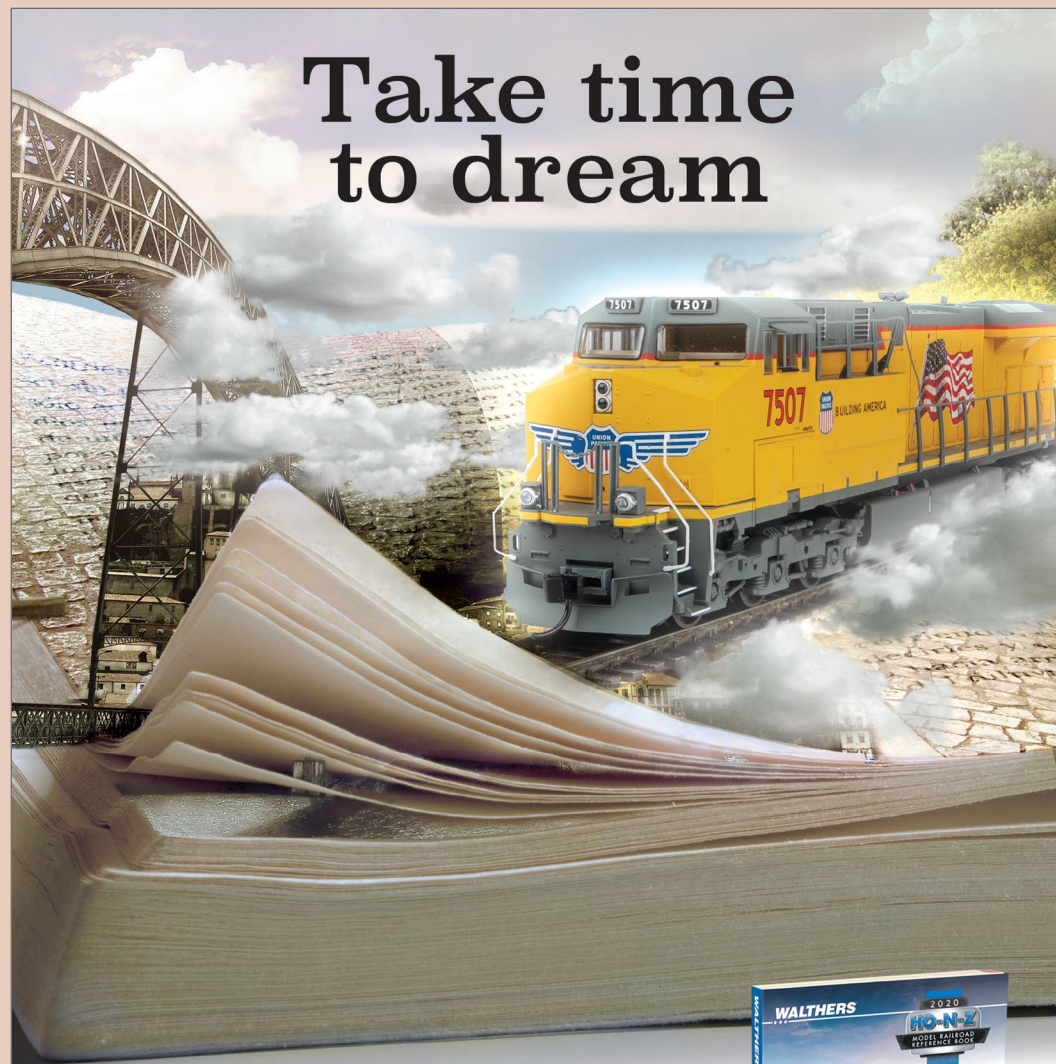


Phase "zero."



Phase one.

Take time to dream



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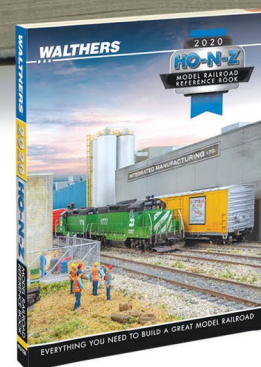
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Do this early, but flexibility matters too – revisit and revise often. Your tastes may change, you realize specific elements aren't going to work as expected, or you may conclude before starting you're doing too much.



Rome wasn't built in a day; neither will your large layout come together overnight. Don't let self-imposed calendar goals shackle you – these can quickly be more demotivating than motivating.

Conversely, do allow deadlines such as scheduled layout tours to put a fire under you, but be flexible. Don't back yourself into a corner by promising you will be at a specified stage of completion by a hard date.

Design for maintenance

First and foremost, consider the layout space environment. A layout in an unfinished, uninsulated, non-climate controlled basement or garage is “asking for it.”

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PUBLISHER'S MUSINGS | 6

Temperature and especially humidity stability remain key to reliable operation and long-term satisfaction. The larger the layout, the more beholden it is to a stable environment.

Don't forget dust control – dust equals dirty track. It's not the only cause, but certainly a big contributor.

A layout area may not need HEPA-grade filtration, but don't overlook double-filter HVAC ducting into the layout room. The difference this makes can be surprising.

Also plan and construct with access in mind. For years, I heard "24-inch maximum reach" and you know what? They were right, but sometimes it is simply unavoidable. I have a couple of areas on the layout that break the 24-inch rule and can confirm they've been challenging to construct and maintain.

Multi-level layouts have become popular as a way to squeeze a larger layout into a smaller space. I find a direct correlation between the difficulty of construction and maintenance – and a multi-level layout design.

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PUBLISHER'S MUSINGS | 7

For instance, adjusting switch machine linkages in a complex yard with only 12" of access clearance underneath can be challenging. Finished scenery on the lower level only confounds the difficulty.

Select benchwork construction materials and methods based on dimensional stability in the expected environment. Organic materials such as wood expand and contract.

If the environment will be difficult to control, consider modern materials such as metal studs for framework and extruded polystyrene (XPS, or "pink foam") for the benchtop.

Ten pounds in a five-pound bag

Some larger layout designs put too much track in a too-small space. This causes many "dream" layouts to get into trouble. Design for the available space and be conservative.

PUBLISHER'S MUSINGS | 8

As previously mentioned, multiple levels and their associated access problems can confound construction and maintenance.

Manage the complexity

With a mainline-oriented layout in a larger space, avoid filling every square inch with a railroad function. You can reduce costs, construction time, and maintenance effort by going with a simpler design.

Sometimes a larger layout can actually be less complex than a smaller one by aiming for a lower turnout-to-mainline ratio. For instance, a smaller switching layout with lots of turnouts and hidden staging can actually be more of a headache to build, operate, and maintain.

Once I had my original layout concept in the computer and had the framework started, I quickly discovered some gotchas. Certain layout design elements added significant work both above and below the benchtop, with rapidly diminishing value for the effort. Realizing this, I exercised the rightclick delete function of the layout design software without mercy!

Experiment

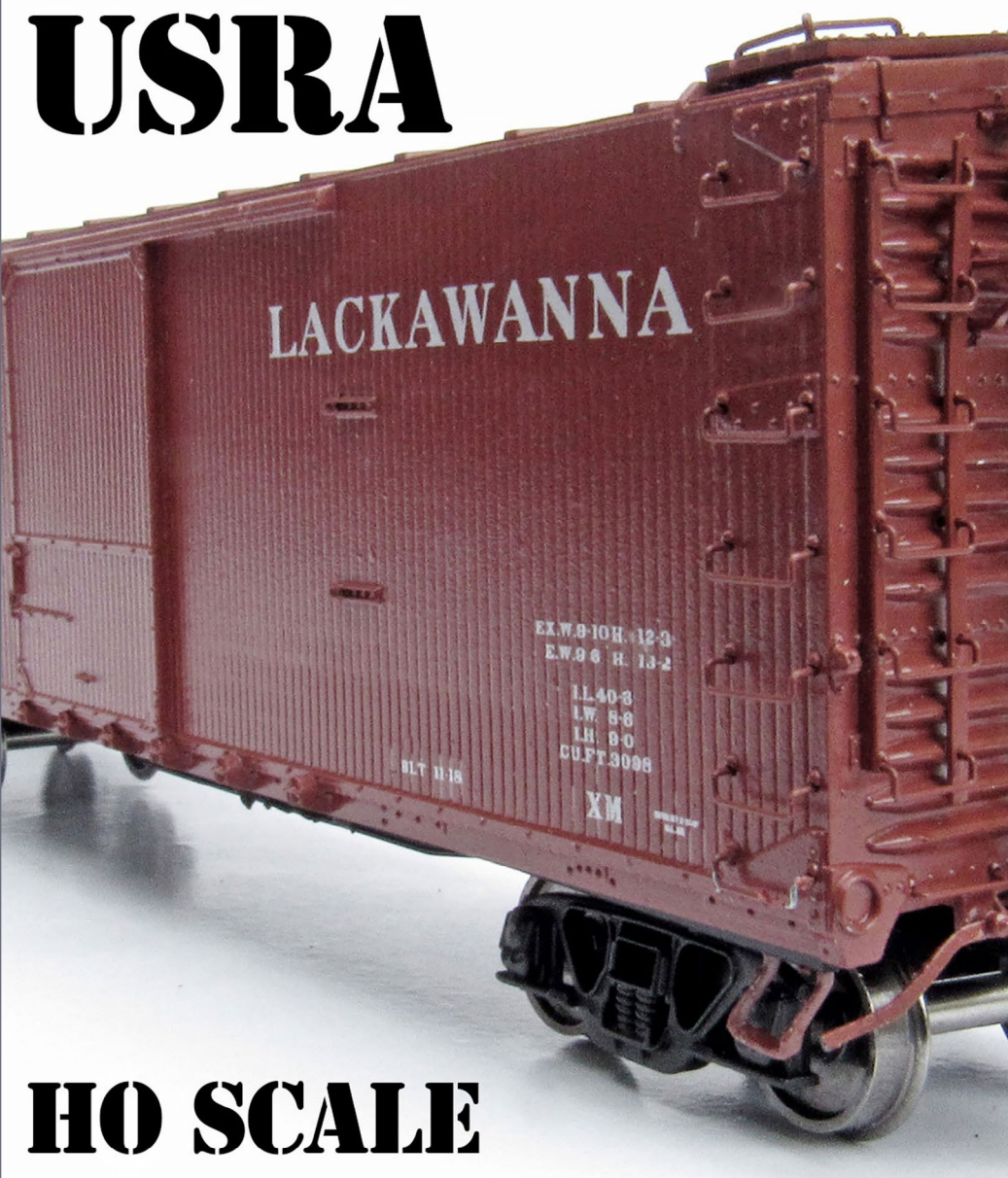
Be creative and flexible in design and execution. Take tried-and-true published advice, techniques, and materials as solid starting points. Ignore any naysayers who protest that "it can't be done that way." Be open to discovering faster techniques, better materials, and better suppliers that can streamline construction.

Hint: Explore and become familiar with art supply stores. These stores stock materials and related techniques not normally discussed in the model railroad media or seen in hobby shops. These materials and



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PUBLISHER'S MUSINGS | 9

methods can jump start scenery projects and sometimes make execution quicker with better results. "Quicker" and "better" are especially good with a large layout.

Test new methods off the layout, even at the cost of throwing away usable track or other valuable materials. It's better to spend a few pennies trying something you're not sure about on some scrap than on finished benchwork as a major fail you need to rip out.

Life will get in the way

I guarantee there will always be something more important in your life not related to your hobby, impinging layout progress. Just expect it.

Other model railroading interests can also distract and create time-outs from layout construction.

No doubt about it, that kit for the prototype you always wanted will be released while you're in the middle of a crucial bit of layout work.

Don't feel guilty, not in the least! A model railroader does not live by building layouts alone.

Above all, revel in what is done

Enjoy every finished sub-project no matter how small, at every stage of work.

Trains run through a complex junction where you just finished the trackwork and everything stays on the rails? Great!

This evening ten more feet of ballasting was done? Good!

Backdrop tacked-up in Smithville? Fabulous!

All those little successes add up – winning layout execution comes as a sum of overcoming all the micro-battles along the way. ☒



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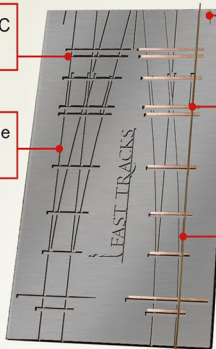


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PC Board ties are soldered to the rails using a standard 35 watt soldering iron.

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Rails are inserted into the fixture right side up, making it easy to confirm alignment.

★ Fixtures are machined out of a solid piece of high grade 6061 aluminium stock and will last for thousands of uses.

Turnouts are built using pre-cut PC Board ties dropped into pockets cut into the fixture.



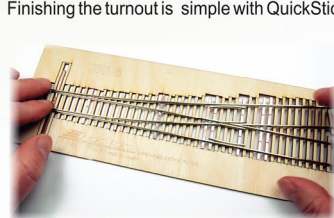
Held in precise alignment, rail is then soldered in place onto the ties.

The Fast Tracks PointForm tool makes it fast and easy to file perfect frog and switch points for the turnout.

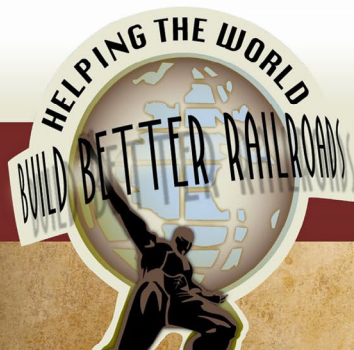


Just insert the rail into the tool and file.

Finishing the turnout is simple with QuickSticks laser cut wood ties.



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PUBLISHER'S MUSINGS | 10

About the author: Mike Musick has been a model railroader since early childhood, crafting bridges, structures, and other accessories within days of receiving his first American Flyer trains for Christmas. His love for larger layouts got inspired by his family's visit to the gymnasium-sized 1964-65 New York World's Fair model railroad. As if that wasn't enough, the family followed the World's Fair visit immediately by a cross-country car vacation paralleling the Union Pacific mainline through Nebraska, Wyoming, and Utah.

Adopting N scale in 1968 long before it was cool, Mike says, "The dream ever since has been to capture the essence of heavy mainline railroading paying homage to the ambience of long trains, heavy motive power and horizon-to-horizon mainline operation.

Now retired, Mike's current layout project is in its sixth year, in its own building made affordable by virtue of living in a flyover USA rural community. Mike has dedicated a 40' x 44' room to the layout. He's beginning scenery execution on the first phase at this writing, with trains (thankfully!) running on more than 10 scale miles of mainline. ■



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LAST ISSUE'S RATINGS

The three top-rated articles in the [August 2019 issue](#) of *Model Railroad Hobbyist* are:

4.2 Writing for MRH

4.2 August 2019 news

3.9 Creative layout downsizing

Issue overall: **3.5**

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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Best of the

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Model Railroad Hobbyist | September 2019 #114

compiled by **JOE FUGATE**

★★★★★
RATE THIS ARTICLE

Freight Cars for "Mortals"

Good to hear

Sun, 2019-08-18 12:03 — King_coal



I've learned a lot from this thread. Always enjoy learning more tips.

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new

Here is another pair of

Sun, 2019-08-18 17:34 — James Six

Here is another pair of freight cars that will be featured in upcoming issues of Running Extra's Limited Modeler column.



1. **Jim Six's** "Freight cars for mortals" thread keeps getting more posts added to it almost daily. As you can see from this recent post, many find this thread to be extremely helpful. Go check it out!

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

Starting point

Fri, 2019-08-30 10:07 — mesimpson



I have added weight to the cars using 5/8" nuts to get the cars up to my preferred 7.5oz weight for 50' cars. More than NMRA standard but I prefer the cars to have some "heft" when switching.



**CLICK TO READ
DETAILS ON THE MRH
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I also test fit the doors from my friend Mike M. He 3D printed these doors with his Photon printer and I think they turned out really well. This style of door has never been offered in HO Scale so having the ability to make prototypical doors for these cars is a wonderful thing. My hat is off to Mike for taking on this project.

2. MRH forum regular *mesimpson* has a new blog thread he's calling "Project 50 foot" on doing a batch build of 50-foot CN boxcars. Click above and follow along ...

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Close up



Step #3

Hide the car in a storage cabinet and vow to someday do a better job on it.

3. Get heavy-handed with some weathering and have a car you think is a lost cause? **Rick Sutton** takes a car he "ruined" and later came back to do an astounding save ... see what he did!

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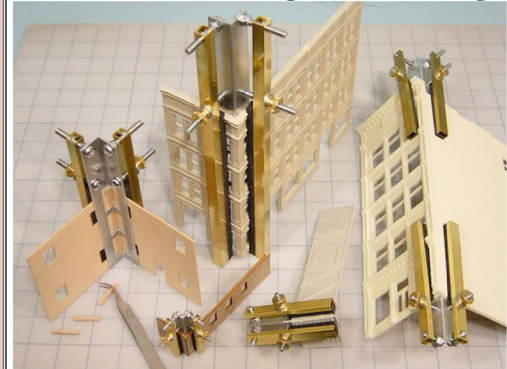
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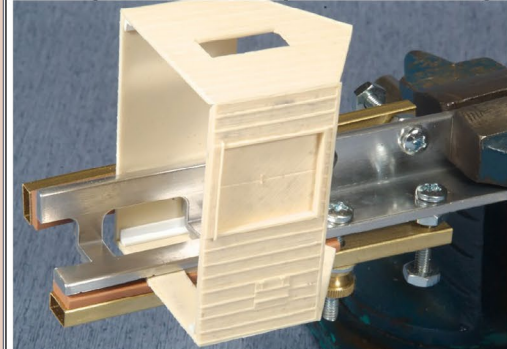
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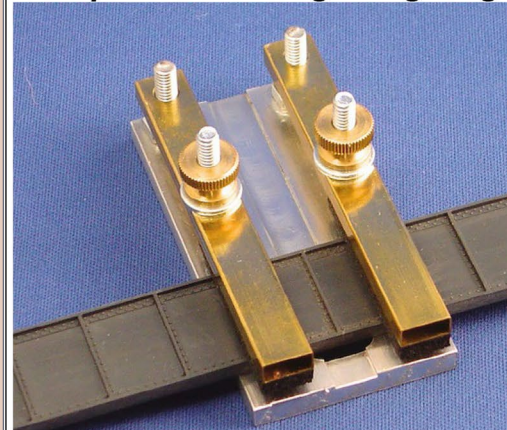
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The Hills Line - Waterways in Iowa City

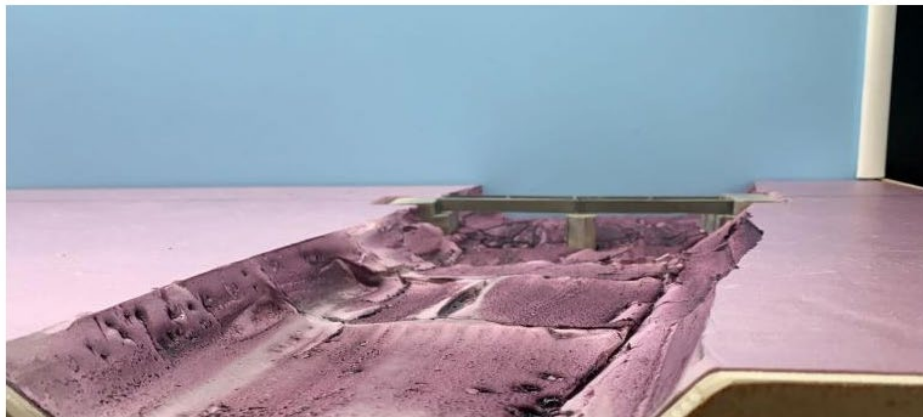
Sat, 2019-06-08 14:49 — [jfmcnab](#)

Progress update on The Hills Line, as the creeks, rivers, and other waterways have been carved, along with the bridges, piers, and abutments being painted and installed. First up is the multi-span crossing of the Iowa River, south of Iowa City.



A small wooden trestle crosses the flood plain between the Iowa River and US Highway 6 in Iowa City. Again, space limitations prevented me from modeling it anywhere near the prototype length, but it still does a good job of representing what's actually there. The trestle was from a Walther's kit, painted and weathered to (hopefully) look like wood. The foam for this and the rest of the watercourses were carved with a variety of tools, including a hot knife, surform rasp, and a few serrated knives.

Unlike the rest of the waterways, there won't be water at this location. Rather the trestle will be surrounded by large old-growth trees and low scrub, per the prototype.



4. In his MRH blog, [jfmcnab](#) discusses the waterways and bridges on his new Hills Lines layout. Learn insights from what James is doing as he posts photos of his many examples ...

SD9s

Sun, 2019-09-01 08:33 — [kevinn](#)

Trio of SD,s crossing Hammond Slough on the go to Samoa.



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new

Leaving town

Sun, 2019-09-01 09:00 — [fempoint](#)



5. How can we pass up these really nice photos on the latest MRH Photo Fun thread? Click above to go check out these and many more great photos. ☒



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WHAT'S NEAT

column



Model Railroad Hobbyist | September 2019

KEN PATTERSON LOOKS AT:



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September 2019 show

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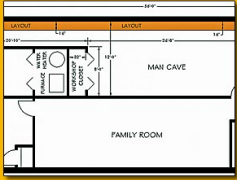
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Galesburg N scale modules



1. Jim Wiggan and Bill Selleck (right) pooled their passions for railroading in Galesburg, Illinois. Jim suggested they work on a layout together, because of a strong mutual interest in Galesburg, and model an short industrial short line in N scale. In front are the Santa Fe mainline and tracks to reach some major industries on this side of town. Ken (left) caught up with them at the Spring Creek Model Show in Nebraska.



THE LIMITED MODELER
Jim Six: Continues rethinking how to approach his layout.

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EXTRA



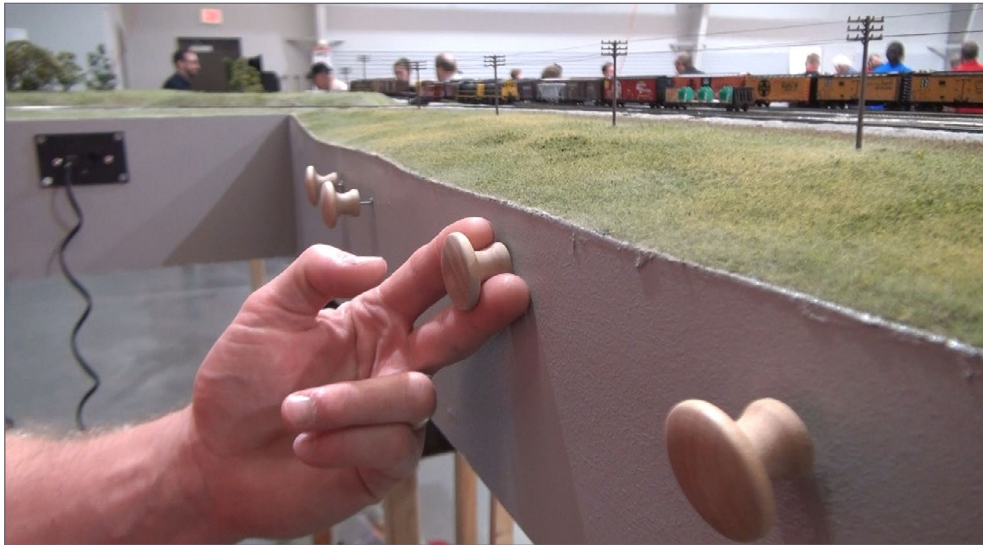
2. Bill and Jim try to be careful observers of the real thing. They model the 1960s, so they did some research and looked up pictures at the city library. The track is Code 55 and the detailing rivals what can be done in HO. Bill remembers the limited options in N many years ago and is thrilled by the etched metal and resin parts now available: "The trick is really bringing those details and things together and try to model the prototype as closely as we can."



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



WHAT'S NEAT | 4



3. They use the NCE DCC system to run the trains and find it simple to use and easy to set up. Because it's a switching layout, they don't need complex controls. Some switches on the modules are built with model airplane servos and others have Blue Point switch controllers using a simple push-pull type operation (above). The track level is about 53 inches and the whole idea is not to be mean to children, but since it's N scale, to bring it closer to eye level.



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



WHAT'S NEAT | 5



4. Switching Galesburg can take Jim and Bill quite a while. 20 freight cars might take a couple of hours. At train shows they're often interrupted with talking to people and whatnot. But that's why they are there. The railroad has been in shows in Michigan, Indiana, Ohio, Wisconsin, Nebraska, and Illinois. Jim Wiggin has a page about the railroad on www.Trainboard.com and maintains a Facebook page called the Galesburg City Job. Bill Selleck posts on The Railwire at www.therailwire.net/forum/index.php.

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Make a Kleenex tarp



5. Mitchell Bevforden here: We're going to do some tarp loads on standard flats. What you're going to need is a base load that you're going to tarp. This can be something that you've bought or something that you've built yourself. You also need Saran Wrap to protect your load as well as protect your car. The tarp is made of standard Kleenex, Woodland Scenic scenery cement, and whatever paint color you choose. Earth color makes a great canvas color and just looks great.

6. (Right top and bottom) Take a piece of Saran Wrap and spread it over your car. This becomes your work platform. You're not doing this on a bench. This is something that you're doing on a model itself. Next you're going to take a piece of Saran Wrap and lightly and carefully wrap your load. In this case it is a transformer. Don't worry about getting creases out because when you go to paint the Kleenex on there and it will help it look like a tarp being swept by the wind. It looks pretty cool when it's done.



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

WATCH NOW >>



7. Now take your Kleenex and drape it over the load. Apply your Woodland Scenics cement with a brush. Let's start slowly coating the Kleenex. Once you have the Kleenex wetted down with glue, slowly start moving the tarp as well as the load into position with the brush. It would be okay if you dry it overnight. A convection oven on low heat works, too. Once I get it all cut up and trimmed, I just start slathering on the paint and let them both dry together.



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



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8. When it's almost dry, grab your hobby knife and start cutting away at the lower edges of the Kleenex lightly and slowly. Once you get done cutting away all your excess tissue, form it and clean up any imperfections. We only partially dried it, so it's still somewhat wet. It gives you a good workable material. Even if it tears slightly, you can repair it with just a little bit of a patch. It actually looks like they patched the tarp, which happened all the time back in that era. Then we step onto painting. You just dip your brush. We'll start adding the color.



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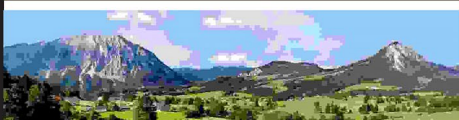


9. Finishing up paint here and, as you can see, the earth color will give it a nice tan canvas color. You can shape it with the brush while it is still a bit wet. You can show some rigging and it all depends on the type of car you have, how you want the load fastened. Look at photos. What I do next is take a knife and just poke a little hole here on each side. Take your rope – we use thread, or you can use chain, and bring it down to one of the tie-downs on the car. Or bring it up high and you need some cross bracing.

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WHAT'S NEAT | 11



10. This model is what your finished product hopefully looks like when it's tied down. We added some extra stuff to give it a little more detailed look.



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WHAT'S NEAT | 12

Dimensional Modeling Concepts



11. Ken also spoke with Mike Brusky, the proprietor of Dimensional Modeling Concepts to learn more about their newest items.



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12. **Mike Brusky**, founder of Dimensional Modeling Concepts, has been “doing trains” since he was 15 years old and discovered there’s a lot of things out there that modelers need that nobody makes. “When I retired a few years ago, I got into 3D printing as a way to first produce models for me, stuff that I needed. Then, I thought it would be a great way to bring some of those concepts to other people and to also bring other people’s concepts alive for them.” One of his stand-out products is this container loader.



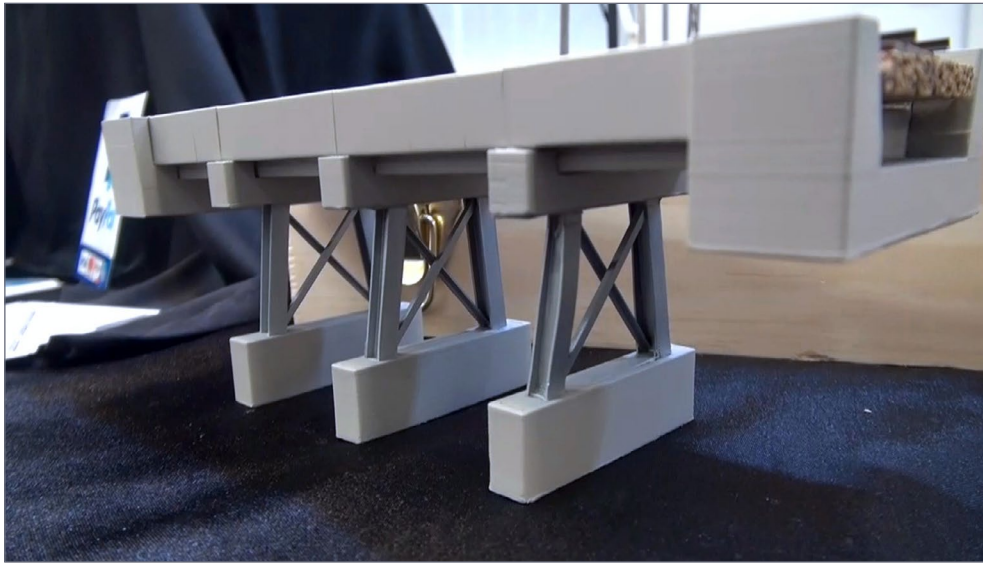
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13. “When you drive down the highway, you see a lot of these wooden poles out there, the big power towers and the wish-bone. They’re along the highway, they’re going across country, you see them everywhere,” Mike says. “Nobody’s modeled those ... they don’t take up a lot of space on your layout because they run overhead. And literally you’ve got two poles or one pole in the ground and ... These don’t take real estate. We have double-arm wishbones, single-arm wishbones, the really big power towers, the 75-foot towers, and then some of the old T-T style that you see everywhere.”

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WHAT'S NEAT | 15



14. "We've got a segmental modular concrete bridge that we're bringing out. I started it as parts for flat car loads and then all of a sudden, you know, I had the decks, I had the abutments, I had the bents and it was like, okay, I've got all the pieces for an actual bridge kit. We'll have extension kits on it where you get an extra deck and an extra bent. You can make this as long as you'd like."



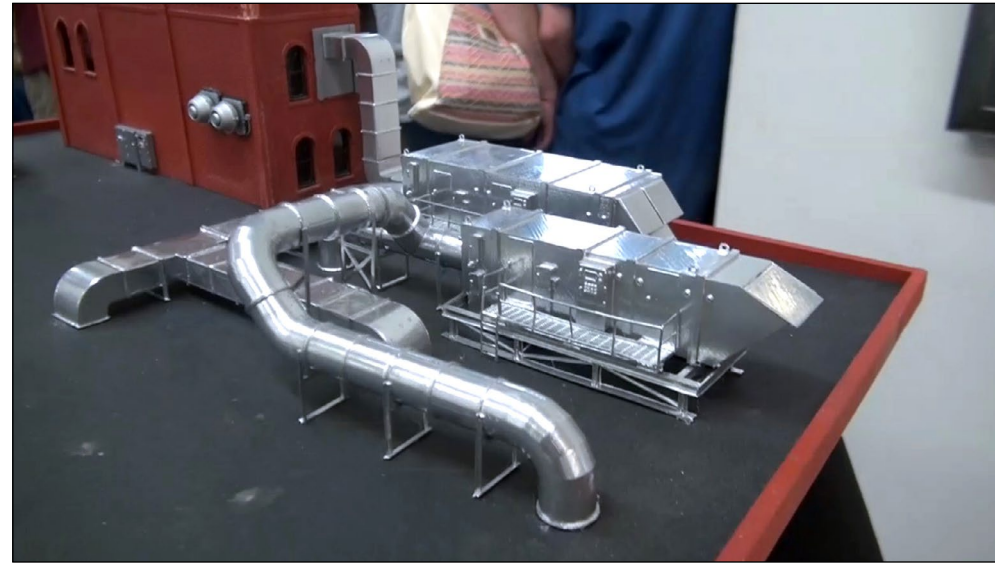
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WHAT'S NEAT | 16



15. "One of our signature items is industrial HVAC for rooftop units. A lot of what is out there is small air conditioners and things that are more suited to office buildings or small retail establishments. Being a former engineer, I've worked with this stuff a lot in the food industry. I've made a whole line of that stuff and we keep expanding it all the time. This year we've come out with some new rooftop exhaust fans like you can see on the top of restaurants or fast food places. You want to go to Dimensional Modeling Concepts at dmcrrproducts.com. That's where you can find us. Everything is available on the website. If I don't have it in stock, I'll print it up for you and have it out within a few days."

Dimensional Modeling Concepts: dmcrrproducts.com.



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Layout animation



16. Dave Scharnhorst: "If it's got Norfolk and Western on it I'm interested in doing it. We started showing our modules about 27 years ago. This is probably the 83rd or 84th show that I've been at ... The bridge is scratchbuilt with cardstock, basswood, hardware cloth, Legos, and whatever else. I don't remember what kind of motor that powers the bridge. It actually lifts with lead counterbalances."



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17. Dave likes simple devices, like the magnetic loader. "I call it clockwork animation. No matter when you come into the show, you can see it because it loads the gondola for a little while and then it turns around and unloads it automatically. It runs all weekend long. And I don't have to operate it much."

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18. The fact that Dave's railroad is at 36 inches rail height makes it a real crowd favorite for the kids. On its last outing, it stretched 55 feet. For the big Milwaukee Trainfest show this fall, it'll be 65 feet. It all fits in the back of his pickup truck.



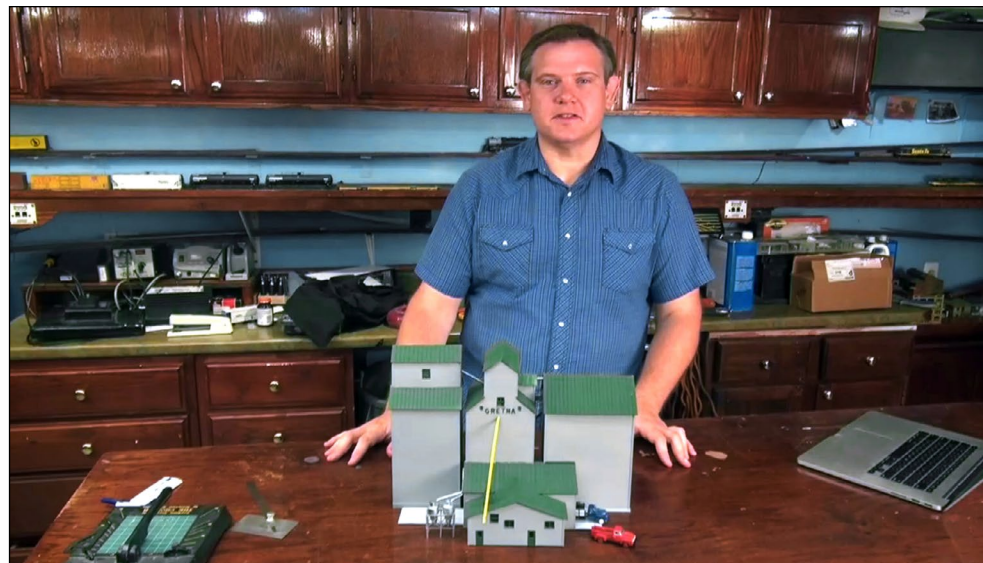
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Gretna grain elevator



18. **James Regier:** This model of the Gretna, Manitoba elevator started with the Walthers country co-op elevators. He built the same tower when he was 10 and did his own paint scheme and sort of his own design. "I wasn't really satisfied with it and I'd always gone to visit my grandfather in Canada near the town of Gretna and we'd haul grain to this elevator and I thought, I want make my elevator look like that," he says. "I looked at this elevator and it was pretty unique. ... So, I got another Walthers kit. I stripped the paint down on this one. I added a little bit of height to it because I noticed there was a height difference between the two towers and I smoothed out the backside to represent an elevator that had been abandoned through a merger and then merged on to this one. I added an extra door and that tower was complete."



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19. "Then I looked at the middle tower. Now this middle tower had a longer dumping bay than your typical elevator. I spliced the two dumping bays from the original two elevators as best as I could. I did the roofs so that the seam lines between the roofs would be undetectable. I laid it flat out on a sheet of glass, pushed them together using Plastruct and made the seam. This annex was Evergreen clapboard styrene that I cut to size, measuring very carefully so the width would equal the elevator. All the time, I was looking at satellite photos of the elevator complex that still exists today. And I used the little ruler that Google maps has to actually get the dimensions so that it would look right. I also looked at where the dust collector piping was going on the side of the building. I used extra sprues and pipes that I had from a Walthers tank car loader that I had assembled."



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20. Next, I observed the office in front of this building and built it from Evergreen styrene. I painted the whole thing sky gray from Tamiya paint and then I painted the roof a field green. The dust collectors were from a Redwing mill scrap kit that I received. I used a sprue to create the augers running between the two buildings. These are all extra sprue parts that you cut off and file to the right angle to create the truck loader here. Now this little support tower I noticed looking at photos of the prototype, I actually used brass wires to create that. I bent that to shape and soldered together. Now, the nice thing is I made it modular. I don't currently have a permanent layout. Everything comes apart and reconnects fairly quickly."

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21. James used a graphics program to design the lettering, printed it on cardstock and cut it out using a very sharp knife. He painted it the same shade of green as the roof and glued it on using Micro Kristal Klear. Now with all of these little details, it was simply a matter of looking at the photographs, considering how to make them and then going and doing that, using a straight edge to find exact angles and using the correct adhesives to put it all together.



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22. "Here's a streetside view. The Gretna elevator actually had a much longer loading auger; the spout coming down from the top of the building was much longer on the Gretna elevator than on the Walthers original. I used sprue to add length and brass rod to reinforce. And that's the Gretna Manitoba Elevator. This will be the beginning of a diorama that I intend to create based off of the town of Gretna circa 1985, when this elevator was active. There were several elevators like this along the line."

Ken P: All of the model railroad products seen in this episode of What's Neat are available through Caboose in Lakewood, Colorado, or order online at mycaboose.com. ☒

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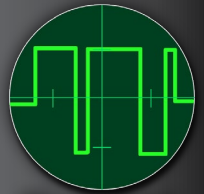
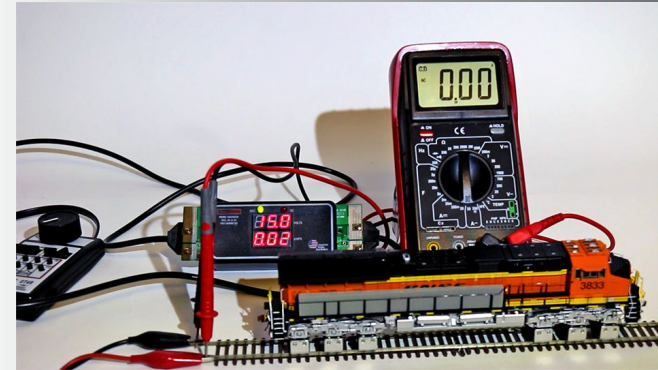


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RRampMeter vs. a standard multimeter



**Electrical
 Impulses**

Model Railroad Hobbyist | September 2019 | #115

1. Jeff used this setup with a type 2 RRampMeter and inexpensive Harbor Freight multimeter for comparing volts on the multimeter. Measuring amps needs a different probe setup to put the multimeter in series.

JEFF SHULTZ looks at measuring DCC volts and amps with an RRampMeter versus a standard multimeter ...

FOR MOST MODEL RAILROADERS, IT'S ENOUGH TO hook up the wires of our DCC command station and booster to the track and turn the power on. It just works, and we trust the DCC manufacturer to have built the system to put a sufficient number of volts on the track.

Unless there are a lot of locomotives sharing the track, particularly sound units, the 3 to 5 amps of a standard DCC power source seems to be adequate.



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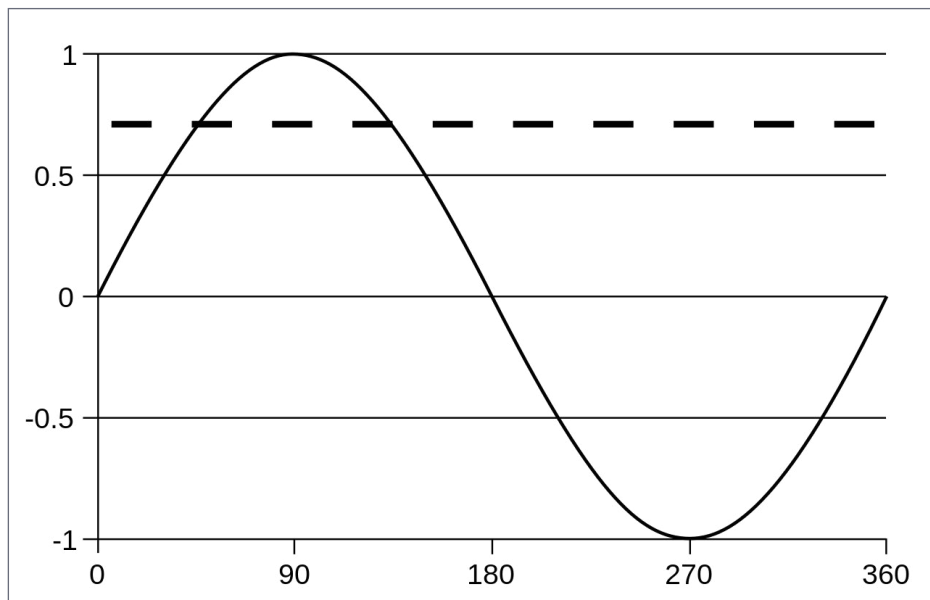
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Then something goes wrong. The circuit breaker on a booster keeps popping, indicating an overload, or everything just seems sluggish – or won't power up at all. At this point we need a meter to determine how many amps the train is sucking up, and how many volts our booster puts to the track. It can also help to see if what's going to the rails is still DCC.

While a common multimeter should be a tool anyone who works or plays with electricity has in their toolbox, it's not the best tool for measuring DCC voltage and amperage. In fact, it's borderline to measure DCC voltage and virtually useless for measuring DCC amperage.



2. Standard AC waveform (AC sine wave graphic from commons.wikimedia.org/wiki/File:Sine_wave_2.svg).

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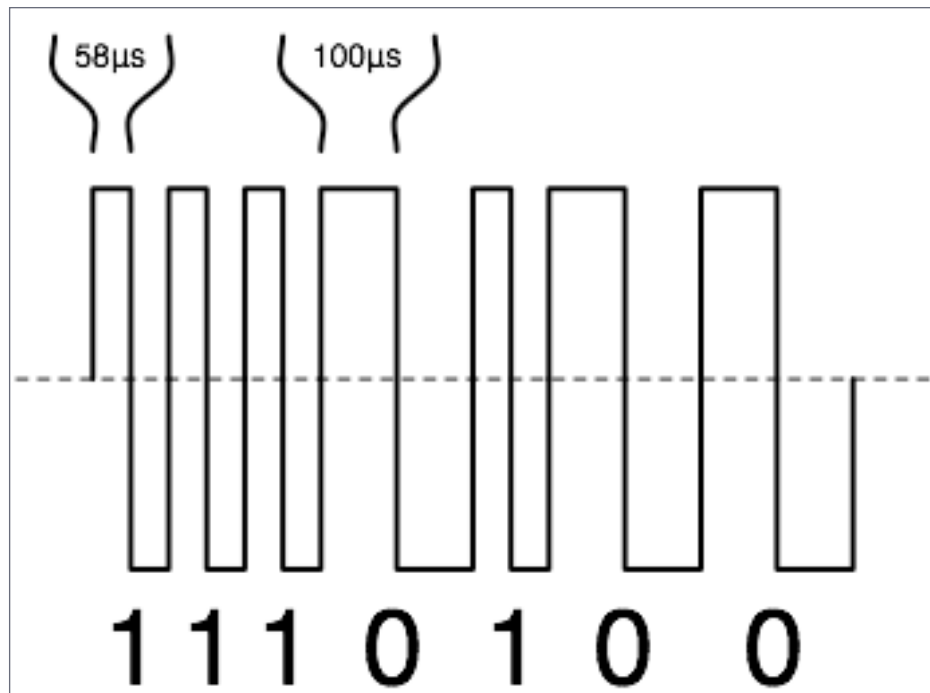
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RRAMPMETER VS. A STANDARD MULTIMETER | 3

It's often said on forums that DCC puts AC power on the rails, but this is not quite accurate. More accurately, a DCC system puts a form of alternating current on the rails, but not what an electrician would consider AC power.

Instead of having a sine wave of smoothly alternating curves at a fixed frequency [2], DCC uses a square wave [3], and the duration of a single square wave indicates a digital "one" or "zero" in the signal.

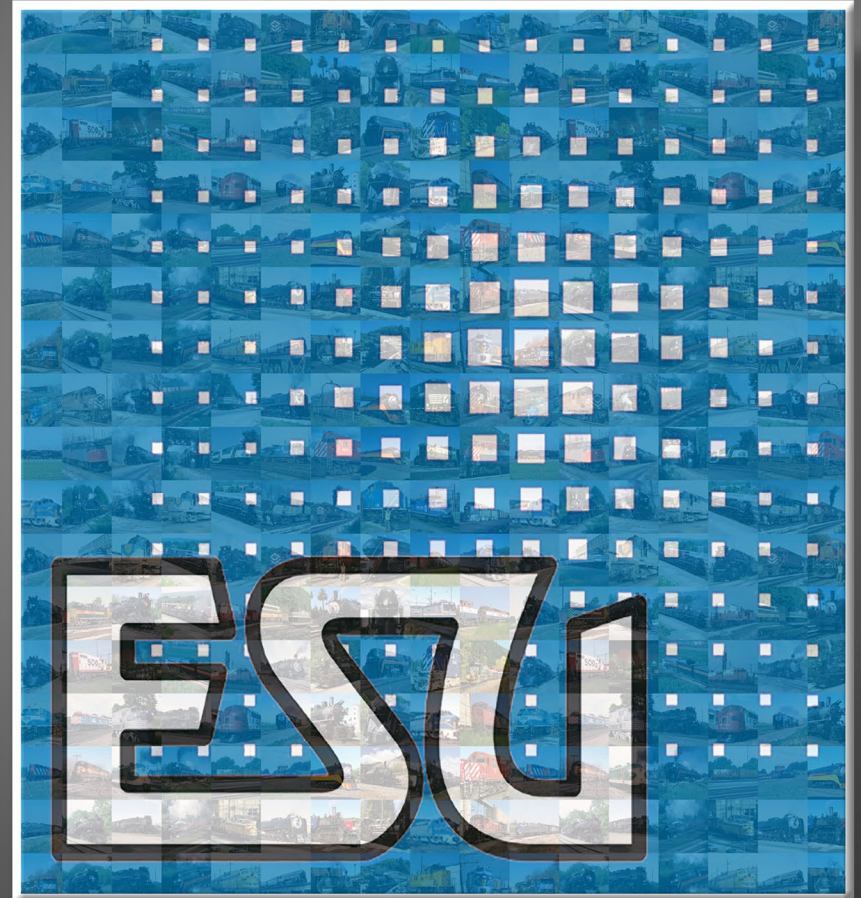
The DCC track voltage is a high-frequency square wave (5,000 to 8,500 Hz, depending on how many "0s" and "1s" are in the



3. DCC square wave signal (from dccwiki.com/DCC_Power/).

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RRAMPMETER VS. A STANDARD MULTIMETER | 4

packets) that's nominally 14.25 volts for HO. See the NMRA Standards for more details.

While a multimeter works as the proper tool for checking continuity and the presence of voltage, the standard AC volts setting on a normal multimeter will not accurately reflect that voltage, and as noted, it won't show DCC amperage properly either.

The electronics of a normal multimeter set to AC volts assumes the AC being measured is standard home electricity of 50 Hz in much of the world or 60 Hz in the US. Further, the meter assumes the waveform to be a smoothly shaped sine wave.

Reading AC voltages of any other frequency and waveform, a standard multimeter gives an incorrect voltage reading. Using an RMS Voltmeter will give a more accurate reading.



4. R RampMeter type 2 with a case and leads. Here we see it's measuring an even 15 volts and one hundredth of an amp on empty track with a standard multimeter from Harbor Freight also attached to the track in parallel to measure voltage (not shown). NOTE: To measure amps, the HF multimeter needs to be inserted into the circuit so one of the track feeder leads goes *through* the meter. You also need to change the probe use the Amps meter port.

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5. In this video, I compare the volt and amps readings of a standard multimeter set on AC to the readings from an R RampMeter designed to measure DCC.

I connected a Digikeijs DR5000, powered by a 15V power source to an R RampMeter, which in turn is connected to both the multimeter probes and the tracks. The multimeter slightly mis-reports the voltage present (although close) but it dramatically under-reports amperage through an operating loco: see the video above.

Conveniently, the R RampMeter can automatically sense if the signal being passed through it is AC, DCC, or DC. If AC or pulsed DC power, the AC LED is lit. If DCC, the DCC LED is lit. If the power passing through the R RampMeter is DC, neither LED is lit, but proper voltage and amps are still displayed.

You can purchase a R RampMeter from most of the *MRH* DCC sponsors. It comes in four different versions. For price, we list the typical street price.

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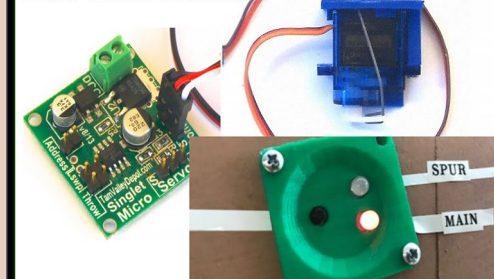
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Why does it matter?

Accurately measuring the DCC track voltage can be extremely helpful when a layout has more than one booster. The boosters should have similar voltages for trouble-free operation.

Another issue can be a slow-running loco or consist at certain locations on the layout. To troubleshoot such a “voltage drop” problem, measuring the DCC voltage directly can quickly tell you what the track voltage is along the track. Once you see where the voltage drop occurs, you can begin troubleshooting the cause, most likely a bad feeder somewhere.

Measuring current draw, especially with consisted sound units, can tell you if you’re going to outstrip your booster’s ability to supply the needed current to your trains.

One way to use the RRampMeter is to get a type 1 for each of your power districts and install it inline. This way, you get voltage and current (amp) readings at all times, which can be invaluable for rapidly detecting and locating problems.

Can you operate a DCC layout without a RRampMeter? Of course. Can you spot and resolve problems more easily with one? Absolutely. ☒



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J. Fugate

MEASURING FUNCTION VOLTAGE EASILY

When adding lighting to a DCC loco, it can be very helpful to know the function voltage. Once you know the voltage, you can precisely determine the voltage-drop resistor needed for LEDs or 1.5V incandescent lamps.

The action of the bridge rectifier and the PWM circuits in a decoder reduce the voltage such that the function voltage should be around 1.5 volts lower than the track voltage.

To measure the function voltage exactly, use a standard multimeter with a setting of around 25V.

Power the decoder from the rails (red and black wires – or temporarily install the decoder in a loco and put the loco on the track), then measure the blue wire of the decoder with the red probe and the white wire with the black probe.

Make sure to set the decoder/loco direction to forward and turn on the headlight function to get a voltage reading.

On my Siskiyou 1 layout powered by an NCE system and Lenz boosters, the track voltage measured right at 15.5V with the RRampMeter and the function voltage measured almost a perfect 14V with a standard multimeter.

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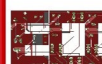
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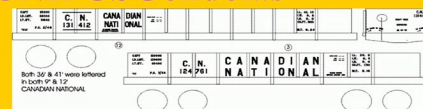
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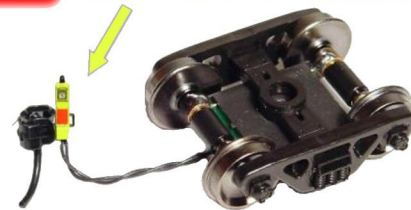
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Small layouts can be fun

Model Railroad Hobbyist | September 2019 | #115



PETER VASSALLO cleverly breathes new life into running trains on a smaller layout ...

FOR MANY MODEL RAILROADERS, OPERATION IS AN integral part of the hobby. And for good reason – after all the hard work of building a layout, it's a pleasure to run it in an engaging way and share it with others.

Many operations schemes are possible to suit particular layouts as well as the people who run them. Some like sophisticated

SMALL LAYOUTS CAN BE FUN | 2

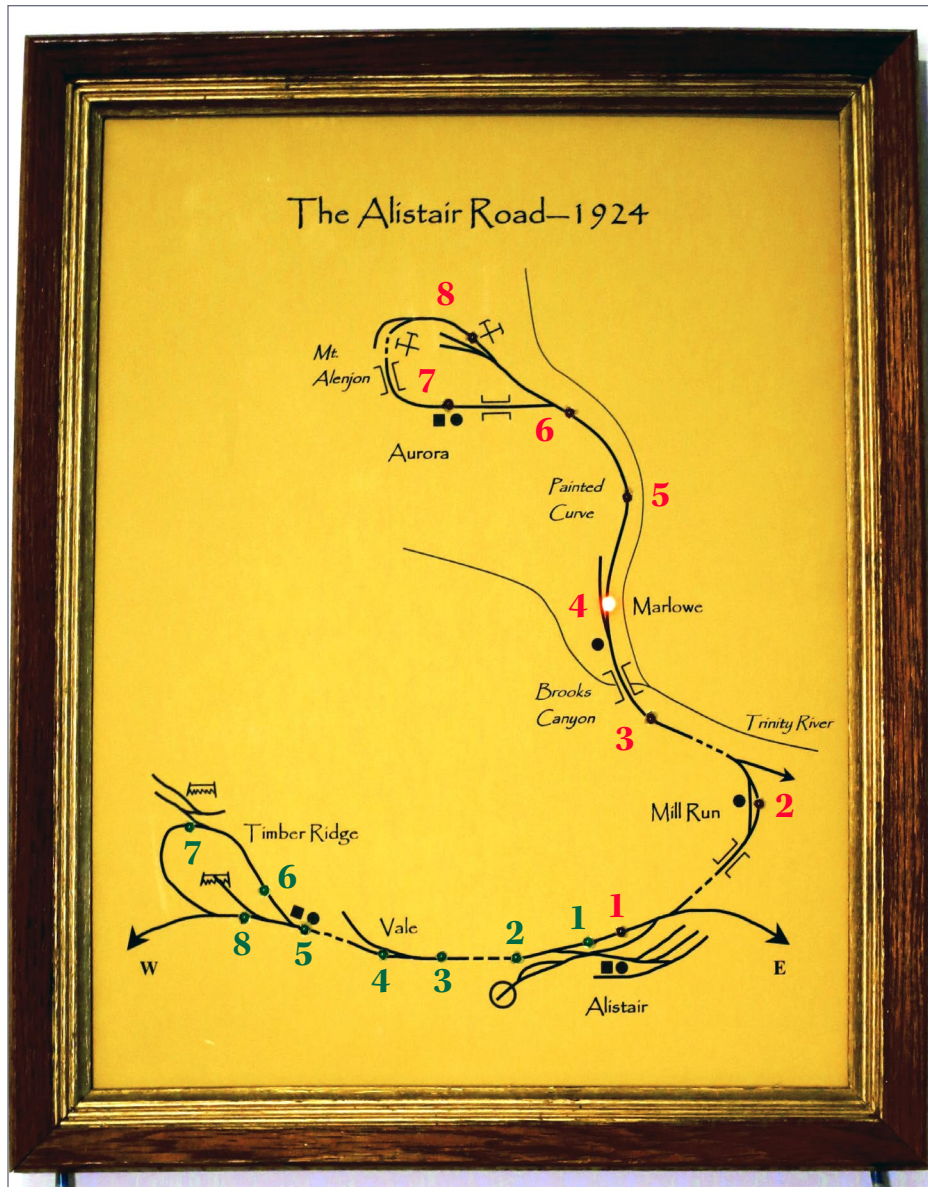
1. Overall view of the author's HO_n3 apartment layout. Left throttle controls Timber Ridge turn, middle throttle controls Alistair yard and right throttle controls Aurora turn. Near the left and right throttles are rotary switches that control lights on the system map visible on the back wall.

schemes involving signals, dispatchers, train scheduling with fast clocks, switch lists, etc.

Others – myself included – prefer a more casual approach that doesn't require much paperwork. In fact, while running my narrow gauge trains over the years, I find myself enjoying just taking a few cars out for a spin around the layout, from yard to towns and back. In doing this, I run laps around the loops to lengthen the mainline and provide a sense of distance between stops.

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MORE LIKELY TO STICK AROUND FOR A LONG
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2. System map of the Alistair Road, with sequence numbers for north and west routes overlaid. At this moment, the lights indicate a train is stopped at Marlowe.

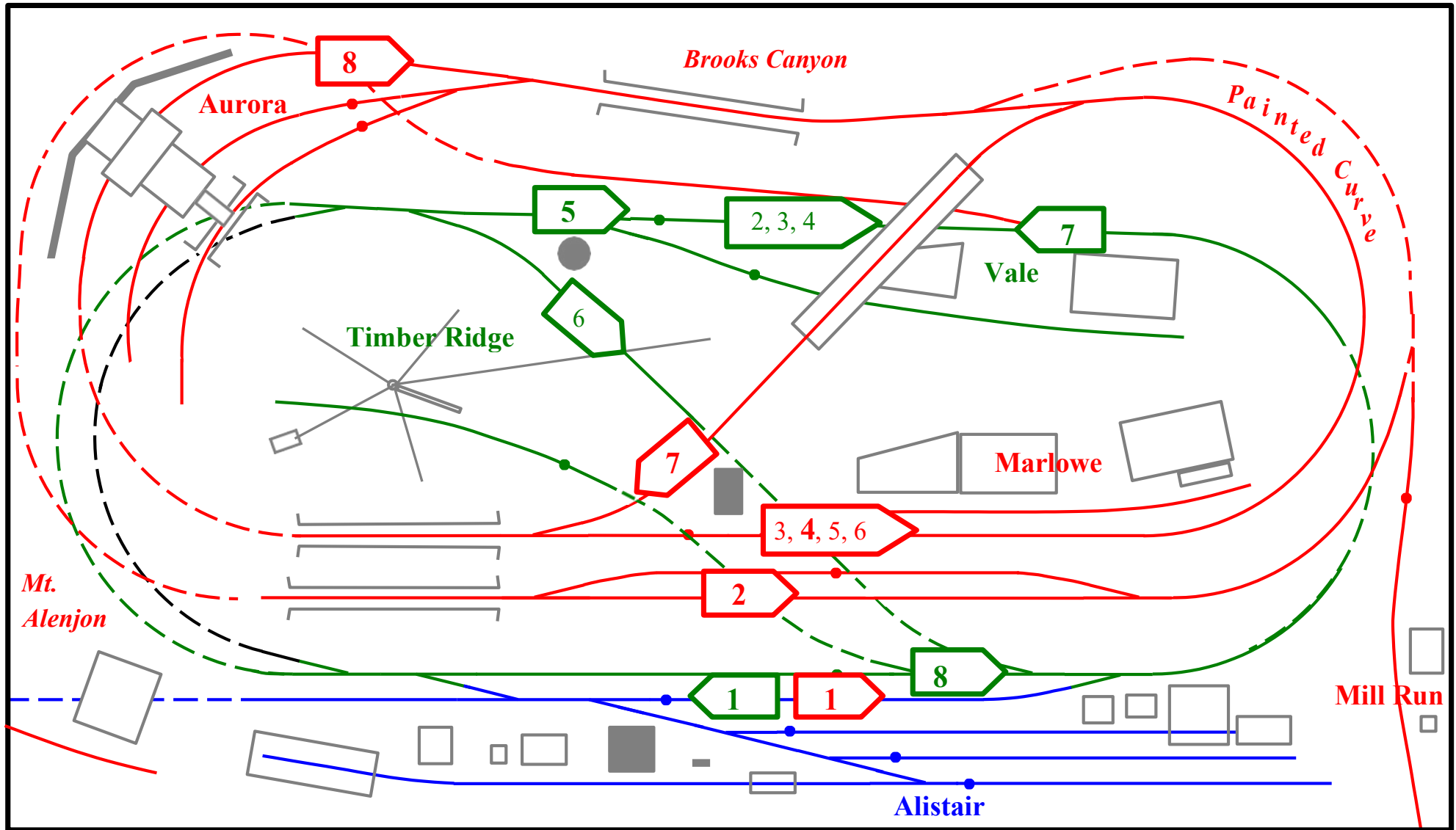
It occurred to me that I could break the bounds of the layout circle by adding a system map to track the progress of my trains. In this approach, rather than mentally count laps to approximate distance, distance would be physically indicated on a system map placed in view of the operators. A rotary switch located near the throttle controls would be used to activate the position indicators on the system map.

Some background on my layout is necessary to understand how the system works. As seen in [2], there are two main routes from the Alistair yard, one running west to Timber Ridge, and the other running north to Aurora.

The lower loop on the layout [3] simulates the east-west route while the upper loop simulates north-south. Trains for each route operate as turns: the trains leaving the yard go out to the reverse loops and back, switching towns along the way.

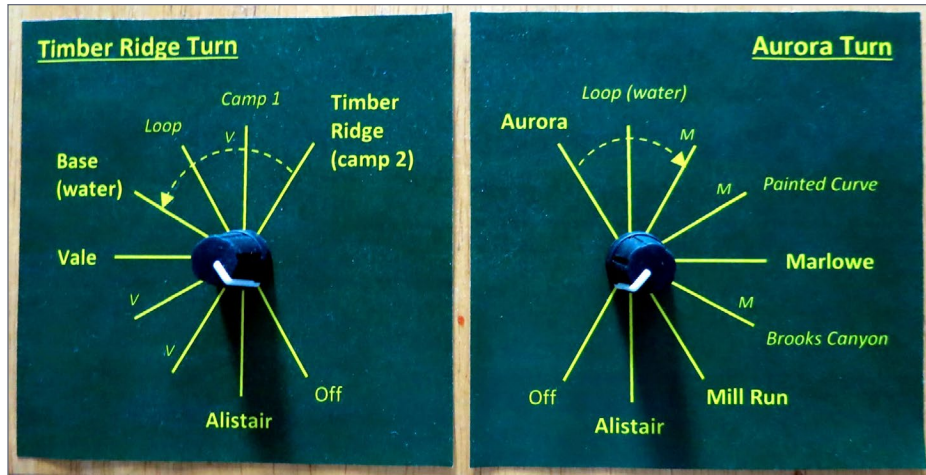
As I run various trains, I turn the rotary switches near the throttles [4] to indicate the relative locations of the trains. Taken together, [2] and [3] shows how this works on the layout. When the trains take the return loops, the process reverses as the trains make their way back to Alistair.

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3. Track plan routes for outbound portions of Aurora (red) and Timber Ridge (green) turns. Numbered positions correspond to locations on system map [2] activated using the rotary switches [4] when the train reaches each position on

the layout. Return trip reverses positions. Note that bold numbers indicate train stops. Solid gray structures indicate water tanks.



4. Rotary switch panels for operator route tracking.

Part	Quantity	Vendor	Total Price
16 x 20 inch frame with 3/16 inch hardboard backing	1	As desired	~20.00
Rotary switch panels, 4 inch square	2	Standard printer	N/A
Route board graphics	1	Staples poster (16 x 20 in)	\$10.00
Rotary switch, 11 position	2	allelectronics.com, RSW-39	\$2.90
Knob	2	allelectronics.com, KNB-269	\$1.30
Ten wire control cable, 22 gage, 10 ft long	2	allelectronics.com, 10CS22	\$12.40
No. 22 wire, 25 feet	1	allelectronics.com, 22RD-25	\$2.70
Red LED, 12VDC	10	allelectronics.com, LED-12R	\$4.50
Green LED, 12VDC	10	allelectronics.com, LED-12G	\$4.50

Table 1. Project list of materials

Building the System Map

See [Table 1] for a list of the materials I used for this layout. I purchased the electronic components from All Electronics (www.allelectronics.com), which is an inexpensive source of electronic equipment.

In making this list, I found the most expensive item to be the frame and backing board, although in my case I found a perfect frame for free that someone had discarded in my apartment house. Talk about lucky! Once I had the frame, I drew the system map in Word and printed it to a PDF file at the right size to fit the frame.

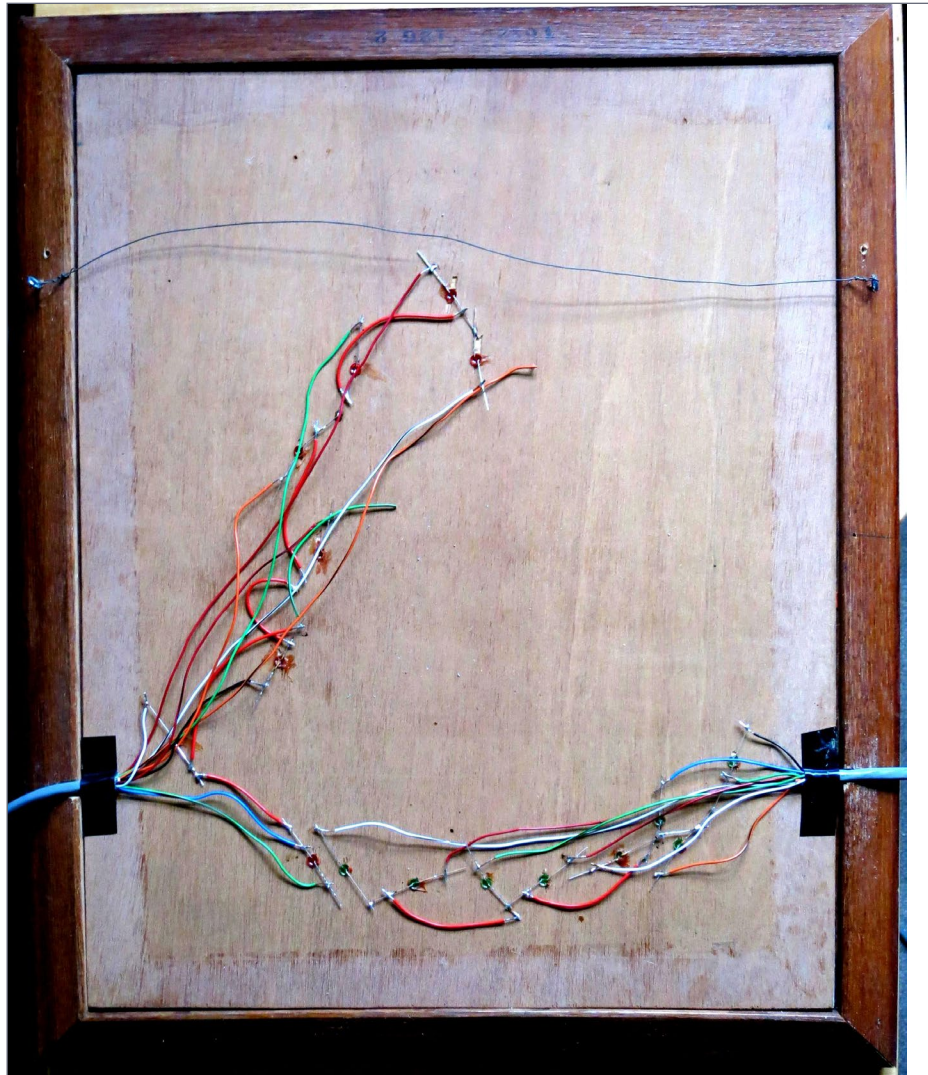
It took some time to draw the map in a style that looked good to me. I included text for towns and points of interest as well as symbols for water, fuel, and mining and logging operations [2].

For a color scheme, I chose a gold background with black graphics to accent the colors of my layout. I took the PDF file to my local Staples store and had them print it onto poster paper and cut it to size.

Back home, I attached the poster to the backing board using Walthers Goo. I then drilled holes through the poster and backing board at the appropriate locations to accept the LED lights.

I dabbed Goo on each light and pushed it through the backing board from behind with the leads for each light splayed out against the board.

I soldered the negative (anode) leads together where I could and used short sections of wire to connect the more distant negative leads together. I did this for each of the two routes, each containing eight lights [5].



5. Backside of system map framing board. Short red wires connect anodes of LEDs for the common negative polarity wire, while individual wires from the control cables connect to the positive cathodes of particular LEDs. The wires at the opposite end of the control cables connect to the rotary switches and to a DC power supply.

With a Dremel tool, I carefully cut and peeled back the outer casing of the 10-wire control cables to expose 12-18 inches of the individual wires inside. I soldered each of these wires to the positive (cathode) leads of the LED lights along the backing board for each of the two routes.

I exposed a few inches of the wires on the opposite ends of the cables to attach to the rotary switches. The connections were, of course, coordinated between the rotational position of the switch and the LED lights along the routes. I could find only 11 position rotary switches from www.allelectronics.com, so I used one of the extra positions as an off switch and did not use the last two positions.

I cut notches in the sides of the frame to accept the control cables and glued and taped the cables in position. I then hung the frame on the wall behind the layout and snaked the rotary switches under the layout to the front control panel. I drilled holes in the control panel to accept the rotary switches with the small graphics boards set in place under the control knobs.

Lastly, I connected the two positive wires from the rotary switches and the two negative wires from the control cables to my DC power supply, the same one I use to power my Tortoise switch motors.

The LEDs I purchased have built-in resistors to operate up to 12 volts. My DC power supply is an old 8.5-volt DC charger; the LEDs shine brightly at this voltage.

Actually, the green looks brighter than the red. This is because the eye is more sensitive to green, which is at the center of the visible spectrum. Better intensity matches would be obtained with green-yellow or red-blue LED pairings.

Layout Operations

With the system map in place, it's time to have some fun. To help a guest operator, I've written general instructions for each route, including arrivals and departures, switching duties and water/fuel stops [6].

I put the general instructions into a four-inch-square plastic holder. Later, I slip handwritten notes inside (visible from the back) to define the car movements.

As an example, the notes for the Aurora Turn might read: *Aurora: deliver 2 empty ore cars, pick up 2 loaded ore cars; Marlowe: deliver boxcar, pick up reefer.*

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When writing these notes, I make sure the deliveries are in the yard and the pick ups are at their industries. This is best done on the fly; in other words, operating the trains as extras.

Aurora Turn

- Assemble train, depart Alistair
- Arrive at Mill Run, take water
- Switch Mill Run as required, then depart
- Arrive at Marlowe, take water, then depart
- Arrive at Loop, take water and fuel, then depart
- Arrive at Mine 1, switch as required, then depart
- Arrive at Marlowe, switch as required, then depart
- Arrive at Mill Run, take water, then depart
- Arrive at Alistair, break up train

Timber Ridge Turn

- Assemble train, depart Alistair
- Pass Vale
- Arrive at Base, take water and fuel, then depart
- Take Loop
- Arrive at Camp 1, "switch" as required, then depart
- Arrive at Camp 2, switch as required, then depart
- Arrive at Base, take water, then depart
- Arrive at Vale, switch as required, then depart
- Arrive at Alistair, break up train

6. General conductor's instructions for Aurora and Timber Ridge turns. These instructions correspond with indications on the rotary switch panels [4].

Since the local freights originate in the yard, it's best to have a yardmaster defining the train orders. The engineer (or conductor, if you prefer) switches the location controls as the trains are run.

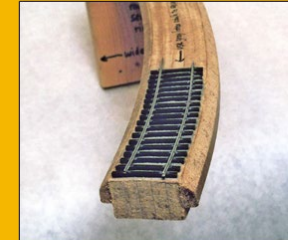


7. The morning unfolds as No. 32 pulls up to the water tank in Alistair, preparing for the day's first run. It will take about ten minutes to fill the tender, then another ten minutes to couple onto the cars in the yard and depart for the trip to Aurora.

I usually operate by myself and perform both engineer and conductor duties (not to mention yardmaster duties). If another operator visits, I take the role of conductor and operate the system map as the other operator (as engineer) drives the train.

With a dedicated yardmaster, they find the system map a convenient way to track the progress of each train and gauge how much time they have before any train returns to the yard.

The lights on the system map correspond with towns, landmarks or water/fuel stops along the line. Water and fuel (typically coal) governs the distance a steam engine can travel, as gasoline might govern the range of an automobile. A steam engine will go through its water supply faster than its coal supply, so water tanks at strategic locations must be used to keep the trains moving.



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8. Road engine 31 departs Alistair while no. 49 switches the yard. The little diesel began its career as a Grandt Line kit, but was later modified by hollowing out the superstructure and placing it on a Bachmann N scale switcher mechanism. A

jeweler's screwdriver was used to expand the wheel spacing to the proper gauge. An idler flat car with N and HO_{N3} couplers solves the coupler mismatch problem.

Narrow gauge railroads in particular required numerous water tanks as the engines were smaller and had to strain against steeper grades. As an example, the Denver and Rio Grande's route from Durango to Silverton, about 45 miles total, had water tanks spaced about 10 miles apart (five tanks in all).

I've explicitly modeled three water tanks on my railroad: one at Alistair yard, one at Marlowe and one at the base camp in Timber Ridge. I've also implicitly modeled two more: one at Mill Run and the other at Aurora.



9. Marlowe's Paint Works is one of the town's major industries. Tank cars carrying raw chemicals are unloaded using the spout siphon, and crated cans of paint are loaded onto box cars, using the wooden loading dock at the rear of the spur. Down the hill in back (in story terms, 70 miles away) is the freight house at Vale, with a gondola full of pipe ready for unloading. Looming in the background is Painted Curve, a picturesque passage between Aurora and Marlowe.

These implicit water tanks show on the system map at locations miles apart from the modeled tanks. I stop for water at these imaginary tanks at locations on the layout physically close to the Marlowe tank to help foster the illusion that the engine takes on water while stopping there.

Sound is another great way to foster the illusion. I've been running two of my older locomotives as soundless DC models, but I recently purchased a Blackstone C-19 with a Tsunami sound encoder and an MRC Prodigy Explorer DCC controller.



10. Number 33 stops for water at the base camp in Timber Ridge after picking up a string of loaded log cars from Camp 2. A simple water tank like this creates another stop along the line even if it's only a few inches away from another stop (in this case, the town of Vale). The tank is an easy scratchbuilding project, partly because it can be seen only from the back and, as such, no spout detailing is required!

The MRC Explorer works perfectly for small railroads like mine; it cost just \$90.00, takes up just 4x5 inches and controls up to four locomotives easily.

When I stop the locomotive for water, I use the “water fill” sound effect to simulate the opening of the tender hatch and the sound of water flowing into the tender.

After about ten seconds, I turn the fill effect off and proceed with a corresponding “whistle” send off.

Water tanks are particularly good to model, as they take up little room on the layout and can serve as separate stops along the line. For example, the small tank at the base camp in Timber Ridge has its own unique stopping point on the system map but sits literally just inches away from the town of Vale.

Just use your imagination to separate them in your mind as you are taking laps and following the lights on the system map.

Other layout elements can correspond with locations on the system map, including geographic features, tunnels and bridges. Some examples of these on my layout include the rock shelf trackage around Painted Curve and the wooden truss bridge over Brooks Canyon.

Again, some imagination is required to only “see” the train passing through these features when the lights on the system map indicate it. The loop circuit at Timber Ridge is longer than at Aurora, mimicking a longer logging route through several camps (green routes 5-6-7-8 in [3]).

Aurora’s loop is shorter (representing about 3 miles around Mt. Alenjon), and is simulated using the red route 6-7-8 in [3]. The train stops for “fuel” after taking the switch into this loop (modeled by stopping at red 7 in [3]). Red 7 is physically close to the



11. Engine 31 exits the cut stone portal of tunnel 1 on the westward route to Vale. Life is good for the engineer, driving his train under creamy blue skies through northern California scenery.



12. Engine 32 pauses at Painted Curve with a short freight in tow. The engineer is waiting for the track crew up ahead to clear debris that had fallen during last night's storm. The conductor took advantage of the delay to capture this dramatic photograph.

water tank at Marlowe; as mentioned previously, this helps with the illusion that the engine is taking on water while stopping there.

Trains can be left at any location between sessions, making the system flexible and relaxed. It's so flexible, in fact, that you can skip laps if you choose and just flip the rotary switch forward to the location you want to work as soon as the train gets there.

The key is, *you can see your exact position* on the railroad while working or stopped at a given location. Even without the lights, the system map reminds me that the railroad is not just a few loops of track but rather a complete and imagined system.

Model railroad operations using a system map breathes new life into the much maligned track circle, which is often the heart of

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13. A northbound freight crosses the wooden truss bridge in Brooks canyon. The train will stop shortly for water at Marlowe before continuing on the uphill climb to Aurora, where empty

ore cars will be exchanged for loads. After taking the turn around Mt. Alenjon, the train will return southbound to Alistair, dropping the box car off at Marlowe on the way.

small layouts. This approach allows those with small layouts to get a concrete sense of travel distance when taking circular laps, adding a whole new dimension of fun to operations.

The approach could be adapted for use with larger point to point layouts, too.

If you wanted to get fancier, signal detection could also be used to automatically increment train position as it progresses along the line.

I'm having a lot more fun running trains on my layout – for those of you with smaller layout, try it, you might like it! ☒



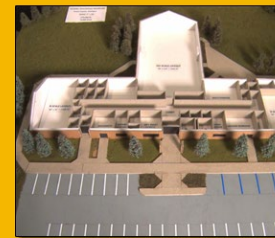
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PETER VASSALLO



Peter lives in Albany, NY and works part time as a mechanical engineer. His interests are many, including golf, Yankees baseball, Giants football, Sabres hockey, writing fiction and poetry, country music and dancing and, of course, trains. His favorite prototypes are the narrow gauge lines of old Colorado and California. An earlier feature on his Alistair Road was published in the Sept/Oct 2017 issue of *Narrow Gauge and Shortline Gazette*. ■



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Building paper and cardstock models

Model Railroad Hobbyist | September 2019 | #115



RATE THIS ARTICLE

JOHN AND AARON GIBBENS describe how to construct cardstock models ...

WE LOVE READING OLD MODEL RAILROAD MAGAZINES.

They are loaded with stories of how people made models from what they had on hand. These folks were creative, making do with what could be found, and turning it into fabulous models.

We remember a magazine cover photo from the '70s showing an amazing black wrought-iron looking bridge built entirely of paper and cardstock. Wow!

Building structures out of paper is not common today. With an abundance of plastic and laser-cut wood kits available, building a model tends to be fairly quick. But then comes time to paint the model – and try our best to make our model look real.

PAPER CARDSTOCK MODELS | 2

1. An HO warehouse (and props) made entirely of paper and cardstock.

Many people love to paint and can produce stunning results. For those who don't produce such superb results, let's introduce you to paper modeling, because paper models are basically *already painted!*

Building structures out of printed paper remains quite popular in Europe but has fallen out of favor here in the United States. Several manufacturers produce excellent models in the UK and Europe, but only a few in the USA.

As new designers come along, our choices for western style models is improving.



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There are three advantages to downloadable paper models. They're inexpensive, immediately accessible, and are "pre-painted." Using photographs and quality illustrations, these models typically look great the moment the final piece is installed. With no cost for packaging, injection molding, laser cutting or shipping, paper models are a tiny fraction of the price of boxed or bagged models.

You can shop at anytime from anywhere you have internet access. You can download and start building your next great scene. Most companies offer free "example" models so you can experience their quality and modeling with paper. For scratchbuilders, paper model companies offer huge arrays of pre-finished pages of wood, brick and metal siding, roofing, stone walls, paving and more.

Modeling with paper may not be for everyone. Construction can take longer than plastic models and there can be more



2. This is John's first attempt at scratchbuilding a paper model, an N-scale low relief model of the Southern Pacific depot in Eugene, Oregon.



J. Fugate

MAKE YOUR OWN STRUCTURE DESIGNS

In this article, John and Aaron talk about paper structure designs you can download, print out, and build.

But if you want to design your own paper structures, check out Model Builder. It is very affordable software from Evan Designs that lets you design your own paper structures on a Windows computer.

WEB: modeltrainsoftware.com/products/model-builder.



3. Paper can be used for more than just buildings. Here paper is used for paving and walls.

parts to assemble, but you save time by not needing to paint. Parts can be small; glue can be messy and some folks just don't think they can cut a straight line. But like any other skill, the more you practice the more your speed and quality will improve.

What you need to make paper models

As with any type of modeling you will need certain basic tools and supplies [4]. These are few and inexpensive, and available at most stores with office supply, craft, or hobby departments. Most modelers will already have most or all of these around their work area. Here's our recommended list of basic tools:

Must haves:

- Scissors
- Hobby knife



4. The basic tools needed to construct paper models are available at most stores, not just specialty hobby shops. Scissors, knife, glue, metal ruler, paper and cardboard will get you started. You may already have them.

- Glue stick glue
- White (PVA) glue
- Metal edge ruler, preferably with cork no-slip backing
- Smartphone, tablet, computer, or borrow a friend's
- Paper
- Poster board
- Mat board

Optional but helpful:

- Color printer - See topic "No Printer? No Problem."
- Tweezers
- Cutting mat

Some of our favorite specialty tools

As you progress in modeling with paper and cardstock you may wish to expand your tool selection. We each have some favorite tools to speed up construction or do it more precisely. None of these are necessary and we would recommend waiting to acquire them until you find the need [5-8].

No printer? No problem.

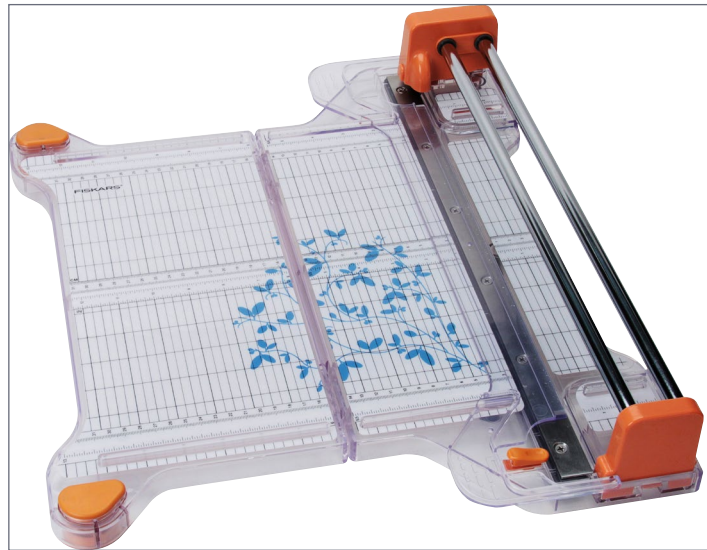
Perhaps the biggest hurdle for some will be printing the files. Have no fear. If you don't have a color printer, or even a computer (but you do have access to email by smartphone or tablet), you can get quality printed output of the files at any of the thousands of FedEx Office or similar stores.

While on the road we needed to print out some PDF documents and had no access to a printer. The only tool we had was a mobile phone. John's wife smartly suggested he call a nearby FedEx Office to see if they could help. They made it so easy!



5. The Chopper by Northwest Short Line. For making slender, small or repetitive cuts of mat board you can't beat The Chopper. Although expensive in comparison

to basic tools this can be a real time saver. An inexpensive alternative: a simple razor glass scraper from the hardware store. Some of the advantages at a tiny fraction of the cost.



6. A rotary paper cutter: We like the deluxe version from Fiskars but even an inexpensive model will assist you in making long straight paper cuts.



7. Mini scissors: I use a pair of expensive German-made sewing snips that excel at small cuts and trimming edges. Many bonsai snips will also work well. Look for a thin blade that will hold an edge. Thick blades will tend to curl the paper and cardstock as you cut.



8. Rotary punch: This doesn't get used very often but is practically indispensable if you need to make small diameter circles in mat or poster board. We specify its use in making

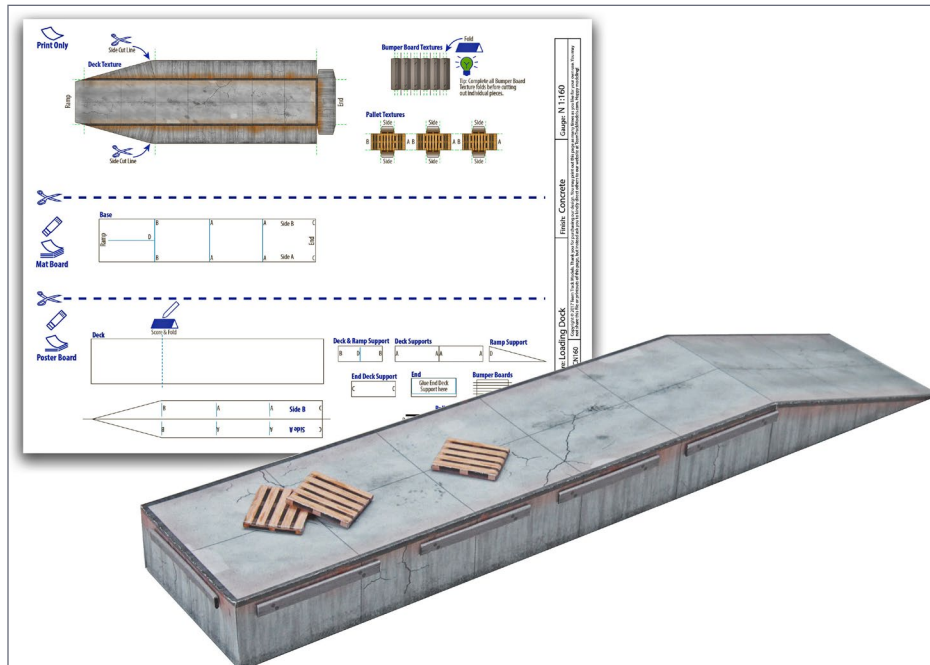
round industrial roof vents for instance. Hint: the 4mm punch is perfect for making N-scale barrels! Four punches of mat board glued together and painted with a felt pen or paint makes a quick 24" diameter by 36" tall standard metal drum.

It occurs to us their handy solution would work for any of our modelers who don't have a color printer, or who wish to have vibrant, waterproof, toner-based color printing!

Here's how it works.

Email the PDFs to printandgo@fedex.com. You will receive a retrieval code back by email.

Go to any FedEx Office location and use the self-service printers. At the Print & Go payment kiosk near the self-service printer, select **Print** and then **Print with Retrieval Code**. Enter the code



9. Here's an example of a basic model available for free online at one of the several vendors. We'll use this to illustrate the basic steps to building a paper model.

and follow the instructions to print the files you sent via email. You even pay at the kiosk.

And for those who feel intimidated by a self-serve process, you can work directly with an employee to print them for you.

Basic steps to building any paper model

Since this article is an overview of modeling with paper we're not going to show each step in building a specific model. Instead, we're going to show you the basic process so you know what to expect. Your model will typically come with its own set of detailed instructions.

To build a paper model you will download the model files, print out the pages and assemble. Assembly starts with gluing some of the model pages or parts to heavier cardstock such as poster and mat board for rigidity. These are then cut out and glued together, forming a finished model.

Here's the basic steps to build a simple paper loading dock model [9], one of the many free models offered by paper model companies (this one is available from our company at www.teamtrackmodels.com).

To begin, you need to download the files. After you make your purchase, typically, you will have a link provided either by email or on the paper model company website [10]. Click the link to download and save the model files. If storage space is limited such as on a mobile phone or tablet, we recommend having a Dropbox or Google Drive account for download storage. They are free, reliable, and accessible from any computer or device.

The next step is to print the model pages and, if desired, the instructions. Color laser printers and copiers have good color

dynamics and are waterproof but the finish is somewhat glossy. In general, we recommend laser printed pages for their durability and bold color. Inkjet printers can be less vibrant on regular paper but don't "shine" with reflected light. If you print using inkjet it can be a good idea to give your pages a coat of dull clear spray to protect the print.

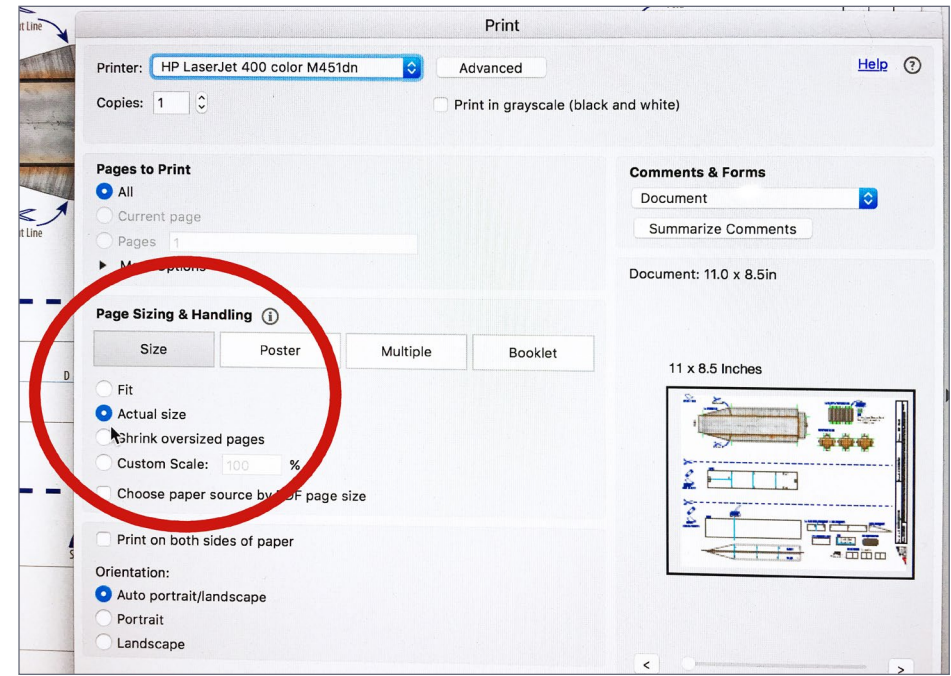
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Product	Quantity	Price
Concrete Loading Dock - N - 1:160 Scale: n-us-1160	1	\$0.00
- Download 1: LDC_N160.pdf - Download 2: LDC_instructions.pdf		
Subtotal:		\$0.00
Total:		\$0.00

10. Once you complete the checkout process (even with free models) you are presented with the links to download your files.



11. When printing the model pages, print them at actual size without any fitting or scaling, unless your model comes in one size but you want to model a different size.

Print the pages needed with scale set to none [11]. This preserves the original scale of the model. Some models include instructions on how to print to different scales. These are usually drawn at HO and can be printed in smaller scales even though this leaves a lot of empty space on the page.

Some parts or pages need to be glued to thicker cardstock before cutting out while some are glued after as per the model instructions. When gluing paper to heavier stock, apply the glue to the poster or mat board [12] and then press the paper to the board.

We have found that applying the glue directly to the paper can cause the paper to stretch, resulting in pieces that don't fit or

assemble properly. A rolling pin (called a brayer) can be useful to get all the bubbles out from underneath the paper and give a better finish.

The most time-consuming aspect of paper modeling is cutting out the parts. Care in cutting results in smoother lines, better piece fitting, and a better overall model upon completion [13]. The advantage of paper models over plastic or wood is that mistakes are easily and inexpensively repaired by simply reprinting a replacement piece.

Paper can be cut with good scissors but cardstock parts need careful cutting with a hobby knife. One of the best knives we've found is the cheap dollar store snap-blade knife.



12. It is most important, especially on larger pieces, to apply glue to the heavier stock. The process of applying glue to thin paper will stretch the paper, rendering your part shape larger than intended.



13. When cutting, keep your knife vertical and use a metal straight edge to get precise cuts. The best knife we've found for cutting poster and mat boards is a cheap snap-blade knife.

They can be found for as low as three for a dollar, have 10 or so blades in each knife, are sharp and sturdy, and last longer than pointier hobby knives. Replace your blades frequently as mat and poster board will dull them very quickly.

The assembly stage brings your model to life. Follow the model's instructions. They were written during the design/build process and will help prevent errors and mistakes. Some models have pictograms to show how the pieces go together.

Apply glue sparingly. A little goes a long way. Allow drying time between steps [14]. While simple models can be built in an hour or two, complex models can require many evenings.

Some structures include light to heavy weathering depending on the effect the designer intended, but you can add weathering to

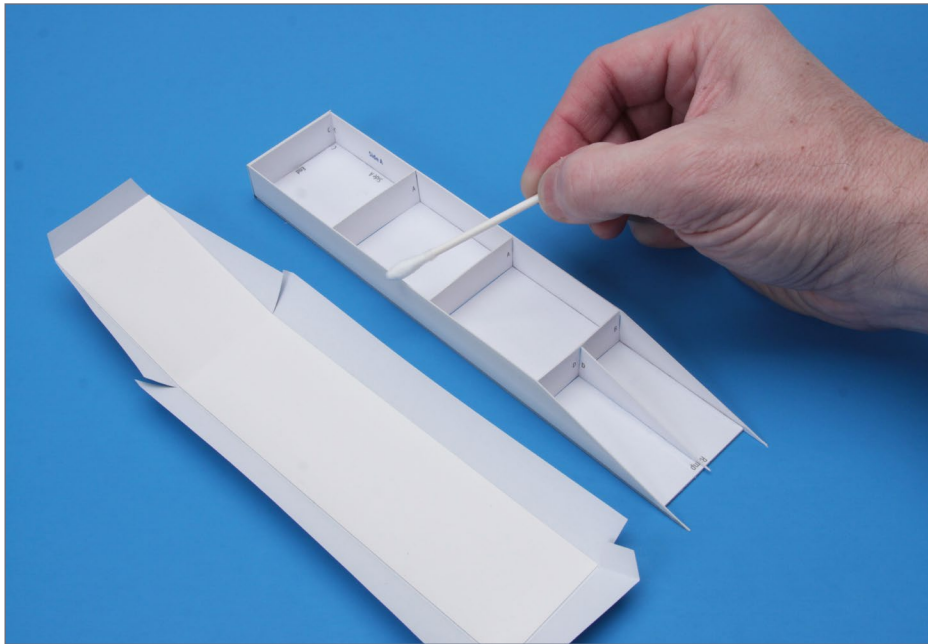
your structures with colored pencils and pastels [15]. Go lightly at first and keep adding detail until you've reached the desired effect. A coat of dull clear finish can seal in your work if desired.

And that's it. That's the basic process for completing a paper structure for your layout.

Textures for scratchbuilders

Most of the companies that have building and structures also have large selections of printable textures and finishes including roofing, siding, flooring, and more [16].

Inexpensive printable textures can be a gold mine of finishes for the scratchbuilder. Regardless of the base building materi-



14. A cotton swab or Microbrush will speed up and help control the application of PVA glue.



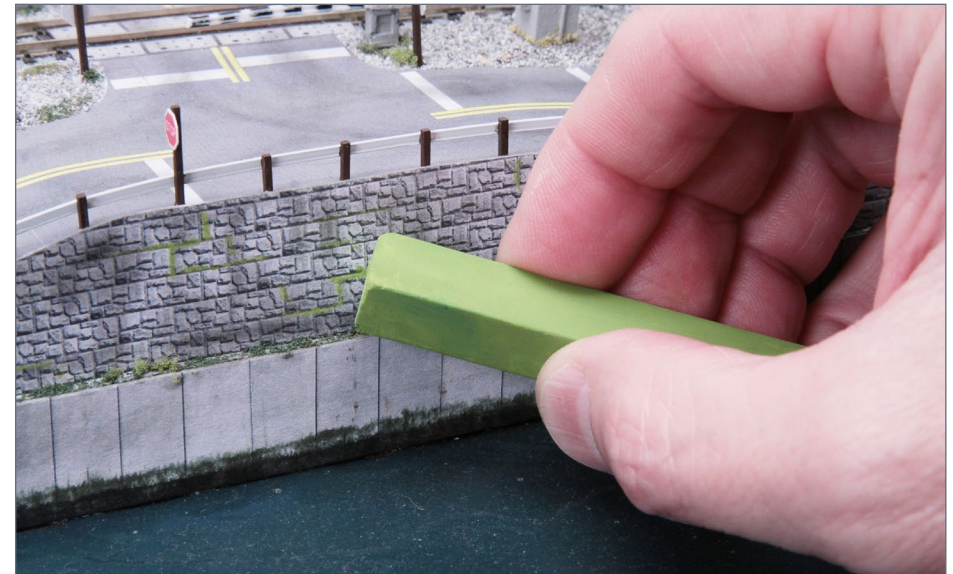
J. Fugate

MORE THAN JUST BACKGROUND STRUCTURES

You can use these paper structures for more than just background buildings. With a bit of extra effort, you can add more layers to get more of a 3D bas-relief look, resulting in foreground structures that are hard to tell from plastic, resin, or laser cut wood structures.

Back in the January 2012 issue of *Model Railroad Hobbyist*, Lance Mindheim discusses the process of adding 3D effects to paper structures made from digital photos (similar to what the authors show here), giving a foreground building that can look more realistic than plastic, resin, or laser cut structures.

WEB: model-railroad-hobbyist.com/magazine/mrh-2012-01-jan.



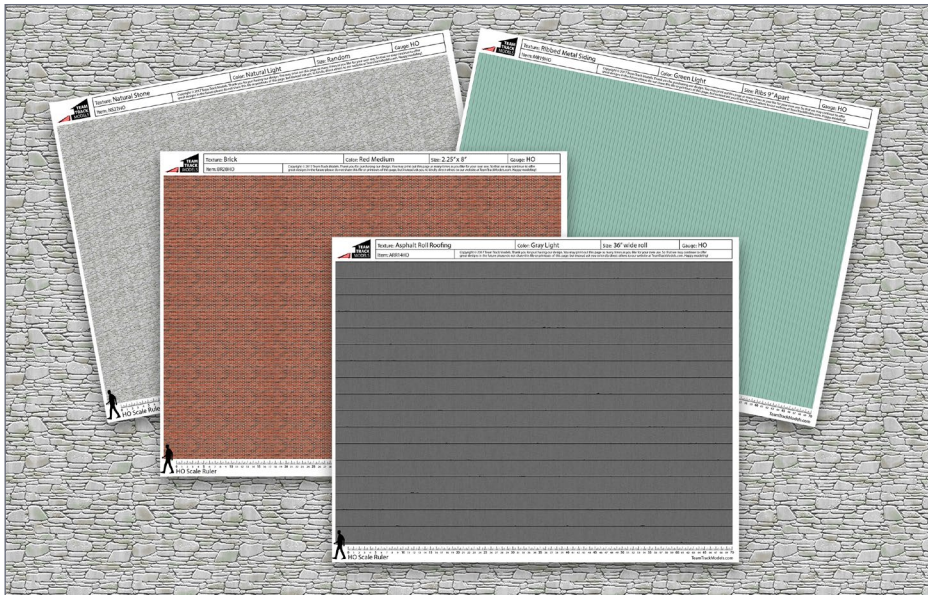
15. You can add weathering with simple pastel chalks and colored pencils. Here we're adding a bit of moss and algae color to this N-scale concrete block shoreline wall.

al, whether it is cardstock, styrene, or wood, printed textures can be an excellent method of finishing a model without the difficulty of paint.

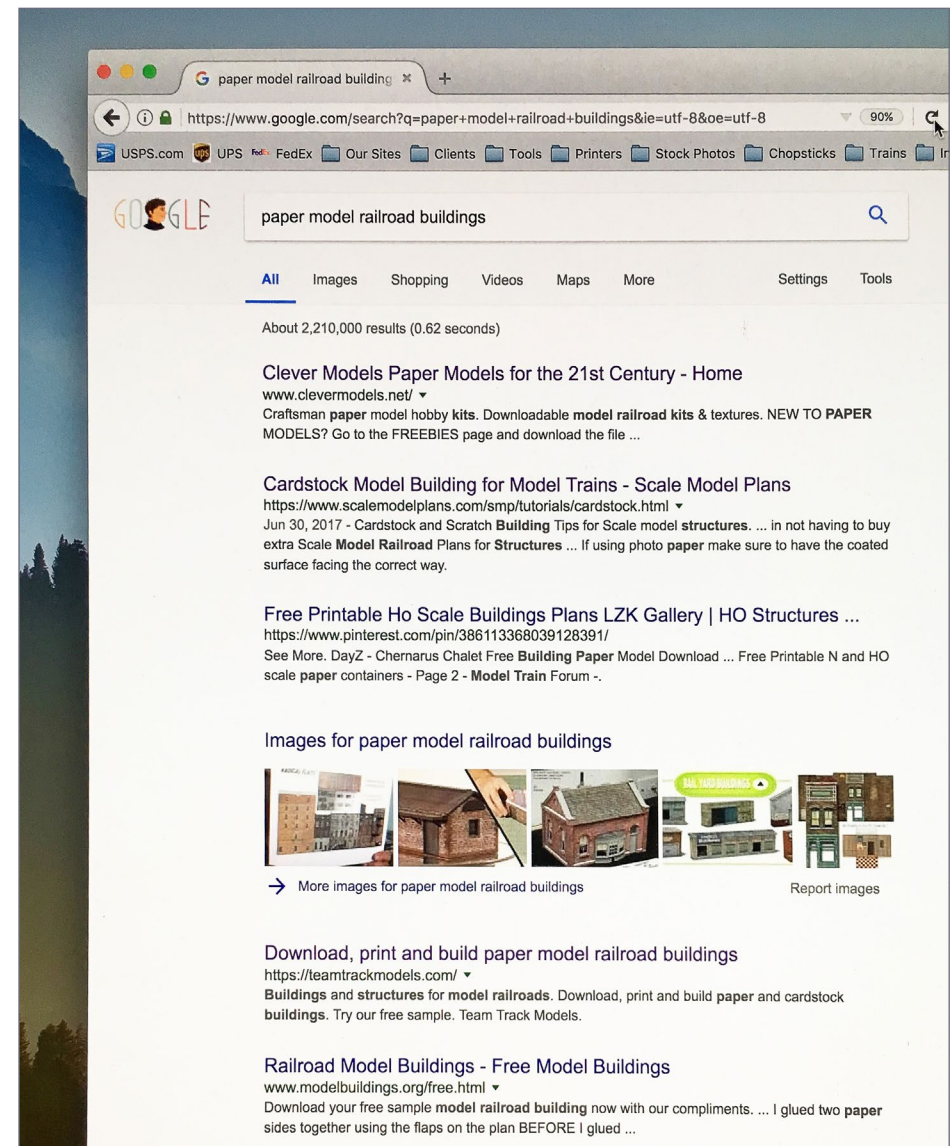
Where to get models

Enter “paper model railroad buildings” into your favorite search engine [17]. You will have many options from which to choose. Businesses offering models for sale typically have excellent model quality, finish and instructions.

Sites offering only free models can be good, but they tend to be simpler models with less graphic quality and less structural detail. A few companies you might try are:



16. Thousands of textures are available to scratchbuilders for practically any finish and color desired such as stone, brick, ribbed metal siding, and asphalt roll roofing.



17. A simple search will bring up several reputable companies to choose from. Look for sites that are secure, those that start with https:// as opposed to just http:// to know you have a safe and secure connection, especially if you're making a payment.

- Clever Models [www.clevermodels.net]
- Scale Scenes [www.scalescenes.com]
- Scale Model Plans [www.scalemodelplans.com]
- Team Track Models [www.teamtrackmodels.com] (our little company)

Many sites offer a free model to download and practice with such as the Concrete Loading Dock model shown earlier [9].

Try a company's free model to look at how good the graphics are and their level of quality of construction before buying kits. Usually they are smaller and easily put together in a short amount of time.

This gives you, the builder, the opportunity to view their graphic quality and building methodology. Use these to practice your building techniques before spending money on more complicated designs.

Note about CA allergies

Cyanoacrylate glue (superglue or CA) is one of a modeler's favorite glues. It bonds many materials and does it quick and strong. When we first began building our paper models naturally we used CA. Last spring, I (John) started having severe colds.

I'd be ill for several days, start to get better for a couple days and then get sick again. This went on for months, including an expensive trip to the doctor and an unsuccessful round of antibiotics, without finding a cure.

I started to wonder if the glue could be the cause, and with a little research I found that a small portion of folks are allergic to CA. The severe cold-like symptoms' onset was about 12

hours after exposure and last about 3 days. Bingo, that was it! I stopped using CA and after a few days I was well.

We decided that if CA can make people sick, perhaps we should look for an alternative [18]. To the rescue is good old PVA (such as Elmer's Glue All). For paper modeling PVA has an excellent bond, reasonably sets in only about twice the seconds as CA and allows for a little adjustment.

We've grown to like using PVA more than CA for most cases when constructing paper models. Our research suggests that medical grade CA (which is also safe for gluing foam) might not cause a reaction, and it seems to not cause me (John) any ill side-effects. ✓



18. Two glue alternatives for people with allergies to CA: Foam Safe CA (also referred to as Medical CA) and PVA such as Elmer's Glue-All.

JOHN AND AARON GIBBENS



John and Aaron Gibbens operate Team Track Models (www.team-trackmodels.com), a new-in-2017 downloadable paper model company in Eugene, Oregon. The brothers are both

model railroaders in N scale.

Aaron has been an HO model railroader most of his life before converting to N scale a couple years ago. Outside of work he is a Lieutenant with the local volunteer fire department and enjoys barbecuing.

John started model railroading four years ago with N scale T-Trak modules. He was looking for an activity to do in the winter months. He operates a catalog design company with his wife and enjoys sailing and movies. ■



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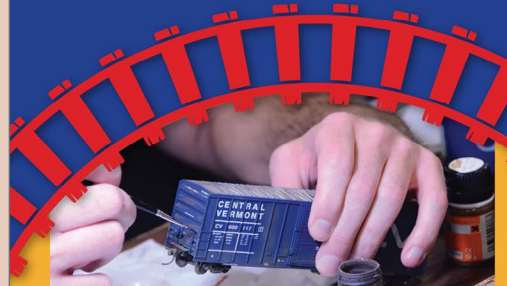
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Model Railroad Hobbyist | September 2019 | #115

JONAS H. NILENDER

looks in depth at a train that both Southern and Norfolk & Western fans can model ...

1. Postcard showing the attractive Tennessean green, white, and yellow paint scheme. *From Wikipedia*

THE SOUTHERN RAILWAY/NORFOLK & WESTERN RAN the Tennessean as a secondary streamliner between Washington, D.C., and Memphis, Tennessee. This train became Southern's third entry into the Washington-Memphis market and quite clearly ran as a secondary train when compared to the likes of the Crescent or the Southerner.

The Southern shepherded the train from Washington to Lynchburg, Virginia, where the N&W took over to Bristol,

THE SOUTHERN RAILWAY'S TENNESSEAN | 2

Tennessee. There, the Southern took over the train again and brought it into Memphis. The train first ran in 1941 and continued until 1968, though service had steeply declined by then, as it had for all streamliners.

The Tennessean never stood out as a particularly fast train – it only averaged a little less than forty miles per hour either way – but, for many years, it provided a direct link between Memphis, Washington, and points to the north.

Because both N&W and Southern operated it, this train provides modeling opportunities for modelers of both railways.



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Historical consist notes

The railroad painted the cars of the Tennessean a plain silver with “Southern” lettering. They painted the motive power more elaborately: Southern diesels which handled this service had an attractive green and white scheme with yellow stripes, as can be seen in [1].

Car Type	Number	Assignment
Baggage-Mail (60' Rolling Post Office (RPO) Section)	1700-1701	Washington-Chattanooga
Baggage-Mail Storage	1750-1751	Washington-Chattanooga
Baggage-Mail (30' RPO Section)	1725-1726	Chattanooga-Memphis
Baggage/Dormitory/22-seat Coach	703-705	Washington-Memphis
52-seat partitioned Coach	903-905	Washington-Chattanooga
56-seat Coach	806-814	Washington-Chattanooga
48-seat Diner	3303-3304	Washington-Chattanooga
56-seat Coach	806-814	Washington-Memphis
56-seat Coach	806-814	Washington-Memphis
Tavern/Lounge/ Observation (flat rear end)	1150-1152	Washington-Memphis
10-3 Sleeper (Pullman-Owned)		New York-Memphis
12-1 Sleeper (Pullman-Owned)		Bristol-Nashville
12-1 Sleeper (Pullman-Owned)		Chattanooga-Memphis

Table 1. According to Wayner (see sources at the end of this article), the 10-3 (10 section, 3 double bedroom) sleepers assigned to the Tennessean were Villa Heights, Villa Nova, and Villa Verde. The 12-1 (12 section, 1 drawing room) sleepers assigned were Brentwood, Dahlonga, Knickerbocker, and Puritan.

The train, when inaugurated, included all-lightweight cars except for the heavyweight sleepers at the rear. Like many Southeastern roads, the Tennessean featured a partitioned coach in order to comply with Jim Crow segregation laws. As these laws were phased out in the late '50s, so were the partitioned coaches.

The heavyweight sleepers included in the consist were painted an aluminum color to match the rest of the sleek train. They were also 'shadow lined': a treatment was applied to the side of the car to imitate the fluted sides of the streamlined cars. After World War II, the heavy-weight sleepers were replaced with lightweights, with configurations such as 10 roomette-6 double bedroom, 14 roomette-4 double bedroom and 10 section-1 drawing room-2 compartment. A Budd 34-seat coach/bar/lounge replaced the original observation car in the late '40s.

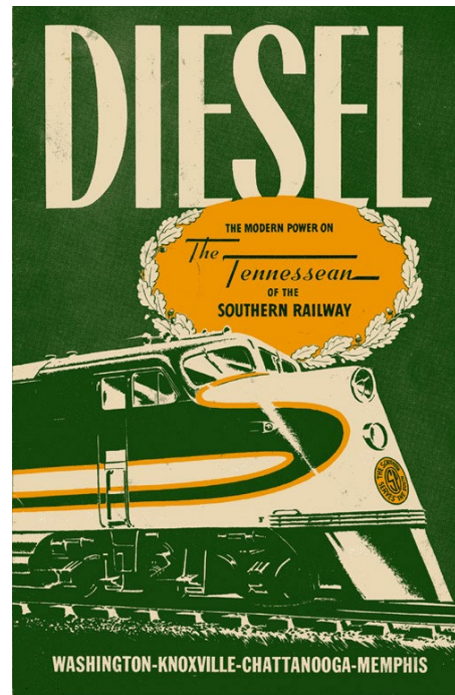
After May 1944, a third baggage-mail car with a 60' railway post office section was provided for expanded RPO service to Memphis and Chattanooga. It is unknown if this car operated between Memphis and Chattanooga alone, or if the car was added to the train to allow through service from Washington to Memphis.

In any event, if you are modeling the Tennessean after 1944, consider having at least two baggage-mail cars with 60' RPO sections between Washington and Memphis if you have the space.

More information on car assignments is available from Mike Condren's Tennessean web page at condrenrails.com/MRP/Tennessean/Tennessean.htm.

Historical power notes

The Southern Railway had one of their attractive Ps-4 4-6-2 Pacific locomotives streamlined for service with the Tennessean between Washington and Monroe, Virginia.



2. An EMD brochure describing the E-unit prominently featured its use on Southern's Tennessean.

However, Southern was an early adopter of diesel power so this locomotive, #1380, was not on the Tennessean for very long. It went to the Washington-Atlanta pool after being retired from Tennessean service; it retained its streamlining to the end of its service life.

Over Norfolk & Western rails, the famous class J streamlined 4-8-4 locomotives handled the Tennessean to Bristol, where a Southern diesel would take over.

This could be an E-unit, an Alco DL-109 or an Alco PA



3. The Tennessean at a stop in Johnson City, Tennessee. This appears to be a publicity run of the train since no head-end cars are present and the train didn't stop in Johnson City normally.

unit. When the entire service was dieselized, these locomotives could be seen anywhere on the Southern portion of the route, though it seems that the E-unit was the most common power for the train.

The Tennessean would be an excellent subject for any modeler of the Southern or Norfolk & Western in Tennessee or Virginia. One idea would be to model Lynchburg, Virginia, a town which had three major railroads running through downtown: the Norfolk & Western, the Chesapeake & Ohio, and the Southern.

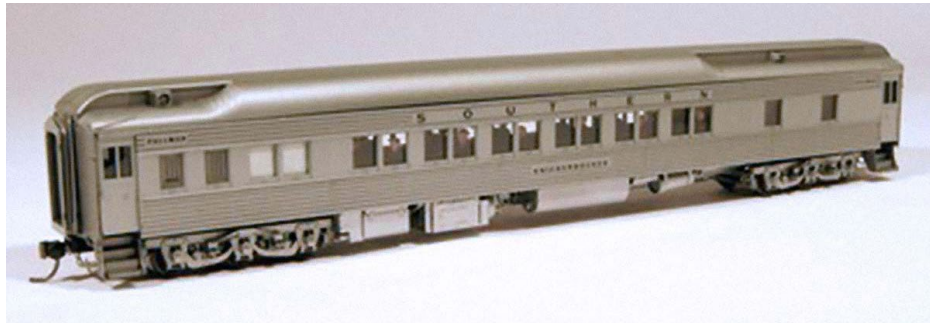
Lynchburg was where the Tennessean was handed off to the Norfolk & Western, so it would provide an opportunity to showcase both the tuscan and gold of the N&W and the Virginia green of the Southern. The same idea could be used to model Bristol, Tennessee, if you are pressed for space or uninterested in the C&O.

If you are modeling Knoxville, Chattanooga, Memphis, or Washington, D.C., then adding the Tennessean to your operating session would be as simple as finding or building the appropriate cars, power, and fitting it into your timetable.

Similarly, any points on the Tennessean's route could see it pass through once an operating session.

Cars

Models of cars for modeling the Tennessean are indexed below [Table 2]. All Union Station Products sides are offered in multiple scales, including HO, N, S and O, making it easier to model the train in those scales. Union Station Products also



4. An HO scale Atlas-Branchline model of the Pullman 12-1 sleeper 'Knickerbocker' as used on the Tennessean. The car has been painted silver and 'shadow lined' to match the rest of the train. Photo by Worthopedia



5. Streamlined Ps-4 Pacific #1380 was a rare example of streamlined steam on the normally conservative Southern railway. This locomotive retained its streamlining until it was scrapped in 1953. Photo by Heath Nicks

offers core kits for convenience when ordering, though not in N scale to the author's knowledge.

Besides the cars listed, Union Station Products, as part as #9621-030, offers car sides for the Budd 34-seat coach/bar/lounge car which replaced the original observation car in the Tennessean consist in the late '40s.

The author has not been able to ascertain exactly what numbers these cars carried, though they were numbered from at least #950 to at least #955. Furthermore, car sides are offered for Southern 10-6 and 14-4 cars as #4140F and #4153C, respectively. Finally, Walther's and Atlas-Branchline both offered a 10-1-2 heavyweight sleeper which can also be used on the Tennessean.

The author has not been able to ascertain names or road numbers for these sleepers with relation to the Tennessean, or if later heavyweight 10-1-2 sleepers were also 'shadow lined.'

The power you use on the Tennessean will depend on the period and location you're modeling. The majority of the train on Southern rails was powered by diesels. In HO scale, Broadway Limited offers an EMD E6 unit painted in appropriate colors for the Tennessean with product #BLI-3272.

Car	Manufacturer
#1700-1701 Baggage-Mail	NKP Car Co. 'Southern Baggage/Mail 85' USP #7462
#1750-1751 Baggage-Mail Storage	USP #7463
#1725-1726 Baggage-Mail	USP #7461
#703-705 Baggage/Dormitory/22-seat Coach	USP #7455
#903-905 52-seat Partitioned Coach	USP #7456
#806-814 56-seat Coach	USP #7457 (incorrectly listed as 52-seat)
#3303-3304 48-seat Diner	USP #7458
#1150-1152 Tavern/Lounge/Observation	USP #7460
10-3 Sleeper	NKP Car Co. 'Pullman 10/3 Villa Series'
12-1 Sleeper	Atlas Branchline #B5300* NKP Car Co. Pullman 12 section / 1 DWG RM Walther's #932-10001*

Table 2. Model car directory, HO scale. Manufacturer links:

Atlas – shop.atlasrr.com/c-1097-ho-branchline-passenger-car-kits.aspx

NKP – NKP Car Co., nkpcarco.com

USP – Union Station Products, unionstationproducts.com

Walthers – walthers.com/pullman-heavyweight-12-1-sleeper-ready-to-run-pullman

The same unit is offered in N scale as product number #BLI-1664. Bachmann currently produces a Southern E7 unit in appropriate colors as product #66602.

The Alco DL-109 was also seen in service on the Tennessean. Walthers Mainline series offered a DL-109 in appropriate Southern colors as product #910-9106, though it is now discontinued.

The same product was offered by Walther's in N scale as product #929-50207. The Alco PA, which was also seen on this

service, was offered in N scale by Con-Cor as product #1-202020. Con-Cor also offered dummy A and B units in the same colors.

If your interest is steam, the Southern streamlined 4-6-2 #1380 has only been offered in brass, to the author's knowledge.

Precision Scale Co. made a very limited 200-unit production run of the locomotive in HO scale in the 1990s, and these units go for around \$1,000 on the second-hand market (PSC also made an 8-car set of prototypically correct Tennessean cars, but these are so rare that they have not been listed in the cars section).

The N&W J class is readily available from Broadway Limited Imports as product #BLI-2551. In N scale, Bachmann makes the

J-class as product #82153. Bachmann also made an HO scale version though it is no longer produced.

Operations

The Tennessean offers a good operating potential for medium and larger size layouts. Like all streamliners, it takes a good amount of space to faithfully recreate the Tennessean. It



6. An Alco DL-109 handles an eastbound Tennessean out of Memphis. Southern used a variety of diesels on their passenger trains, providing modeling opportunities for fans of both EMD and Alco. *Photo by Phil Gosney*

would be difficult to recreate the whole train in larger scales on all but the largest layouts.

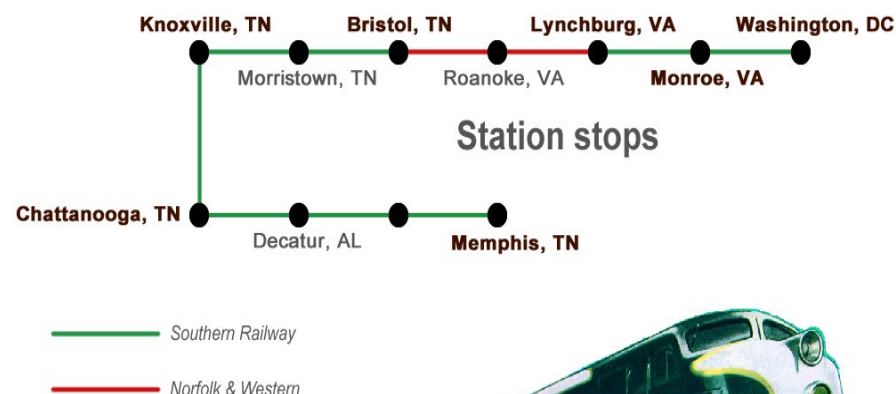
Consist length can vary based on specific layout characteristics, but generally it will take at least seven or eight cars to recreate the character of the Tennessean. A suggested consist might include:

The Tennessean

Created by Jonas Nilender

#45 Westbound

#46 Eastbound



7. A large amount of operating activity on the Tennessean took place at Chattanooga and Knoxville. This means that if you're not modeling the terminuses of this train, these two locations make good candidates, as well as Bristol and Lynchburg, as mentioned earlier. The Southern diesel image is from a Tennessean brochure. Note that only station stops are shown.

1. At least one baggage-mail car: #1700-1701 60' baggage-RPO if before Chattanooga, and #1725-1726 30' if after Chattanooga
2. #703-705 baggage/dormitory/22-seat coach
3. #903-905 52-seat partitioned coach
4. #3303-3304 48-seat diner
5. #806-814 56-seat coach
6. #1150-1152 tavern/lounge/observation
7. One or two sleepers: heavyweight if 1940s, lightweight afterwards

These are only suggestions, of course.

In general, when modeling the Tennessean, you should strive to include at least some head-end cars, a handful of coaches (including possibly the partitioned coach, to establish this as a southern train in the time of Jim Crow), the diner in the middle of the train, and the unique tavern/lounge/observation car.

Sleepers should round out the end of the train to allow more operating potential enroute. If you are modeling in N scale or have more space in larger scales, you can recreate the complete train as it is not overly large. It may take a while to construct each of the cars from side kits, however, especially in N scale.

The Tennessean

Southern Railway and Norfolk & Western Railway

Station stop notes:

Washington, D.C.: At Washington, Train 45 connected with PRR trains 101 and 107 on a daily basis. Train 101 was a

sleeper train and carried a through sleeper from New York to Memphis, while 107 was a coach-only train.

Train 46 connected with PRR train 108 on a daily basis, and train 160 every day except Sunday. Train 108 was a sleeper train and handled a through sleeper from Memphis, while train 160 was a coach train. Train 198 connected with Southern train 46 on Sundays.

Monroe: Streamlined 4-6-2 #1380 was taken off the train at Monroe, Virginia, and replaced by a Southern diesel.

Lynchburg: At Lynchburg, the train was transferred to N&W power.



8. A Norfolk & Western J class 4-8-4 handles the Tennessean around a bend. The Tennessean's routing was somewhat unusual for a joint train but was similar to that of other Southern trains like the Birmingham Special. *Photo by Phil Gosney*

Bristol: In Bristol, the Tennessean was transferred back to Southern diesels.

Knoxville: Inconvenient train times at Knoxville (the train passed through in the middle of the night) resulted in a 12-1, then 10-1-2 sleeper being added to the train in 1944. This sleeper operated between Memphis and Knoxville, set out by #46 and picked up by #45.

Chattanooga: Originally, dining car service was only provided between Washington and Chattanooga. In 1946, this was shortened to a Washington-Knoxville service. Before 1946, #46 would set out its dining car here and #45 would pick it up on its way east. After 1946, the same operation would take place at Knoxville.

One 60' RPO/baggage car was set out here and replaced with a 30' RPO/baggage car.

The shortest sleeper service on the Tennessean was between Chattanooga and Memphis. This was originally a 12-1 sleeper, then a 10-1-2 in 1950, followed by an 8-1-restaurant-lounge car in 1951. A sleeper was picked up by #46 and set out by #45 here.

A through sleeper from Bristol to Nashville via Nashville, Chattanooga & St. Louis (NC&StL) train #3 and #4 was set out at Nashville from the inauguration of the train. This car was later extended to operate Washington-Nashville and was originally a 12-1 sleeper until being replaced by a 10-1-2 in 1951.

Memphis: #45 terminated in Memphis and stayed until the evening, when it returned in the other direction as #46.

As mentioned before, a good idea for an entire layout would be Lynchburg, Virginia, which saw three major railroads running right through downtown, and several trains a day, including the Tennessean.

If you model anywhere else along the Tennessean's line, including the terminuses at Washington and Memphis, then the Tennessean can still form a part of your timetable. Reference the operation diagram above for ideas about operating potential on the Tennessean's route.

Like many streamliners, the days of the Tennessean are long past, but recreating the majesty of this train may be easier than you think. 

FLAT-END OBSERVATIONS: A SOLUTION TO A COMMON PROBLEM

Like many things, observation cars were more popular with railfans than they were with the railroads.

It was difficult to provide facilities for turning the cars at each end of the line, time-consuming to turn them, and it was impossible to run traditional open-ended or boat-tailed observations in the middle of a train. Few passengers wished to jump from the swaying platform of one car to the vestibule of another while rattling along at 70 miles per hour!

A solution found in the lightweight car era was the flat-end observation car. Rather than the traditional boat-tail featured on many popular streamliners, such as the 20th Century Limited and the Broadway Limited, the flat-end observation car could be switched into the train at any location.

This was also a boon for observation cars which featured a tavern, since passengers were more likely to purchase a drink if the tavern was next to the dining car. The dining car

FLAT-END OBSERVATIONS: A SOLUTION TO A COMMON PROBLEM *CONTINUED ...*

was usually in the middle of the train, meaning a traditional observation car could not fulfill this niche.

Flat-end observations often occupied their familiar place at the end of the train, though, providing a place to look out the windows as the scenery rolled past. Their much-increased convenience compared to boat-tailed observation cars meant that they were used by many roads.

On the Tennessean, the flat-end observation car was used to allow sleepers to be switched in and out of the consist enroute.

Some cars, like those for the *Tennessean*, were purpose-built to be flat-ended. Other cars were converted from boat-tailed observations by squaring off the end.



9. Tavern/observation/lounge #1150, a flat-end observation car used on the *Tennessean*. Photo by Phil Gosney

Some roads, like the Denver & Rio Grande Western, simply added a housing to a traditional observation car that allowed a diaphragm to be run to the next car in the train, thus fulfilling the role – if not the appearance – of a flat-ended observation car.

Adding a flat-ended observation car is a good kitbashing project and adds interest to your passenger trains. It also allows you to run an observation car in a feeder train that doesn't have to be switched to place the observation car on the end of the train, thus allowing you to get away with having both a flat-ended and boat-tailed observation in the same train.

For tips on kitbashing a flat-ended observation car, see George Drury's Model Railroader article, April 1979, Page 84. ■



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JONAS NILENDER



Jonas started in the hobby at a young age by watching "Thomas the Tank Engine" and visiting various model railroads. He lost interest in modeling for several years but came back to it recently.

Jonas' hobby interests are very passenger-based and include building passenger cars and operating passenger trains from the transition era.

Outside of the hobby, Jonas likes drawing, writing, theater, and singing. He goes to North Carolina State University and is studying for a degree in Mechanical Engineering. ■

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In this 6 minute video, modeler **Maaïke Broek** shows how he makes some fabulous looking foreground conifers. This technique requires enough handwork that it's not for background conifer forests, however. He calls this "part 2" because he has an older video on deciduous trees (nice trees, blurry video): youtu.be/u44LAaNoZgI ■



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RICHARD BALE and
JEFF SHULTZ report the
latest hobby industry news

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INDUSTRY NEWS

San Juan Model Co. of Arvada, Colorado has purchased Rail Graphics, the Chicago-based manufacturer of high-quality specialized decals for model railroad kit manufacturers and hobbyists. SJM is in the process of moving the equipment, including artwork, to Colorado. In addition to its own line of decals sold under the Leadville Shops brand name, San Juan Model Co. acquired San Juan Decals from the estate of Dan Peterson in the fall of 2017.

.....

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► THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

ACF Center-Flow covered hopper. The custom decorated model was produced for CCMRC by Accurail. The kit is available for \$30.00 plus shipping. All proceeds from the sale of the model go toward the club's building fund. For full details visit www.ccmrc.com.

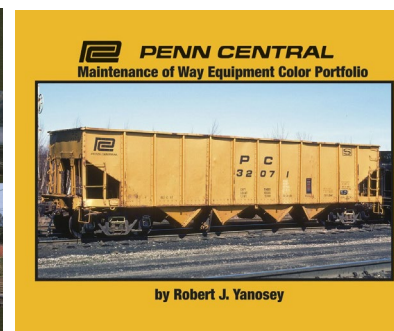
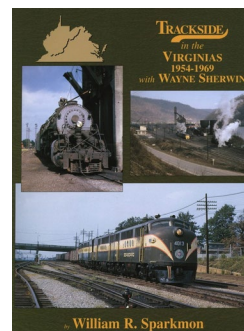
NEW PRODUCTS FOR MULTIPLE SCALES



MicroBond is a specialized industrial-strength bonding system available from **Microscale Industries**. MicroBond is reported to have good sheer strength and withstands expansion and contraction of different materials. It will successfully bond to rubber, brass, steel, resins, leather, wood, and assorted

ABS and styrene plastics. The material bonds in seconds and cures in about 5 minutes. MicroBond is not suitable for foam surfaces.

MicroBond is available in three viscosities including Thin for gap filling projects, Medium for applying directly the material before bonding, and Thick when a longer bond time is needed for positioning parts. For bonding engineering plastics such as Delrin, or Celcon, the bonding surface requires the application of MicroPrep. MicroBond and MicroPrep are available in a complete set or individually. Adult supervision is recommended as there are safety issues in the use of this material. MicroPrep cannot be shipped by airmail, priority mail, or internationally. For additional information contact a Microscale dealer or visit microscale.com.



New publications from **Morning Sun Books** include *Trackside in the Virginias* in which author William R. Sparkmon

presents full-color illustrations of the railroads of both Virginia and West Virginia during the late steam to early diesel transition period. Scheduled for release this month is a new Robert J. Yanosey color portfolio titled *Penn Central Maintenance of Way Equipment*. Despite its chronic financial problems, the Penn Central assembled an extensive array of equipment to keep its property in operable condition. The softcover book features everything from ballast hoppers to jet engine snow blowers. For additional information contact a dealer or visit morningsunbooks.com.



Motrak Models is introducing a new line of easy-to-build kits called the "Mistie Street Series." Each kit will have a limited run of 100 kits. The first kit of the series is The Watch Tower, which is also Motrak's second release from the North East Scale Models line. Available in HO and N scale, the kit consists of only laser-cut materials, without any additional detail parts.

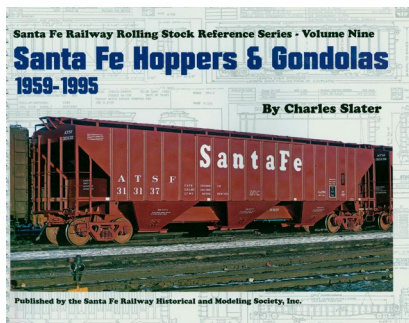
Andi's Sandwich Shop & Newsstand, the second kit in the Mistie Street series, will be available in N, HO, S and O scales. A laser-cut wood structure kit, it includes all signage as well as laser-cut walls and tarpaper, with laser-cut or plastic



window and door depending on scale. Designed to be built in two days, the kit will be available in N, HO, S and O scales. The kit will ship in September. Photos are of the HO structure.

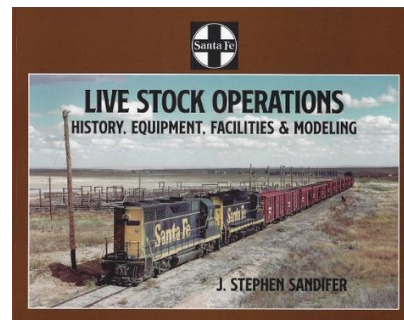


Also announced in N, HO, S, and O scales is an Industrial Water Tank and pump house. The kit includes laser-cut tarpaper, tank walls, and pump house walls, and stick pieces and piping. For more information see motrakmodelsusa.com.



The Santa Fe Railway Historical and Modeling Society has released *Santa Fe Hoppers & Gondolas: 1960-1995*, by Charles Slater. This 256 page soft cover book is volume nine in the society's ATSF rolling stock reference series. It documents 107 classes with roster, painting and lettering information.

This volume covers the Ga class of cars that Santa Fe owned from 1960 to the BNSF merger in 1995. It includes two cars, the Ga-76 class 65-foot mill gondola and the Ga-107 class Hurley ore car, that were listed but not illustrated in volume seven *Santa Fe Open-Top Cars: Flat, Gondola and Hopper Cars 1902-1959*. For more information visit sfrhms.org/product/santa-fe-hoppers-gondolas-1960-1995.



Santa Fe Live Stock Operations by J. Stephen Sandifer is now available from McMillan Publications. From its earliest days, livestock meant big business for the Atchison, Topeka & Santa Fe Railway. In 1884 Santa Fe shipped 800,000 head of cattle from Dodge City alone. Thoroughly researched and liberally illustrated,

this is the story of Santa Fe's livestock operations, including its history, a roster of unique livestock equipment, and the extensive infrastructure required to support the business. Sandifer touches on the rules and regulations governing the traffic, rodeo, and circus trains, Railway Express shipping, as well as modeling this fascinating part of Santa Fe's legacy. The 8.5 x 11-inch 256-page soft cover book includes over 140 color photos and more than 300 black & white photos and diagrams. For additional information contact a dealer or visit www.mcmillanpublications.com/products/santa-fe-live-stock-operations-history-equipment-facilities-and-modeling-sandifer.



MSC, a major distributor of professional metal working products, sells a wide range of precision jeweler-quality micro drill bits. Brand names for cobalt and solid carbide micro drill bits include M.A.Ford (above), Guhring, OSG, and Walter-Titex. For additional information visit www.mscdirect.com/browse/tn/Holemaking/Drilling-Drill-Bits/Metalworking-Multipurpose-Drill-Bits/Micro-Drill-Bits?navid=12106217.

O SCALE PRODUCT NEWS



Frenchman River Model Works is selling a kit for a 1:48 scale 32-foot Combination Fishing Boat. Components of the waterline kit include laser-cut detail parts and resin and pewter castings.

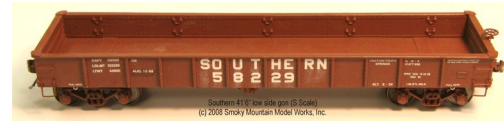


Prototype boats of this type regularly handle gill net, purse seine, or long line fishing. The model was designed using blueprints from the H.C. Hanson Naval Architect Collection, Whatcom Museum of History and Art, Bellingham, Washington. For

additional information visit frenchmanriver.com.



Motrak Models has announced the O scale Valley Hardware & Plumbing Supply. The 9 x 10 x 12-inch structure includes laser-cut clapboard walls, windows, shake shingles, foundation, porch, stair stringers, and railings. Also included are Tichy doors and lamp shades. The kit is limited to a production run of 20 kits. For more information visit motrakmodelsusa.com.



Smoky Mountain Model Works is selling a prototypically accurate kit for an O scale Southern

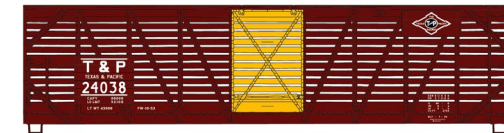
Railway 41-foot 6-inch low-side gondola. The kit features a one-piece cast resin body with a separate underframe casting, a brass weight, and numerous detail parts. The kit is available with a choice of either Roman or Block/Gothic decals. The illustration is an S scale version of the model. For additional information visit smokymountainmodelworks.com.

HO SCALE PRODUCT NEWS



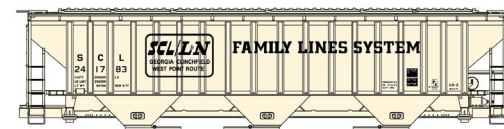
Accurail has released several new kits for HO scale freight cars including one for this Chicago & North Western USA twin-bay open hopper car.

The model is based on a prototype class HM coal hopper built in 1923.



Accurail's kit for this 40-foot Texas & Pacific stock car includes both yellow doors (for a double

deck car) and brown doors (single deck). The prototype of the wood stock car with a steel frame was built in 1933.



Accurail has a kit for a Pullman Standard triple-bay covered hopper decorated for SCL/Family Lines.

The HO scale model is based on a 4750 cu. ft. prototype built in May 1977.



Accurail's HO scale kit for this 40-foot Milwaukee Road PS-1 steel boxcar with a Youngstown sliding door displays a Route of the Hiawathas slogan.



This Fowler wood boxcar with Howe truss exterior frame was built for the Erie Railroad in 1913. The car had an interior length of 36 feet.



Chicago Great Western took delivery of this Pullman Standard triple-bay covered hopper in September 1966.

Accurail's HO scale kit is stenciled Not For Cement Loading. All Accurail kits include appropriate trucks and Accumate knuckle couplers. For additional information contact a dealer or visit accurail.com.



Athearn is planning a January 2020 release date for a new run of SD45-2

diesels. The HO scale Genesis series model is based on a Dash-2 version of EMD's 20 cylinder 3600 hp locomotive that was 3 feet longer than the original SD45 and rode on high-adhesion trucks.

In addition to the Santa Fe blue and yellow freight version, decorating schemes will include Santa Fe Bicentennial (with shield on



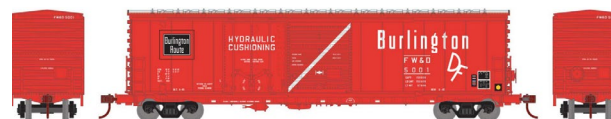
the handrail aft of the cab), Conrail, Erie Lackawanna, Clinchfield, CSX, HATX Helm Lease, and both SF and SPSF Kodachrome schemes. In addition to having Athearn's new LED lighting and rubber MU

hoses, sound versions of the SD45-2 will feature SoundTraxx's recording of an actual 20-cylinder 645E3 prime mover.



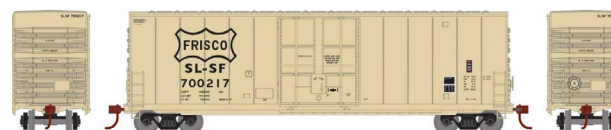
Athearn's July 2020 locomotive schedule concludes with a Genesis series

SD70. Road names will include Canadian National, Canadian National (ex-IC), Conrail, Norfolk Southern (Horse Head scheme), and Norfolk Southern (ex-Conrail patch). Athearn DCC-ready locomotives operate on standard DC and come with a QuickPlug 21-pin NEM connector for installation of an aftermarket decoder. DCC models have a factory installed DCC decoder with SoundTraxx Tsunami2 sound.



Ready-to-Roll freight cars on Athearn's July 2020 production sched-

ule include a 50-foot 6-inch boxcar with a combination plug door and 8-foot Youngstown sliding door. Road names will be Chicago, Burlington & Quincy; Richmond, Fredericksburg & Potomac; SSW-Cotton Belt, Denver & Rio Grande Western, Milwaukee Road, and Canadian Pacific.



Roundhouse brand models coming from Athearn next

summer include a 50-foot high-cube plug-door boxcar. The HO scale model will be produced from former MDC tooling. In addition to the SL-SF Frisco car shown above, the model will be available decorated for Burlington Northern, Santa Fe, Burlington Northern Santa Fe, Iowa Northern Railway, SSW-Cotton Belt, and Golden West Service. The model will be equipped with appropriate trucks with machined metal wheelsets.



This 40-foot triple-dome tank car is scheduled for release next July under the Roundhouse brand name. The HO scale

model was originally introduced by Athearn in 1957 and has subsequently received several upgrades including body-mounted knuckle couplers and appropriate trucks with machined metal wheels. In addition to Deep-Rock, road names will be Shell Chemical, Sun Oil, Union Tank Car, Cook Paint & Varnish, and General American Tank Car.



Also coming from Roundhouse next summer is a 50-foot flat car

decorated for Alaska Railroad, Denver & Rio Grande Western, Illinois Central, Ferrocarriles Nacionales de México, and CIL Monon (Chicago, Indianapolis, & Louisville Railway). A gray Maintenance of Way version will also be in the release. Although not shown in the illustration the HO scale ready-to-run model will come with side stakes. For additional information on all Athearn and Roundhouse products contact a dealer or visit athearn.com.



Bachmann Trains has scheduled a fall delivery date for a trio of HO scale old-time wood passenger cars. Body types include a coach, combine, and baggage car.



Features of the truss rod-era passenger cars include a clerestory roof, open vestibule, and four-wheel wood beam trucks. Road names will be Santa Fe and Baltimore & Ohio.

For additional information contact a dealer or visit bachmann-trains.com.



Bowser is taking reservations for HO scale versions of Baldwin diesel

road switcher locomotives produced from the late 1940s through the mid-1950s. Delivery of the Executive series models is planned for April 2020. The selection includes the original DRS-4-4-15 1500hp and the outwardly identical 1600hp AS16 units. Both ride on 4-wheel B-B trucks. They will be available for Baltimore & Ohio, Erie, Erie-Lackawanna, Soo Line, and Durham & Southern (ex-Soo).



Baldwin road switchers with 6-wheel A1A-A1A trucks with

unevenly spaced axles include the 1948-1950 DRS-6-6-1500 decorated for Duluth, South Shore & Atlantic; Soo (ex-DSSA), and Union Railroad.



Additional locomotives with 6-wheel trucks with unevenly spaced axles include an AS416 in Norfolk Southern's red and yellow scheme, and AS616 units decorated for Baltimore & Ohio, Chesapeake & Ohio, DSSA, Milwaukee Road, Penn Central, and Pittsburg & West Virginia. Bowser's Executive series Baldwin road switchers feature MU hoses, air hoses, individual windshield wipers, operating headlights, blackened nickel silver wheels, and knuckle couplers. The locomotives will be available with LokSound sound and DCC installed. They will also be available for analog DC operation with a 21-pin socket for installation of an aftermarket decoder. For additional information contact a dealer or visit bowser-trains.com.



Broadway Limited Imports is selling HO scale models of Baldwin's distinctive 1600hp Sharknose diesel locomotives. A and B units are available decorated for Pennsylvania Railroad with five gold stripes in both Brunswick green and the post-1950 Tuscan red.



Additional road names for the diesel include New York Central and Delaware & Hudson.

Baltimore & Ohio units and undecorated models are also available. The HO scale models feature Paragon3 Sound & Operating System with Rolling Thunder sound in both DC and DCC



environments. For additional information contact a dealer or visit broadway-limited.com.



Classic Metal Works has released several new HO scale vehicle models, including a 1957

Chevy Cameo in Alpine Blue, Omaha Orange, and Golden Yellow, and a 1950 Plymouth Sedan in New Brunswick Blue, Shore Green, and Palm Beige.



A White WC22 Tractor Trailer set is available in two Coca-Cola and a Ford Exchange Engines schemes.



Also available are a 1960 Ford stakebed truck with 1960s Coca-Cola details, and a 1957 Chevy

flatbed truck with bricks, blocks and a wheelbarrow.



Finally, Classic Metal Works has released three 1950s

country billboards advertising Coca-Cola, Hostess, and Planters Peanuts. For more information contact your dealer or visit round2corp.com.



InterMountain showed several preproduction samples of PFE wood refrigerator cars at a recent RPM meet

held in Collinsville, MO. The HO scale models feature artwork prepared by PFE historian Dick Harley. Class R-30-13-18 reefers will be available with a single herald (above), with double heralds, and with a black stripe at the top of the side. PFE R-40-19 reefers built in 1923 and rebuilt in 1944 with convertible ice bunkers will display a single herald.



PFE R-30-12-18 ventilated refrigerator cars built in 1923 and rebuilt in 1941 have a bold boxcar red stripe at the

top and bottom of the side.



Completing the series is a class R-30-21 reefer built in 1924 and rebuilt in 1946 with a single herald and with both an SP

herald and a three-color UP shield. Multiple car numbers will be available for each version. For additional information contact a dealer or visit intermountain-railway.com.

Kadee has scheduled a late summer release for this HO scale Missouri Pacific 50-foot PS-1 boxcar. Details include full-height



ladders, a running board, Pullman Standard 8-foot sliding doors, and Bettendorf-type plain-bearing trucks.



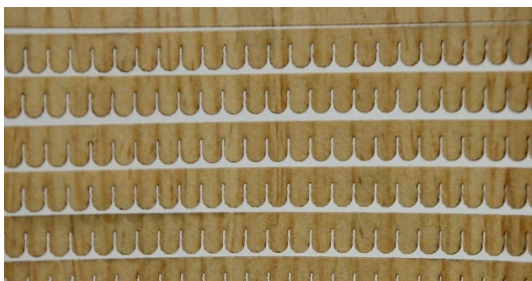
Coming from Kadee this fall is a PS-2 twin-bay covered hopper decorated for Pennsylvania Railroad with a shadow key-stone herald. The HO scale

ready-to-run model reflects a prototype Pullman Standard delivered in 1955 in alkali resisting light gray paint. For additional information contact a dealer or visit kadee.com.



Lines West has released a Milwaukee Road 1956 Thrall built bay-window caboose detailed for 1970s service. The caboose features scale 33-inch

turned metal wheels, cushion draft gear designed for Kadee #148 couplers, AB brake set, 1970s era specific decals, a jig for bending MILW style caboose grab irons, and wire to make grab irons. For more information see a dealer or visit lineswestproducts.com.



Maple Leaf Trains has a full selection of HO scale shingles featuring self-adhesive backs. The laser-cut shingles are available in natural veneer and treated and

painted craft cardboard, with eight different shapes and six colors plus natural veneer. Ridge-caps are also available. For more information see a dealer or visit mapleleaftrains.com.



Mine Mount Models has announced an Industrial Racking detail kit in HO scale. The kit includes six uprights with all horizontal bars, six with top bars at an angle, and three with one sided racks that are found against walls and fences. The racks are laser-cut from 1/32-inch laserboard with 1/16-inch square basswood to create racks from 2 to 12 inches in length. For more information visit minemount-models.com.



Motrak Models has announced the re-release of their first structure kit from 2006, The Little Depot. Loosely based on a depot outside of St. Paul, MN, the kit includes laser-cut wood walls, shake shingles, and roof supports. Details include

Tichy windows and door and two scale 6-foot long benches. The benches, shake shingles, and wooden platform are new for this kit. The kit is limited to a run of 50 kits. For more information visit motrakmodelsusa.com.



As published in the July 2019 issue of MRH, **Rapido** announced plans to

produce 11 of the 14 distinctive cars of the Rio Grande Ski Train. The initial response for the HO scale cars was far greater than anticipated with a large number of the responders also wanting to order the three cars left off Rapido's original offer.



Spring Creek Model Trains of Deshler, NE, has partnered with Rapido to offer the three missing cars.

They are identified as parlor/club car Idaho Springs, coach Mount Bierstadt, and coach/snack car Shavano Peak. Hobbyists wanting the full 14-car Ski Train can order 11 from Rapido or a Rapido dealer, and the final three from Spring Creek Model Trains. For additional information visit www.springcreekmodeltrains.com/product/spring-creek-exclusive-ho-scale-rapido-rio-grande-ski-train-passenger-car-set.



ScaleTrains.com has opened Rivet Counter GE Tier IV pre-orders for

Kansas City Southern "Southern Belle" and two Canadian National commemorative paint schemes – CN 100th Anniversary and CN Indigenous People. Additionally, CSX #3440 "Spirit of Ravenna", benefitting the Kentucky Steam Heritage Corp., is being re-run and more road numbers for BNSF, CN, CSX, Norfolk Southern, and Union Pacific were included in the announcement. Three new road

numbers for each road will be available in the Operator line for BNSF, CN, CSX, NS, and UP. Delivery is anticipated in Spring 2020. For more information see your dealer or scaletrains.com.



Marc Simpson Collection

Sylvan Scale Models is soliciting reservations for a limited run of HO scale kits for a CN eight-hatch covered hopper. Accurate Canadian National noodle decals are

included with the kit. The challenge in building kits for this type of car has always been in assembling the end cage. Sylvan's newly developed etched metal end cage solves that modeling problem. The new end cages are included in this kit and are also available separately. For additional information visit sylvanscalemodels.com.



Tangent Scale Models has released another production run of its HO scale PRR X58 exterior-post boxcar. Based on measurements of the full-size

X58 at the Rail Museum in Danbury, Connecticut, Tangent's HO scale version faithfully reproduces the more than 2,500 prototype cars built between 1964 and 1966. Features include extended-length draft sill, see-through running board, wire grab irons, and formed wire trombone-style uncoupling bars. During their useful life X58 cars wore a mix of Penn Central, NYC, and Conrail paint schemes as well as the original 1965 PRR version shown above with a yellow Cushioned Car tag.



Additional schemes include Penn Central 1974 repaint with a white PC worm (above) and a 1998 restenciled NYC-CSX car.



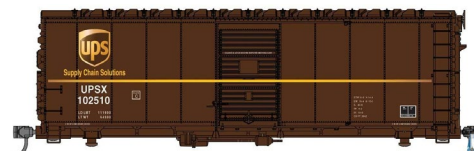
Tangent also offers the X58 decorated as a PC 1974 green repaint, a 1978 Conrail repaint with a high brake wheel and ladders at the B end and short-

ened ladders at the A end, and two variations of Lehigh Valley cars restenciled for Conrail. Road specific details on Tangents X58 boxcar include high or low ladders and brake appliances, Keystone or Hydra-cushion underframes, and center door locking arm variations. All versions come with Kadee couplers and ASF 70-ton roller-bearing trucks with 33-inch machined metal wheelsets. In addition to an undecorated kit, Tangent is offering fully-assembled X58s ready for decaling. The undecorated cars are painted PRR freight car red, Penn Central green, and Conrail red. For additional information visit tangentscalemodels.com.



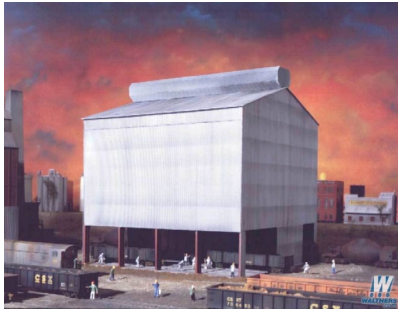
Walthers is quoting a November delivery date for two Mainline series 40-foot AAR boxcars decorated for United Parcel Service. The HO scale

ready-to-run model will be available with a traditional UPS herald and a globe logo (above), and with a modernized UPS herald and a gold stripe across the middle of the car side.



Each scheme will be available in three road numbers.

Walthers is re-issuing five HO scale kits that collectively make up an impressive steel-producing complex. The structure kits will be released over five months beginning this December with



an Electric Furnace (above left), followed in January 2020 by a Coke Oven and Quench Tower (above right).



The Blower Engine House (above left) will be released in February. A kit for a Rolling Mill and Reversing Mill Stand is planned for March. Walthers steel producing complex will be completed in April with the release of the Blast Furnace (above right).



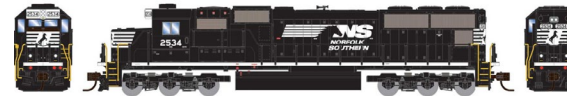
Specialized HO scale rolling stock for operation at the steel mill will include a Hot Metal Bottle Car (left) to move molten iron from the blast furnace to the electric

furnace, and a Slag Car (next).



Both ready-to-run HO scale cars will be available next June. For additional information contact a dealer or visit walthers.com.

N SCALE PRODUCT NEWS



Athearn's July 2020 production schedule includes an N scale

SD70 diesel locomotive. Road names will be Norfolk Southern, Illinois Central, CN, Conrail, National Railway Equipment, SPSF (Kodachrome scheme), and three EMD Demonstrator schemes. Road names will be Baltimore & Ohio-Chessie System, Chicago & North Western, Rio Grande, Green Bay & Western, Louisville & Nashville, and Rock Island.



Features include see-through cab windows, Celcon

handrails, illuminated front and rear headlights, and nickel plated blackened machined wheels. The N scale locomotive operates on standard DC layouts. It is DCC-ready for a replacement decoder circuit board that is available for purchase separately.



N scale freight cars coming from Athearn next summer include this 50-foot high-cube

boxcar with plug-doors. The ready-to-run model will be available decorated for SSW-Cotton Belt, SL-SF Frisco, Burlington Northern, Santa Fe, Burlington Northern Santa Fe, Iowa Northern Railway, and Golden West Service.



The boxcar will be equipped with appropriate trucks with machined metal wheelsets.



Completing Athearn's mid-summer release of N scale models is a 40-foot triple-bay open hopper with ribbed sides. The model comes with a removable load and features a separately applied brake wheel, machined nickel silver wheels, and body-mounted knuckle couplers. Road names will be Union Pacific, Norfolk Southern, CSX, RJ Corman, Herzog, Alaska Railroad, and Conrail.



Athearn's N scale hopper cars will be available singly and in four-packs. For additional information contact a dealer or visit athearn.com.



Broadway Limited Imports is selling an N scale model of EMD SD70ACe diesel locomotive in 13 paint schemes plus an undecorated version. In addition

to a black and white Norfolk Southern scheme, NS Heritage paint

schemes are available for Erie, New York Central, Reading, and Penn Central.



Union Pacific models are available in UP's Building America scheme as well as UP's retro heritage designs for Western Pacific (above), Missouri Pacific, Missouri-Kansas-Texas, Denver & Rio Grande Western (below), Chicago & North Western and Southern Pacific.



The N scale locomotives feature BLI's Paragon3 Sound & Operating System with Rolling Thunder for operation in both DC and DCC environments. The models have a diecast metal chassis and an ABS plastic body. They come with golden white LED headlight and rear light. For additional information contact a dealer or visit broadway-limited.com.



Classic Metal Works has announced two new vehicles in N scale. The first is a 1950 Plymouth Sedan, which will come in New Brunswick Blue, Shore Green, and Palm Beige.



Also announced is a White WC22 tractor trailer set decorated in two Coca-Cola schemes and Ford Exchange Engines. For more information contact a dealer or visit round2corp.com.



GG1 ELECTRIC

The famed GG1 electric locomotive entered service on the Pennsylvania Railroad in 1935 and later served on successor railroads Penn Central, Conrail, and Amtrak. A pantograph on each end of the locomotive body collected 11,000 VAC from overhead wires. Twelve 385-horsepower traction motors drove the GG1's 57-inch driving wheels. The two-piece frame of the locomotive allowed it to negotiate tight curves and confined station tracks. In operation the rear pantograph was generally used with the forward unit lowered. In the event of a high-speed failure the rear pantograph would not strike and disable the front pantograph. The iconic design of the GG1 is the combined work of Donald Roscoe Dohner and Raymond Loewy, who was called in late by PRR to enhance the GG1's aesthetics. Loewy's contributions included replacing the riveted body with a smooth welded design and adding the five gold pinstripes and Brunswick green paint scheme. In 1952, the paint scheme was changed to Tuscan red. Three years later the pinstripes were simplified to a single stripe and large red PRR keystone was added.



KatoUSA has announced plans to produce an N scale version of the Broadway Limited, the Pennsylvania Railroad's premier New York-to-Chicago passenger train. Both EMD E8A diesel and GG1 electric locomotives will be

available. The GG1 will come in both Brunswick green and Tuscan red. Both liveries will feature the five-gold stripes. Options include analog DC as well as factory installed DCC. A black GG1 decorated for Amtrak and Penn Central will be available for DC operation only.



Kato will offer its N scale version of the EMD E8A diesel decorated in the Tuscan red scheme with five gold stripes. It will be avail-

able for analog DC operation, with preinstalled DCC, and with ESU LokSound DCC and sound. Availability on all the locomotives mentioned will be during the first quarter of 2020.



Kato's reissue of the Broadway Limited includes new names and numbers on 11 Tuscan red cars. The cars will be sold in a ten-car set

consisting of a Bm70M baggage/mail heavyweight car, a 12-Duplex 4-double bed sleeper (above), 5-double bed/bar lounge car, diner, kitchen dormitory car, four 10-6 sleepers, and an observation car. With the exception of the baggage/mail, all of the cars are lightweight with smooth sides and skirts.



A four-car set consisting of two Budd 21-roomette cars and two 4-4-2 sleepers will also be available. For modelers wanting a complete Broadway Limited consist a Santa Fe 4-4-2 transcontinental sleeper will also be produced. All the passenger cars are scheduled for release in January with cars fitted

with interior lighting arriving the following month. For additional information contact a dealer or visit katousa.com.

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Micro-Trains has added a 28-1 parlor car to its selection of Northern Pacific heavyweight passenger equipment. The N scale ready-to-run



car wears the two-tone green paint scheme developed in the early 1950s by designer Raymond Loewy.



Micro-Trains version of this high-side triple-bay covered hopper is an N scale stand-in for a Union Pacific 4700 cu. ft. class CH-90-14 prototype built in the late 1960s.



This N scale 40-foot wood-sheathed ice reefer with a steel fish belly underframe is based on a prototype built for Dingfelder & Balish's in 1932.



Micro-Trains N Scale 10,000-gallon insulated tanker represents a group of cars the U.S. Navy operated out of Norfolk Naval Base during World War II. For additional information

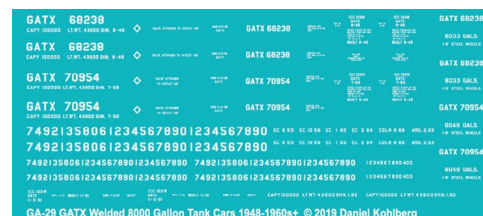
contact a Micro-Trains dealer.



NEW DECALS, SIGNS AND FINISHING PRODUCTS



New HO scale water-slide decals released by ICG Decals at the St. Louis RPM include #BN-12 for CB&Q class HC-1B twin-bay covered hopper. This set will correctly letter one Intermountain 1958 cu. ft. covered hopper. The silk-screened decal set is printed in red, black and white.



Also new from ICG are two lettering sets for GATX Leasing 8,000-gallon welded tank cars. Decal set #GA-29 will letter two black cars in the correct 1948-1960 GATX scheme.



ICG's decal set #GA-30 will letter two black GATX 8000 gallon general service tank cars in use in the 1960s to 1980s. The decal set provides material for cars built in the 1948-1957 period that were repainted in the 1960s

and 1970s. Various dates and COTS are included. All ICG decals include prototype lettering guides. For additional information visit www.icgdecals.com.

DISCLAIMER

The opinions expressed in this column are those of the writer and do not necessarily reflect the opinion of *Model Railroad Hobbyist* or its sponsors. Every effort is made to provide our readers with accurate and responsible news and information, however, neither *Model Railroad Hobbyist* or the writer of this column can be held responsible for any inaccuracies or typographical errors that may inadvertently appear in this column.

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COMMENTS


The Amherst Railway Society Railroad Hobby Show

Our 2020 Show will be

January 25 & 26, 2020

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! BRIEFLY NOTED AT PRESS TIME ...

NorthWest Short Line, on the verge of shutting down, has been acquired by an unnamed employee. The new owner has pledged to fill all existing back orders, and will begin accepting new orders as soon as a new website can be established. NWSL's complete line of precision gears and other machined parts is expected to continue to be available. The company was founded in 1959 by Fred and Sheryl Martin in Seattle, Washington. In 2008, NWSL was purchased by Dave and Lynda Rygmyr who relocated all operations to Hamilton, Montana. Following this most recent change of ownership, NWSL's address will be PO Box 219, Kila, MT 59920. A new email address will be announced soon on the website at nwsl.com ...

Tariffs on Chinese Imports Delayed. The pending 10 percent tariff on selected consumer items imported from China — including model trains and supplies — has been postponed until December 15. In announcing the delay the Office of the U.S. Trade Representative said the move was in deference to suppliers and retailers who are already committed to pricing and catalog programming for the 2019 Christmas season ...

Morning Sun has released a set of digital reprints covering *New York Harbor railroads*. Volume 1 details the marine operations, including terminals and float bridges, of the B&O, CNJ, DL&W, Erie, LV, LIRR, NYC, NH, PRR and independent Brooklyn Terminal railroads. Volume 2 documents float bridge operations, coal dumpers, floating grain elevators, Seatrain Lines, and the waterfront terminals of trunk line and short line railroads at the port ...

InterMountain Railway has released HO scale 40-foot R-40-25 steel refrigerator cars in six decorating schemes. Three are for PFE and two are for Northern Pacific. InterMountain has also released 40 and 53-foot HO scale intermodal containers in a choice of 20 decorating schemes.



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SELECTED EVENTS



Model Railroad Hobbyist | September 2019 | #115

SEPTEMBER 2019

(Many events charge a fee. Check individual info website for details.)

ARIZONA, MESA, (Metro Phoenix), September 25-29, Arizona Junction, 2019 NMRA Pacific Southwest Region Convention, hosted by PSR Arizona Division, at Sheraton Mesa Hotel at Wrigleyville West, 860 North Riverview Mesa. Info at azdiv-nmra.org/psr2019convention.

CALIFORNIA, SACRAMENTO, September 4-7, 39th National Narrow Gauge Convention, at DoubleTree by Hilton Hotel, 2001 Point West Way. Info at www.nngc2019.org.

INDIANA, INDIANAPOLIS, September 14, Train Show & Sale, sponsored by Naptown & White River Model Railroad Club, at Emmerich Manual High School, 2405 S. Madison Avenue. Info at naptownrr.org.

MARYLAND, LINTHICUM HEIGHTS (Metro Baltimore), September 19-22, Mid Atlantic RPM Meet, at Double Tree by Hilton, BWI Airport, 890 Elkridge Landing Road. Info at marpm.org.

MISSOURI, SPRINGFIELD, September 7, Fall Train Show, sponsored by Ozarks Model Railroad Association, at East Hall Ozark Empire Fairgrounds Eplex, 3001 N. Grant Ave. Info at www.omraspringfield.org.

SELECTED EVENTS | 2

NEW YORK, LIVERPOOL, (Metro Syracuse), September 19-22, NMRA Northeastern Region Empire Junction 2019 Convention, at Holiday Inn, 441 Electronics Parkway. Info at empirejunction.org.

WASHINGTON, BATTLE GROUND, September 28, 46th Great Train Swap Meet, sponsored by Southwest Washington Model Railroaders at Battle Ground High School Gymnasium, 300 West Main Street. Request info from Larry Sprenkel at Larry.sprenkel@gmail.com.

WISCONSIN, MILWAUKEE, September 21, NMRA Wise Division RPM Meet, Four Points Sheraton at Milwaukee Airport. Info at www.wisedivision.org.

October 2019, by location

CANADA, ONTARIO, BRAMPTON, October 5-6, Greater Toronto Train Show, at Brampton Fairgrounds, 12942 Heart Lake Road. Info at www.torontotrainshow.com.

CANADA, ONTARIO, MARKHAM, October 19-20, Railview Historical Society Open House, 550 Alden Rd Unit 201. Info at www.facebook.com/Railview-Historical-Society-209331442911433.

CALIFORNIA, BELLFLOWER (Metro LA), October 5, Railroad Prototype Modelers Meet, at Encounter Christian Church, 10012 Ramona Street. Info at www.laapm.org.

CALIFORNIA, CROCKETT, October 12-13, Carquinez Model Railroad Society Open House, 645 Loring Ave, info at cmrstrain-club.org.

CALIFORNIA, SAN LUIS OBISPO, October 4-6, Central Coast Railroad Festival and Train Show. Info at ccrrf.com.

SELECTED EVENTS | 3

CALIFORNIA, OCEANSIDE, October 12, Train Show & Swap Meet, sponsored by North County Model Railroad Society at Heritage Park, 230 Peyri Drive. Info at swapmeetinfo@ncmrs.org.

CONNECTICUT, MILFORD, October 6, 27th Annual Model Train Show, sponsored by New Haven & Derby Model Railroad Club. Jonathan Law High School, 20 Landsdale Ave., Info from NHD06477@hotmail.com or www.facebook.com/New-Haven-Derby-Model-Railroad-Club-1626679067606876.

ILLINOIS, LISLE, (Metro Chicago), October 24-26, 26th Chicagoland RPM (formerly known as Naperville Meet), at Sheraton Hotel & Conference Center. Info at www.rpmconference.com.

ILLINOIS, MORTON, October 26, Central Illinois Train Xchange, at Blessed Sacrament Church, 225 East Greenwood Street. Request info from Roger at citrainx@gmail.com.

MASSACHUSETTS, BOXBOROUGH, October 5-6, 55th Annual Railfair, sponsored by Nashua Valley Model Railroad Association, at Boxborough Regency Hotel, 242 Adams Place. Info at www.nvrra.com.

MASSACHUSETTS, GARDNER, October 5, Southern New England 2 Rail O Scale Fall Show, at United Methodist Church, 161 Chestnut Street. Info at www.snemrr.org.

MISSOURI, KIRKWOOD (Metro St. Louis), October 12-13, Greater St. Louis Train Show, sponsored by Mississippi Valley N Scalers at Kirkwood Community Center, 111 South Geyer Road. Info at mvns.railfan.net.

MAINE, BREWER, November 23, Annual Show hosted by Eastern Maine Model Railroad Club at Jeff's Catering, 15 Littlefield Way, East West Industrial Park. Request info from Geoff Anthony at geoff04614@gmail.com.

SELECTED EVENTS | 4

NORTH CAROLINA, FLETCHER, October 4-5, Autumn Rails Train Show, Sponsored by French Broad e'N'pire NTRAK Club at Western North Carolina Agricultural Center. Info at www.wncag-center.org/events/2019/autumn-rails-train-show.

OHIO, CAMBRIDGE, October 20, NMRA MCR Division 6 Swap Meet, at Pritchard Laughlin Center, 7033 Glenn Highway. Info at div6-mcr-nmra.org/swapmeet.htm.

PENNSYLVANIA, EASTON, October 6, 43rd Annual Lehigh Valley Regional Train Show & Expo, at Charles Chrin Community Center, 4100 Green Pond Road. Info at www.lehighlines.org/events.html.

WASHINGTON, SPOKANE, October 13, Fall Train Show, sponsored by River City Modelers at Spokane Fair & Expo Center, 404 North Havana Street. Request info from Shirley Sample at shirley@busnws.com.

Future 2019, by location

CANADA, ONTARIO, FENWICK, November 16-17, 23-24, Open House at Greater Niagara Model Railroad Engineers, 1141 Maple Street. Info at gnmre.ca.

CALIFORNIA, SAN PEDRO, November 16-17, Open House at Belmont Shore Railroad Club, 3601 South Gaffey Street, Building 824. Info at www.belmontshorerr.com.

FLORIDA, DAVENPORT, November 9, NMRA SSR Eastern/Western Fall Workshop, at Edgehill Recreation Association Clubhouse, 50 Westridge Drive. Request info from Jim Robertson at 352-249-6862.

FLORIDA, PENSACOLA, December 7-8, Railfest Model Train Show & Sale, sponsored by Pensacola Model Railroad Club at Pensacola Interstate Fairgrounds, 6655 Mobile Highway. Info at pmrc.us.

INDIANA, INDIANAPOLIS, December 7, Train Show & Open House at Naptown & White River Model Railroad Club, 1115 McDougal Street. Request info from Steve Handly at nap-townmrr@gmail.com.

SELECTED EVENTS | 5

KENTUCKY, LOUISVILLE, November 16, NMRA MCR Division 8 Train Show, at Holy Family Parish Saffin Center, 3938 Poplar Level Road. Info at www.div8-mcr-nmra.org.

MAINE, BREWER, November 23, Annual Show hosted by Eastern Maine Model Railroad Club at Jeff's Catering, 15 Littlefield Way, East West Industrial Park. Request info from Geoff Anthony at geoff04614@gmail.com.

MASSACHUSETTS, MARLBOROUGH, December 7-8, New England Model Train Expo, hosted by NMRA Hub Division at Best Western Royal Plaza Trade Center, 181 Boston Post Road West (US 20). Info at hubdiv.org.

MASSACHUSETTS & NEW HAMPSHIRE, November 29-December 1, 25th annual Tour de Chooch, self-guided tour of open houses at model railroads in Northern Massachusetts and Southern New Hampshire. Details and maps of participating locations available at www.tourdechooch.org.

MICHIGAN, EAST LANSING, November 10, Model Railroad Club Show and Sale sponsored by Lansing Model Railroad Club at Michigan State University Pavilion. Info at www.lmrc.org.

MICHIGAN, TROY, November 7-10, NMRA NCR North Central Region Convention, at Troy Community Center, 3179 Livernois. Info at www.div8.ncr-nmra.org/ncx-2019.

NEW YORK, ALBANY, December 1, Great Train Extravaganza Show & Sale, sponsored by NMRA Hudson Berkshire Division at Empire State Convention Center. Info at gtealbany.com.

NEW YORK, BATAVIA, November 10, The Great Batavia Train Show sponsored by Genesee Society of Model Engineers at Richard C. Call Arena, One College Road. Request info at batavia-trainshow@gsme.org.

NEW YORK, SCHENECTADY, November 2, Open House at Hudson-Berkshire NMRA Division, 4026 Ryan Place. Request info from Irwin Nathanson at hudson.berkshire.nmra@gmail.com.

SELECTED EVENTS | 6

NORTH CAROLINA, WINSTON-SALEM, November 8-9, RPM Carolinas School of Railroad Modeling Techniques, at Forsyth County Center, 1450 Fairchild Road. Info at sissonstony.wixsite.com/rpm-carolina.

OHIO, DAYTON, November 2-3, Train Show sponsored by NMRA, Miami Valley Division, at New Montgomery County Fairgrounds, 645 Infirmary Road.

PENNSYLVANIA, LANCASTER, November 23-24, Brass Expo & Custom Craftsman Models 2019 Show, at Wyndham Lancaster Resort & Convention Center, 2300 Lincoln Highway. Info at brassexpo.com.

SOUTH CAROLINA, NORTH CHARLESTON, November 16-17, Fall Train Show, sponsored by Charleston Area Model Railroad Club, at Danny Jones Armory Complex, 5000 Lackawanna Blvd, Info at www.camrc.club.

Beyond 2019, by date

FLORIDA, COCOA BEACH, January 9, 2020, Prototype Rails, at Cocoa Beach Hilton Oceanfront, 1550 North Atlantic Avenue. Info at www.prototype Rails.com.

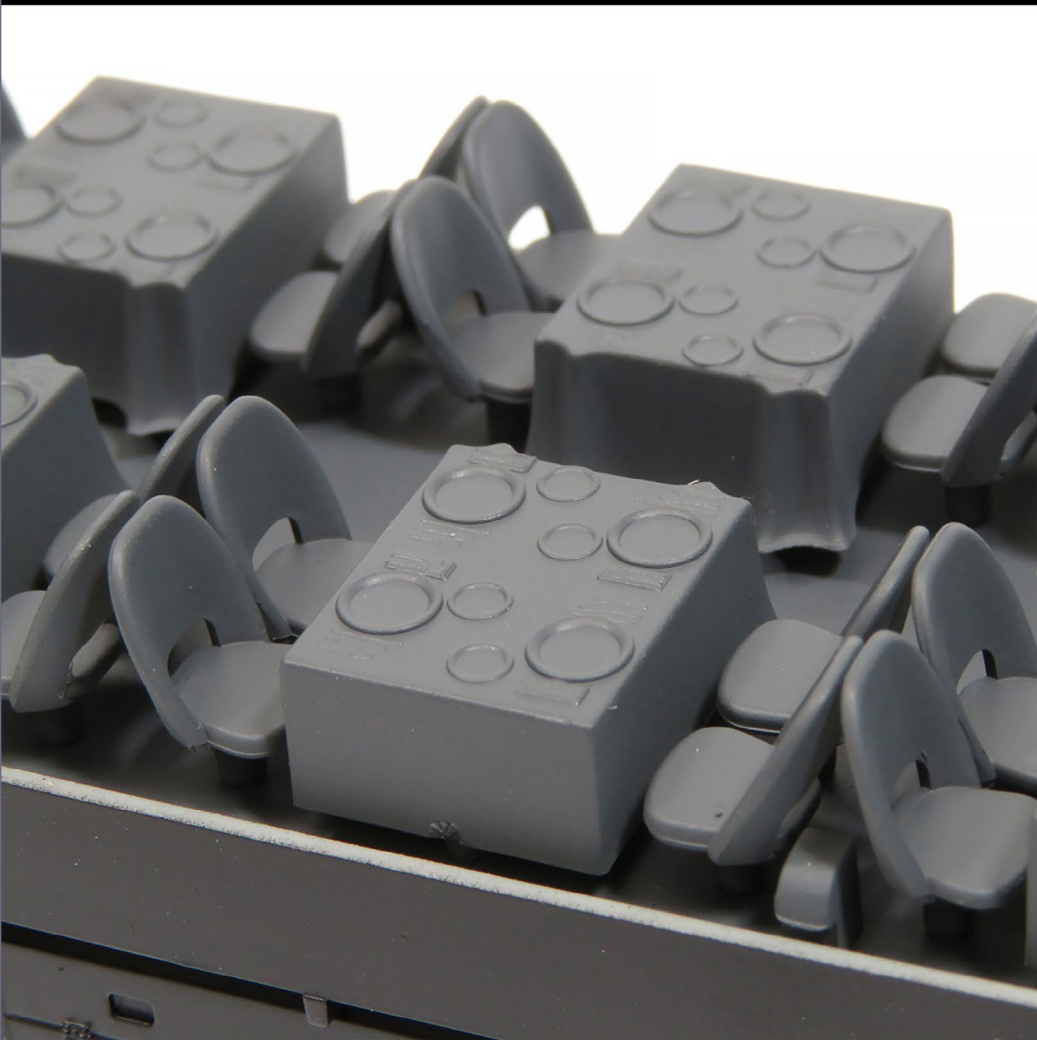
PENNSYLVANIA, MALVERN (Valley Forge), March 27-29 2020, Railroad Prototype Modelers Meet, at Desmond Hotel. Info at rpmvalleyforge.com.

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.

CALIFORNIA, SANTA CLARA, 2021, NMRA National Convention and National Train Show.

ENGLAND, BIRMINGHAM, 2022, NMRA National Convention and National Train Show. Info at www.nmra2022uk.org. ■

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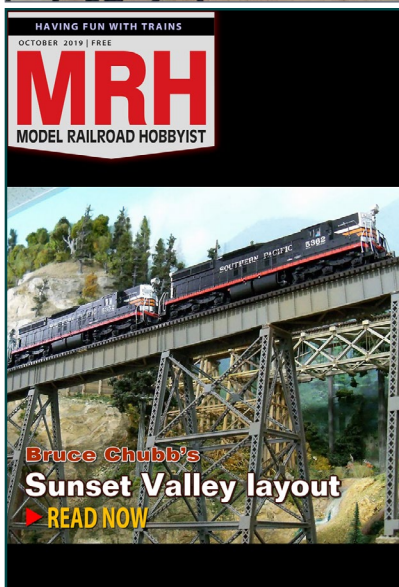
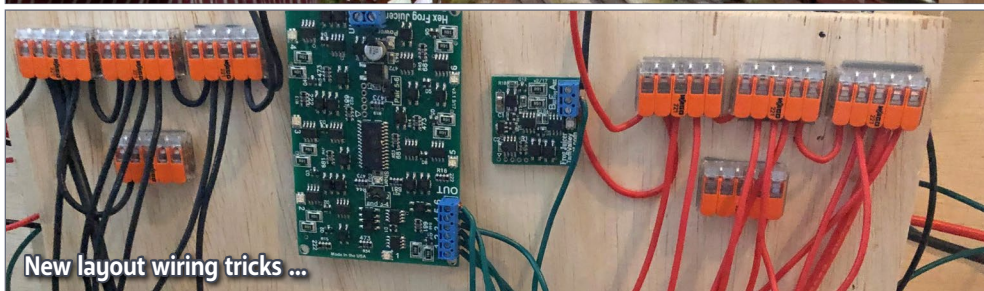
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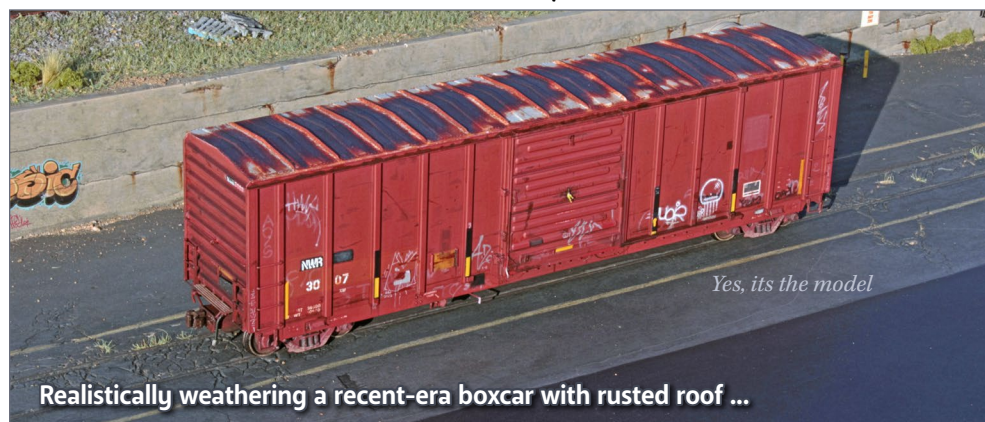
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