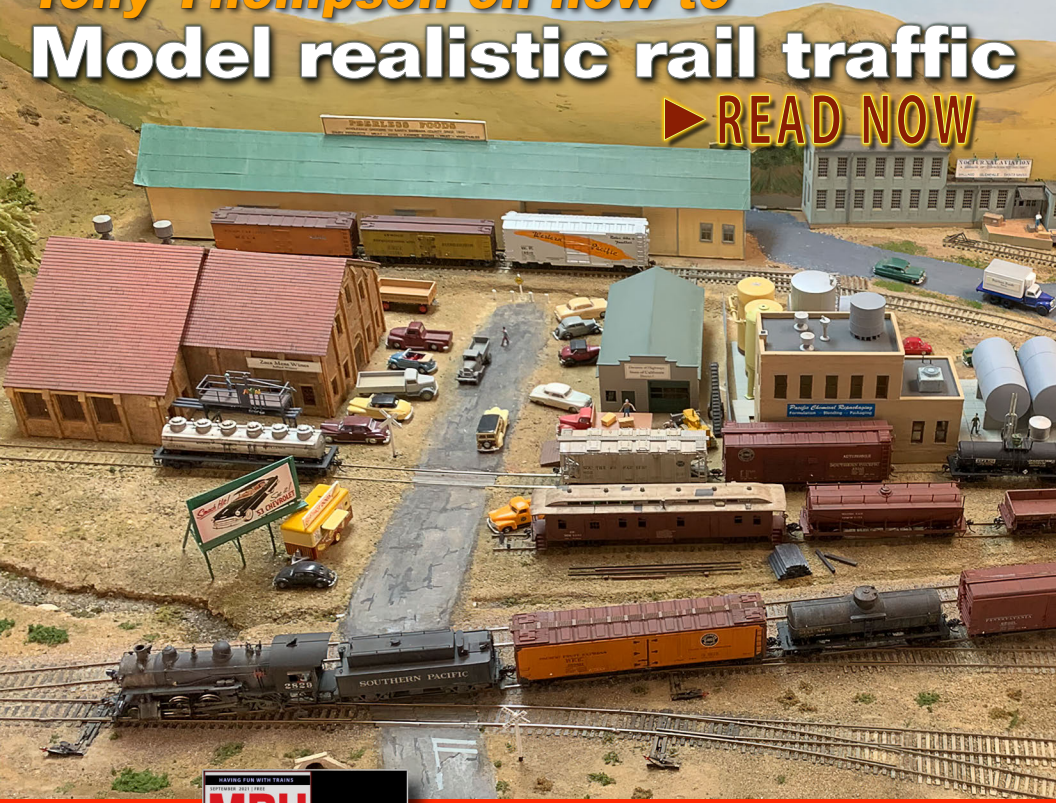




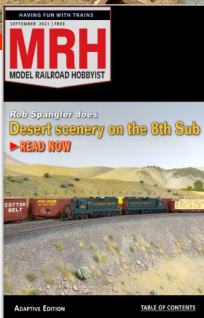
RUNNING # # # # # **EXTRA**

Apprentice with savvy modelers

Tony Thompson on how to
Model realistic rail traffic
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- 36 foot wooden boxcars
- Thin-walled scale pipe sources
- Make ultra-realistic looking logs
- Detail the interior of open-door boxcars
- ... and much more inside!

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TONY THOMPSON



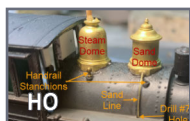
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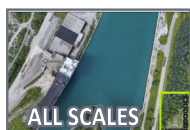
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RICHARD BALE and JEFF SHULTZ

PUBLISHER'S WELCOME

introduction



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JOE FUGATE ON USING VARIOUS DIAMETER
DRINKING STRAWS FOR SCALE PIPE ...



RATE THIS ARTICLE

I WANTED TO MODEL SOME PIPE LOADS, so I started thinking what would make the best model pipe. Styrene tubing sold by Plastruct or Evergreen doesn't work – the walls are much too thick for scale steel pipe.

As I looked around for options, I was sipping on my hot drink I had picked up at the local coffee drink place and noticed my plastic straw. Hey, perfect scale pipe!

I went looking online for different diameters of plastic drinking straws and found a lot more variety than I expected. I also searched for their smaller cousin: coffee stirrers.

I tried to find black straws/coffee stirrers if at all possible, since that color looks the most realistic as a pipe load [1]. In most cases, I could find black. But in a few cases, especially in the larger sizes, I could only find colored straws.

With colored straws, you'll have to spray them with black or some other realistic color to get something that looks more realistic than red candy stripes!

I made a list of all the sizes I could find and put them into a table [2]. I also converted the diameters to the various sizes for the different scales to make it easy. I put links to all these sizes in the shopping list for this article

One caveat: you can't easily buy just a few of these. Most of the time they come in packs of hundreds or thousands.



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PUBLISHER'S WELCOME | 2

Fortunately, they're not very expensive in bulk, so it won't break the bank. But you'll have several layouts' supply of scale pipe! ☑

To get a shopping list for this article, visit the *MRH* website at this link: mrhmag.com/magazine/running-extra/2021-09/publishers-welcome#shopping



1. Drinking straws and their smaller cousin – coffee stirrers – make great scale pipe. The thin walls look just like scale steel pipe. Where possible, I tried to locate black ones, since they look the proper scale color right out of the box.

COMMON STRAW DIAMETERS						
metric	inches	Z	N	HO	S	O
3.0mm	0.12"	26"	19"	10.5"	7.5"	5.5"
4.0mm	0.16"	35"	25.5"	14"	10"	7.5"
5.0mm	0.19"	41.5"	30"	16.5"	12"	9"
6.5mm	0.24"	53"	38"	21"	15.5"	11.5"
7.0mm	0.28"	61.5"	45"	24"	18"	13.5"
8.0mm	0.32"	70"	51"	28"	20.5"	15"
9.0mm	0.35"	77"	56"	30.5"	22"	17"
10.0mm	0.39"	86"	62"	34"	25"	18.5"
11.0mm	0.43"	94"	69"	38"	27.5"	20.5"

2. I located these drinking straw/coffee stirrer diameters and built this table to show their size in the most common modeling scales.

THE LIMITED MODELER

column



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

MRH Running Extra | September 2021

JIM SIX DISCUSSES 36' WOODEN
BOXCARS FROM THE EARLY
TWENTIETH CENTURY ...



**VIEW READER
COMMENTS**



1. Cleveland, Cincinnati, Chicago, and St. Louis (CCC&StL or Big Four) 55498. This boxcar was built 10-14, with a 36-foot inside length. New York Central acquired the CCC&STL in 1906, and operated it as a separate entity until 1930.



DOING MORE WITH LESS



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THE BOXCAR HAS ALWAYS BEEN THE

WORKHORSE OF THE FREIGHT car fleet. Offering better protection than flatcars, they hauled everything from lumber to livestock. The first boxcars appeared as early as the dawn of railroading in the 1830s.

Until the 1890s, boxcars had an average length of 30 feet [2]. By the early 1900s, the length increased to 36 feet, and the capacity to 40 tons. While boxcars were used for carrying entire loads from point to point, they were also used for “less than carload” (LCL) shipments.

During the first half of the 20th century, railroads served a significant common carrier function that companies such as UPS and FedEx have since taken over. Nearly every town in the United States –and parts of Canada and Mexico – had a freight house for shipping and delivering packages from department stores or mail order catalogues.

Over the past few years Accurail introduced five different versions of 36-foot boxcars. These are a much-needed contribution to those modeling the first half of the 20th century. Previously, they could choose only an older model from Athearn/Roundhouse or several resin kits. This month we will delve into the history of 36-foot boxcars and available models that represent them.

The 36-foot boxcar was key to the growth and success of railroads between 1900 and the Great Depression. They were a stepping stone to 40-foot boxcars, which in turn were a stepping stone to 50-foot and longer boxcars. Until the 1950s, side openings were typically six feet wide, and closed with sliding doors.

In the early 1900s, the inside length was extended to about 36 feet, with a capacity rating of 40 tons. Depending on the frame structure and material used, some were rated up to 50 tons.

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Many 36-foot boxcars lasted in revenue service into the 1950s, with some serving as late as 1960. 40-foot boxcars began to show up about 1915, but did not become dominant until the late 1930s, by which time construction of 36-foot boxcars had ended.

This all seems to be organized progress, but it was not. Quoting freight car historian and modeler Ray Breyer, “The notion of a ‘36-foot boxcar’ is another one of those hobby myths.”

The railroad industry tried to standardize things for decades. If you read through the Master Car Builder's Association (MCBA) annual reports, that's about all they argue about. For some reason, Victorians didn't understand standardization at all, so about the best anyone could do was standardize on interior sizes to make bookkeeping easier.

That led to assorted standard inside sizes. What we think of as “36-foot boxcars”, had a legally stated interior dimension of



2. N.Y.C. & St. L. (Nickel Plate) 15281, a 30-foot, double-sheathed boxcar.



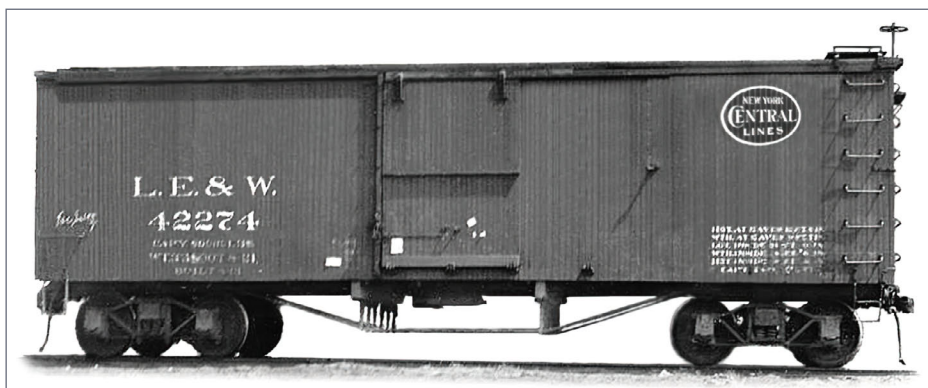
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36'x8'x8.5', which gives you an interior capacity of 2448 cubic feet. The Accurail car represents a slightly newer MCBA standard interior size of 38'x8.5'x9', for an interior of 2907 cu-ft.

Early 36-foot boxcars had wooden frames and wooden bodies. Two, four, or six steel truss rods were used to reinforce the wooden frame. Note that the LE&W boxcar [3] has six truss rods, while SOU 158466 has four [4]. Both are the typical early double-sheathed boxcars.



3. LE&W NYC Lines 36-foot boxcar with six truss rods.



4. Southern 36-foot boxcar with stamped steel ends.

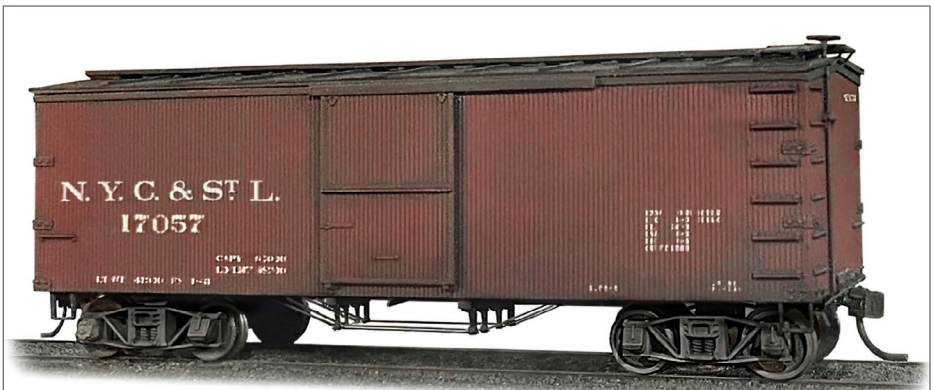
Athearn's Roundhouse Old Time boxcar is a reasonable representation of a double-sheathed truss rod boxcar. Athearn offers it in several versions, including decorated for the NYC&StL and undecorated. The Athearn model comes with a truss rod frame.

I used decals to letter this model to represent an NYC&StL 36-foot boxcar when it was part of the New York Central Lines [5]. It was just like those of other NYC Lines boxcars except it never had the NYC Lines oval herald.

I changed the trucks to Bowser arch bar trucks, installed metal wheel sets and Kadee #153 couplers, and added four corner stirrup steps from Accurail. I weathered it with wet chalks, and sealed it with clear flat rattle-can paint. The model represents a prototype from the early 1910s.

Single-sheathed cars had a frame structure with wood sheathing only on the inside of the body. Double-sheathed cars had wood sheathing on the inside and outside.

Single-sheathed boxcars are erroneously called “outside-braced” boxcars. Not having exterior sheathing merely exposed the body frame structure.



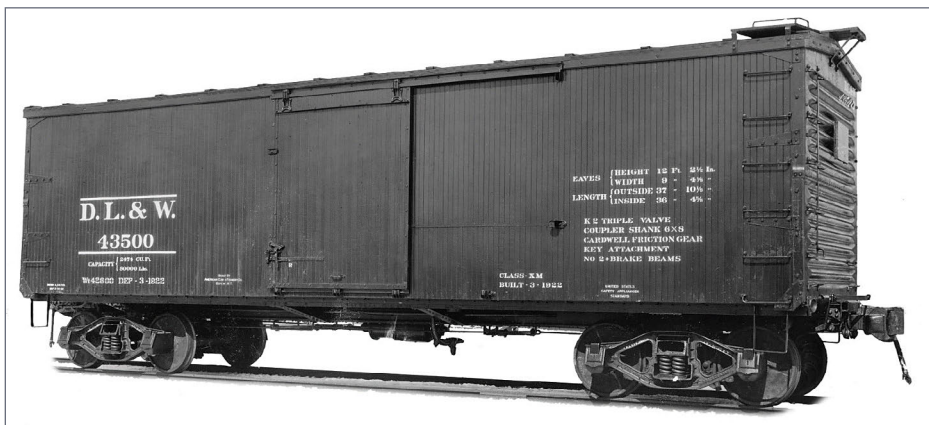
5. Athearn/Roundhouse Old Time boxcar re-lettered and weathered.



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Most 36-foot boxcars were double-sheathed wood-constructed bodies, although single-sheathed 36-foot boxcars started to be produced about 1910. When the USRA was created in 1919, both single- and double-sheathed 40-foot boxcars were built for railroads needing that length.

The next step in the evolution of early boxcars was the use of steel frames, which made truss rods unnecessary in many cases [6, 7].



6. D.L. & W 43500 is an early steel center-sill frame boxcar without truss rods. *Prototype builder's photo*



7. My proposed Accurail model of a steel center-sill frame boxcar. I photo-edited this photo to match the specs of the car in [6].

However, straight steel frames were of limited strength. Sometimes the number of truss rods with straight steel frames was reduced to two or four. To add greater strength for 50-ton cars, so-called fish belly center sills of steel were used [8].

Photo [8] shows CCC&StL 53572, a 36-foot boxcar. My original image of [8] is a good high-resolution image, so I was able to crop details showing the actual interior dimensions [9, 10]. Photos, if unaltered, are historical record. I rely on railroad history for my modeling, and this is a perfect example of what I do. I worked with Accurail to help them produce the model shown in [11].

All 36-foot boxcars were certainly not the same. Photo [12] is a 1910 builder's photo of New York Central & Hudson River 105640. Note the steel fish belly frame members along with tall steel side-sill frame members.



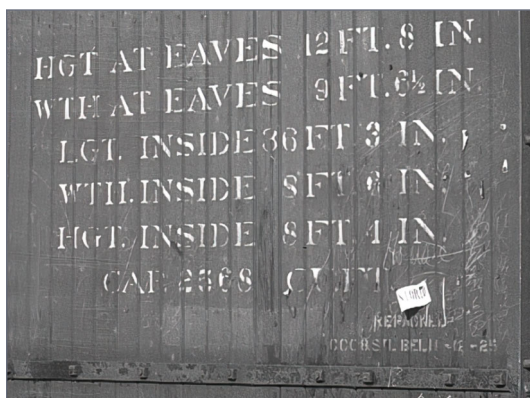
8. C.C.C.&St.L. 53572 was a 36' 3" fish belly boxcar with 80,000-pound capacity.



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9. An enhancement of [8] reveals the inner dimensions.



10. Another enhancement of [8] reveals an 80,000-pound load capacity.



11. This is an Accurail model of a single-sheathed 36' fish belly boxcar.

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I would love to see an HO scale model of this prototype. Many railroads had 36-foot boxcars of this configuration. I may one day kitbash this prototype starting with the Accurail model.



12. N.Y.C & H.R. is another version of a 36' fish belly boxcar.



13. ERIE 91465 Fowler 36-ft single-sheathed boxcar, built 8-17.



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STEEL FRAMED CARS

Per Ray Breyer, railroads knew before 1880 that steel structural components would make freight cars stronger, more durable, and longer-lived.

The Master Car Builder's Association began recommending the building of steel framed freight cars as early as 1889 – but tradition, frugality, and the skill sets required to work with steel took time to overcome. Aside from a few all-steel hoppers and gondolas, wood car construction continued to dominate the industry into the 1900s.

It wasn't until 1902 that freight cars with composite steel and wood bodies began being built in quantity that C. A. Seley designed a group of boxcars and gondolas for the Norfolk & Western. Built by ACF's Huntington Shops in 1904, these double-sheathed N&W boxcars ranked among the first in the country to be built with steel body framework. Refer to [14, 15].

Not until 1907 did the idea of eliminating the outside wood sheathing get introduced, creating the first single-sheathed boxcars. The idea came from the Canadian Pacific Railroad



14. ACF builder's photo. *St. Louis Mercantile Library collection*



15. ACF builder's photo. *St. Louis Mercantile Library collection*

while looking for an affordable way to build a large number of grain-carrying cars. W.E. Fowler and the Canadian Pacific led the way as the first car builder in Canada building steel-framed freight cars.

Dominion began building these cars in 1908. Demand for the new cars quickly outpaced Dominion's capacity to build them, causing that company to reorganize as CC&F, Canada's largest freight car manufacturing company.

In July 1908, Fowler applied for a patent on a box car design very similar to the CP's new cars. Fowler quit the CP in 1909 citing health reasons, and the patent office approved his patent in June 1910. Fowler quickly formed the Fowler Car Co. and began advertising "The Fowler Car".

Production of this car type was brisk in the years before World War I. By 1915, over 75,000 cars had been built to his general plans. The Fowler cars were long-lived with the last revenue service car not removed from service until 1981.



MODELING THESE 36-FOOT CARS

Can we find sufficient 36-foot boxcars as HO models in the years before the Great Depression? The answer is a resounding yes!

Both Accurail and Athearn offer HO-scale models of 36-foot boxcars. While the Athearn/Roundhouse “old time” boxcars do not look as nice as the newer Accurail models, they still can easily be transformed into credible models. They represent earlier all-wood construction and can be had as ready-to-roll plastic models.

I like this model so much that I have another five of these Athearn models to prepare as I did this one.

Accurail offers 36-foot boxcars represent five different prototypes. Offered are:

- 1150 Series – 36-foot Fowler, single sheathed box
- 1300 series – 36-foot, double sheathed box cars with steel roof, steel ends, and fish-belly underframe
- 1400 series – 36-foot, double sheathed box cars with steel roof, steel ends, and straight underframe
- 1700 series – 36-foot, double sheathed box cars with steel roof, wood ends, and fish-belly underframe
- 1800 series – 36-foot, double sheathed box cars with steel roof, wood ends, and straight underframe

Accurail makes dozens of paint schemes available for each of these five prototype offerings.

Photo [16] is an Accurail Fowler model. Photo [17] is the Accurail 1300-series model. Both photos show their NYC&StL/NKP version – note neither prototype has a Nickel Plate Road slogan. The slogan came in 1918, two years after the NYC Lines sold the NYC&StL to the Van Sweringen brothers of Cleveland, Ohio.

My point with the Accurail and Athearn models is this: a lot of 36-foot wood boxcars can be found in HO – especially with Accurail models. I would like to see Athearn release more of their 36-foot boxcar model decorated in at least a couple of dozen paint schemes.

In the meanwhile, we will have to find and buy the Athearn models where we can, then re-paint and letter them to meet our needs. ✓



RATE THIS ARTICLE



16. Accurail 1150-series model model. Factory paint, Kadee metal wheels, Kadee #153 scale couplers. Weathering with chalks wetted with decal setting solution.



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17. Accurail 1300-series model model. Factory paint, Kadee metal wheels, Kadee #153 scale couplers. Weathering with chalks wetted with decal setting solution.

Did you know
there's an MRH/
RE index
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Modeling traffic on a layout



Tony Thompson talks about realistic movements of freight cars in operation ...



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1. This local train, returning from the end of the Santa Rosalia Branch and shown in my layout town of Ballard, is not just a group of freight cars. It represents work done to switch several industries along the branch.

GETTING REAL



column

MRH Running Extra | September 2021

All photos by the author unless noted



BY “TRAFFIC,” I mean the work of the railroad, not automobile congestion. Traffic, of course, is the reason the railroad exists in the first place. Traffic essentially arises from the need of shippers to move cargo.

From the railroad’s point of view, traffic causes demand for movement of freight cars, loaded or empty. Accordingly, traffic underlies the work of through and local freights, and of course the work of yard crews.

It’s natural that we find it interesting to model the freight cars and locomotives, the depots and roundhouses and team tracks, but those only serve the business: the traffic.

Note that the subject here needn’t touch on waybills. If anything, waybills result from the needs of traffic, not the other way around.

In model railroading, it seems to me that there are two aspects to traffic on a layout [1]. One aspect is the switching of industries on a layout, and the resulting movement of cars. Implementing that requires some understanding of each industry modeled.

The cars we switch usually have arrived from off the layout. When their work is completed, they will depart the layout – either via moves involving staging or 0-5-0 moves. The sources of the freight cars arriving on the layout and the destinations



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of those departing it are important too. In this article, I address both aspects.

These ideas dovetail with many helpful publications about model operations, for example the books of Koester, Chubb, and others, and I commend those as background. I also recommend becoming familiar with descriptions of prototype practice, from Armstrong, Sagle, Coughlin and others (all these are shown in the Bibliography).

LAYOUT INDUSTRIES

Industries on the layout may represent any number of approaches to modeling, from meticulous reproductions of actual industries in the area modeled to entirely freelanced industries chosen for variety, and everything in between. But regardless of the approach they represent, they should exhibit certain traffic characteristics.

We need to understand traffic patterns from two different perspectives: The first is the layout itself. The second is the industries elsewhere in the world, the economy that is the reason for loads moving to and from the layout. I'll return to this second category after discussing the on-layout industries.

Each industry on a layout may logically have a unique pattern of work, and therefore also unique needs for inbound and outbound freight cars. When all of these industries are put together, we get the pattern(s) of an operating session. Let me illustrate with a few examples.

One of the busy industries on my layout is a wholesale grocer. Because it receives a wide range of food products, a variety of cars that arrive from food producers. Most of these products are perishable, so loads arrive frequently.

The business, called Peerless Foods, has four warehouse doors at four car spots [2]. Usually there are three or four cars

spotted at Peerless. In most operating sessions, at least two of these spots receive new loaded cars, and the empties are taken away. This is year-round, and is a staple of nearly every operation session.

I mention “year-round” because of how I operate my layout. Each operating day is imagined to be that day in 1953, my modeling year. If we are operating on August 15 of the current year, on the layout it is August 15, 1953.

Seasonal patterns, especially with produce, are accordingly important. I addressed this topic in more detail in a 2018 column (see Bibliography).

At the other extreme from Peerless Foods are very small, or seasonal businesses. The Guadalupe Fruit Company, for example, specializes in tree fruit, and thus is mostly active only from May to September. The rest of the year, they are not



2. This is Peerless Foods, a wholesale grocer in my layout town of Ballard. Spotted here at the moment are a heavily insulated PFE car delivering frozen food; a Wilson meat reefer; and a Great Northern boxcar carrying dry goods. The Class R-70-2 PFE car, 52 feet long, looks large next to the 37-foot meat car.





3. The Guadalupe Fruit Company is a seasonal business that produces single carloads each day during the summer. In fall and winter, the business receives only an occasional delivery.



4. Martinez & Son Marine Engine Service & Repair in my layout town of Santa Rosalia only gets an inbound load once every several operating sessions. Empty cars would be picked up right away.

Distribution Schedule

Industry	Day									
	1	2	3	4	5	6	7	8	9	10
Shumala										
Produce shed	RS		RS		RS		RS		RS	
Team track			XM							FM
Oil dealer		TM					TM			
Ballard										
Peerless Foods		RS			XM		RS			RS
Zaca Winery			TMI				RS	TMI		
Team track		XM				FM				
Guadalupe	RS		RS		RS		RS		RS	
"Random"	2B	1S	1SR	2B	1SR	2S	1B	2SR	1S	2B

5. An example of a formal operating schedule: a 10-day sequence of car deliveries at a few of my layout industries, for both empty (open letters) and loaded cars (solid letters). This table is explained in my January 2018 *MRH* article.

shipping and may only receive an occasional car of box shook or replacement machinery [3].

Martinez & Son Marine Engine Service and Repair is a very small industry [4]. Most of its work is locally done at the port. It receives only an occasional boxcar load of repair parts or new engines.

In describing these examples, you can see I have not been particularly formal about exact timing of delivery or shipment patterns. It would certainly be possible to do so, and at times I have operated my layout that way [5], as I described awhile back in *MRH* (see Bibliography). The layout owner (or staging person) needs only a broad sense of how individual industries should logically operate to achieve realism.



When an operating session is conducted, it is not really “the next day” after the previous session. More likely the previous session was at least a week previous, quite possibly a month or more. Maintaining exact frequencies of car pickup and delivery wouldn’t be evident to anyone but the layout owner.

Instead, my suggestion is that these frequencies simply be believable for the kind and size of each individual industry. That can be chosen as desired for any operating session. Visiting operators have a sense of what is realistic, and will probably recognize unrealistic switching patterns.

OFF-LAYOUT INDUSTRIES

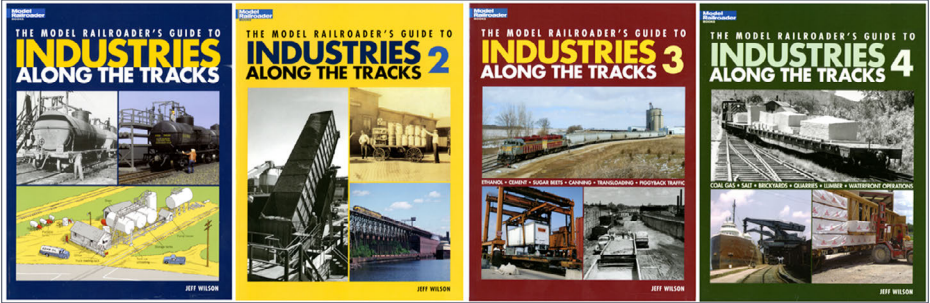
We have great freedom to imagine and to choose the off-layout industries that interact with the trackage on our layouts. There are some superb sources of information for industries that you may not know too much about. I cannot praise the four-book *Industries Along the Tracks (IATT)* series by Jeff Wilson enough [6].

Each book in the series covers eight industries, briefly but completely. Some are now out of print but readily available from used book dealers online. They are worth seeking out.

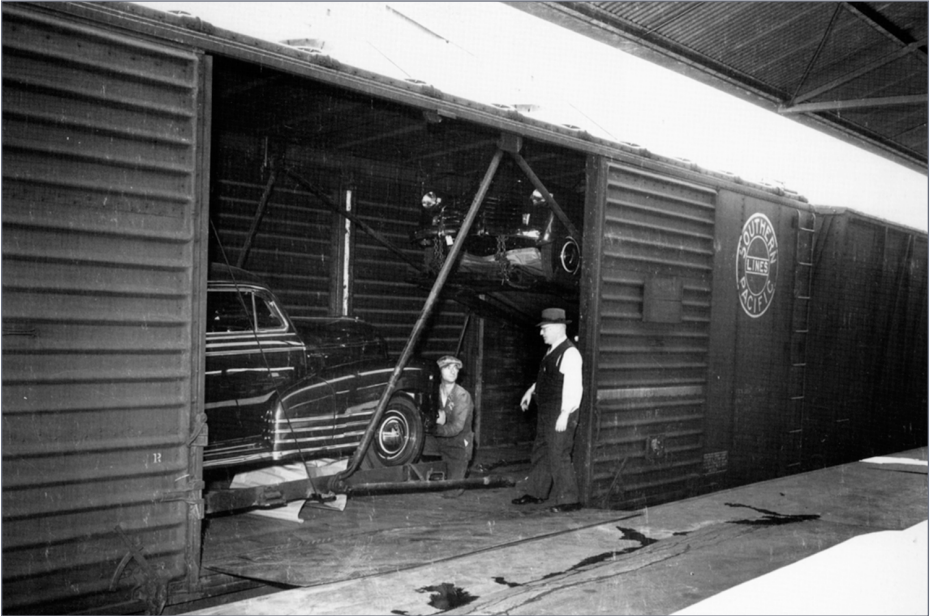
AUTOMOBILES

Let’s start with the automobile industry. To many people, this immediately suggests shipment of completed or set-up cars [7]. That is indeed a very important component of railroad traffic, in almost any era.

At one time, an even more voluminous traffic was shipment of auto parts to decentralized assembly plants around the country [8]. Just like assembled automobiles, this was high-value and high-tariff priority traffic. For those eras, auto parts ought to hold at least an equal importance in auto industry traffic. One



6. The covers of the four *Industries Along the Tracks* books by Jeff Wilson, published by Kalmbach.



7. An important part of automobile industry traffic was and is assembled or set-up vehicles, shipped to all parts of the country. These cars are being loaded into a boxcar with auto racks at Chevrolet's Melrose Assembly plant in Oakland, California.
SP photo



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8. In terms of carloads, auto parts, shipped to assembly plants all around the country, were an even bigger component of auto industry traffic than were finished automobiles. *SP photo*

of the best books on the subject, *America's Driving Force* from Walthers, is packed with worthwhile information about auto industry traffic. Though out of print, it is readily available for sale online.

Almost as much value is Jeff Wilson's recent Kalmbach book, entitled *Railroading and the Automobile Industry*. This is lavishly illustrated and is quite helpful. It goes beyond Jeff's coverage in the first volume of *IATT*.

Among the things these books can tell you is where auto parts were made, and for which automobile company. The Walthers book has tables for both the 1950s and the 1990s with considerable lists of these parts companies and where they were located.

How about destinations? Auto parts of course went to the Detroit-area auto plants in large quantities, but they also went to regional assembly plants all over the country for many years.

These assembly plants are mostly gone today, but because they were so important for town or county histories, sites of that kind on the internet provide extensive history. I show here a table [9] that I made up for my own use, illustrating the kind of information that is readily available online.

Automobiles moved in cars with Evans auto racks in the days of boxcar auto shipments, while auto parts mostly moved in cars with special parts racks installed in them. As such, these cars were not in general service.

One can find information on the cars railroads used to carry this traffic. One example is shown here [10], from an article by Mark Amfahr (Bibliography).

The cars listed in [10] were not all intended for Bay Area assembly plants. The Overland Route was the quickest way across the country from the Midwest for many years. When



California Automobile Assembly Plants, early 1950s

Los Angeles area

GM: Chevrolet in Van Nuys (called "Gemco" by SP and "Van Nuys Assembly" by GM) and also a Buick-Olds-Pontiac plant in South Gate

Ford: assembly plant in Long Beach and a Lincoln-Mercury plant in Maywood, what is now Commerce (Commerce didn't become a city until 1960). In 1957, Ford closed both the Maywood and Long Beach plants, replacing them with a new plant in Pico-Rivera

Chrysler in Maywood (plant called "Los Angeles Assembly" or "Maywood Assembly," built all Chrysler makes until 1971

Studebaker: assembly plant in Vernon, closed in 1956

Nash assembly plant in El Segundo (Nash & Hudson formed American Motors in 1954), closed in 1955

Willys-Overland: assembly plant for civilian Jeeps (model CJ) in Maywood, closed in 1954.

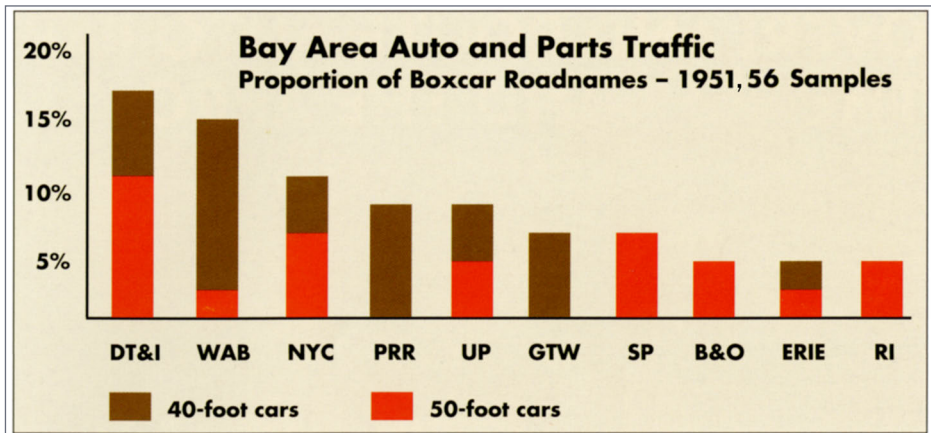
San Francisco Bay Area

GM/Chevrolet in Melrose (Oakland), called "Oakland Assembly," moved to Fremont in 1962

Ford: plant in Richmond, called "Ford Assembly;" closed in 1956, replaced with San Jose Assembly Plant

Chrysler: Plymouth & Dodge assembly in San Leandro until 1954, then continued as a parts plant, located right at Oakland boundary

9. This table shows auto assembly plant history readily found on the Internet. I used this information for a 1953 layout set in California.



10. This graph shows auto and auto parts traffic over the Overland Route (SP and UP) to the San Francisco Bay Area, for both 40- and 50-foot cars, listed by owning railroad. *Mark Amfahr*

cars reached the Bay Area, Southern Pacific operated scheduled auto parts trains to the Los Angeles area plants.

These are only a few examples of the many special schedules and trains for auto industry traffic. Among several sources, Fred Frailey's book has many details (Bibliography).

Almost any modeling situation can include auto industry traffic, even if only an occasional 50-foot auto car delivering a couple of sedans to a local car dealer at the team track. I will say more about team tracks below.

CEMENT

Another major industry is cement. There is a good overview of the industry in Jeff Wilson's third volume of *Industries Along the Tracks*.



11. This photo from the mid-1950s shows covered hoppers spotted for loading at Southwestern Portland Cement in Victorville, California. The storage silos dwarf the 70-ton hoppers. *Don Sims, photo*





12. On my layout, I have a district facility of the California Division of Highways (as it was called in the 1950s), which receives shipments of cement from time to time. The area that I model was in fact located in CDH District 5 in that era.

Cement is made from limestone, found across the U.S. It is heavy and relatively cheap, and consequently it is rarely shipped very far. That means that covered hoppers carrying cement should be from regional railroads only.

Most cement plants are immense [11]. If you have the impulse to model one, backdrops are a good location. Such a plant will consume very large amounts of limestone and coal and will ship very large amounts of product.

As for destinations, there may be facilities on a layout that would naturally receive cement [12]. But if not, that need not be a limitation, because cement can readily be unloaded on a team track [13].

In any area of the country, a little internet research will quickly tell you where the cement plants were, and when (they do change ownership and name, and go out of business). Since I



13. Although this is a modern image, it shows that unloading granular materials, including cement, can easily be done with a portable auger at a team track. This would be easy to model.
photo courtesy Jim Seagrave

model California in the early 1950s, the plants that will be my sources of inbound cement shipments are shown in the following list:

- Southwestern Portland Cement, Victorville
- California Portland Cement, Colton
- Monolith Portland Cement, Monolith
- Kaiser Permanente Cement, Permanente
- Santa Cruz Portland Cement, Davenport
(became Pacific Cement after 1956)

PETROLEUM

The petroleum industry is fascinating in many ways. In all but the largest places, local bulk oil dealers would represent it. As with cement plants, most oil refineries are huge, shipping



immense amounts of product, so most modelers will not have space to model a refinery realistically.

Bulk oil dealers were located even in small towns and are readily modeled. I wrote an article in *MRH* some years back, showing the typical features of most prototype bulk oil dealers, and showing how to kitbash one (Bibliography).

On my layout, I have four bulk oil dealers, all for regional oil companies, such as Union Oil in my layout's state of California [14]. Of course, one may wish to model one of the big national service station brands, such as Texaco, Shell, or Mobil, but I prefer emphasizing the region my layout depicts by choosing regionals only.



14. This example of a small bulk oil dealer, distributing Union 76 products, is in my layout town of Ballard. I developed part of it from a Chooch kit and scratchbuilt the remainder. The tank car has custom lettering.

LIVESTOCK

Livestock as an industry can mean stock pens from which stock are shipped, or it can mean local “branch houses” of the meat packing companies. These companies also had huge main plants, but they would be a challenge to model, unless you represent them on the backdrop. Jeff Wilson provides a good perspective on the livestock business in his first *IATT* volume.

Stock pens have been the subject of many modeling articles over the years, and they are readily available as kits. In small towns, they can be quite small, so often fit well onto layouts. This example of a Santa Fe stock pen is interesting for its construction, as well as small size [15].



15. This small stock pen was in Peach Springs, Arizona, and cattle are shown being loaded into a single Santa Fe stock car.
Joe McMillan photo, Richard Hendrickson collection





16. This small stock facility, with three pens and an SP office, also has an enclosed water tower as part of stock watering. That's Pismo Dunes Road in the foreground.

For modelers, small size is an asset. The one I have added to my layout in the East Shumala area has just three pens and an SP office [16]. Like many railroads, SP owned quite a few of the stock pens along its lines.

LUMBER

Lumber as an industry can mean lots of things. Some modelers think first of logging and sawmills; others think first of lumber yards or building materials companies which receive cut lumber; and others think of uses for wood products other than local lumber yards. A broad summary of the lumber industry is in Jeff Wilson's *IATT*, Volume 4.

Lumber was a major mainline traffic component for Western railroads in the transition era [17], when a national homebuilding boom was in progress. Modelers often associate

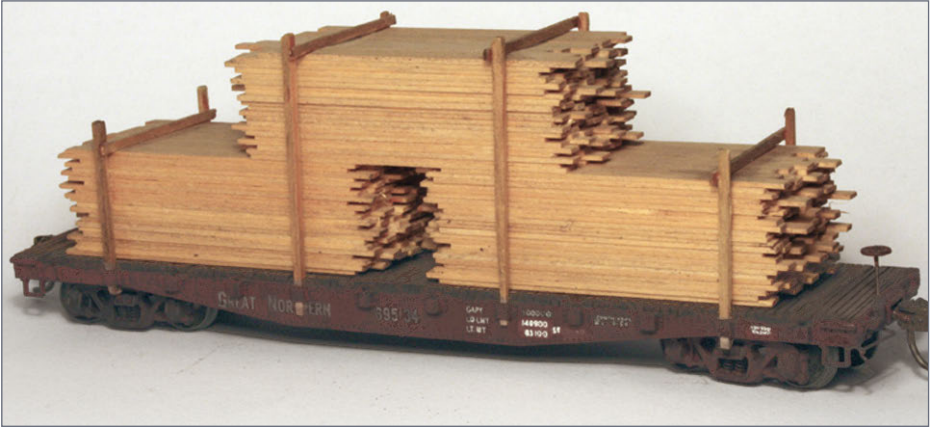
lumber loads exclusively with flat cars [18], and such loads were certainly common; but the lumber on flat cars was usually rough lumber, needing finishing before many uses.

Finished lumber was usually shipped in boxcars, ideally with double doors for ease in loading and unloading, to protect from weather and dirt. Unloading photos can illustrate the amount of hand labor that often was needed [19].

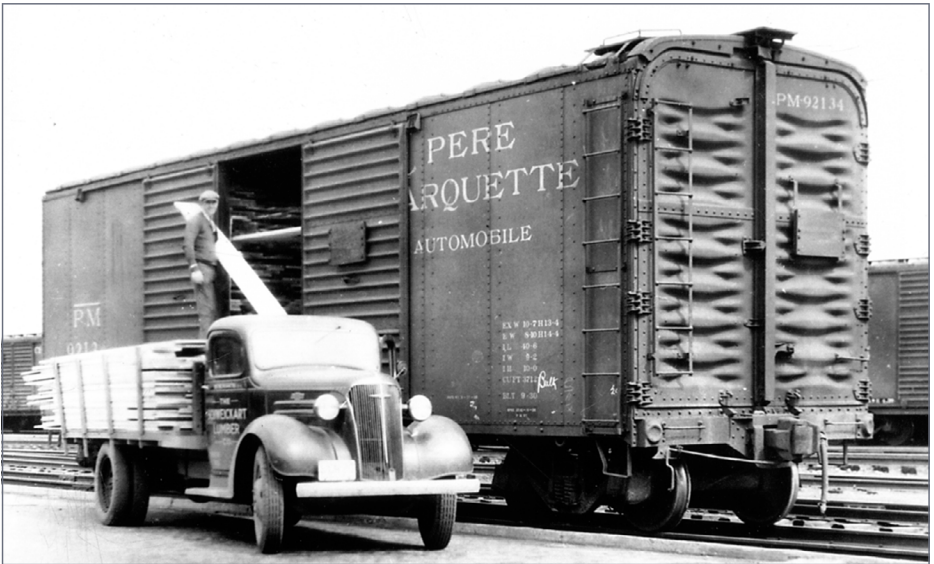


17. This train in southern Oregon, headed to California, contains many cars of lumber, both flat cars and gondolas. If there weren't enough flat cars, gondolas would be pressed into service. *SP photo*





18. Lumber loaded this way, shown on a model of a Great Northern flat car, was usually rough. Any lumber yard without its own siding would receive this cargo at a team track.



19. This photo shows an employee of Schweikart Lumber unloading lumber from a 40-foot automobile car at Ashland, Kentucky, about 1940. You can see inside that a great deal of lumber remains. *C&O Historical Society*

Modelers know the many modeling opportunities with lumber products on flat cars well but should realize they go beyond the one shown [18] to other kinds of products [20].

PRODUCE

If you model a significant growing area, packing sheds are a natural industry. If you happen to be modeling mainline operations, you may enjoy operating solid trains of perishables, and depicting the icing along the way. The destinations – wholesale grocers, produce brokers, and regional cold storage facilities – also have potential for modeling.

Jeff Wilson's third volume of *IATT* has a good overall summary of this industry.

All these aspects have a strong seasonal component. You may not want that much detail, but if you do, there is ample information available to correctly model the appropriate crops and their harvest seasons.



20. Not all lumber products shipped by rail were plain lumber. Creosoted timbers, as shown here on the way to a railroad Bridge and Building gang, are another possibility.



The U.S. Department of Agriculture and similar departments in various states issued monthly or annual reports on crops, and so did many railroads. As a single example, I show this partial table [21].

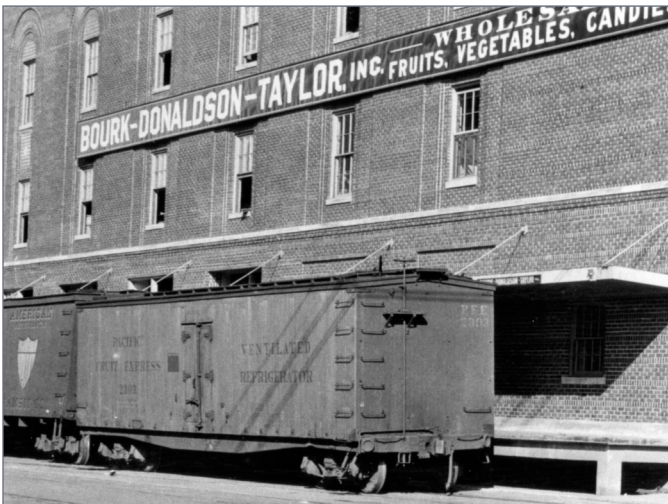
The modeling opportunities here are quite varied. You can model the shipping end of the business [3, 22], the packing houses and other intermediaries, or you can choose to model the ultimate destinations, such as this wholesale grocer [2, 23]. As with auto industry traffic, produce was a priority cargo and

Normal Growing and Shipping Seasons on Southern Pacific Lines														
Commodity	Producing District	Producing State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Garlic	Maricopa County	CA												
	Northern and Central California	CA												
Grapefruit	Coachella Valley	CA												
	Maricopa County	AZ												
	Rio Grande Valley	TX												
	Riverside County	CA												
	San Bernardino District	CA												
Grapefruit	Tulare County	CA												
	Yuma County	AZ												
Grapes	Bakersfield District	CA												
	Central California	CA												
	Imperial and Coachella Valleys	CA												
	Maricopa County	AZ												
	Northern Cal.-Lodi-Modesto	CA												
	Sacramento District	CA												
	San Joaquin Valley	CA												
	Yuma County	AZ												
Lemons	Maricopa County	AZ												
	Northern California	CA												
	Santa Barbera-Oxnard District	CA												
	Southern California	CA												
	Yuma County	AZ												
Lettuce	Bakersfield District	CA												
	Brentwood District	CA												
	Central California (Fresno—Sout	CA												
	Cochise County	AZ												
	Guadalupe-Santa Maria	CA												
	Imperial Valley	CA												
	Irvington-Centerville-SnoBoy Di	CA												
	Maricopa County	AZ												
	Oxnard District	CA												
	Patterson District	CA												
	Modesto-Oakdale District	CA												
	Watsonville-Salinas	CA												
	San Jose District	CA												

21. This is just part of a multi-page table for crop shipping seasons in different growing areas of the Southern Pacific, from Oregon to Texas. *Pacific Fruit Express book*



22. Loading oranges in a refrigerator car, with ice visible in the bunker. Sun-kist photo, Clark Bauer collection



23. This is a wholesale fruit and vegetable merchant in Denver, Colorado, taken in 1925, with two reefers spotted (PFE and ART). Bourk-Donaldson-Taylor was not the sole occupant of the building. Hol Wagner collection



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24. The Phelan & Taylor packing house in my layout's East Shumala area can accommodate three reefers for loading. It packs vegetables most of the year. It's a modified Showcase Miniatures kit, and the building sign is from the actual Phelan & Taylor building in Oceano, California, in my modeling area.

its handling can offer interesting challenges in a model operating session.

On my own layout, I find reefer operations interesting, and thus offer seasonal crops in appropriate time frames. I have five packing houses on my layout [24].

HOUSE AND TEAM TRACKS

Finally, I want to mention team tracks. Team tracks were provided even in the smallest towns, and can serve as “universal industries,” since almost anything can be transloaded at such a facility.

While freight houses were not usually provided in small towns, very active team tracks were commonplace. For more on the topic, you may consult Jeff Wilson's Volume 3 in the *IATT* series.

Many depots also had a freight section at one end, served by a house track. Since they serve essentially the same operational

purpose, the two terms, house track and team track, can be considered together in industry terms. Many modelers don't think of a depot in this light, but most depot photos do show the house track [25].

Since almost any product can be shipped to or from team tracks, this is an open-ended topic. Let me just illustrate a few that are useful in model railroad operations.

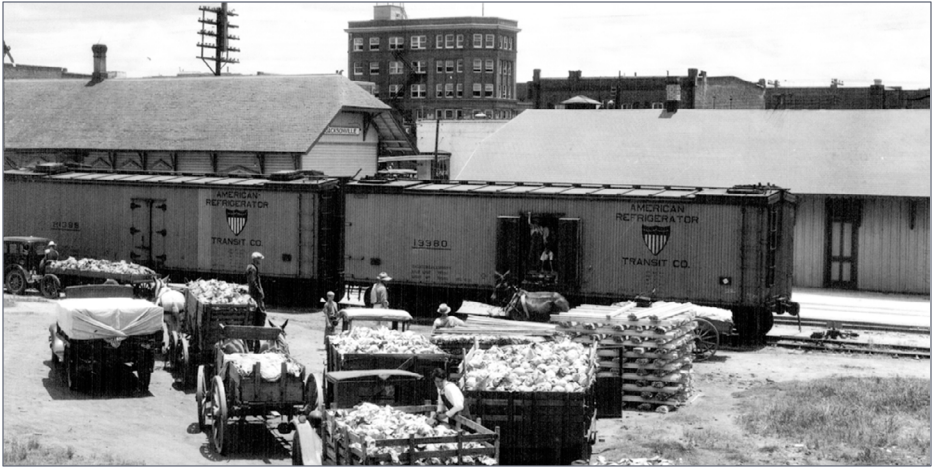
I've already mentioned lumber and shown a team track unloading scene [19]. Modelers tend to think of lumber yards with their own spur, but many were not located on the railroad, and made use of the town's team track.

Products of various kinds could be equally well loaded outbound at a team track, so one should not only think of arriving loads. For just one example, this photo [26] shows



25. This is the Southern Pacific depot at Port Chicago, California (now Bay Point), in May 1939. In photos like this, we tend to just see the depot, but may not notice the cars on the house track behind the platform. The depot is the SP Common Standard No. 22 design, an extremely common version. *Wilbur C. Whittaker, photo*





26. This is Jacksonville, Texas in the late 1940s. Lettuce is arriving in both trucks and wagons to load directly into ART refrigerator cars on the team track. You can see why they were named “team tracks.” *Gene Semon collection*

lettuce being loaded from wagons directly into refrigerator cars, without benefit of a packing house. For crops with short seasons, it might not pay to build a permanent packing facility, and the team track could serve the need.

Arriving loads of produce were certainly also significant, particularly in big cities, where it was efficient to have a large team track area from which delivery trucks could fan out across the city [27]. Few modelers choose layouts set in deeply urban locations, but the same kinds of arrangements occurred in many smaller cities too.

We tend to think of discrete kinds of cargo, crates and boxes, or automobiles, or sacks of flour, as the unloading candidates. In fact, bulk cargoes could be and often were unloaded at team tracks too. I’ve already shown the example of cement being unloaded at such a location [13].

Liquid cargoes could also be readily unloaded into tank trucks, and there are numerous prototype photos that show examples. I do this on my own layout for road asphalt. The picture is completed by having a tank trailer spotted in position to receive the cargo [28].

Another of those sobering examples of the amount of hand labor once commonplace is an example of unloading what appears to be sand directly into trucks at a team track [29].

Other kinds of cargoes that don't have a direct on-line destination can of course be directed to a team track for pickup by the consignee. One example on my layout is a load of creosoted power poles, to be picked up by a local utility crew at the nearest team track to their current work site [30].



27. Reefers were unloaded at team tracks, too. This view in Manhattan shows long strings of meat and produce reefers on separate tracks. *Jim Shaughnessy photo*





28. Here a tank car of road asphalt has been spotted on the East Shumala team track, to be unloaded by workmen from Guadalupe Paving.



29. In this 1951 photo, sand is being unloaded from a gondola into dump trucks – one shovelful at a time. Photographer and location unknown. *Richard Hendrickson collection*



30. This load of creosoted poles is destined to a team track, to be picked up by a Pacific Gas & Electric crew.



31. This example of a large crate, shipped on NYC flat car 496240, is shown spotted in the team track area of my layout town of Ballard. In the background, workmen are unloading crates and boxes from a boxcar on the depot's freight platform and transferring them to a truck.



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A particularly flexible and wide-ranging example of a good team-track load is any kind of crate, piece of machinery, or structure that doesn't have an on-layout spur. An example is shown on a flat car [31], though loads like this are equally well transported in gondolas.

For my last example, again from the same photo [31], I will point out that during unloading at a team track, or the freight section of a depot, the activity on the freight platform is an additional modeling opportunity. I have made a variety of representations of crates and cardboard boxes for this purpose. Examples can be seen in the background of this photo [31].

Consulting railroad-issued shipper guides, such as the Union Pacific one cited (Bibliography) will not only show team tracks in every town, but considerable lists of railroad customers who don't have their own spurs but rely on a team or house tracks.

CONCLUDING REMARKS

I hope it's clear what I mean by traffic. Most of us don't focus on it that way, but it is indeed what underlies the work of the railroad. If we focus on trying to represent traffic patterns on a layout, there are many opportunities we can take advantage of in developing or improving operating sessions.

I attempted to separate two aspects of traffic in my description here: the traffic to and from the industries represented on the layout, and the traffic to and from the rest of the world, that enters and leaves the layout. These are interdependent but separable topics, and each deserves consideration and understanding before implementing operations in response.

Finally, I want to emphasize that there are extensive resources available on this topic, and have specifically referenced some of them that can help modelers learn more about traffic.

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Make realistic scale logs



Photo by Joe Fugate

MRH Running Extra | September 2021

HAROLD MINKWITZ MAKES REALISTIC LOGS FROM DOWELS ...



LIKE MANY NARROW-GAUGE RAILROADS, my Pacific Northwest Airline depicts railroading in rough, mountainous wilderness. In such remote areas, structures were frequently built using readily available, locally sourced materials. Builders frequently used log crib work to make retaining walls, for example.

I found dowels cut to the proper length to be a good basis for these logs. The smooth finished look of a dowel, however, is a far cry from the rough, knotty look of logs.



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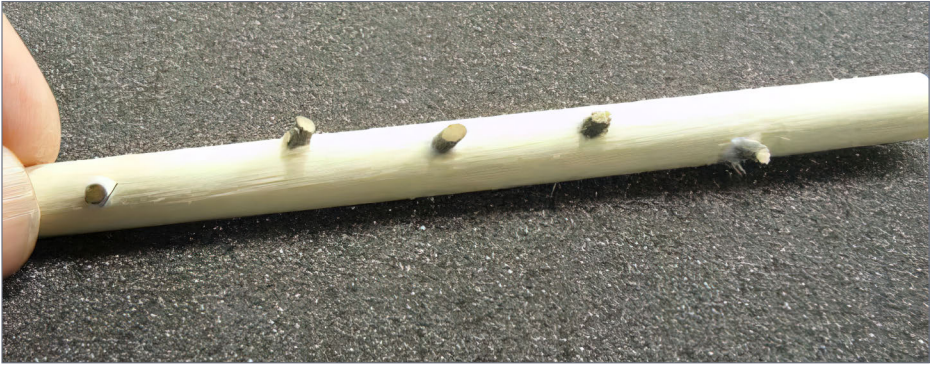
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MAKE REALISTIC SCALE LOGS | 2

I found that with the right preparation work, these dowels can make very convincing logs. Let's go through the process I use to create rough logs out of the dowels.

CREATING THE RAW WOOD

With the first step, I transform the dowel into a log effectively stripped of its bark. I want to give a smooth dowel the look of raw, weathered wood.



1. I started with a 3/8-inch diameter dowel – this is for On30 crib work, but you can adjust the diameter to fit the scale you need. After cutting it to length, I roughed the dowel lengthwise with 50-grit sandpaper. I added smaller diameter dowel stubs to represent limbs and kept going until it looked right.



2. Once I had all the limbs placed, I primed my log with Kilz2 primer. Any flat white paint will work for this.

MAKE REALISTIC SCALE LOGS | 3



3. I used Koh-I-Noor water-resistant drawing ink in burnt sienna and raw sienna to stain the logs. I thinned it with distilled water to make washes.



4. I applied a wash of raw sienna drawing ink, which began to give it a weathered tone. At this point, it was still a little bit too yellow.



5. I added a wash of burnt sienna ink to the log. This dampened the yellow and gave it more of natural wood appearance.



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ADDING THE BARK

For the log crib work to look right, I needed to have bark on my logs. I spent a while searching and testing techniques for creating convincing bark.

In the 1950s, someone suggested simulating bark using household scouring powder. I tried this technique but found it did not create enough texture. I tried fine sand but wound up with a texture that was too coarse.

I had used tile grout coloring powder previously to simulate foamy water. The coloring powder is a very fine silica sand. In observing the foamy water, I thought it might just make some good bark.

I used some SpectraLOCK grout powder part C [6]. This is an epoxy grout and you're expected to mix the part C powder with parts A and B to get a very durable grout. Needless to say, all I need is the powdered part C for my project.

In applying this bark layer, I found the trick was to work from the inside out, applying first the inner layer of bark and then coming back to add the outer layer in a second pass.

Often in modeling scenic elements, building things up in layers results in the most realism.



6. I used SpectraLOCK grout powder part C in a light color like Marble Beige, Sauterne (off white), or Almond.

MAKE REALISTIC SCALE LOGS | 5



7. I mixed the grout with matte medium, in this case Modge-Podge Matte. I then mixed in burnt sienna acrylic tube paint to give it more of a bark color.



8. I daubed a first layer of the grout on over the log to represent the under-bark. On this layer, I tried to keep it fairly smooth.



9. After the first layer set up, I daubed on an additional layer with more complete coverage. I stippled the surface to make it rough and accentuate the grout texture.



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MAKE REALISTIC SCALE LOGS | 6



10. Once the grout had set, I drybrushed the tree gray to represent the outer layer of bark. I left a slight edge of burnt sienna under bark showing.



11. I followed up the gray with a very light wash of black to bring out the roughness of the bark.



12. With the painting complete, I scraped the paint and the bark off the limb ends to expose the wood again.



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J. Fugate

MAKING THESE LOGS

When I first discovered Harold's log-making process, I was fascinated at how realistic his logs looked. It surprised me he started with ordinary dowels.

As we considered publishing this great technique in *MRH Running Extra*, I couldn't wait to try making some of these logs for myself. I'm quite pleased with the result: you can see my log car loads in the lead photo.

I cut the dowels on a table saw, and in a few cases I did part-way through offset cuts and then broke off the dowel to get the offset falling cut seen on some log ends.

I modified Harold's bark detailing process a bit. I used Durham's Water Putty instead of grout. I added some gray-brown sand I sifted through a 50 mesh screen to get what is essentially N-scale ballast as to grit size. For all coloring, I used Model Master acrylic paints.

I also took some colored pencils and marked some heartwood grain lines on a couple of the log ends. For reference, I looked up Douglas Fir logs on Google and found many great photos.

When I finished the logs, I sprayed them with Rustoleum dead flat to remove any sheen from the paint. You can see my simple card-stock stand I made for spraying the logs here [13].

I am impressed with Harold's log-making method! I finally have some realistic Doug Fir log loads for my SP log racks [lead photo].



13. I made this simple spraying stand out of stiff cardstock so I could coat my logs with Rustoleum dead flat, rotate them, and get the underside as well. It worked really slick!



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HAROLD MINKWITZ 1947-2020



“You need to count rivets, just not all of them.”

Harold Minkwitz was a proponent of 5.5mm scale modeling in the U.S. His website *55n3.info* showed how easy it is for modelers to recreate US 3ft short lines, with a focus on the late 19th century.

Sadly, Harold passed away in March 2020. He will be sorely missed and fondly remembered by his innumerable friends and admirers around the world. ■

Reference: www.55ng.co.uk/archive/hm1.php



14. Harold's entire log-making journey started when he wanted to make realistic logs for his narrow gauge line retaining wall shown here.

Aluminum foil boxcar details



MRH Running Extra | September 2021

MIKE KNUCKEY DETAILS A
BOXCAR INTERIOR WITH EMBOSSED
ALUMINUM FOIL ...



RUNNING BOXCARS WITH THE DOORS OPEN CAN ADD INTEREST TO a train or to a static scene. The problem is that most boxcars on the market lack interior detail.

I was working on an Atlas auto parts boxcar, trying to improve the interior, when it came to me. Mike Budde had demonstrated how to make crushed carloads with aluminum foil on the *MRH* forum. I wondered if it also could be used to make boxcar interior details. Here's how I did that.

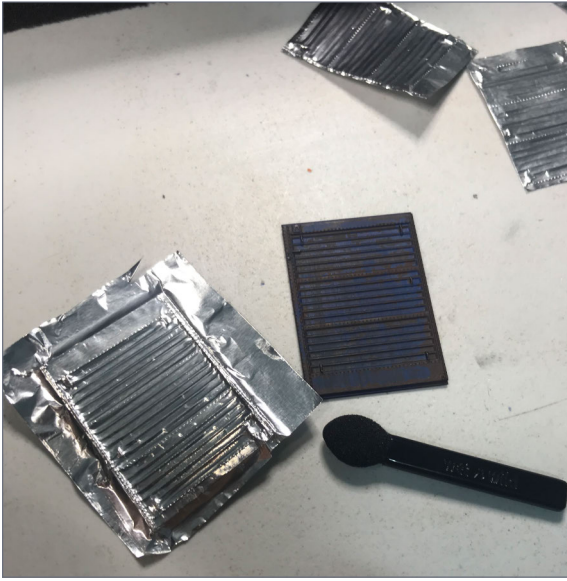


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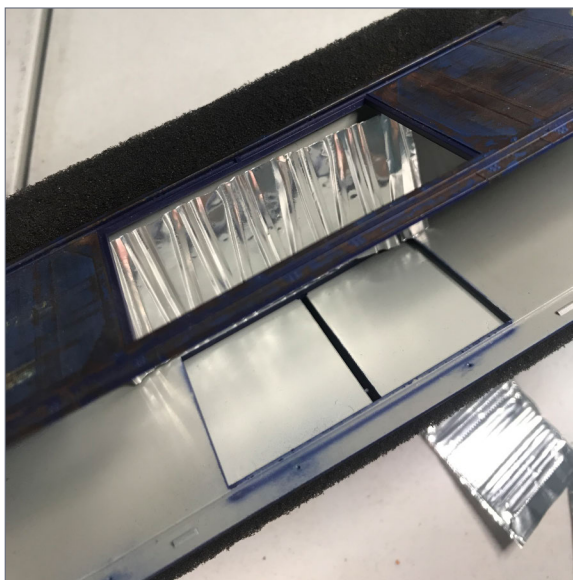
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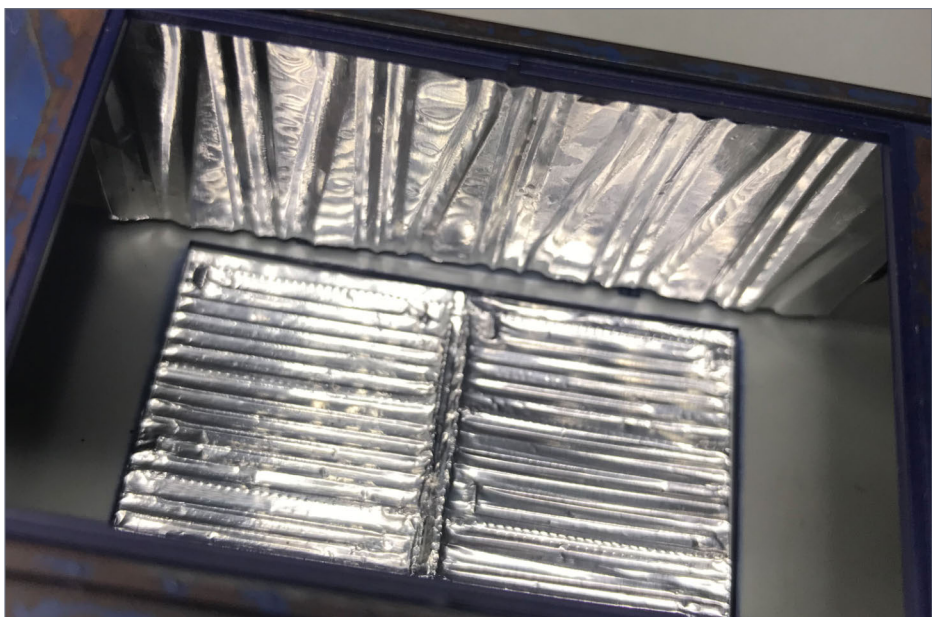
1. I cut a piece of heavy-duty aluminum foil somewhat larger than the boxcar door and used a foam makeup brush to emboss it onto the boxcar doors, careful to replicate every corrugation and rivet.



2. I did the same with the roof.



3. Once the roof and doors were embossed in foil, I used a sharp pair of scissors to cut them to size. Here, the roof is pressed into place on the ceiling of the car.



4. I glued the embossed foil to the door backs and to the ceiling. This started to bring the car interior to life.



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5. The foil did not look right as bare metal. I needed to paint it to match the rest of the interior.



6. I painted the foil with AK Acrylics White, then weathered it with Tamiya acrylic flat brown (XF-10) and dark iron (XF-84). I also added some crates, printed in PLA and painted with AK acrylics.



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MIGUEL "MIKE" KNUCKEY



Mike is a Chilean modeler who has been involved since the '90s. His love for trains began at the age of 2 because he and his family lived in a small mining town a half-block from the train yard. There he saw trains moving copper every day.

Although Mike was always interested in trains, he did not actively start in the hobby until the age of 26. Shortly after that, due to some modeling forums, the weathering fever caught him.

Weathering is the second thing he likes most about modeling trains. The first is the people he meets.

He studied equipment design at the university. Though he worked in various fields, he always dreamed of owning his own business. After moving to a different city four years ago, he and his wife opened a toy and hobby store in the city of Rancagua (Central Chile). This store is focused mainly on plastic models, and always finds Mike teaching the basics to newbies, and spreading the love for "The best hobby in the world."

Mike is married to Katherine who always encourages him to conquer his dreams. They are the happy parents of Kate, a 3-month-old girl. ■

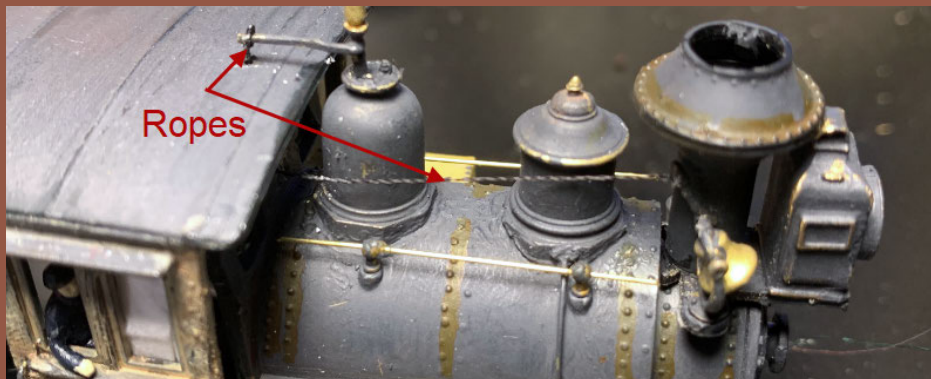


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7. Finally, I added the open doors. This car is ready to roll with its doors open. ☒

Climax rebuild

Part 3



MRH Running Extra | September 2021

JEFF PALMER CONTINUES THE
PROCESS OF UPGRADING AND
DETAILING HIS **CLASS A CLIMAX ...**



IN THE PREVIOUS SECTIONS, I began with an out-of-the-box Roundhouse Class A Climax. In the first installation, I lowered the Climax's boiler and bunker and I cut away its doors. In the second installation, I modified a Bachmann 44-ton chassis to fit the Climax shell.

NEW DOMES FOR AN OLDER LOOK

By this time, I could think a little bit more about detailing. I decided that the steam and sand domes on the original Roundhouse Climax did not look right for the era. I found a Cal-Scale set that included 1870 steam and sand domes (no. 190-338), which I found to be more suitable.



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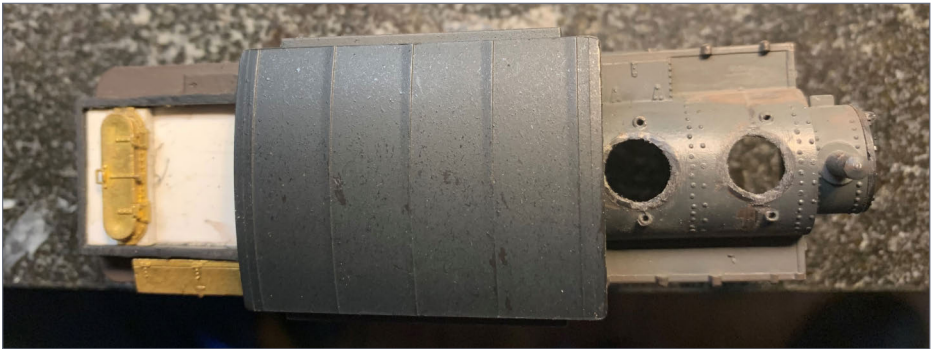
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CLIMAX REBUILD | 2

I used a 1/4" bit and a slow-speed setting to drill through the domes, working from inside the locomotive shell to aid alignment. Once I was through with the 1/4" bit, I increased the diameter to 5/16" for the sand dome and 3/8" for the steam dome. I trimmed the remaining scrap away with my X-Acto knife and cleaned up everything with thin sanding sticks [1].

I reshaped the new domes to fit the curvature of the climax boiler by sanding their bottoms. I built my own sanding stick for this by applying a piece of emery cloth around a 3/4" wood dowel with contact cement, and securing it with a staple. Dowels from 1/2" to 1" will work [2].

I first used a super glue gel to attach the domes to the boiler, but the glue joint proved too brittle for handling, so I needed a



1. I drilled the sand and steam domes out of the climax shell.



2. I made this custom round sanding stick to help clean up the holes for the sand and steam domes.

different solution. I mixed up some epoxy and added denatured alcohol one drop at a time until the mixture had the consistency of honey. Denatured alcohol works better for this instead of isopropyl; see www.epoxyworks.com/index.php/thinning-west-system-epoxy.

Before pouring, I plugged the holes in and around the domes – I had only one hole in the sand dome, which I plugged with a toothpick [3]. I then filled up each of the domes with epoxy until I had a shallow pool in the top of the boiler [4]. I allowed it to cure overnight.



3. I plugged the hole in the top of the steam dome with a toothpick before pouring epoxy.





4. A pool of epoxy in the domes and the top of the boiler.

DETAILING THE BUNKER

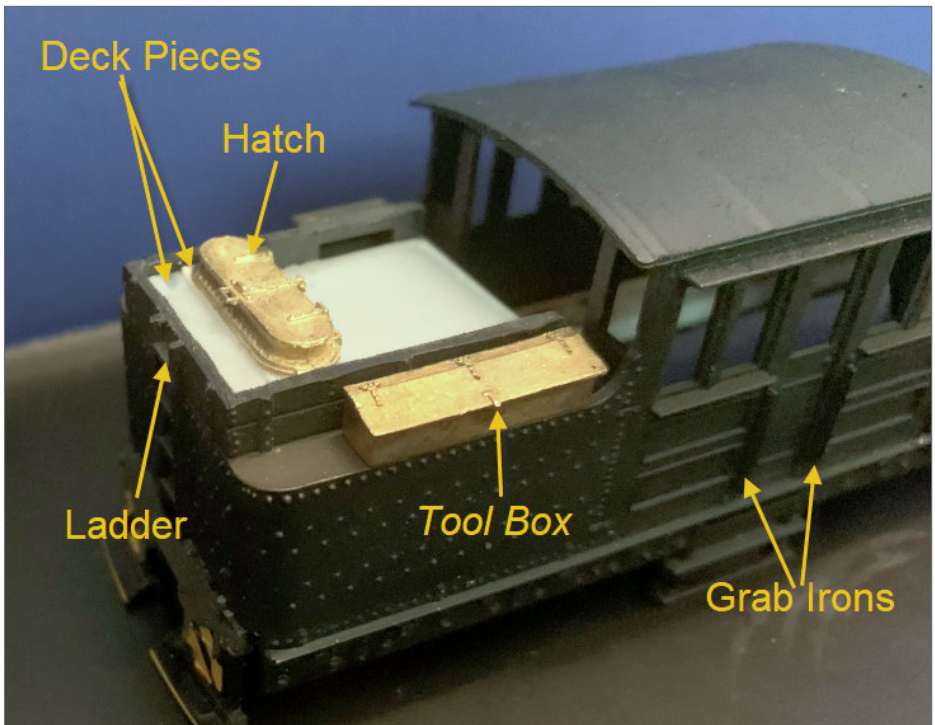
The bunker needed a new deck and a hatch for filling water. I built the deck on the back of the tender using Evergreen strip styrene, cut to a length of 5-3/4 HO scale feet.

I cut four 0.060" square strips of styrene (Evergreen 153) to serve as the deck footings. I then cut one HO scale 2x8, Evergreen 8208), and one 0.020" x 0.250" strip (Evergreen 129) to serve as the deck surface. I glued two 0.060" square strips to each of the other strips for the decks [5].

When the glue dried, I sanded the deck pieces to fit inside the back of the bunker, then glued them into place. I secured a round-based tender hatch (Cal Scale 190-233) in place on the back edge of the deck, and a toolbox alongside the bunker (Cal Scale 190-295) [6].



5. The bottom of two deck pieces made from strip styrene.



6. The bunker decking, water hatch, and toolbox are in place.



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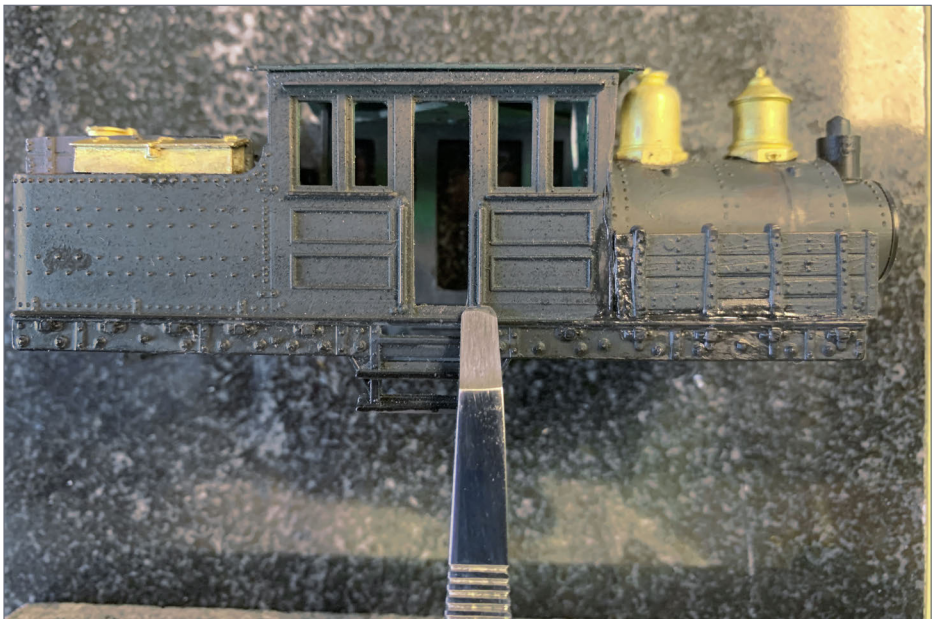
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REPLACING THE MOLDED-ON DETAILING

As I was detailing the rest of the locomotive, the molded-on detailing looked clunkier and clunkier. The sand lines from the sand dome, handrails on either side of the cab entry, and the ladder on the back of the bunker all had to go. I chiseled them off with a Micro-Mark 4mm Plastic Modeler's Chisel (No.80893), which made for a clean and complete removal [7].

I took my time removing the molded-on details to minimize later sanding and cleanup [8]. I wanted to replace each of these molded-on features with separately applied parts for better detail.

With the molded-on details removed, I could begin to replace them. I needed to buy or make some 0.45" handrails for the sides of the cab. I decided to make my own, using 0.015" brass wire.



7. Removing the cab entry handrail with a chisel.

Micro-Mark makes a handy gauging tool that I frequently use for precisely sized grab irons or handrails. I loosened the knob on the tool and fed the wire through at the 0.45" setting. I then tightened the nob, bent the wire to shape, and trimmed off the surplus [9].



8. Only a shadow remains of the bunker ladder, with minimal cleanup required.



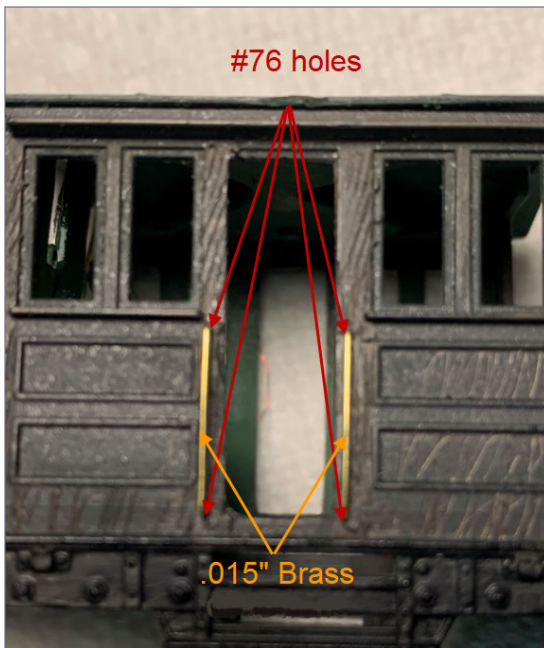
9. Bending wire to shape for cab handrails in Micro-Mark Grab Iron Bending Gauge.



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10. Cab entry handrails installed.

Using a #76 drill bit, I drilled the top holes for the grab iron on one side of the cab doorway. Then I did the same on the other side, making sure the tops of the opposing grab irons were at the same height. I slipped a grab iron into the hole and used the other end of the wire to score the shell to mark the bottom mounting hole.

I repeated this process three more times for each handrail. Finally, I glued them all in place [10].





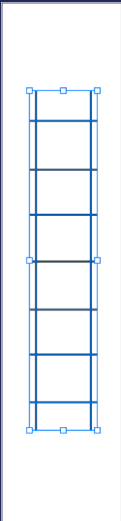
J. Regier

ALIGNING GRAB IRONS

In cases requiring precise grab iron alignment, I find it helpful to use a graphics program to draw up a template. A while back, I was detailing a Stewart Hobbies F9 to match prototype photos I found online of Santa Fe 287L.

The prototype included a grab iron ladder up the side of the nose for service access to the windshield and roof that the Santa Fe had added. While the Stewart molding had “dimples” to guide drilling for grab iron placement, it did not include these guides for after-market additions.

I first measured the distance I needed the grab iron ladder to cover, then I divided it by the number of grab irons. I then drew up a template on my graphics program, printed it, taped it to the model, and drilled. The alignment was good [11, 12].

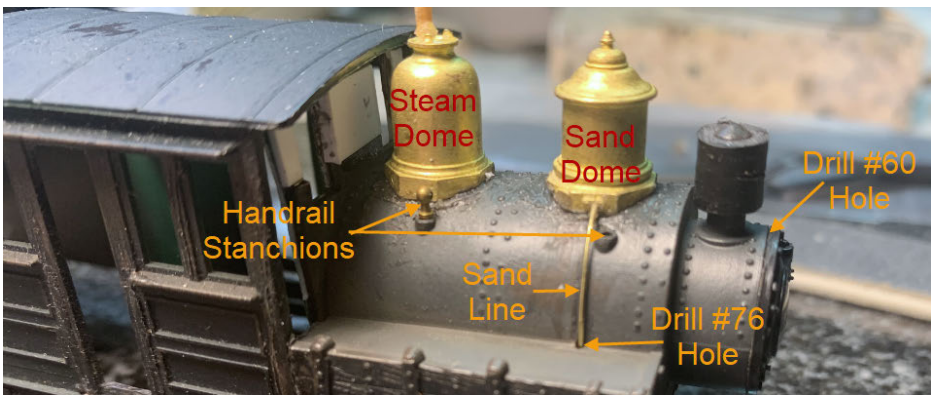


11, 12. The grab iron ladder template on left and its application on the F9 at right.

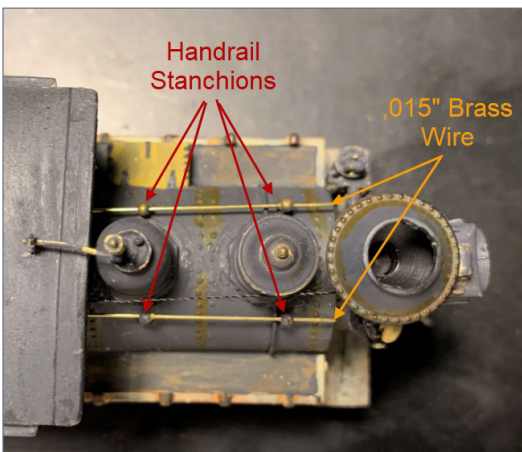
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I also wanted to replace the sand lines I had shaved off with brass. I drilled a #76 hole in the wooden frame, just where the molded-on sand line entered it. I bent 0.015" brass wire to match the curvature of the boiler, and glued it in place [13].

I decided to use handrail stanchions from Cal Scale (no. 190-604) and 0.015" brass wire instead of the parts included with the kit. I cut two brass wires to 1-1/4" long. I used these to make sure that the holes in the stanchions were aligned correctly before gluing it all in place [14].



13. I installed a brass sand line. The back stanchions are already in place.



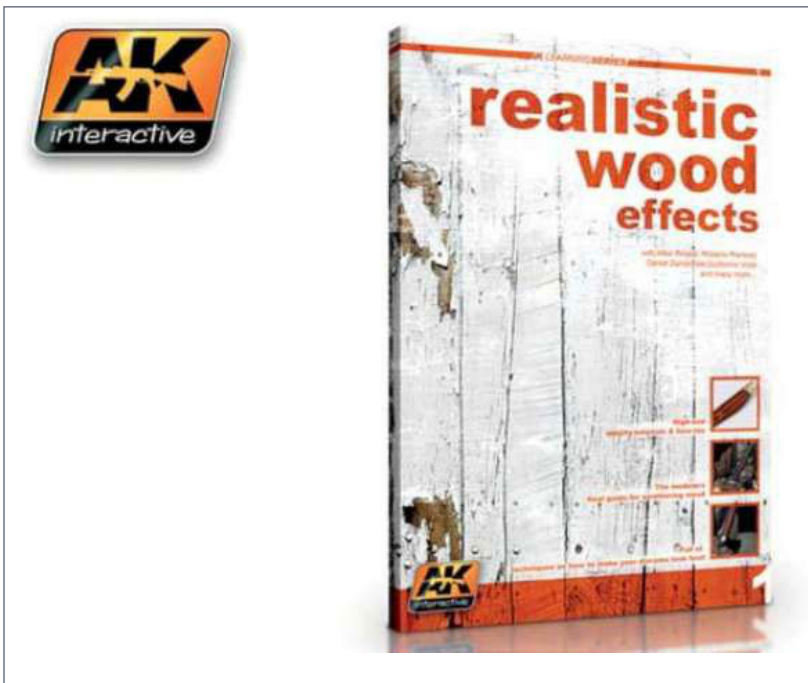
14. The handrails are installed.

DECIDING ON PAINT

For the most part, the cabs of Climaxes were made of wood, so I wanted to replicate the look of aged, weathered wood on the styrene roof. I read about a process in *Realistic Wood Effects* from AK Interactive (AK259) [15].

The process called for using the AK's Old & Weathered Wood Vol. 1 paint set (AK 11673). After painting the cab, I weathered it with the AK Wood Weathering Set (AK 260).

I used Floquil Weathered Black as a base coat for boiler, tender, side rails, and metal straps. I followed with washes of rust and dust. I allowed each paint coat to cure for 24 hours before proceeding.



15. I drew my techniques from *Realistic Wood Effects* from AK Interactive. AK Interactive photo



ADDING WOOD

Most of the Class A Climax's were wood-burners, and I wanted real wood in the bunker. I cut a dead twig from my mulberry tree into 1/8" to 1/4" lengths, then quartered each twig twice.

Generally wood was not dumped into locomotive bunkers, but stacked to make the most efficient use of bunker space, so I stacked my chopped twigs accordingly. I painted the floor of the bunker with white glue and added the first layer of twigs. I let it dry thoroughly and repeated the process until the bunker was full [16].

LIGHTING THE MODEL

The model's front headlight was a non-illuminated jewel. I was not fond of this, so I substituted a Baldwin Box Headlight (Cal Scale 190-305). It is slightly smaller, but molded with better detail.

I removed the molding leads on the headlight and sanded the bottom smooth. I painted the inside of the headlight cavity silver.

I then soldered 8" magnet wire – red to the anode and green to the cathode – to a 2x3 Super Incandescent LED (warm amber color) from Ngineering. I fed these wires through the light box cavity and out the bottom. Then I installed the LED into the



16. Stacked cord wood from mulberry twigs.

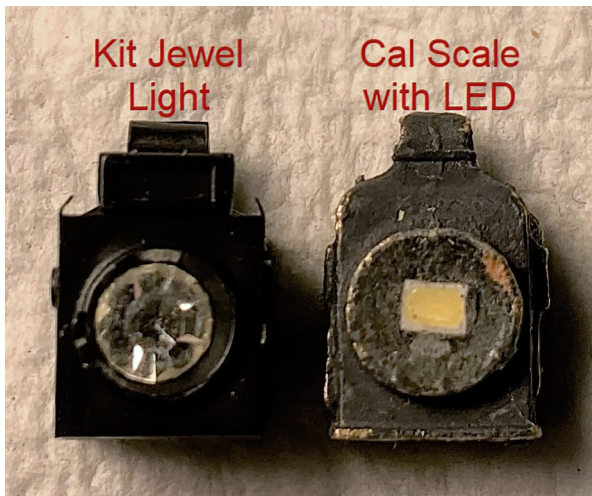
light box using super glue gel – which also serves to insulate the LED from the brass lamp – making sure that the LED was square to the front surface of the box before the glue set [17].

I sealed the back of the headlight box with superglue gel. Once this cured, I used two drops of Rapid Fix UV-Activated Liquid Plastic Adhesive to form a lens for the headlight. I applied the two drops to the headlight, and cured them in place with the UV light, creating a crystal-clear lens.

The same bracket that holds the headlight also holds the bell. I removed the handrails, cut 1/16" off the front of the bracket, and squared my cut. The headlight would line up with the front edge of the bracket.

I replaced the original bell with a standard bell with rope pull from Cal Scale (190-281). The mounting was a little too long, so I cut off the excess and sanded it smooth. I mounted the bell bracket so the pull was next to the stack.

Before mounting the headlight to the bracket, I drilled a #60 hole for the LED wires [18]. I drilled another #60 hole in the shell, just in front of the smokestack at the joint between the boiler face and the boiler, so I could route the wires into the shell.



17. The original headlight from the kit with jewel at left, the new headlight with LED on right.



I fed the lead wires through the boiler hole and positioned the bracket on the stack mount. I gently pulling the lead wires through the hole as I snugged the bracket to the boiler, but did not glue it on, just in case I ever need to replace the LED. I also positioned the smokestack without gluing it for the same reason.

EVEN MORE DETAILS

This kit included a separately molded single-phase air pump, though its detailing is lacking. I replaced it with a single-phase air pump from Cal Scale (No. 190-256), which had more pronounced detailing [19]. I mounted it to the smokebox.



18. The bell and headlight bracket with a #60 hole for the wiring.



19. Detail comparison between the Cal Scale single-phase air pump (left) and that original in the Roundhouse kit (right).

I needed a whistle for the steam dome, and I went with Cal Scale no. 190-339. The whistle had a long arm, which I left on, since it extended nicely over the front of the cab roof. It smacked of late-1800s, early-1900s, so it was perfect for this Class A Climax [20].

Early Climax cabs were open. That is, the windows did not have glass and the entry did not have a door. Instead, crews nailed tarps to the inside cab frame to protect themselves from inclement weather. For modeling purposes, this treatment is a good way to partially obscure the locomotive's innards.

Wrapping paper from new tennis shoes was exactly what I needed for the tarps – newsprint would also work. The paper was thin but coarse with lots of pulp to give the paper a natural weathered look. I cut the paper into 1" strips and fan-folded it [21].



When I had the tarps prepared, I used white glue to attach them to the inside of the locomotive cab. I took care to avoid placing

20. With the smokestack, headlight, domes, air pump, and whistle, this Class A Climax was coming to life. The forward cab windows have no tarps.



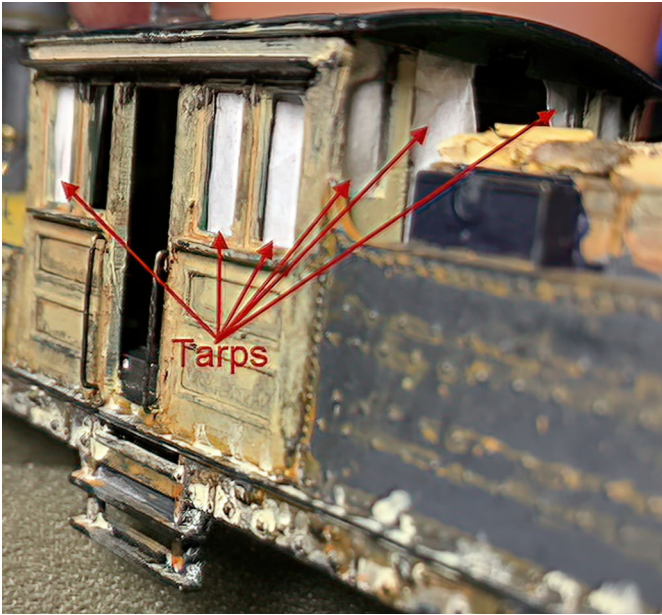


21. Folded shoe wrapping paper for a window tarp.

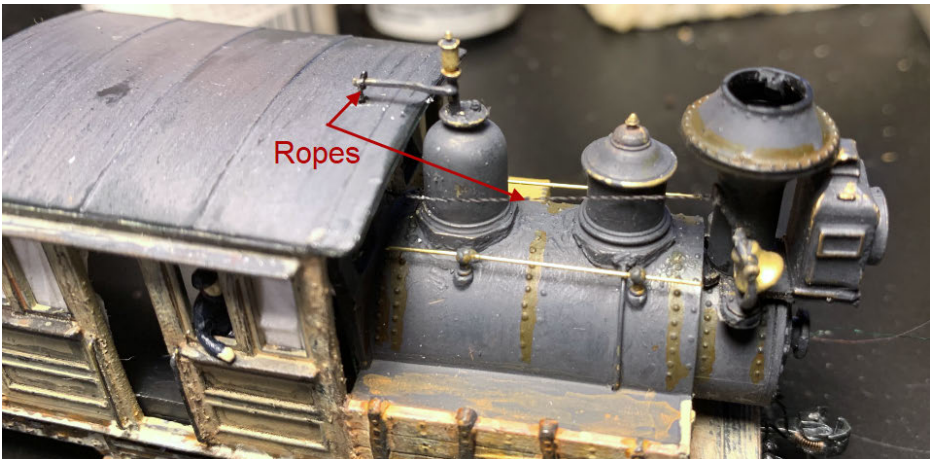
them where they would obscure the engineer's vision or prevent the fireman from stoking the fire [22].

With that, the Climax was looking more and more ready to run [23]. I had made just about all the modifications I could reasonably make without the cab mounted to the Bachmann chassis. Next month, we'll attach the shell to the chassis, complete the wiring, and finish the detailing so that the Climax is ready for the rails. ☑





22. The tarps are in place on the rear of the cab.



23. With the progress of the last several months, this locomotive has taken a much more detailed appearance. Mating it with the Bachmann Chassis and final details remain.



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JEFF PALMER



Until Jeff retired, he spent 50 years developing software, and 25 years as a college professor. During that time, as now, he was a modeler. He loves to build structures, bridges, scenery, and locos. More specifically, his interest is in logging and mining, which means that he likes narrow gauge. He enjoys the free form and ruggedness that surrounds

logging and mining railroads, the scenery and landscape, and is always on the lookout for new techniques, and tools that improve the hobby. Model railroading allows him to expand his skill set, work with his hands, and share with his friends, the things he has learned.

About two years ago, he completed his MMR (Master Model Railroader) certificate from the NMRA. During that journey, he had the privilege of meeting many of the modelers he looked up to, like Gil Freitag, Duane Richardson, Chuck Ellis, George Sellios, Marc LaChey, Dave Revelia, Dave Frary, Scott Mason, and others. His goal is to be recognized in this group someday. ■



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THE AH-HAH MOMENT

column



MRH Running Extra | September 2021

JOE FUGATE FINDS AN EVEN CHEAPER

SOURCE FOR THIN ALUMINUM SHEET STOCK ...



RATE THIS ARTICLE

LAST MONTH, I DISCUSSED MAKING CORRUGATED TIN SHEETS FROM THIN ALUMINUM SHEET STOCK. I bought the sheet stock in the 5 mil thickness (5-10x heavier than aluminum foil) from sources like K&S Metals.

This thin sheet stock comes in rolls (12" x 30" or 360 square inches) and costs \$15-\$20. One of the folks on the forum mentioned disposable cookie sheets. I went looking and found a supply of 15 for just under \$20. *Ah-hah!*

I bought some of these disposable cookie sheet pans and tested the metal thickness: 3 mils (0.003"). Perfect: you want 2-5 mils since that's a lot thicker than aluminum foil and holds its shape better.

These pans are 16" x 11", or 176 square inches per pan. And for 15 pans, that's a whopping 2600 square inches of 3 mil aluminum sheet stock. Cost-wise, that's about 0.7 cents per square inch, compared to 4.2 cents for the sheet stock from K&S Metals.

One thing to watch out for: make sure the cookie sheet has no pattern on it. Get cookie sheets that are totally smooth.

I love how the MRH forum works – I came up with this idea on finding thin sheet stock for making my own corrugated material and someone mentions a source I have never thought of that turns out to be a lot more economical. Bravo!

I also like the slightly thinner stock. The 5 mil stock readily available from K&S not only costs more, but it's on the border of being a bit too thick for



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THE AH-HAH MOMENT | 2



1. I found these 3 mil disposable aluminum cookie sheets in 15 packs for just under \$20. That's a lot of thin aluminum sheet stock!

2. Look very closely before you buy disposable aluminum cookie sheets. A lot of them have a pattern embossed on them like this one. You want totally smooth ones like [1] above.

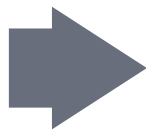
easily pressing against the corrugated styrene stock I mentioned last month. The 3 mil stock embosses easier yet holds its shape just as well. A win-win all the way around! ☑



To get a shopping list for this article, visit the *MRH* website at this link: mrhmag.com/magazine/running-extra/2021-09/ah-hah-moment#shopping

Bonus section!

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



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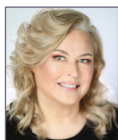
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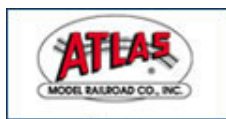
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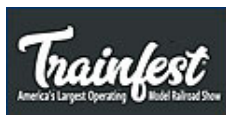
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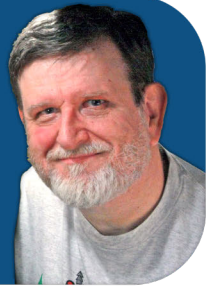


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PUBLISHER'S MUSINGS



Model Railroad Hobbyist | September 2021

JOE FUGATE NEW FORUM GO LIVE:
SEPTEMBER 27TH ...



LAST SPRING, I DISCUSSED HOW WE'RE PREPARING TO MOVE TO NEW FORUM HOSTING. Visit forum.mrhmag.com to access a beta test version the new forum. All forum links on our current website will automatically go there once we go live.

We've been doing test conversions, so the new forum content right now is temporary. But as of the last weekend in September, we're moving for real and the new forum is going live.

What's going to happen conversion weekend

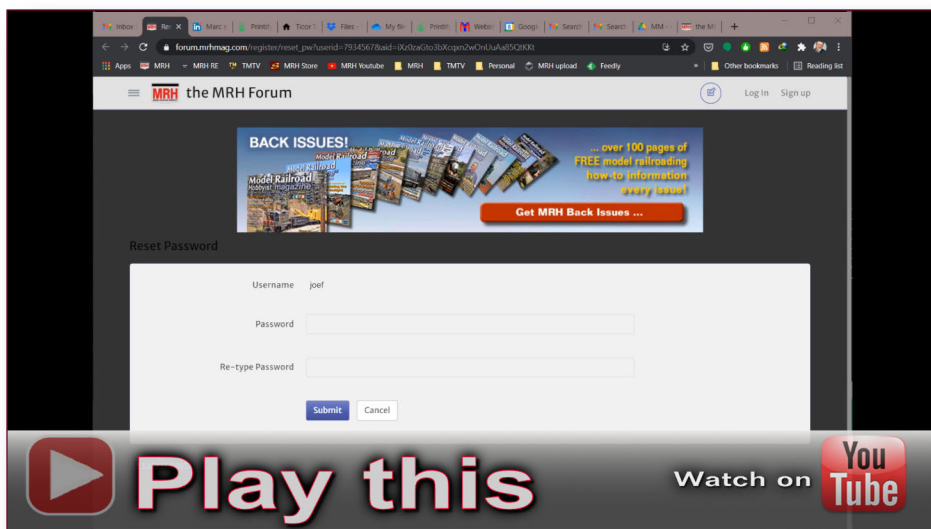
At almost midnight (11:59pm Pacific time) on Friday, September 24th, the current forum will be locked and become read-only. You can still read posts, but you won't be able to make any new posts.

This allows us to copy all ~40,000 forum posts over to the new forum and convert them to the new forum format.

Sometime that weekend once we're happy that the new forum conversion worked properly, we will change the forum links on the current site to all go to the new forum. At the latest, we expect to be live on the new forum by 12:01am Pacific time on Monday, September 27th.

Once the new forum is live, you'll need to get your login working over there. We can copy your username and your email, but

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1. This video shows how to log into the new forum for the first time.

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WHAT'S NEW?



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PUBLISHER'S MUSINGS | 3

we can't see your password, so you will need to establish a new password on the new forum site. See video [1] on the previous page of this editorial for how to get logged in on the new forum once we do the live conversion.

What's wrong with the old forum?

So why are we moving to this new forum software?

Our current forum software was new in 2008, and the web has *changed a lot* since then. In short, our old forum software is a ticking time bomb, and at some point soon, we will no longer be able to add security patches to it because it's *just too old*.

Without security patches, our forum becomes susceptible to hackers trashing it, stealing your passwords, and all manner of nasty things. We need to upgrade *before* that happens.



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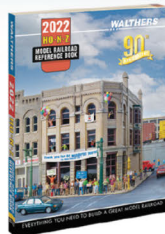
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Plus the newer forum software has a lot of new features in it, not the least of which is rich support for mobile devices like phone and tablets.

Here's a short list of the most important new features we get with this new forum software:

- Easier than ever to post images.
- Easy ability to quote another post.
- Automatically post a video player inline by just pasting in the link to the video.
- The ability to follow a thread and get notified.
- Private messaging other forum members that works well (the old forum private messaging had become unreliable).
- Ability to like threads and posts with a single click, and the ability to see just the threads and posts you have liked.
- Real time online chat. If you want to ask someone a question in real time, you can use chat. If you don't want bothered by folks trying to chat with you, you can set yourself offline to chat.
- Email notification of post activity. If you follow a thread and you want notified by email, you can do that.
- Ability to respond by email. If the forum sends you an email of something you're following, you can reply via email and it will become a post on the forum thread.
- Online event calendar. You can post events to a public event calendar and get notices about those events.

Be careful what you ask for!

On the old forum, a frequent question is how to be notified when someone posts something to a thread of interest, or posts something to one of your own threads.





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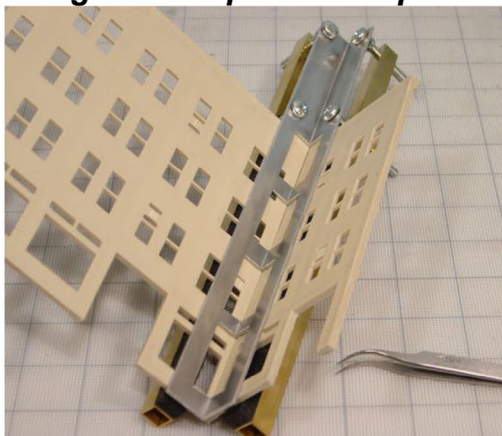
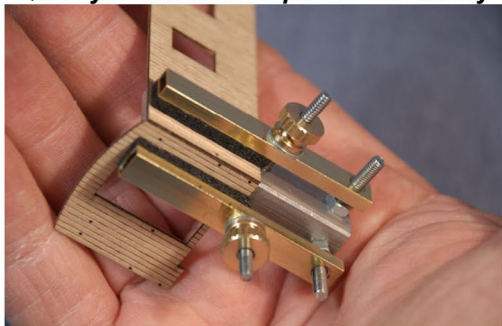
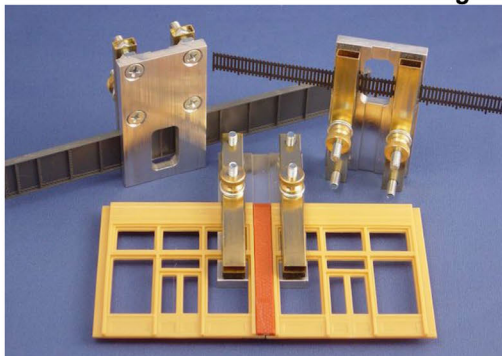
4600 cu. ft. 3 Bay Centerflow Covered Hoppers, with trough hatches. 100 tons, 55' 5" long.

Painted yellow with Union Pacific herald on patch.

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There has never been a good way to do that on the old forum. People have developed a few hacks to work around this, but they're just that, hacks (more on this later).

Finally with this new forum software, it's easy to get notified when there's activity on a thread of interest.

But watch out – it's easy to think you want notified on everything. You will find your email being bombarded with emails from the new forum!

We also stumbled upon a gotcha along this line in our testing with events.

Originally, anyone could post an event to the calendar, so some folks tried doing that with some test events on the test forum.

We found that spammed all 34,000 forum members with event notice emails! Several of you emailed and asked us to please stop with the spam garbage!

We quickly turned off the ability for anyone to post events to limit this spam annoyance.

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The Shay locomotive was the most widely used geared steam locomotive. The locomotives were built to the patents of Ephraim Shay, who has been credited with the popularization of the concept of a geared steam locomotive. Although the design of Ephraim Shay's early locomotives differed from later ones, there is a clear line of development that joins all Shays. In 1884, they delivered the first 3-cylinder (Class B) Shay.

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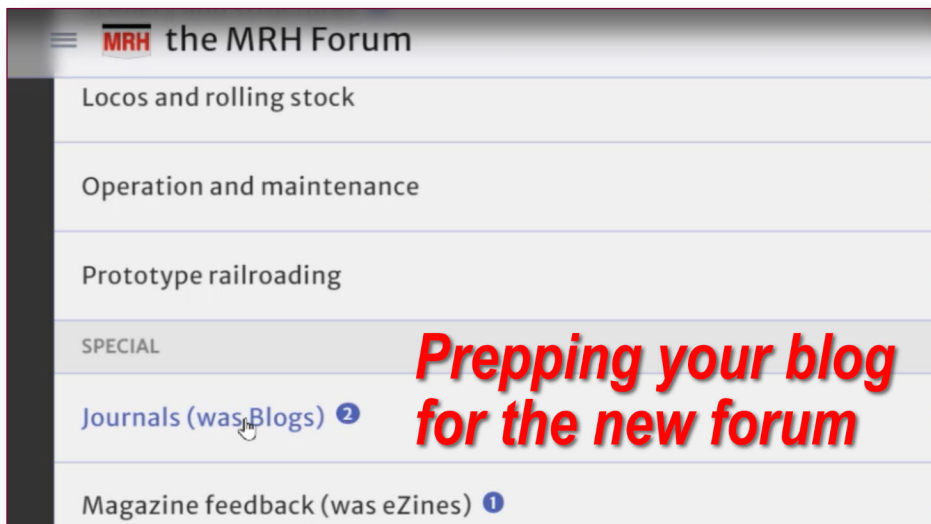
As the date approaches for this new forum to go live, we will be posting more how-to videos on best practices to get the most out of the new form – and how to avoid accidentally getting too many email notifications hitting your inbox.

What about blogs?

One other common question has been how blogs work on the new forum. Blogs, for those of you who may not know, is a personal web journal you keep online (blog is short for weBLOG).

On the new forum, they're in their own category called **Journals (was Blogs)**. For all the details of how blogs work on the new forum, and to get some guidance on how to prepare your blog for the move, see the video below [2].

IMPORTANT: If you're a fan of blogging on the current forum, then you need to watch the video below [2] and follow the steps shown to prepare your blog for the move (~5 mins of prep).



2. This video shows how blogs work on the new forum and how you can prepare for the move.



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What about tracking?

If you visit the my account link (right hand menu) on the current forum, you will see a tab that says "Track" and it will show you all the threads you have posted to.

The new forum uses a proper system for "tracking" threads of interest ... it's called "following" and it's quite robust with many options for getting email notification when something new gets posted to it.

Often on the old forum, folks simply use a "hack" to follow interesting threads by adding a short post to the threads they like and then use the Track tab on their account to see what threads they posted to.

On the new site, to see what threads you posted to, visit your profile and select the POSTS option to see a list of all the threads you've posted to.

You can also like a thread or post on the new forum and visiting your profile gives you a list of all the posts and threads you've liked under LIKES. So we have many ways to mark things of interest on the new forum that simply don't exist on the old forum.

In summary

The go-live weekend for the new forum is September 25-26.

We've created a new thread for go-live assistance here:

mrhmag.com/forum/new-forum-help.

Just click this link and ask for assistance if you need new forum help. ☒



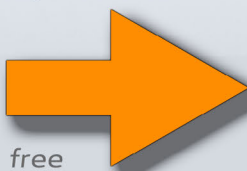
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LAST ISSUE RATINGS

Top rated articles in the [August 2020 issue](#) of *MRH* are:

4.8 August 2021 news

4.6 Modeling a backwoods caboose

4.6 Scatchbuild a miner's shack

Issue overall: **3.7**

Top rated articles in the [August 2020 issue](#) of *Running Extra* ...

4.8 Modeling a stream with ripples

4.4 Getting Real: From eyesore to masterpiece-2

4.4 Ah-hah Moment: Make your own corrugated tin

Issue overall: **3.3**

Rate the articles! Click the comments button on each article and select the star rating you think it deserves. ■

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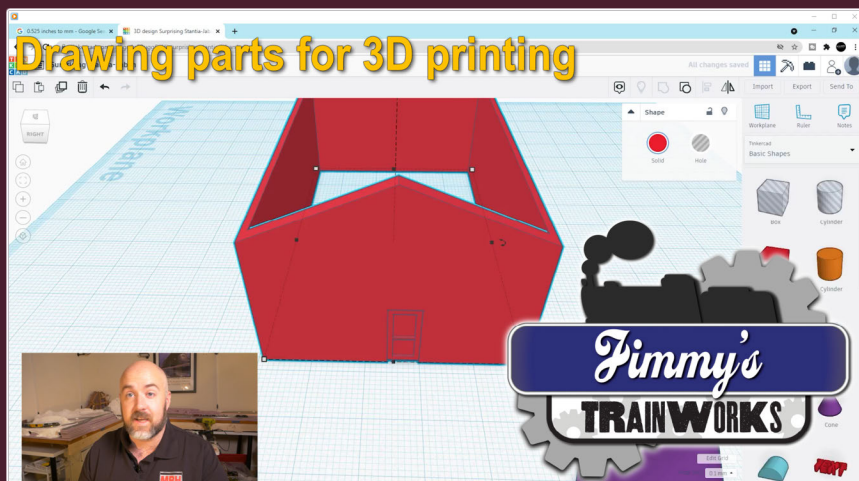
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Best of the

MRH WEBSITE



THIS MONTH

Model Railroad Hobbyist | September 2021

Compiled by **JOE FUGATE**



Resurrecting John Allen's Gorre & Daphetid

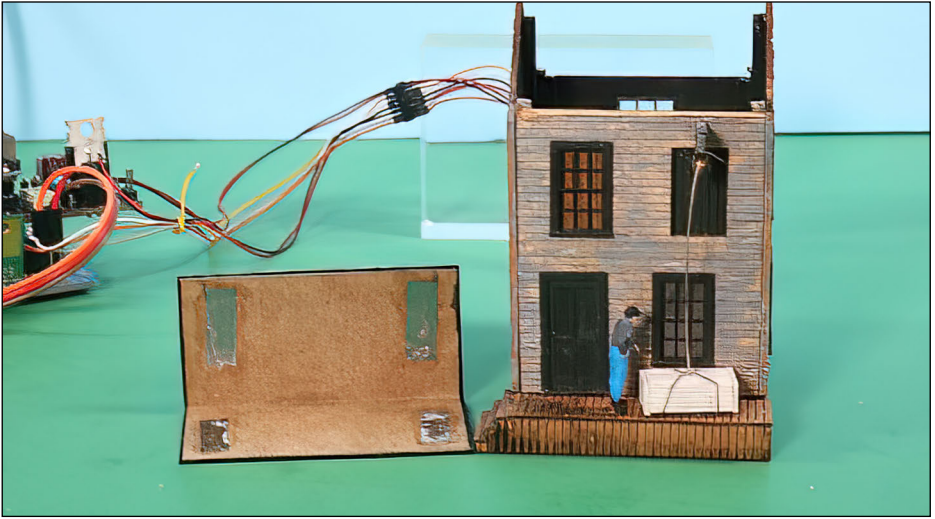
MRH forum member **Great Divide** (Randy Lee Decker) has a background in building museum displays. Randy's also a fan of John Allen's Gorre & Daphetid (pronounced gory & defeated) railroad.

Randy has decided to build a museum-quality reproduction of John Allen's most famous third G&D layout! For those familiar with John Allen's layout, Randy's doing a fabulous job – the resemblance to John's layout is totally uncanny.



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

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



1. Geoff Bunza discusses innovative ways to use magnets on your layout: such as to hold on a structure roof like shown here.

Modeling with magnets

MRH forum member **geoffb** (Geoff Bunza) has a new fascinating blog thread: *Modeling with Magnets: Working MU Connections, Brake Hoses, Structure Mounts & Boxes*.

Geoff provides a host of fascinating uses for magnets on our layouts. One such use involves holding on a structure roof:

“Example [1] shows how I attached the roof to this small house. Steel shim stock (0.005”) was glued flat to the roof – the steel covers a large area compared to the size of the magnets – 5mm disks located inside the corners of the upper walls. Precision isn’t needed, the magnetic attraction is strong enough to allow irregular fitting or minor gaps.”

Follow the fascinating discussion on this helpful thread!

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



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FAST TRACKS

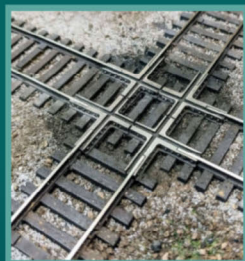
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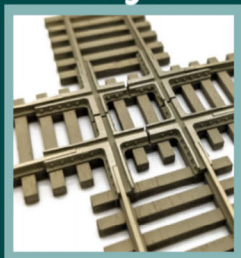
Building an accurate crossing has long been a challenge in our hobby.

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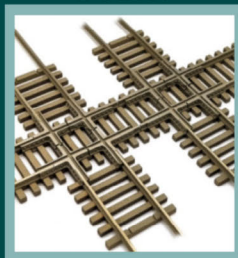
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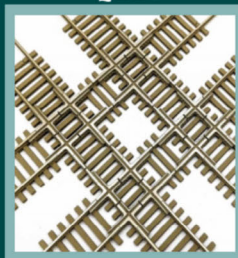
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2. *MRH* forum member and regular *MRH* contributor **Michael Anteau** has an active blog about getting his layout operational.

Nicholas & Ashley Creek RY ops

Many forum members maintain fascinating blogs and that includes regular *MRH* contributor **anteaum2666** (Michael Anteau). Michael's blog starts out this way:

"I designed and built the Nicholas & Ashley Creek RY to be operated either by myself or with a crew of up to 4 people. I am several years into construction now and the trains are beginning to run. This blog chronicles the developing operations on my railroad. I show what I'm doing and we discuss operating ideas – hopefully, you will find this blog useful if you're thinking about how to operate your model railroad."

Useful is an understatement! Michael has been posting regularly to this blog for three years now and it's up approaching 300 posts now. Lots of great ideas for realistic ops!

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



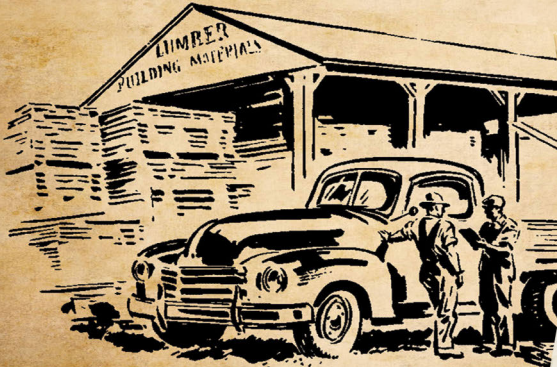
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3. *MRH* forum member **Deemiorgos** (Peter Soulikias) discussed using Celluclay on this thread and it lead to several “ground goop” recipes.

Celluclay and “ground goop” recipes

MRH forum member **Deemiorgos** (Peter Soulikias) posted how he’s using Celluclay to model tidal land forms. From there, others asked about Peter’s approach and they discussed his experiments with it – what has worked and not worked.

From there the discussion became more generalized when member D.M. Mitzel asked:

“I recall from old magazines that some modelers were using (what they called) “ground-goop” made from a mix of Celluclay and some other material. Might anyone have any info on a possible recipe to create this stuff?”

This lead to some great recipe links – check ‘em out!

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



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More Weekly Photo Fun!

In a recent Weekly Photo Fun thread, MRH Editor Emeritus Charlie Comstock posted some new photos of his Bear Creek & South Jackson layout. Charlie retired several years ago from his MRH Staff position so he could focus more on the hobby and on building his layout. *How's that for an idea?*

View the full post on the *MRH* website



4, 5. *MRH* forum member **bear creek** (Charlie Comstock) posted recent photos from his 1950s freelanced Bear Creek & South Jackson layout. It's been a while since we heard from Charlie and it's nice to see his modeling again!



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WHAT'S NEAT

column



Model Railroad Hobbyist | September 2021

KEN PATTERSON
TALKS ABOUT MAKING
GRASS TUFTS, MODELING
RIVERS AND BRIDGES
FROM ABOVE, AND
VISITING THE FRANKLIN
PACIFIC RR ...



click to play video

PHOTOS AND VIDEO OF SUPERB MODELS

THIS MONTH KEN STARTS BY SHOWING US SEVERAL METHODS OF making static grass tufts. Some methods work, some don't, and Ken shows us which is which. Modeling from Above by Dan Scheidell highlights bridges and water with some wonderful river crossings. Finally, in his first post-Covid layout visit, Ken interviews Gary Gross about his triple-deck HO scale Franklin Pacific layout.

Making grass tufts with glue and static grass



1. Ken tests several methods of making static grass tufts on wax paper. The first one involved putting glue dots on the wax paper and then wetting the paper. He tried four different types of glue: Elmers Glue-All, Gorilla Household glue, Gorilla clear water activated polyurethane glue, and Elmers rubber cement. He also tested wetting the paper first and then putting down the glue dots.





2. Ken also tested three different lengths of static grass: Woodland Scenics 3mm, War World Scenics 6mm, and War World Scenics 10mm. He used the Noch static grass gun for the 3mm and 6mm grass, and spread the 10mm by hand, since it failed to drop evenly from the grass gun.

in the **SEPTEMBER 2021 MRH RUNNING EXTRA!**

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3. Ken discovered that the different glues had very different adhesive properties on the wax paper. The rubber cement refused to peel off in all of the tests, while the Elmers Glue-All white glue worked OK, and the Clear Gorilla Glue had the best results. Applying the glue to the paper prior to wetting it provided the best results.



4. After peeling off some of the tufts, Ken demonstrated how he simply glues them with Elmers Glue-All to the layout, using a gravel lot to demonstrate.



Modeling ideas from above



5. This month's "Modeling from Above" sequence shows Dan Scheidell's drone footage of the Portland & Western and Coos Bay Rail Link railroads traveling over trestles and bridges in a series of river scenes in western Oregon. This photo shows the Portland & Western crossing the Willamette River in Albany, Oregon with four GP39-2s and a GP38-2.

in the **SEPTEMBER 2021 MRH RUNNING EXTRA!**

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Visiting Gary Gross' Franklin Pacific Railroad



6. Ken and Daniel Coombs visited Gary Gross' HO scale Franklin Pacific layout in July. The triple-deck layout began construction in 2002 and features two large helixes.

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7. The layout has been hosting ops sessions since 2005, with most of the scenery completed within the last five years. Gary loves both the Missouri Pacific and Frisco railroads and regularly features them as detour traffic over the Franklin Pacific. Operating sessions can include up to seven people, with a dispatcher, two yardmasters, and four train operators running on a 4:1 fast clock for the three-hour sessions.

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number when emailing us if
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**(Just in case your spam filters eat
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8. The Franklin Pacific features code 83 Micro-Engineering flex track with Walthers/Shinohara turnouts. Lighting for the lower levels is provided by LED strip lighting. Gary was one of the first Digitrax users in the St. Louis area, and has an impressive array of boosters and circuit breakers dividing the layout into power blocks. The Franklin Pacific will be one of the layouts on tour for the Gateway 2022 NMRA National Convention in St. Louis. Check out the video for Ken's full demonstration of making static grass tufts, Dan's drone video of river crossings, and the full Franklin Pacific layout visit.



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

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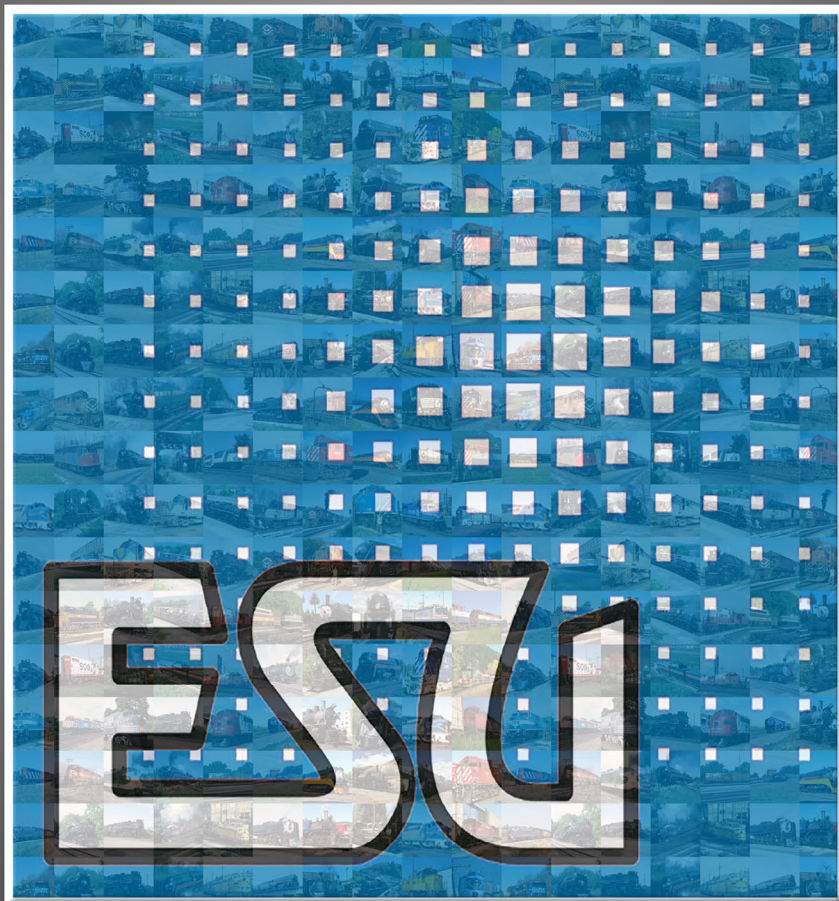
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The care and feeding of switches



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Model Railroad Hobbyist | September 2021



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JACK OLIVIERI DISCUSSES THE PROS AND CONS OF VARIOUS ELECTRICAL SWITCHES FOR A LAYOUT ...

THIS ARTICLE DISCUSSES THE CHARACTERISTICS AND APPLICATION OF POWER AND CONTROL

switches on a model railroad. We look at:

- 1) Basic types of switches
- 2) Contact forms
- 3) Contact plating materials, and
- 4) Reliable application to model railroading.

These factors matter most when buying switches on the surplus market.

“It is a good idea to standardize on the type of miniature and heavy-duty switches throughout your model railroad. Once you find a reliable switch, stick with it.”

DEFINITIONS

1. The number of “poles” – the number of circuits that one switch can control – and “throws” – the number of contact points – are used to describe a switch.
2. “Snap Action” – the ability of a switch to close or open contact(s) very quickly, regardless of how slowly the operator actuates the switch. Data compiled by the military over several decades (Mil-HDBK-217) shows that snap action switches are about six times more reliable than non-snap action switches. A knife switch is an example of a non-snap action switch.
3. “Wiping” – the action of contacts moving across each other – has the effect of mitigating contact sticking or welding caused by an inrush of current, and cleaning the contact surfaces of contaminants.
4. “Miniature switches” are used where space is an issue, but they are usually less reliable. It is important not to exceed their ratings, and to understand the robustness of the mechanical design from the specification sheet of the switch.

It is a good idea to standardize on the type of miniature and heavy-duty switches throughout your model railroad. Once you find a reliable switch, stick with it.



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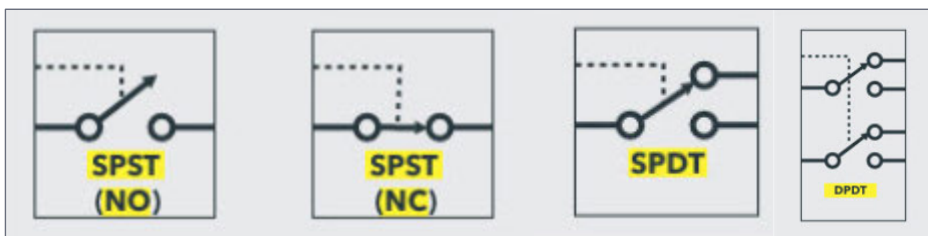
1. Typical slide switches.

BASIC SWITCH TYPES

Slide switch

A *slide switch* has a knob or button that you can slide back and forth to open or close the contacts. Most slide switches are either open to the atmosphere (see [1]) or are not sealed well. This can allow moisture and contaminants to degrade the contact material.

These switches use a wiping action from a spring to push the actuator button down against the contacts. This may not be



2. Circuit diagrams, left to right: Single-pole single-throw, normally open; single-pole single-throw, normally closed; single-pole, double-throw; double-pole, double-throw.





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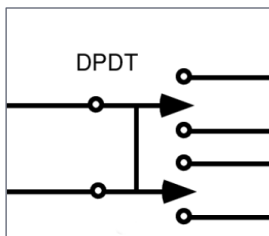
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enough to ensure long-term contact reliability since the variability of the pressure on the contacts can wear away the plating.

Although slide

switches have improved in recent years, they have enough variability that I avoid them if possible.



3. Circuit diagram for double-pole double-throw switch with an off position.



4. Miniature toggle switches.



5. Heavy-duty toggle switches.

Toggle switch

A *toggle switch* [4, 5] has a lever that you flip to open or close the contacts. Common household light switches are examples of toggle switches. Almost all toggle switches exhibit snap-action characteristics.

There is wiping action, and most toggle switches are sealed, though not airtight unless specified as such. The military





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requirement of hermeticity used to be glass-to-metal or metal-to-metal seals. Since the advent of more reliable plastic integrated circuit packages decades ago, that requirement is seldom used.

Some toggle switches have a center-off position, where no connection is made. Certain switches with multiple poles can “make” a circuit before “breaking” another circuit. Some heavy-duty toggle switches have screw terminals.

When toggle switches fail, they tend to fail “shorted.”

A toggle switch can control one or multiple circuits, and can be either normally open or normally closed. For example, a DPDT switch can control two independent circuits and switch between two different contacts each. Also [5] shows a DPDT switch with a center-off position.

DPDT switches are good for reversing polarity to the rails in a DC layout or a reversing loop.

See: components.omron.com/web/en/pole-throw and also mrhmag.com/magazine/url/switch-datasheet.



6. Rotary switches.

Rotary/selector switch

A *rotary switch* [6, 7] has a knob you turn to select the contacts. A rotary switch can have multiple contacts/poles, conceptually similar to a model railroad turntable.

High-end rotary switches have plastic or ceramic to hold the contacts in place. The tabs of the switch slide through contacts (wiping action), which “sandwich” the tabs as they make contact.



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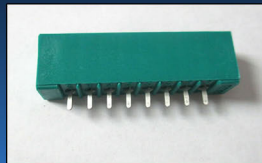
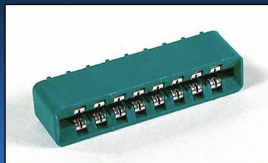
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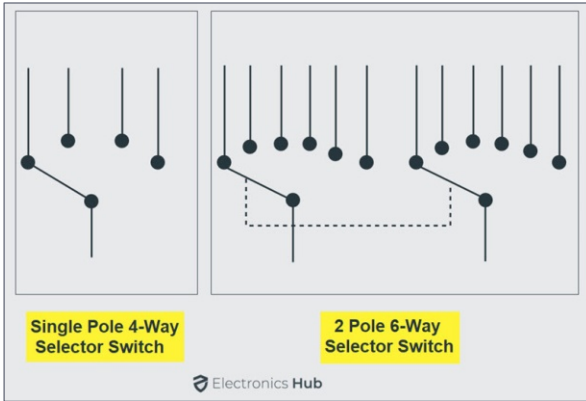
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7. Circuit diagrams for rotary selector switches.

Use this switch where several circuits need to be controlled at once. They can be open to the environment or enclosed.



8. Rocker switches.

Rocker switch

A *rocker switch* has a seesaw action. You press one side of the switch down to close the contacts, and press the other side down to open the contacts. There is typically wiping action of the contacts.

Rockers can be difficult to mount if they require a square cutout [8].



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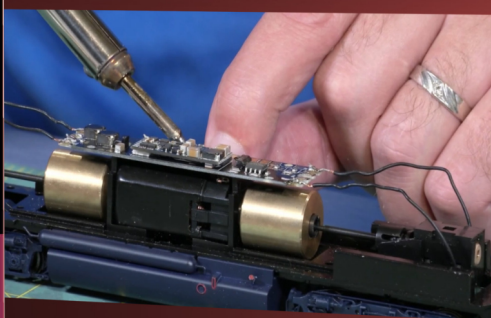
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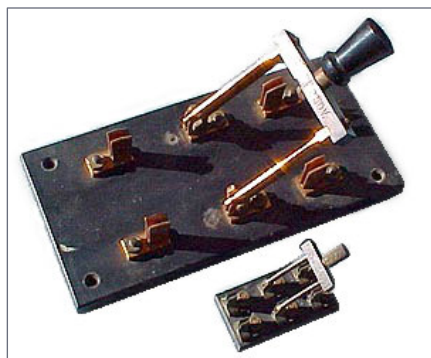
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Knife switch

A *knife switch* has exposed contacts. There is a lot of wiping action, but no snap action. They are the kind of switch you see in old late-night sci-fi movies, but they have little application in model railroading [9].



9. Knife switch.

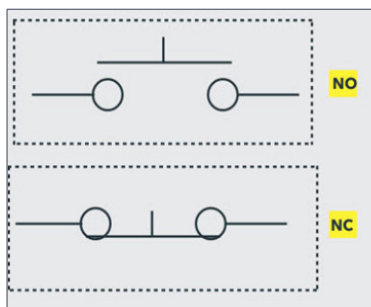


10. Miniature and heavy-duty push-button switches.

Pushbutton switch

A *pushbutton switch* has a button that you push to open or close the contacts. In some pushbutton switches, the contacts alternate between open and closed each time you push the switch [10, 11].

Pushbuttons can have normally open contacts that must be pushed to make the connection or normally closed contacts which must be



11. Normally open (top) and normally closed (bottom) push-button switches.



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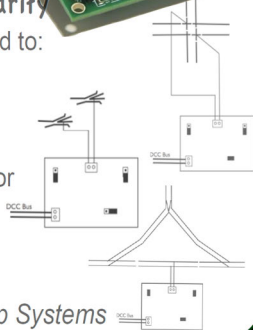
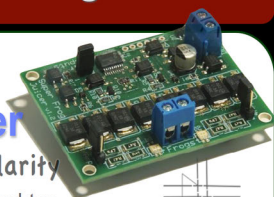


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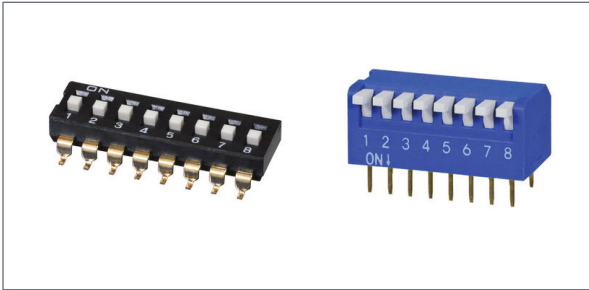


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pushed to break the connection. Like toggle switches, there can be multiple contacts. When they fail, pushbutton switches tend to fail “open” 60% of the time.



12. DIP switches.

DIP switch

DIP switches are typically used on circuit boards to set configuration values (such as on a command station). They are not exercised often, and once set typically are not changed [12].

CONTACT PLATING

Contact plating is important for reliability. There are many finishes and plating materials that are used on switch contacts, the most common of which employ silver, nickel, copper and gold, or some combination of the four.

Silver has the lowest contact resistance, but silver can tarnish in damp environments. Tarnish is an insulator, but with high enough current – greater than 12V 0.5A – the arc caused by switching will overcome the tarnish. This type of plating is best suited for controlling turnouts or track circuits, where the current is relatively high.

Gold is typically plated over silver, nickel, or nickel silver alloys. Gold provides excellent resistance to corrosion and



moisture, but it is expensive and is prone to vaporizing and melting due to arcing in high-current situations.

Sometimes the base material will leach through the porous gold layer and corrode. For greatest reliability, gold-plated contacts should be used in low-level signal switching and logic (<20 VAC or DC @ 0.1A) applications, such as LEDs, IR sensors, or track voltage sensors.

The thickness of gold plating depends on the usage. Minimal plating (4 -20 micro-inches) is used on connectors that do not see a lot of mating-/un-mating, or wiping action. Gold plating actually behaves in a porous way at this thickness, which may expose the base metal.

For moderate-use contacts in switches, 30-50 micro-inches of gold (over 150 micro-inches over nickel/ silver) is more common and recommended. This slightly porous design gives much better protection against moisture and corrosion. For even more robust applications, prefer higher levels of gold (>50 micro-inches).

SWITCH PACKAGING AND RELIABILITY

There are four levels of dust, humidity, and water protection for switches: open, enclosed, environmentally sealed or resilient, or hermetically sealed.

Open switches provide no protection against atmospheric conditions or particulates. Such switches tend to be prone to corrosion and dirty contacts.

Enclosed switches have a protective packaging against particulates, but there is no seal for additional protection.

Environmentally sealed packages use a seal or gasket of resilient material that protects the switch parts from the outside environment.

Materials & Finishes

Toggle:	Brass with chrome plating
Bushing & Outer Case:	Glass fiber reinforced polyamide (UL94V-0)
Inner Case:	Melamine
Inner Sealing Ring:	Acrylonitrile butadiene rubber
Outer Sealing Ring:	Nitrile butadiene rubber
Movable Contactor:	Copper with silver plating
Movable Contacts:	Silver alloy plus copper with silver plating
Stationary Contacts:	Silver alloy plus copper with silver plating
Terminals:	Brass with tin plating
Wire Lead Covers:	Heat resistant polyvinyl chloride (Leads are AWG 16)

13. Here is an example of the materials used in an environmentally sealed toggle switch with a typical lifetime of 15,000 operations.

Generally, environmentally sealed switches provide good protection against particulates, and also some degree of protection against moisture and water [13].

There are standards for protection against dust and water penetration.

For example, in C&K, a major switch manufacturer's chart [14], IP11 means the switch is protected against solid objects greater than 50mm in diameter (2 inches) "fully penetrating" the switch, as well as vertically falling water drops.

Maybe you want something a little better than IP11, but you don't need or want to pay for IP68 ratings for your layout.

Most modelers build their layouts in heated, relatively clean buildings. These charts indicate what you are paying for, though note there is no mention of "airtight".

Finally, there are hermetically sealed packages that offer complete protection against moisture, particulates, and even gasses. Hermetically sealed packages have no gaskets but are fused or soldered for a solid enclosure.



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First Characteristic Numeral	Degree of protection	
	Brief description	Definition
0	Non-protected	-
1	Protected against solid foreign objects of 50 mm Ø and greater	The object probe, sphere of 50 mm Ø, shall not fully penetrate*
2	Protected against solid foreign objects of 12.5 mm Ø and greater	The object probe, sphere of 12.5 mm Ø, shall not fully penetrate*
3	Protected against solid foreign objects of 2.5 mm Ø and greater	The object probe, sphere of 2.5 mm Ø, shall not fully penetrate*
4	Protected against solid foreign objects of 1.0 mm Ø and greater	The object probe, sphere of 1.0 mm Ø, shall not fully penetrate*
5	Dust-protected	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety
6	Dust-tight	No ingress of dust

* The full diameter of the object probe shall not pass through an opening of the enclosure.

Second Characteristic Numeral	Degree of protection	
	Brief description	Definition
0	Non-protected	-
1	Protected against vertically falling water drops	Vertically falling water drops shall have no harmful effects
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Vertically falling water drops shall have no harmful effects when the enclosure is tilted up to 15° on either side of the vertical
3	Protected against spraying water	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects
4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effects
5	Protected against water jets	Water projected in jets against the enclosure from any direction shall have no harmful effects
6	Protected against powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects
7	Protected against the effects of temporary immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time
8	Protected against the effects of continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than for numeral 7

14. This chart shows standard protection ratings against dust and water.

Such hermetically sealed switches can be hard to find, be quite expensive, and frankly, overkill for model railroad applications.

SOLDERING AND CLEANING

To maximize reliability, soldering temperature and minimizing contamination of the contacts rank as important considerations. Contamination can occur in both hand-soldering and machine-soldering processes.



According to switch manufacturer C&K, “Hand soldering and cleaning are acceptable with properly trained personnel, small diameter solder (.030-.040 in.) and low wattage soldering irons (25-40 watts max.).

The maximum recommended solder time is about 3 seconds.”

60/40 solder is made of 60% tin and 40% lead. It has a melting point of around 374F, depending on the exact composition. Iron tip temperatures of at least 572F are recommended, though 600F is close enough.

I found out the hard way that a 5-10 second solder time at 750F on a miniature switch happened to be enough to separate the terminal from the switch body, destroying the switch.

Even if the terminal did not come out of the body, it could have moved and ruined the switch’s function. The switch body was plastic with a blob of epoxy at the switch terminals, but this didn’t help.

Do not immerse or spray the unsealed areas of the switches with cleaners during flux removal. Use a brush. This will minimize contact contamination by the flux.

Alternately, you could use heavy duty toggle switches with screw terminals, and avoid soldering altogether, though this requires more space.

“I found out the hard way that a 5-10 second solder time at 750F on a miniature switch happened to be enough to separate the terminal from the switch body, destroying the switch.”

DERATING

When you use a switch (or any component) below its maximum specification, you're *derating* it.

Derating increases the life and reliability of a component. For a switch, compute the derating factor as a percentage of the operating current load.

For example, operating a switch at 4 amps DC that's rated at 10 amps DC, gives a derating factor of 40% or 0.4, though you should consider the type of load on the switch because of stresses related to the type of load.

Derating matters more for non-resistive or capacitive loads because of high current demands at initial startup and increased probability of voltage spikes.

For a resistive load, the 40% derating translates to 1.28 times the normal failure rate. For an inductive load the failure rate is 2.72 times normal, and for a lamp (incandescent) load, the failure rate is a whopping 54 times the normal failure rate (load stress factor). Here is chart of the derating vs the type of load (applies to toggle and pushbutton switches):

Derating Recommendations

Recommended % of Max Rated Value in an indoor protected (controlled) environment

70% - Capacitive Load

70% - Resistive Load

50% - Inductive Load

30% - Motor

20% - Filament (Lamp)

Remember that snap switch machines and stall (motor) machines are inductive because of the coils inside. For example,



“Derating increases the life and reliability of a component. For a switch, compute the derating factor as a percentage of the operating current load.”

if a turnout requires 0.5 amps and it is an inductive load, it will need a switch with at least a 1 Amp rating (50% derating).

I thought using a “heavy-duty” 120VAC 5 amp switch for my layout power to be sufficient. No way did the layout use 600 watts (120v x 5 amps)! After a couple months, the switch failed.

My problem? I had several laptop power supplies on the layout for turnout control, lighting, booster supply, and so on. Those “bricks” current-surged when switched on, eventually welding the switch contacts together.

Moving to a 20-amp switch solved it.

MECHANICAL MOUNTING CONSIDERATIONS

When constructing the original control panel for my layout, I used 1/8”-thick aluminum. Some of the miniature switches had short-threaded bushings that did not allow two nuts and a lock washer, so I used a single lock washer on the back of the aluminum panel and a flat washer and single nut on the front.

When I tightened the nut, it put enough pressure on the threaded bushing connection on the switch that it pulled the bushing right out of the switch. Apparently, the bushing was just press-fit into the miniature plastic switch body.

This may or may not be true of heavy-duty toggle switches, but I will not take a chance again.

According to a *Model Railroader* forum post, “The correct order from the body of the switch is: adjustment nut, lock washer, panel, smooth washer, tightening nut. This assumes that the panel is thin enough to accommodate everything. The bottom nut is adjusted so that the top nut when tight, is even with the top of the switch shaft for a neat look.”

0.090" aluminum sheet is strong enough not to bend, but thin enough to allow for the two-nut, two-washer arrangement for miniature switch bushings. I got mine from Amazon.

mrhmag.com/magazine/url/aluminum-sheet-amazon

SUMMARY

For reliable switch operation:

1. Consider more-expensive gold-plated switches only for low level applications (signal, logic level, voltage monitoring) where moisture and corrosion could be an issue. If used in a power circuit, expect the gold plating to vaporize and reveal the base metal underneath. The base metal must be of good quality to minimize the effects of moisture and contamination.
2. Derate the switch based on applied current vs rated current and the type of load.
3. Consider inrush/ surge current.
4. Pay attention to soldering temperatures and times.
5. Review mechanical mounting details. Use a thin enough sheet of aluminum, etc. to allow for proper hardware usage.
6. Switches should never be placed in parallel for increasing the current-handling capability of a circuit.



References:

Electronics Hub has an in-depth look at mechanical and electronic switches: www.electronicshub.org/switches.

Toggle switch sonfigurations:

components.omron.com/web/en/pole-throw

Switch diagrams:

mrhmag.com/magazine/url/switch-diagram

Military reliability derating standards

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JACK OLIVIERI



Jack is a retired Systems Reliability Engineer who has worked for numerous network and computer companies during his career. For the last 12 years he has worked for the MITRE Corporation (an FFRDC) where he consulted for the US Air Force on ground-based space radars, drones and missile systems.

He has authored many papers on hardware and software reliability and presented them at reliability conferences across the country.

His current hobbies include model railroading, astronomy and ham radio. ■

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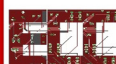
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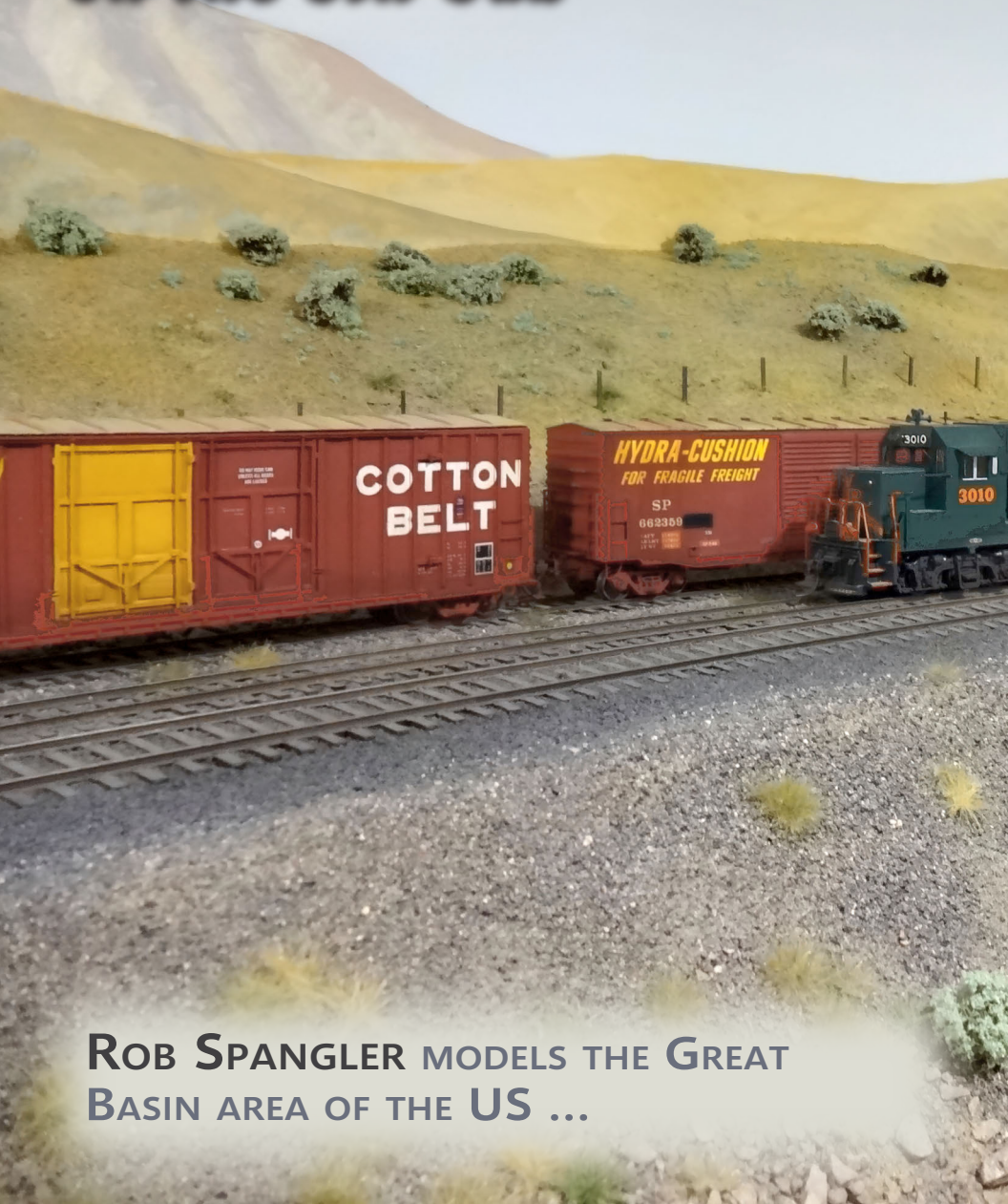
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DOING DESERT SCENERY *on the 8th Sub*



**ROB SPANGLER MODELS THE GREAT
BASIN AREA OF THE US ...**



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Note from Rob Spangler

This scenery in this article came from my MRH blog as the layout was under construction, and most of the scenes have since been completed. Visit my blog for recent photos of the layout:

WEB: mrhmag.com/blog/rob_spangler



I'VE SET MY LAYOUT IN THE NORTHERN GREAT BASIN IN Utah, but I also draw from adjacent Idaho and Nevada.

The vegetation of this region consists mostly of bunchgrass, which has a yellow color much of the year. Add to that shrubs like sagebrush, rabbitbrush, four-winged saltbush, and greasewood.

The region has a few naturally occurring trees like cottonwood, willow, and box elder along some of the watercourses. Upland slopes can have Utah juniper, with bigtooth maple and Gambel oak in scattered places, the latter two mostly in drainages. The Great Basin also has some cactus, but the species present, such as plains prickly pear, grow so small they can be difficult to represent in HO scale.

PROTOTYPE INSPIRATION

Before you get into modeling scenery, it's always good to start with reference photos.

For examples of the scenery, here are some prototype views I took along the former Western Pacific's 7th Subdivision in western Utah. I took these photos at roughly the time of year I intend to represent – late summer [1, 2, 3].

The first two views [1, 2] look north toward the Lakeside Mountains. Bunch grasses, sagebrush, and rabbitbrush are common, along with smaller plants like snakeweed and sunflowers.

Photo [3] shows the ice-age bed of Lake Bonneville. Here the shrubs consist mostly of four-winged saltbush and greasewood, which tolerate poorly draining, salty soils. They have a somewhat greener color than sagebrush or rabbitbrush.



DOING DESERT SCENERY | 3

For additional photos of typical scenery, look at the Golden Spike historic site: www.rgusrail.com/utgspike.html.



1. The big cut at the summit of Low Hill.



2. The siding at Delle.

Also see some shots of Palisade Canyon, Nevada here:

www.rgusrail.com/nvpalisade.html.

This link has shots of tunnel portals and bridge abutments I've modeled.

BUILDING THE SCENERY TERRAIN FORMS

My first step is assembling a cardboard web of the terrain contours, held together with hot glue. I like to build the web to the "original" terrain contours from before the railroad arrived. I then add fills above it and cuts into it [4].

Prior to cutting the hillside around the track, I install supports for the sides of the cut. They will maintain the overall landscape contour once I remove the cardboard above the track.

Here's the same area once the cut and tunnel locations were finalized [5].

While not obvious from the photos, I do not weave the strips basket-style. Weaving adds no meaningful strength but yields



3. The Stansbury range from near the salt plant at Timpie.



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4. I Built up the original contours of the slope across the Raft River Branch and have started to create the fill leading up to the trestle. You can also see the supports for the cut along the track below the slope surface, leading into what will be a tunnel.



5. Same area as shown in [4], but with the final cut and tunnel locations. I built the deep cut on the left in the same way, first building the “original” contours, then cutting them back for the railroad route.

an uneven, lumpy surface. Even in rugged country, most of the scenic contours run smoothly, so I make the job of smoothing the slopes as easy as possible.

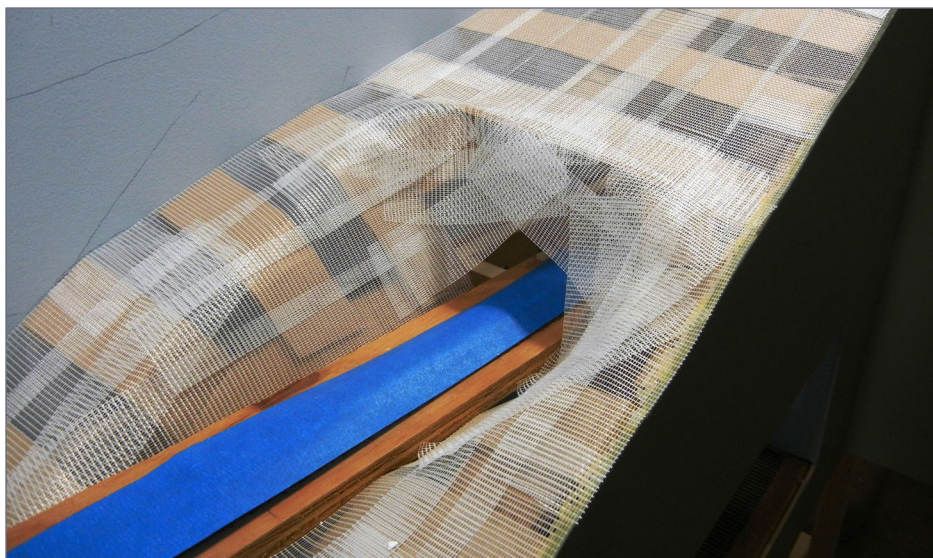
Next I apply plaster onto the cardboard strips. I have tried various methods over the years. I found draping a layer of cheesecloth over the strips and applying coats of plaster to yield satisfactory results, though it can unravel if you're not careful. My wife volunteered (!) to buy more cheesecloth from the fabric store but could find only the expensive stuff in bags.

A store employee suggested *tulle* – typically used as bridal veil material – as a cheaper substitute – modelers may be familiar with tulle for making chain-link fencing – at about \$0.69 for 3' x 45". Tulle is about half the price of cheesecloth, has much smaller gaps between strands, and has no tendency to unravel. We gave it a try.



6. Using tulle over the cardboard strips as a “screen mesh” to hold up the plaster scenery.





7. Here's a hillside covered with Fibatape. I constructed the cardboard scenic supports using the same technique of building up the hill, then working-in the cuts, abutments, and tunnel portals later.

Tulle proved to be very successful for holding up plaster [6]. The brush-coat formula that worked well with cheesecloth (1 part plaster to 1 part water) beaded up on the synthetic material but changing the ratio to 3 parts plaster and 2 parts water did the trick.

Big pieces of fabric-type material aren't necessarily the best to use everywhere, especially in narrow spots. My friend Steve Blodgett, whose layout was featured in the "Fun with Talus" article in the January 2011 *MRH*, has been using fiberglass mesh drywall tape in scenic applications for a while now. I thought this technique might work better for those narrower spots.

I found Fibatape Perfect Finish at Home Depot, a new variety that is more flexible and thinner than older styles with a finer mesh. A 1-7/8 -in. x 300-ft. roll cost about \$9.00. I tried it on one of my narrower hillsides [7].

This new mesh tape works much better than the old mesh tape ever did. I found myself using a lot of it along backdrops, in the bottom of cuts, next to the track, and generally anywhere it made sense to take advantage of how controllable it is.

A note about attaching mesh tape and tulle: Ideally it should be secured to the substrate before plastering. Otherwise, you'll have material shifting around constantly as you apply plaster.

I stretch the tulle fabric tight to eliminate sags between supports, and use hot glue to secure it to the cardboard, since it goes quickly. Hot glue doesn't work well atop fascia, so there I use yellow glue there. Overlap the material past the fascia when convenient, glue it down, apply a coat or two of plaster, then trim flush with a utility knife.

The plaster grabs onto the mesh tape – the same with the tulle or cheesecloth – and surrounds the fibers completely. The tape or tulle all but disappears with one or two brush coats of plaster, serving as rebar to create a strong, integrated structure. The tulle completely disappears in many areas, and it looks like a smooth layer of plaster suspended between supports from under the layout.

What's great about scenery is there's no "wrong" way to build a land form, so pick whatever method works for you.

Some have asked me how I keep the mesh pattern of the tape or tulle from showing through.

I've found it unavoidable to have the tape or tulle show through on at least the first brush coat or two. The trick is to apply a thicker, final coat by hand to smooth the ground and to provide both strength and a presentable surface for painting.

LET'S GET PLASTERED

Once all that substrate has gone in, it's time to plaster.





8. Initial plastering brush coats to the area in [4]. I have cut the plaster shell to test-fit the bridge abutments and piers.

I use a generic casting plaster/Plaster of Paris. I get mine at a building materials dealer that mostly caters to contractors (not a big-box store) and it comes in a “plain brown wrapper” bag. Some bags from this store are marked US Gypsum, while others don’t have any branding.

You can get Plaster of Paris in the paint aisle at Home Depot or Lowe's, but it costs twice as much – and it’s sold only in 25-pound bags instead of 50.

For my brush-coat formula, I mix about 3 parts plaster to 2 parts water.

I apply the plaster mix with a 2" disposable brush [8]. After two or three brush coats, I can start to add finish coats of much thicker stuff, mixed 2:1 or so, which I apply with a drywall knife and/or with my hands [9, 10].



9. Same area as [8] but looking the other direction. I have started some of the thicker final smoothing coat on the rise to the left, bringing out the final contours. Rock carving, stream banks, and so on are next.



10. A different bridge location with the bridge abutments placed into the rough plaster terrain. I will use dirt and rocks for much of the fill contour later.



I scratchbuilt these abutments from styrene sheet. What you see in the photos is essentially all there is to them: two sides, a front, and a shelf for the bridge shoes. I added thicker styrene pieces hidden inside for bracing, and along the outside edges to make the abutments look as if they're thick cast concrete [10].

I scratchbuilt the steel tower's concrete feet from styrene sheet as well, approximating dimensions from photos of the Keddie wye trestle. I used a square top plus four identical sides. They went together quickly [8, 9].

I added additional plaster around the steel trestle to give it the final smooth ground contour I wanted. I'll need to permanently install the abutments soon, along with the tunnel portal for the branch below.

I removed the trestle for most of this activity. I carved rocks along the ravine and built some banks for the dry wash while it was out. The trestle will get its final weathering before re-installation.

ROCK ON!

I carve all rock work using a putty knife and/or artist's palette knife, and a special mix of plaster that includes sand for texture.

The texture of the rocks comes in part from a handful of paver sand added to the 2:1 plaster/water mix.

The sand adds texture to the rocks and retards the setting time, which can be useful while you're carving. I don't add sand to plaster used for other purposes because I use other dirt and sand for ground cover atop areas that aren't rock.

I use the following plaster mixes:

- An initial base of several thin coats that are brushed on (3:2 plaster/water).

- Thick plaster for rocks (2 pints plaster, 1 pint water plus a handful of sand).
- Finish smooth coat (2:1 plaster/water with no sand).

My rock-carving plaster batch size usually runs about three pints (1 water and 2 plaster), and the coverage depends on how thick I'm making the rocks. The insides of the cuts are thinner than a natural cliff due to the relative lack of relief.

The slope of the left side of the ravine [11] is steeper than the right. I needed rock faces to look correct.

I also modeled a concrete check dam just below the trestle to control erosion around the piers. The remaining gaps below the piers will be filled with natural dirt and rocks, so they'll get no further plaster.



11. Rock work and other plaster work is nearly finished at the Greasewood Draw scene.





12. Broader view of the trestle area seen in [11].

I also want to add a culvert below the lower track to direct water into the foreground part of the wash. It will go in later with the talus, fill, and ballast.

Where I don't model rocks, the plaster shell seldom is very thick. The only plaster is what's necessary to get the scenery base ready for ground cover: rock work can get a couple of inches thick.

While it's possible to apply a finish coat that gets carved here and there, I like to separate the two tasks and use dedicated rock batches. I've been including sand for just a few years, but I've always separated plaster batches intended for rock carving from those used for smoothing the surface.

Plain old sand is fine. I use paver sand, which has various particle sizes.

A more distant view of the trestle [12] shows the surroundings a bit more, including how I've integrated the abutments into the fills.



13. Another view of the trestle area scenery, focusing on the lower branch line. Note where the cut at left slices through the cliff and how the texture of the rock changes inside the cut.



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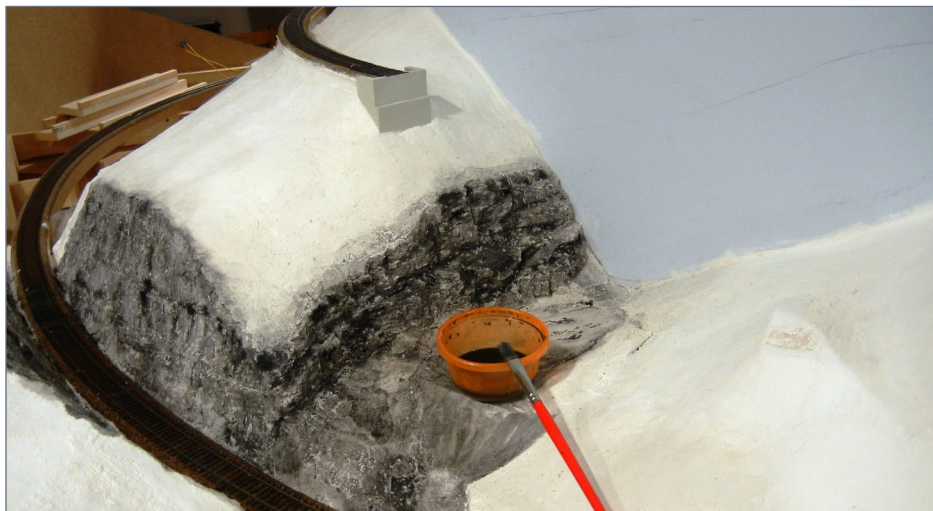
Since the whole thing's still unpainted plaster, there isn't much contrast to show how the contours vary between the "original" hillsides and the fills. You can also see the finished cuts and tunnel on the branch track in [13].

TIME FOR COLOR

It's time to add color to the rocks at the trestle scene. All paints used are acrylic craft paints [14].

The first step is to apply a black wash. I don't have a set ratio, nor do I try to get even coverage. I try to ensure the black gets everywhere, so sometimes I use a spray bottle to flood crevices. The black serves as a base for building up other applications of paint.

Once the black has soaked in, I dry-brush layers of progressively lighter colors. I used Americana Driftwood for the main color, plus some Apple Barrel Goosefeather and Terrestrial Beige, along with plain white. It's a little like weathering a structure or freight car [15, 16].



14. Adding black wash to the rock work and concrete dam in the scene.

You may be wondering if I plan to add any special slide-control details to these cuts. I've taken my inspiration for this area from Nevada's Silver Zone pass on the WP's 7th Sub. I don't recall seeing slide fencing, even though some of the cuts were large.

The Western Pacific had slide fencing in Palisade Canyon on the adjacent 6th Sub, also in Nevada, so I may consider that as a detail for later.

Now onto painting the rest of the plaster and moving on to my backdrops.

MY HEAD IS IN THE CLOUDS

Finishing scenery and backdrops is a surprisingly cerebral modeling effort! I'm always pondering how to think about and execute it differently. I hope you find my current process helpful.



15. The cliff and adjacent cut after the dry-brushing, plus some paint and weathering on the check dam. I used mostly the same color for the check dam concrete as for the rocks, but in a different ratio to get more gray.





16. Same angle as 13, but with rock coloring added.

I like to do the backdrop after I've done basic scenery terrain so I can plan where I want things on the backdrop to be relative to the track and other foreground elements. Also, I won't mess up the backdrop during scenery construction. Plus, I can feather the 3D and 2D together more easily.

If your chosen scenery methods won't ruin your backdrop work, the timing may be of less concern. Whether or not you can reach the sky in certain areas after the benchwork is up also may be a factor.

On my backdrop painting, I start with clouds and haze.

First, I lightened the sky as it neared the horizon. I brushed on some vinyl acrylic drywall primer (Kilz PVA is one brand), which makes a nice translucent white, and blended it with some sky blue so the boundary was indistinct.

It's necessary to blend wet into wet, so I worked on about three feet at a time. The top foot of the sky stayed pure blue, and everything below that got at least some haze. I didn't go all the way to white at the bottom. You can see the effect of the haze in [17]. The haze is more apparent in person than in the photos.



17. Painting the sky by adding haze and clouds.



I do all this painting with the same 2" disposable brush I use for brushing plaster. I like this brush because it leaves no visible marks. To avoid the brush marks, you must blend the colors wet-on-wet.

I remember the old John Nehrich article (I've always been a fan of the NEB&W layout), and my basic technique isn't much different, except for using brushes instead of sponges. It was the inspiration for all the clouds I've painted.

Everything's being done from photos to keep it logical. Multiple cloud masses stacked at various altitudes, and with different apparent orientations, seems more pronounced and common in my part of the country than in the Midwest or East. I always model my scenery and backdrop from photos to keep it logical.

Earlier photos [1, 2, 3] show typical skies in the area modeled.

Also, here's a photo [18] I took in Capitol Reef National Park that serves as some cloud-painting inspiration. There are several different cloud masses that don't line up with each other, and there's pronounced shading on the bottom of the nearest clouds at the right.



18. Photo from the Utah region (but not the specific area I'm modeling) shows examples of clouds.

I don't have clouds everywhere. My technique is nearly the same as in Mike Dannemann's book, *Painting Backdrops for your Model Railroad*, from Kalmbach's Model Railroader's How-to Guide series, so I'll refer you to that for more detail on the technique.

To paint clouds, I start with white, blend and soften the edges with some sky blue, and add shadows to some with Payne's gray. I use artists' acrylics in the tubes for the white and gray.

You can see the completed skies above Cedar [17] and Milton [19] which has no 3D scenery yet.

In [20], the sky behind the grain elevators at Milton received more clouds than most places.



19. Painting the sky backdrop at Milton. I caulked the joint between the 3D scene and the bottom of the backdrop, then applied a narrow band of tan paint over the caulk.





20. Another view of Milton, this time behind the grain elevators.

BLOCKING-IN BACKDROP TERRAIN

Before proceeding with the final backdrop, I like to add a color “sketch” to block-in the basic forms and values (lights and darks) for the 2D terrain. Try searching online for “distant barren rolling hills” to get some examples that look like what I’m painting.

At this stage, I use only three colors of craft paint (white, ultramarine blue, and tan) since the goal is only to test the composition. The sketch is simple to refine, and it’s easy to try variations [21, 22].

I decided to add a concrete letter M to the hillside to proclaim the place’s identity. No self-respecting Utah farm town would be without one! I’m also noting shadows from the 3D structures to determine the future locations of painted trees and other backdrop details to help disguise the shadows.



21. Blocked-in background hills behind the Cenex structures at Milton.



22. Milton area [21] backdrop progress as seen from the other direction.



Another goal of the process is to check for any backdrop shapes that look OK from one place in the aisle, but odd from another. Sometimes placing foreground trees or small structures to prevent viewing from the “wrong” direction can mitigate such things.

The prominent shadows from the Greasewood Draw trestle will coincide with some cottonwood trees growing along the wash so they fall into a dark area on the backdrop. I will carry the same vegetation into the foreground to further blend the 3D scenery with the 2D backdrop [23].



23. Greasewood trestle backdrop progress.



R. Spangler

LEARNING TO PAINT

When it comes to artistic pursuits, we all handle the process differently. I recommend Mike Danneman's book, *Painting Backdrops for Your Model Railroad* from Kalmbach.

One of my current favorites that isn't model-oriented is *Painting Better Landscapes* by Margaret Kessler. Keep in mind this book is intended for oils, not acrylics. Acrylics dry faster than oils, so you must paint small areas wet-on-wet if you want to blend the colors like oils before the paint dries.

[Also see Ross Bown: www.paintdrawpaint.com/2010/10/painting-basics-landscape-step-by-step.html and learn to use a wet palette if you want the acrylics to not dry as quickly and to work more like oils. - ed.]

Frankly, none of the instruction really did me much good just by reading about it or even by watching it. I've found the key is practice. Use scrap material and mess around with various ideas. Books can give a good introduction to mixing colors and some hints on technique, but after that I just have to do it myself to learn what works.

One of the things that kills a lot of backdrops is poor understanding of color, particularly with regard to green. Many model backdrops I've seen use a bright, unrealistic green that does not tie well with foreground colors. Pre-mixed greens are usually a bad idea to use by themselves, so learning to handle green will be a big help. Books on color mixing are good to review for ideas on making green.

Make some copies of real scenery pictures that inspire your backdrop, and try matching colors on them, even directly painting on photocopies to test the mixtures.

Move from there to something that's entirely your own.

[For specifically where to find the two books and a wet palette, see the shopping list link at the end of this article. - ed.]



I did more plaster work and backdrop under-painting in adjacent scenes before starting the finish work on the backdrops here.

EXTENDING THE SCENE

I kept working on the scenery around Milton siding on each end. The narrow 3D scene around the east end now has plaster and backdrop terrain [24].

Note the girder bridge installed just beyond the siding turnout at right. The fill will be built up from real rocks and dirt before adding ballast. Again, the backdrop here is only a color sketch which will be covered with the final backdrop later.

I repainted part of it after I found some better photos of the prototype scene. It's much simpler to make such changes to the temporary backdrop before the forms have been committed to a finished painting.

A short distance farther east of the scene above, the mainline crosses Muddy Creek on the through truss. The areas to be filled with rocks and dirt stand out more here [25].



24. Narrow scene past the east end of Milton.

A NEW ANGLE ON THINGS

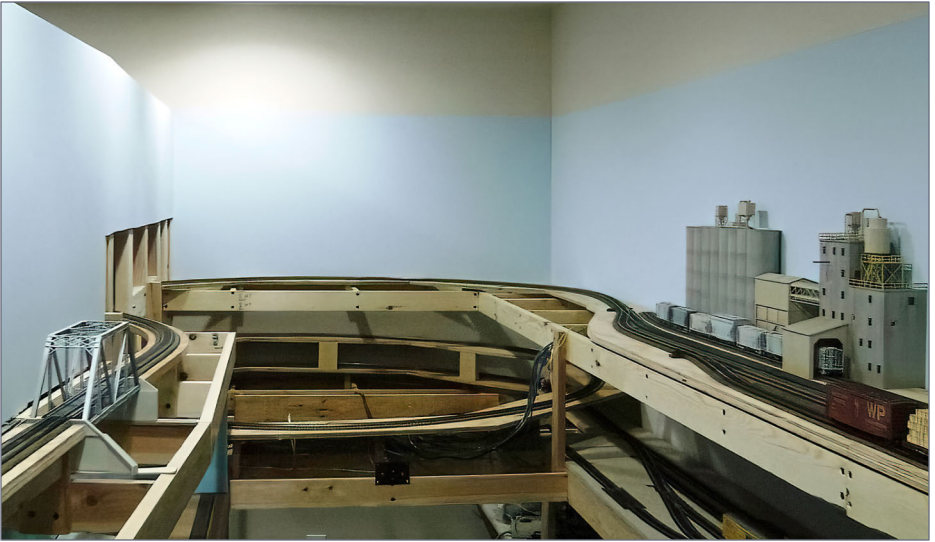
Between the tunnel pictured in [25] and the cement plant at the next town of Chester is an area where I struggled to develop a scene. The mainline negotiates a turnback curve atop the staging helix, so there's a deep area that also needs access from the center [26].

I decided to locate a creek on one side of the curve and placed a tall hill beside it. The main track now appears to follow the creek, and the hill obscures the helix access. I added some steeply angled rock strata along the creek opposite the track, which is common in nature but seldom modeled [27].



25. I based this spot on a prototype scene in Palisade Canyon, NV. I made the bridge shorter by one panel but otherwise it's close. The exposed tunnel liner is half of a PVC pipe coupling wrapped with styrene. More on modeling this tunnel liner later.





26. I needed a scenery solution for the back curve over the staging helix that would hide the helix access.



27. The solution I came up with to obscure the helix access.

To add some color variation from the previous scenes, I altered the rock color by adding oxide red and terra cotta. The color and shape of the rocks is similar in appearance to the canyon next to the cement plant at Devil's Slide near Croydon, UT.

The backdrop represents the opposite side of the canyon. I decided to add a terraced quarry to the backdrop to tie with the cement plant. I started to rough-in the limestone quarry next to the cement plant silos. A large excavation spread over a couple of hillsides will reinforce the idea that this plant serves as a major industry [28].

The rest of the scene serves mainly to hide the reverse curve at the end of the aisle and to disguise the access to the staging helix underneath the mainline visible here. The roadbed comes to within an inch of the wall at the apex of the curve at right, and roughly the same at the back of the scene [29].

PROGRESS HITS THE WALL

For a change of pace, I added a stone retaining wall to a new scene in Cedar Creek canyon, using prototype photos for ref-

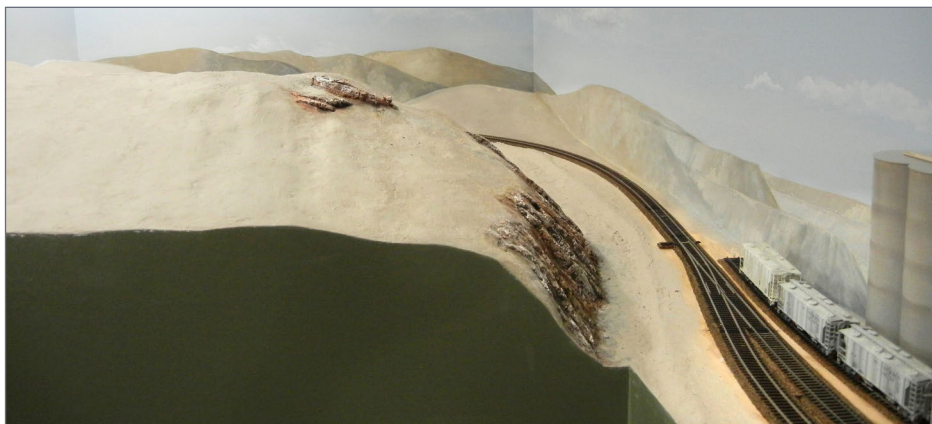


28. Adding a terraced limestone quarry backdrop behind the cement plant.



erence. The wall, about 24 inches long, holds up the mainline so it won't slide down the cliffs. Other steep spots will receive timber cribbing.

I started the wall by applying a ¼"-thick base coat of plaster – 2 parts plaster to 1 part water – to the scenery shell with a putty knife. Using my photos as a guide, I drew the basic pattern onto the plaster with a pencil. I began with places requiring certain shapes of individual stones to work with the imperfections of the plaster and filled in the rest from there [30].



29. Overall view of the area in [27] and [28]. Compare with [26].



30. Penciling-in the stones on the plaster retaining wall.

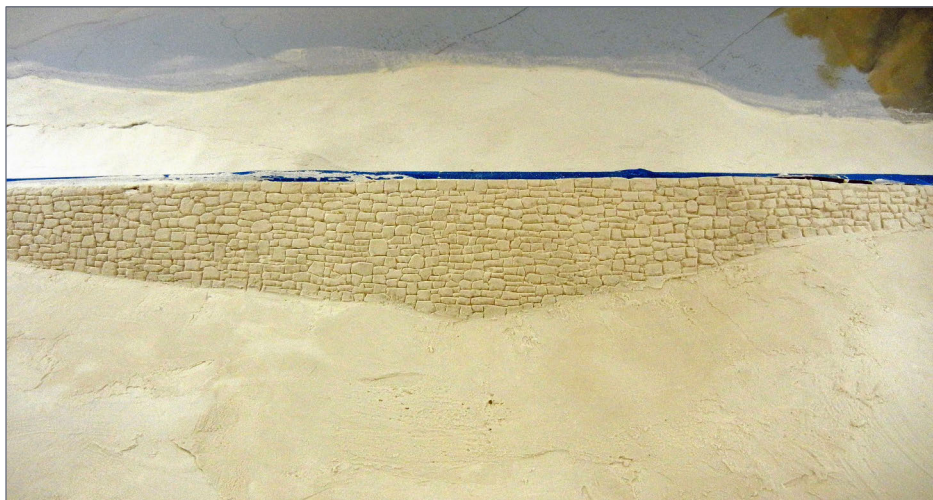
Completing the pencil drawing allowed for easy adjustment before carving and helped me resolve funky patterns in the masonry and avoid individual stones that were too large. With the drawing complete, I used a Stanley utility knife to carve the stonework. I tried to carve each stone so it would look like a separate piece [31].

I went over the wall several times to add individual facets here and there. The project took several hours, and although I could have used molds or commercial castings, I like that I have something unique. I will paint the wall once I finish the rest of the plaster in this scene.

ROCKIN' INTO THE NIGHT

Sometimes, staying up late to carve rocks can be therapeutic. Such was the case with Cedar Creek canyon. Sloping rock layers typify many of the fault-block ranges in the Great Basin and its surroundings, so it makes logical sense to model them [32].

The gap in the lower track (the Raft River branch) will have a trestle [32]. I plan to model the foreground scene to reflect



31. The retaining wall with carved stones.





32. Carved rock layers in Cedar Creek canyon, just below the stone retaining wall.

how the railroad channeled the creek to alter its course around its fills. There will be another trestle just out of view to the right where Cedar Creek exits the scene.

This scene has a lot of rock, so I have much more to do before I'm ready for color.

in the **SEPTEMBER 2021 MRH RUNNING EXTRA!**

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RUNNING EXTRA



R. Spangler

FINDING CEDAR ON THE WP

You won't find Cedar on a map of the Western Pacific in Utah. It's a fabrication, just like every other location on my layout, although I draw heavily from prototype locales for influence and always make sure to model from a stack of photos.

Influences for Cedar include, but are not limited to:

- The Pequop Mountains of northeastern Nevada. These were crossed by both SP and WP. Scenery on the Cedar peninsula draws from both, as well as the pass where I-80 crosses the Pequops.
- Flower Lake tunnel on the WP (now Hogan Tunnel), or Moor, Pequop, or Cobre on the SP.
- Silver Zone Pass in the Toano Range. The distant mountains on the backdrop are from a photo of the northern end of the Toanos. The Toanos consist mostly of granite around the WP grade, so a totally different geology from what I have here but similar otherwise.
- Low Hill, where the Cedar, Lakeside and Grassy ranges converge in UT.
- Various other ranges in northern UT and NV.

Here are some prototype photos:

Low, UT www.rrpicturearchives.net/showPicture.aspx?id=2371875

Moor, NV www.rrpicturearchives.net/showPicture.aspx?id=2000330

Cobre, NV www.rrpicturearchives.net/showPicture.aspx?id=3091131

Silver Zone, NV ...

www.rrpicturearchives.net/showPicture.aspx?id=2863217

www.rrpicturearchives.net/showPicture.aspx?id=2863219

www.rrpicturearchives.net/showPicture.aspx?id=2000328

www.rrpicturearchives.net/showPicture.aspx?id=438156

Ryndon, NV www.rrpicturearchives.net/showPicture.aspx?id=438148

Wheelon, UT www.rrpicturearchives.net/showPicture.aspx?id=1404796



IT ALL COMES OUT IN THE WASH

Once I was done with the rock work in Cedar Creek canyon, the retaining wall and cliffs received some color. As a first step, I applied my usual wash of diluted black acrylic craft paint. I applied it only to areas that represent rock, and in this case that includes the stone wall [33].

Next, the rocks get a few layers of dry-brushed acrylic [36], building up from dark to light. Less paint gets into the deeper crevices, enhancing the natural shadow effect. The retaining wall received similar treatment, which is the same basic technique I use for painting stone walls in plaster structure kits [34].

The wall contrast was too stark. I had carved the joints deep enough to take a lot of black and the coloring applied to the sur-



33. Applying a black wash to the finished Cedar Creek canyon rock work.

face left too much dark between the stones. I mixed up another wash of my darkest acrylic rock color and flowed it over the entire wall, which reduced the contrast considerably.

As the final phase on the wall, I took a small brush and applied the various rock colors I'd been using elsewhere full-strength to individual stones. I also mixed up some intermediate colors (like taking the lightest and next lightest) and added them here and there. Many of the stones received individual coloring, and since it's all done with related paints everything ties together.

Every place that isn't a rock gets a coat of tan latex after I'm done coloring rocks.

MODELING TUNNELS

I plastered the area around Cedar last before moving on to finishing the backdrops and ground cover. With this work, one



34. After the black wash dries, I apply my dry-brushed rock colors.

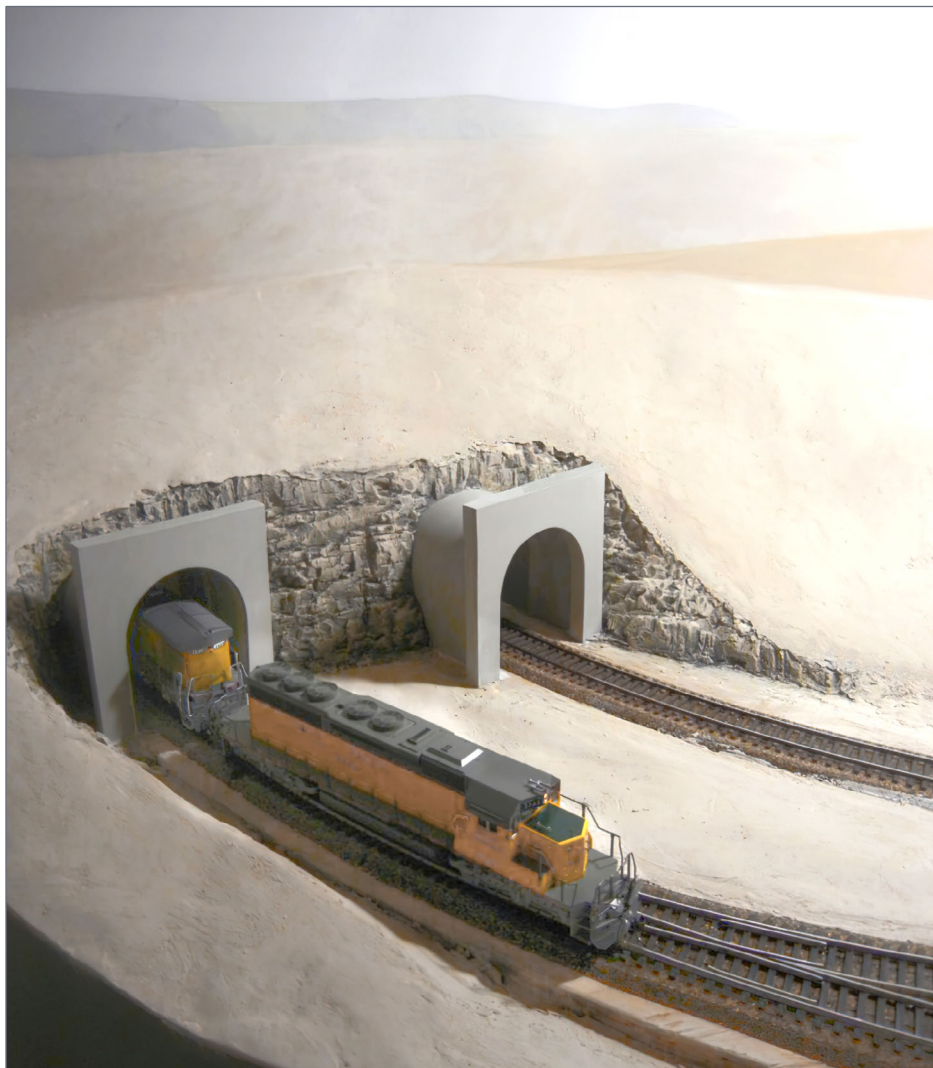


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entire side of the layout's serpentine peninsula now had its scenery base. I was ready to do a test run [35, 36].



35. Twin tunnels at Cedar – the main line runs on the left, and the Raft River branch traverses the right of the scene. I had added color to the tunnel area at Cedar and cleaned-up the track for a test run using UP pool power.

Portals with exposed liners are common on the WP, UP, and SP lines in the area modeled. They're not necessarily related to a specific rock formation as much as the stability of the rock layers. Rockfall debris usually evident on and around the liner will be added to the model scene [37].

PULLING THINGS TOGETHER

After plastering, coloring, and backdrop blocking come dirt, talus, vegetation, and other such details. The low angle of [38] hides the fact the track isn't painted or ballasted yet.



36. Farther along, the eastbound intermodal negotiates the last S-curve as it departs Cedar en route to its appointment with the Junction City pig ramp. Note the boxcar train order office in the distance, which now has a home on the hillside, awaiting timber Cribbing. The Raft River branch is at the base of the hill. In the distance, the branch.





37. This is the prototype former Western Pacific line at Palisade Canyon. Note the exposed tunnel liner in the foreground. It is covered with rock debris. I am aiming to replicate this

look on my layout. Robert David Grant, photo (rgusrail.com/album/nvpalisade/palisade_51.jpg)



38. This shot of the Cedar area shows how the scenery and backdrop are shaping up.



I modeled this area to represent a side-hill grade, with the up-hill side in a cut – you can see the cut behind the cars – and the downhill side on a fill.

I kitbashed a train order office for Cedar from a C&BT Shops boxcar, and based it loosely on a depot on the UP at Walden, CO. I built it originally for a town named Cooper two layouts ago, and I haven't changed the signboards yet. Plus, there's no Train Order signal [39].

I'd like to add more small details around this structure to bring it to life. Tie plates would be perfect. I made all the static grass tufts myself; you can learn how from the cover story in the February 2021 issue of *MRH Running Extra*.

The road in the rear of Cedar needs some trees to help disguise the joint between the 3D road and the 2D backdrop. I added more foreground scenery details to get this road and its surroundings looking more finished. Combined with the trees on the backdrop, it's starting to blend in [40].

I built some 3D trees using Supertree material with sagebrush armatures for the trunks. I also added some bushes, both from Supertrees and from "synthetic steel wool" scouring pads (basically like pot scrubbers but they're gray and are coarser).

I sprayed all of the armatures with 3M Super 77 adhesive and covered them with ground foam. I used several different colors from AMSI, Scenic Express, and Woodland Scenics. You can see the result in [40, 41, 42]. ☑

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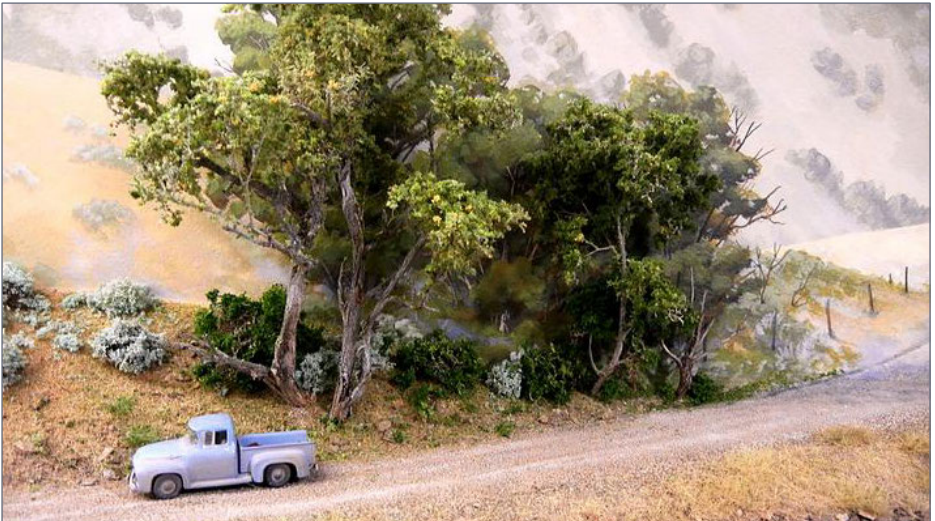
39. Cedar's train order office. The location of the propane tank started quite a discussion on the *MRH* forum model-railroad-hobbyist.com/node/7324?page=14#comment-73024.



40. A road scene at Cedar where I'm trying to blend the 3d road into a 2D backdrop.



41. Side view of the road area, showing the 3D trees in front of the backdrop trees. Thanks to the tree and bush shadows combined with trees on the backdrop, it's hard to tell where the 3D ends and the 2D begins.



42. Another view of the trees and road seen in [40 and 41].



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ROB SPANGLER



Rob has been a model railroader for over 42 years, since he received a train set at age six. He has been modeling the Western Pacific since 1989.

In addition to trains, Rob enjoys various activities like gardening, photography, and cheering for his daughters Lanie and Lizzie at their karate tournaments.

Rob and his wife Talene have been married since 1997. ■



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Researching industrial structures using Google Globe View



Model Railroad Hobbyist | September 2021



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PAUL HURLY SHOWS HOW TO USE GOOGLE MAPS FEATURES TO RESEARCH MODELING PROJECTS ...

ONE DAY IN 2016, my wife suggested I fill one corner of my layout's upper deck with the massive, former Robin Hood Flour Mill terminal in Port Colborne, Ontario. I didn't know much about this industry. The Toronto, Hamilton, and Buffalo (TH&B) Historical Society archivist confirmed that the TH&B had negotiated trackage rights from Canadian National to

serve the mill but had no details about the structure or its track plan.

Photos [1] and [2] are typical of what anyone would see on a visit to this structure in the past four years, or find via a search using Google Images or Bing.



1. The Robin Hood Flour Mill of Port Colborne, ON, now Ceres Global, looking west across the Welland Canal. Wikiwand



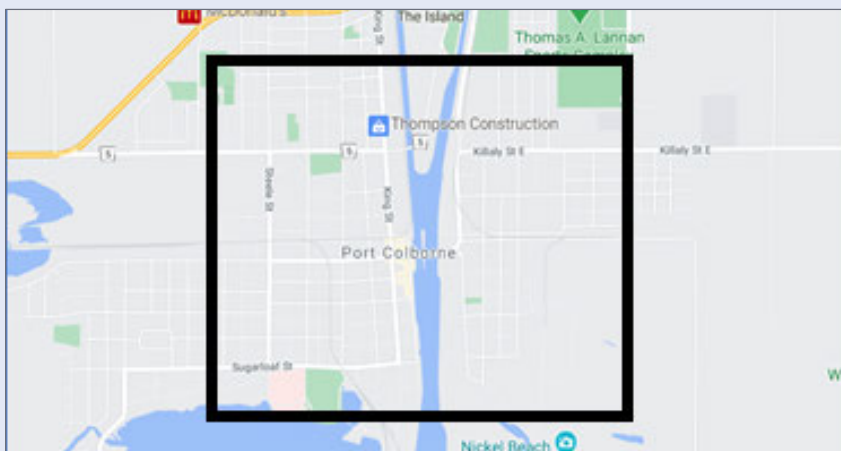
2. The west side of the Robin Hood Flour Mill in Port Colborne, Ontario, available from the internet or by visits to the site.



Using several features of Google Maps, I was able to find much more detailed information about the flour mill. The following step-by-step describes how I used the Global View feature within Google Maps to obtain information about this industrial structure.

STEP 1: FIND THE CITY

I went to maps.google.com and entered “Port Colborne, ON” into the search bar. The search function will take specific addresses, too, if you have them. The search produced a two-dimensional map view of Port Colborne, on the Lake Erie shoreline of the Niagara Peninsula, west of Buffalo [3].

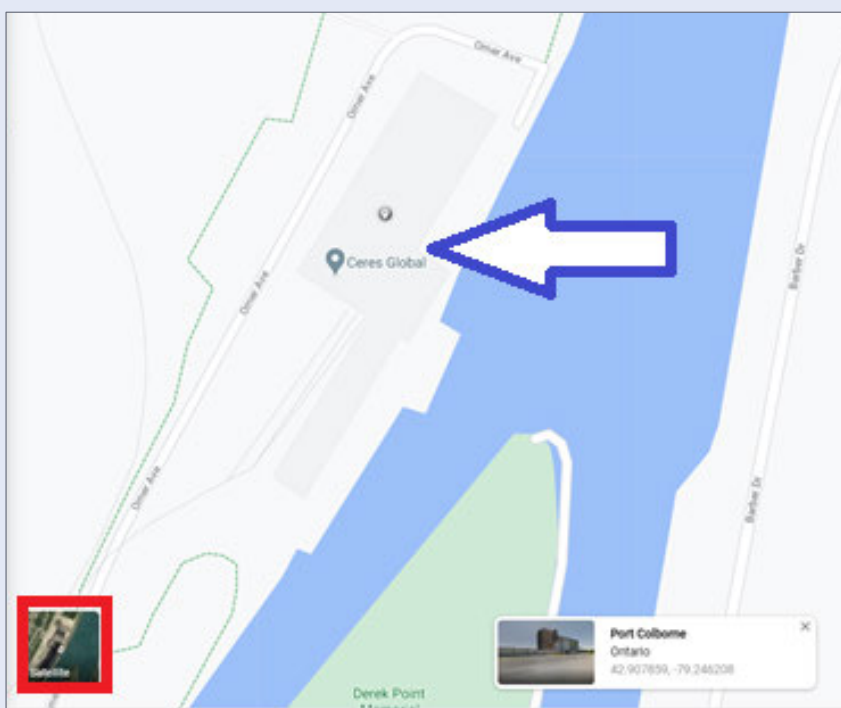


3. Google Maps view of Port Colborne, Ontario (highlighted by black box). The north-south waterway is the Welland Canal. The old Robin Hood Flour Mill (red arrow) is on the west side of the canal, even with the northern tip of the large island. *Google Maps image*

STEP 2: FIND THE SPECIFIC INDUSTRY

My next step was to locate the mill itself. I had visited the mill's location twice before, so I knew where it should be on the map.

I dragged the map on the screen to center it on the industry. I then zoomed-in to locate the specific site of the mill [4].



4. The map is focused on the site of the former Robin Hood Flour Mill on the west bank of the Welland Canal, north of Port Colborne. *Google Maps*



STEP 3: LOCK ONTO THE INDUSTRY AND GO TO A SATELLITE VIEW

The present owner of the Robin Hood Flour Mill is Ceres Global. I clicked on the balloon marker in the maps view to lock the map in position. This also brought up more information about Ceres Global, though I didn't need it for my purposes.

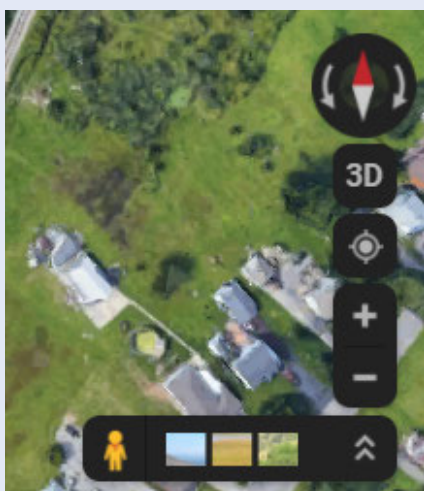
Once I was focused on the mill, I clicked on the satellite box on the lower-left corner of the map [4]. This changed the map into a satellite image, with a detailed view of the mill [5]. This same process will work to provide a satellite image for almost any place on earth. Rural areas and small towns do not have as much detailed satellite imagery for this feature.



5. With the click of the mouse, I had a satellite image of the site. Note the additional menu that appears in the lower-right corner.

STEP 4: SWITCH TO GLOBE VIEW

Along with the detailed satellite image was a new set of commands available in the lower-right corner [5]. I clicked on the “3D” button in the lower right menu [6]. The 2D satellite image immediately converted the satellite image in [5] to the “Globe View” 3D graphical image of the same area [7].



6. A closeup of the commands in the lower right corner of a Google satellite image.

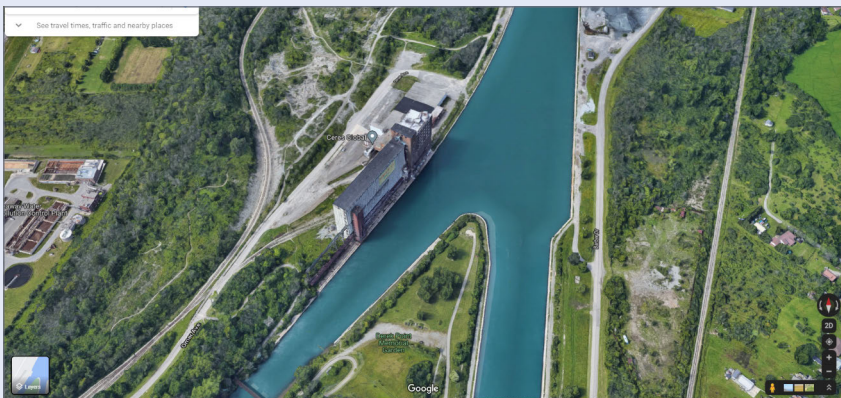
The menu [6] has some other features of possible interest. In the bottom left bar is a yellow figure icon. With the left mouse button, drag this icon to a street and release. If there is data available, this will open Street View. If there are no street data, the figure icon will snap back to the menu.

In the bottom right-hand corner are two chevrons. Click on these to open a ribbon of photos taken from many sources of this location.



“Globe View” uses advanced algorithms to combine multiple satellite photos to produce three dimensional graphical images of structures and communities.

The menu in the bottom right corner only slightly changes in Globe View [7], with the 3D option now replaced by 2D (clicking this allows a to return to the top-down satellite view).



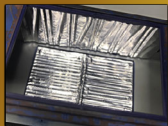
7. The “Globe View” creates a 3D-rendered image of the satellite view.



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STEP 6: NAVIGATE THE 3D VIEW

Hovering the cursor over the “compass” menu item will provide mouse and keyboard commands needed to rotate the 3D-rendered image. Alternately, clicking on the “3D” menu item will tilt the view to provide a 45-degree 3D perspective.

You can use the wheel on your mouse to zoom in and out of the 3D image. You can also drag the image by holding down the left mouse button as you move your mouse slowly across your mouse pad. This will allow you to examine the wider environment where the industry or business is located.

But here is the real magic and structure research benefit of the 3D Globe View perspective. Hold down the Ctrl key on your keyboard as you hold down the left-mouse button. Now, slowly drag the mouse diagonally or downward.

The image on your screen should begin to rotate, as if pulled by your cursor, from the somewhat two-dimension aerial view you started with in [7] into a three-dimension graphic of the structure [8]. With a little practice, you can manipulate your way around the image almost in a drone-like view. The compass in the lower-right corner will always show your orientation.

With practice using the controls in unison, I was able to learn many details about the former Robin Hood Flour mill that I could not from the perimeter view of the property, or by searching images, or even by viewing the 2D Google Map image.





8. This is one of the first images I obtained of the Robin Hood Flour mill with Globe View.

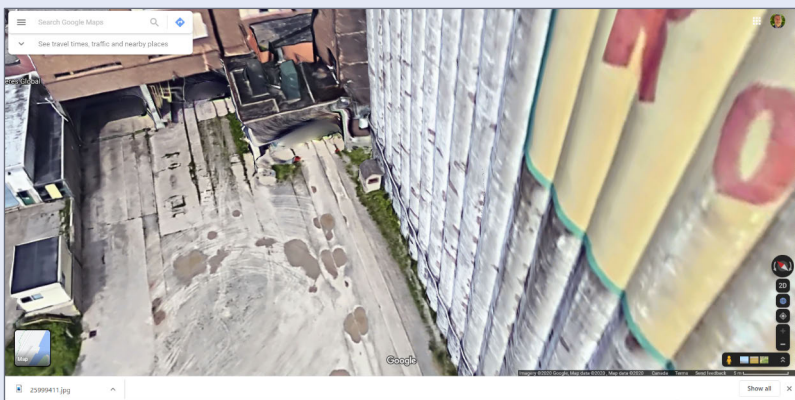
I discovered there had been five or six spurs at one time to accept hoppers from Robin Hood's south approach yard [9]. This was very different from the three spurs shown on the track plan in the Google Maps image [4] and the two spurs I had seen from the perimeter fence gate [2].

I rotated the building image 180° from the [10] perspective to view the building from the north [11]. Zooming in allowed me to confirm the tracks had terminated in the loading bays, as opposed to running through to a series of holding tracks to the north. I could not see any trace of existing or removed tracks on the north side of the building.

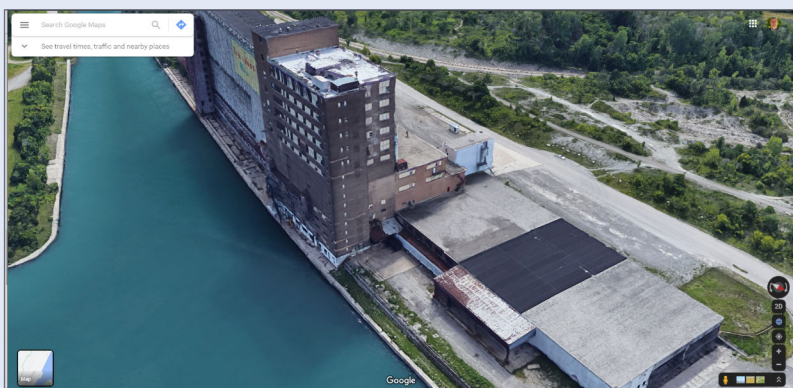


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STEP 6: NAVIGATE THE 3D VIEW *CONTINUED ...*



9. This angle from Globe View revealed a more detailed image of the mill's track plan than I could obtain from any other source.



10. The Robin Hood Flour mill seen from the north as if hovering over the Welland Canal.





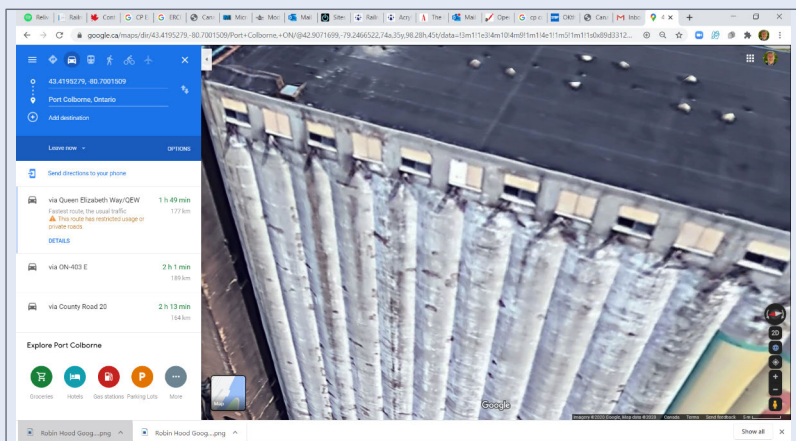
11. There were no tell-tale signs of tracks to the north of the loading bays. The concrete apron and truck wheel marks on the gravel lot to the right suggest this is a truck loading/unloading area.

The nature of the head structure on top of the silos and the roof top details were nearly impossible to see looking up at the building. All the available photographs on the internet had the same perspective [1, 2]. Rotating the structure in Globe View revealed those previously hidden details of silo head structure and dust collectors [12, 13].

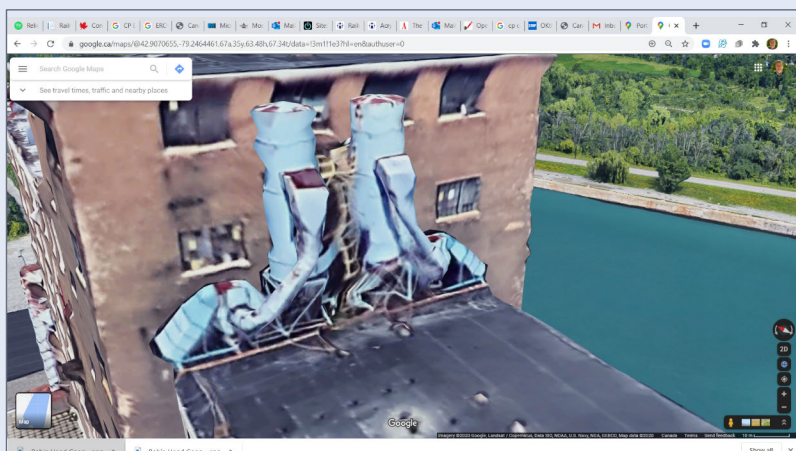


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STEP 6: NAVIGATE THE 3D VIEW *CONTINUED ...*



12. Details of the silo head structure and roof venting.



13. The dust catchers on the roof.



To create plans to scratchbuild the mill complex, I had several reference benchmarks to help me estimate the size of the structure's key components. I used standard door openings and typical industrial floor heights from the building to scale much of the complex. Fiddling with Globe View yielded some unexpected bonuses.

The Globe View has the drawback that it does not render some mobile objects. For example, hopper cars visible in the satellite image did not appear in the 3D Globe View. Using the hopper cars for scale, I was able to count six silo diameters per hopper car [14].



14. Hopper cars hidden in the shadows alongside the mill. The author used this reference, combined with the dimensions of a similar hopper car photographed at the mill [2], to scale the width of the silos.

STEP 6: NAVIGATE THE 3D VIEW *CONTINUED ...*

For a time, it seemed that the new owners were shipping most of the mill's flour by truck. On my third trip to the mill in September 2019, I photographed three covered hoppers waiting to be loaded [2]. I checked one of the hopper car numbers on www.rrpicturearchives.net, and found its length was 65 feet, 10 inches long. Using the "good enough" principle, I was able to extrapolate the width of the silos as shown in [14].

So, these satellite and Globe View images, combined with other measurements and scale calculations, gave me everything I needed to scratchbuild a structure 177 km (109 miles) away from my home.

MAPPING AN INTERNAL PLANT TRACK PLAN

Atlas Steel in Welland, Ontario was another former industrial customer of the TH&B. Like many steel mills, it is a sprawling complex. Atlas Steel was once one of the pre-eminent North American manufacturers of specialty steel, especially stainless steel.

In the 1960s, roughly 25% of the original plant was demolished as part of a major modernization program. Then, like so many integrated steel mills in the United States and Canada, Atlas Steel fell on hard times following the 1980-1981 recession. Since 1989, ownership of what was then Atlas Steels Limited changed hands several times.

A small portion of the plant complex remains active today under the name Valbruna ASW. The firm is now a manufacturer of carbon, alloy and stainless steel in cast billet and ingot products of various dimensions. Valbruna ASW is classified as a mini mill.

I was able to obtain only site overview photographs online, including an aerial view from the 1960s [15]. I was especially interested in the



rails near the rear of the aerial photo, and an aerial photo of the building itself did not show anything useful [16]. A visit to the site in 2017 produced few helpful photographs because of fencing, security gates, adjacent properties and railway rights of way.

I had a friend who was a former Atlas steelworker. He could identify the foreground buildings and their functions, but he had no knowledge of the track arrangements or rail traffic, and



15. An aerial view of Atlas Steel in the 1960s.

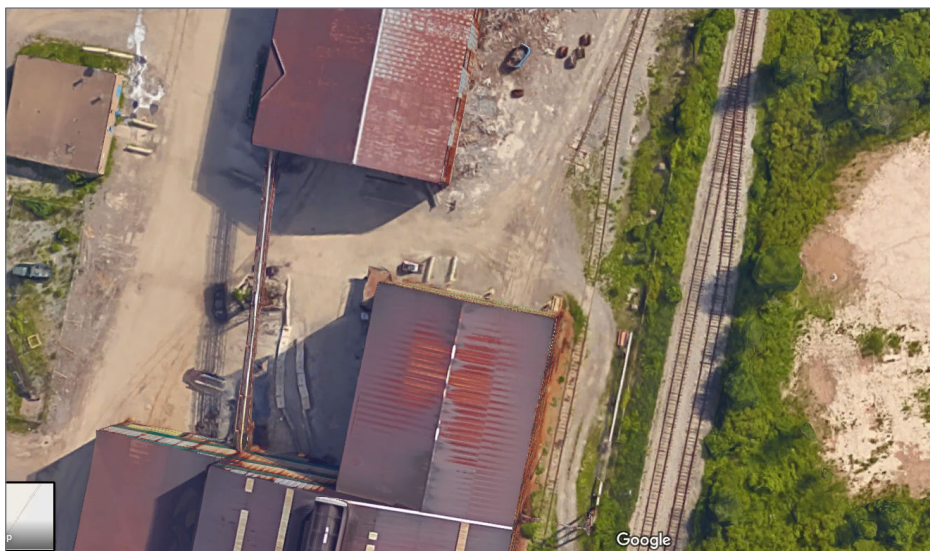


16. The carbon electrode furnace was the last major production facility added to the plant.

these were not clear in the photo. The Welland Public Library photographic archive had mainly newspaper clippings and in-plant publicity photos.

Searching for the site with Google's Globe View proved more useful in finding the information I was after, including the arrangement of tracks between the buildings. I could make out most of the sidings and spurs [17].

The satellite image showed what appeared to be several tracks that had been abandoned or fallen into disrepair. When compared to the other in-plant tracks to the right of the melt shop, the left-side tracks are all but buried in the dirt. In the summer of 2020, I finally found an old photograph of the melt shop taken from the south that confirmed the original track configuration [18].



17. A Google Globe View image of the carbon electrode furnace (center bottom) and surrounding buildings. The tracks on the far right are the CN line between Thorold and Welland, ON and a siding. I could make out several in-plant spurs in various states of repair, too.



Not only did Globe View prove helpful in finding the Atlas plant's track plan, but it showed many ideas for modeling as well. The weathering patterns of the building were evident. Zooming and moving the image around the plant, I could also see rail traffic, including gondolas with ingots, industrial switchers, mill cars, and even cars for scrap showed up in the images as well.

All the figures which accompany this article are screen shots of a dynamic, seamless 3D-rendered Google graphic. This technology allows modelers to obtain an almost infinite series of vantage points for any structure or location they choose to research. In many ways, these images are superior to aerial photography, because you can zoom-in anywhere and from any angle you choose, without sacrificing resolution.



18. This 1970s photo of the south face of the carbon electrode furnace building confirmed that the faint set of tracks I found in the Google Globe View image [17] indeed ran north both into the furnace and past the building toward the scrap yard.



19. This lower-angle Globe View screen capture of the melt shop shows the weathering of this and other buildings, roof details, and additional details such as the ingots in gondolas spotted alongside the furnace.



20. This zoomed photo of the far-right portion of [19] reveals a plant industrial switcher with idler cars and another piece of Valbruna ASW rolling stock on the siding south of the carbon electrode melt shop. On a track beside the switcher, ingot molds sit on another mill rail car.



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21. A view from the north end of the carbon electrode furnace. To the right is the CNR main line and a passing and set-out siding. In the foreground center is a switcher, likely from the short line Trillium Railway, which has served Valbruna ASW for the past 20 years. Some of the scrap destined for the furnace is also visible.



22. The scrap yard, just north of the furnace building, seen from the north. Notice the arrangement of tracks with scrap hoppers, the sorted piles of scrap, and the parking area for trucks.

For someone like me who is modeling the prototype, this level of detail is extremely helpful. If there is something I need to check, it is far easier for me to access Google Globe View in my home than to drive for two hours to Welland. Give the Globe View feature a try to research an entire community, a structure, or industry you are modeling. There's a lot to like about such a versatile, free service from Google. ✓



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23. Using this detailed closeup of the former Atlas Steel “north plant” complex, I could ask a former Atlas Steel employee to identify the various buildings’ functions in the 1970s. I could also find, follow, and map the internal plant rail lines that once shuttled ingots and steel around the facilities. Although trucks have replaced trains for these tasks, the remnants remain.



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J. Regier

EVEN MORE POWERFUL TOOLS FROM GOOGLE

Google offers a suite of tools to help model rail-roaders research prototype locations. The Street View function offers street-level photography along most public roads. Meanwhile, you can also find backdated satellite imagery and aerial photos to capture many different eras.

Google Earth provides all the 3D-rendered, navigable imagery of Google Maps' Globe View, but includes even more powerful tools such as rulers, place marks, polygons, and paths to help you precisely determine a building's dimensions.

Google's 3D graphics availability has limitations, especially when it comes to rural, sparsely populated areas. Whereas satellite imagery is available for just about any location on earth, 3D-rendered images seem to be limited to more populated areas for the time being.

PAUL HURLY



Paul got started in model building when he was seven years old, and he received a Lionel train set when he was nine.

Paul is now weathering and ballasting the track on his second HO layout of the Toronto, Hamilton & Buffalo Railway, after being away from the hobby for about 12 years. It is a two-deck configuration with roughly 140 feet of mainline track, two staging yards with a total of nine tracks, and a 48"-diameter helix. The layout is designed for operations with lots of heavy industrial switching. He uses JMRI to generate switch lists and manifests.

Paul lives west of Waterloo, Ontario having retired in 2020. Paul and his wife have four children, and six grandchildren. ■

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SAVVY MODELER *Online*



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Model Railroad Hobbyist | September 2021



Cheapest HO Loco on Amazon - Good or Crap?

Youtuber **SMT Mainline** went looking for the cheapest HO loco available online, and found this Walther's Trainline EMD GP15-1 for less than \$70. It comes in 20 different paint schemes (do note, some show as no longer available). SMT put the loco through its paces and even cracked the shell to take a closer look at the mechanism.

Watch this 11-minute video to see if this loco is a good deal or complete crap! ☒



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column



Model Railroad Hobbyist | September 2021

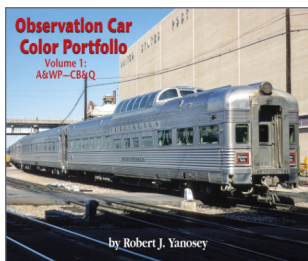
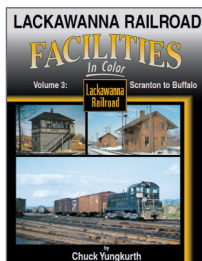
RICHARD BALE AND JEFF SHULTZ
REPORT THE LATEST HOBBY
INDUSTRY NEWS ...



INDUSTRY NEWS

Duncan McRee, owner of **Tam Valley Depot**, has announced that he has been diagnosed with Stage 4 lung cancer and is retiring to work on his layout. Mono, Dual, and Hex Frog Juicers, Circuit Breakers, and DCC Boosters will continue to be made by family members, all other products will be discontinued. More information can be found at: tamvalleydepot.com.

NEW PRODUCTS FOR ALL SCALES



Morning Sun Books has released Volume 3 of *Lackawanna Railroad Facilities: Scranton to Buffalo*. In this hard-cover book, author Chuck Yungkurth takes readers on an all-color tour of

DL&W's stations, towers, and other buildings in Scranton, Binghamton, Corning, Bloomsburg, Syracuse, and Utica.

THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

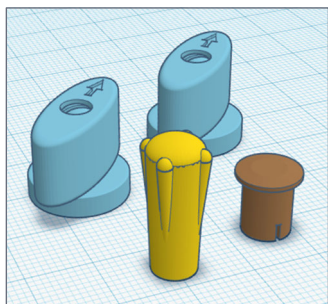


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Observation Car Color Portfolio, Volume 1, is scheduled for release by Morning Sun Books this month. The 96-page soft-cover book by Robert Yanosey presents tail end cars with the reporting marks of A&WP, AA, AC, AFT, AMT, ARR, AT&SF, B&LE, B&M, B&O, BAR, BCH, BCR, BN, C&EI, C&IM, C&NW, C&O, CAGY, and CB&Q. For additional information contact a dealer or visit: www.morningsunbooks.com



Scotty's Model Shop sells a variety of 3D printed items including knob control upgrades for the ProtoThrottle. The upgrades include a reverser handle, plunger bell button, and oval light switches based on a prototypical EMD design. For additional information visit: www.scottysmodelshop.com

0 SCALE PRODUCT NEWS

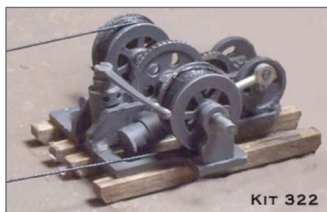


3rd Rail Division of Sunset Models is

currently booking reservations for an O scale Chesapeake and Ohio class H-8 2-6-6-6 steam locomotive. The hand-crafted museum-quality brass model will faithfully replicate the 113' prototype built by Lima Locomotive Works beginning in 1941.

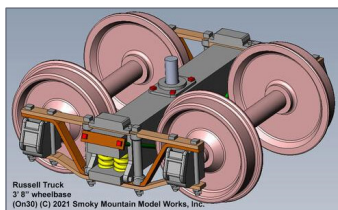
Features of the limited edition model – only 50 will be built, evenly split between two and three rail – include operating reverse linkage, a fully detailed backhead with back-lighted dials, operating sand and turret hatches, and positionable cab vents, doors and windows. The tender trucks and all drivers will be sprung. Operating/sound systems include ERR CRUISE in

three-rail TMCC, and ESU LokSound 5L DC/DCC in two-rail. For additional information contact an authorized dealer or visit: www.3rdrail.com

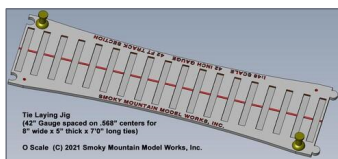


Crow River offers a wide range of O scale details including a cast pewter kit for this steam-powered slewing engine. A steam slewing engine, aka swinger engine, is used in conjunction with the steam hoisting equipment. When used with a bullwheel it provides a means of rotating, or slewing a derrick. The kit includes scale stripwood for the skid. For additional information visit:

www.crowriverproducts.com



Smoky Mountain Model Works has developed an On3 Russell arch bar truck with a 3' 8" wheelbase. The truck is a 3D SLA resin printed item that is ready for painting and insertion of Kadee 24" On30 wheelsets. The truck will soon be available separately as well as a component in a kit for Argent Lumber log cars.



Also new from Smoky Mountain Model Works is a tie jig for building 42" gauge track in O scale. Although designed for rail 42' long, the jig can be used with rails of any length. For additional information visit:

smokymountainmodelworks.com

HO SCALE PRODUCT NEWS

The latest HO scale freight car kits from **Accurail** include a 3-car

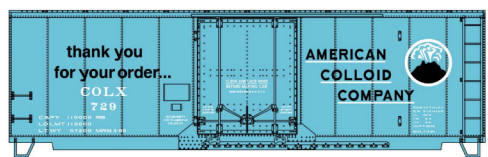


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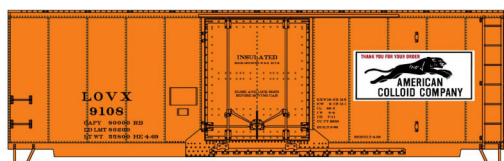
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set of 40' insulated steel boxcars decorated for American Colloid

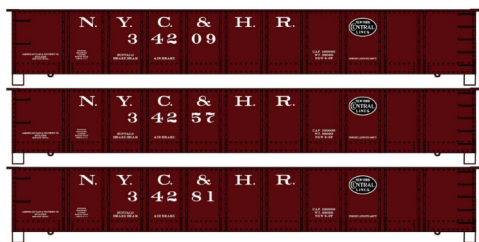


Company. A powder blue COLX car represents a prototype built in April 1950. Two other cars in the

3-car set are painted orange with LOVX reporting marks. They represent cars built in early 1950 that went through a rebuilding program in the late 1960s. All three cars in the set have running boards, full height ladders, and 8' Youngstown plug doors.

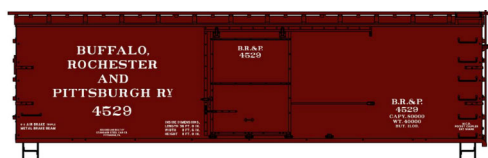


Also new from Accurail is a Northern Pacific twin-bay ACF Center Flow covered hopper. The HO scale kit is based on a 2970 cu. ft. prototype built by American Car & Foundry in November 1967.



A 3-car set of 41' steel gondolas decorated for the New York Central & Hudson River Railroad are available as kits from Accurail. The HO scale models represent a series of durable

prototype gondolas built by ACF in 1907.



Completing Accurail's latest release is a kit for an HO scale 36' double-sheathed wood boxcar decorated for Buffalo, Rochester &

Pittsburgh. The model follows a prototype Standard Steel Car built in 1909 with a steel roof, wood ends, a vertical brake shaft,

National sliding doors, and a fishbelly underframe.

All Accurail HO car kits include Accumate couplers and appropriate trucks with Delrin plastic wheelsets. For additional information contact a dealer or visit:

www.accurail.com



Athearn's October 2022 production schedule includes a Genesis MP15AC road switcher.

The HO scale model replicates the 1500 hp prototype built by EMD in the late 1970s. Features include operating front and rear ditch lights, a detailed cab interior, an upgraded motor, Tsunami2 Sound, and numerous road and road number specific details.



MP15AC models decorated for Milwaukee Road will have an operating Stratolight and Leslie RS3L horn. The Lake State Railroad MP15AC will have both front and rear MU holders.



Athearn will offer Long Island Railroad MP15AC units, which operated from Manhattan to New York's Suffolk County, in two prototypically correct paint schemes.



Athearn's CSX version of the MP15AC will have Timken bearing caps, and an RV-style air conditioner. Additional road names

include Union Pacific.



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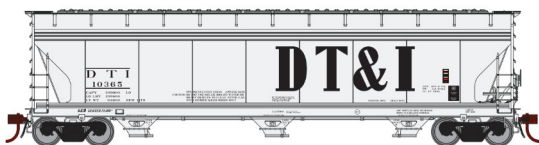
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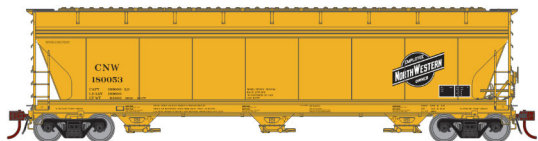
Athearn has included a rerun of its Genesis HO scale ACF 4600 Center Flow covered hopper car

in its October 2022 production schedule.



Details on the triple-bay hopper will include photo-etched metal roofwalks, separately applied wire grab irons

and stirrup steps, detailed discharge outlets, McHenry knuckle couplers, and 100-ton trucks with 36" machined metal wheels with rotating bearing caps.



Road names and the era they represent include Gulf, Mobile & Ohio (1966), Grand

Trunk Western (1973), and Detroit, Toledo & Ironton (1973 white scheme).



Additional roads will be Chicago & North Western (1977), Detroit, Toledo &

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R. Bale

UNION PACIFIC CHALLENGER

The Union Pacific's search for a powerful freight locomotive that could handle the mountain grades of Utah and Wyoming at high speed without the need of helpers was finally fulfilled in 1936 with the development of the 4-6-6-4 Challenger. Unlike a Mallet compound locomotive that recycles the exhaust of one set of high-pressure cylinders into larger low-pressure cylinders, the Challenger 4-6-6-4s built by the American Locomotive Company were simple articulated locomotives with both front and rear engines using high-pressure steam directly from the boiler. Although intended for freight service, the Challengers were built with 69" drivers, a large size usually reserved for high-speed passenger locomotives. While unheard of on other railroads, operating articulated steam locomotives at speeds at 60 to 80 mph was routine on the Union Pacific. Seemingly never satisfied, UP teamed with Alco designers in 1941 to develop a new and improved 4-6-6-4 Challenger. The result was a series of 65 Challengers built in three separate groups during World War II.

Ironton (1979 brown scheme), AEX-The Andersons Inc. (late 1980s, Primed for Grime), and ACF Leasing (late 1990s).



Athearn is upgrading its Genesis model of the Union Pacific 4-6-6-4 Challenger steam locomotive to represent modernized prototypes built by Alco during World War II. Upgrades include LED headlights, dual cube speakers, and a lighted firebox flicker effect. Scheduled for release in October 2022, road numbers will include No. 3985 (oil burning modern

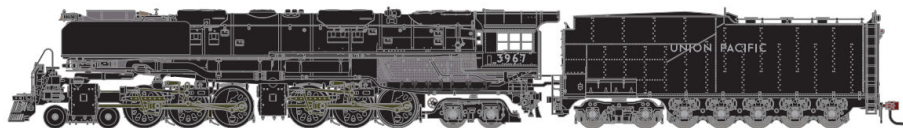


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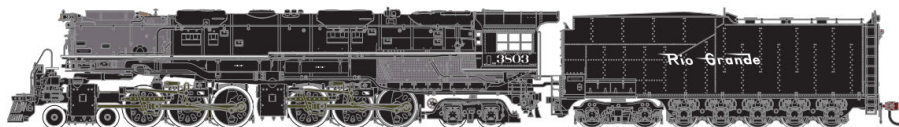
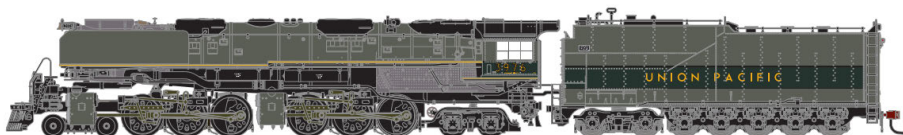
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excursion version), and No. 3933 (1940s coal burner with dual smoke stacks).



The 2022 release will include No. 3967 (smoke lifters, coal bunker, dual smoke stacks), No. 3997 (dual smoke stack, extensions on coal bunker), and No. 3976 (two-tone grey, yellow lettering and striping, oil tender).

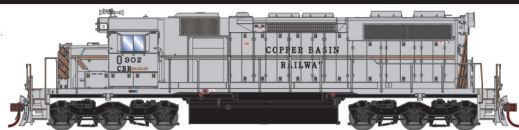


Athearn has included Denver & Rio Grande Western No. 3803 (dual smoke stacks, coal tender) in the October 2022 release. All of the Genesis Challenger locomotives will be equipped with a tender-mounted DCC decoder with SoundTraxx Tsunami2 sound.



In the mid-1980's Santa Fe upgraded its SD39 fleet with rebuilt engines, and new controls and wiring.

Prototype upgrades on Athearn's RTR version include a relocated headlight, tall cab-mounted horn, antenna with stand, and front/rear slug MU boxes. Both Prime and Vapor air conditioners are included with the HO scale model which is scheduled for release in October 2022.



The October 2022 release includes a Copper Basin SD39. The CBR models are based on ex-

Southern Pacific units with large front and rear plows, a rear brake wheel, P-3 horns, and FARR grilles.



Additional road names for Athearn's HO scale SD39 include Dakota & Iowa Railway and a

Guilford unit that represents the prototype before they were painted into Guilford grey and orange scheme.



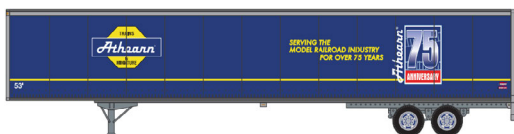
Sound-equipped versions of Athearn's SD39 will have an onboard Econami sound decoder

by Soundtraxx with sound that functions in both DC and DCC modes. Full DCC features function when operated in DCC mode. Non-sound versions will have a 21-pin NEM DCC plug.



Athearn has included a 53' Wabash Duraplate trailer in its October 2022 production

schedule. Features of the 1:87 scale model include separate etched metal hazmat placards (where applicable), six-piece landing gear assembly, sliding tandem, and rubber tires.



Decorating schemes include Wonder Bread, Bay Logistics, Bison Transport, Millis

Transfer, Wills Transport, and three Athearn 75th Anniversary schemes.



New **Roundhouse** brand



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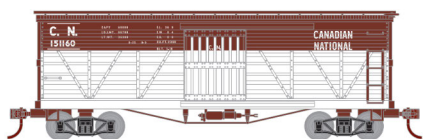
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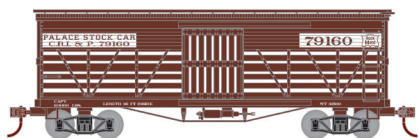
models coming from Athearn in October 2022 include a 50' hi-cube boxcar with waffle sides.



Three road numbers each will be available for Chesapeake & Ohio, Illinois Central, Seaboard Coast Line, Guilford (Maine Central), Southern Railway of British Columbia, and TTX. The HO scale model will be fitted with McHenry knuckle couplers and appropriate trucks with machined metal wheels.



A 36' wood stock car with a truss-rod underframe and arch bar trucks is coming from Roundhouse in 2022.



Road names scheduled for this release will be Canada Cattle Car Co., Canadian National, Union Pacific, SSW-Cotton Belt, Rock Island, Santa Fe, and St. Louis & Iron Mountain.

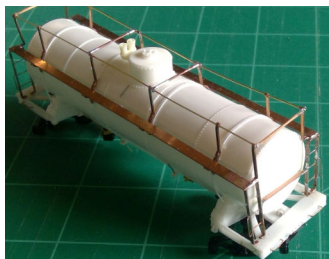


Athearn's October 2022 production schedule includes a Roundhouse wood 36' truss-rod era caboose. The HO scale model will feature clear window glazing, McHenry knuckle couplers, and wire truss-rods. Trucks with 33" machined metal wheels will be either arch bar or Bettendorf-style per the road name being modeled.

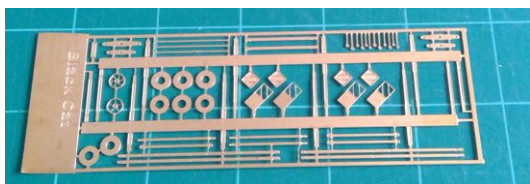


Road names will be Burlington Northern, Grand Trunk & Western, Union Pacific, Soo Line, Western Pacific, and Elgin, Joliet & Eastern. For additional

information on Athearn or Roundhouse products contact a dealer or visit www.athearn.com



In addition to lettering systems, **Black Cat Decals** also offers a variety of etched metal detail parts. Available now is an etched-metal kit for the high walkway on an HO scale Funaro & Camerlengo ACF tank car kit #8180.



Etched from phosphor-bronze, the kit includes the walkway/stanchions/supports, the end ladders which require 0.010" rungs, hazardous goods



R. Bale

E-UNIT DIESELS

E-units were a line of passenger train diesel locomotives built by General Motors Electro Motive Division (EMD), and its predecessor the Electro-Motive Corporation (EMC), from 1937 to late 1963. The name E-units originally stood for eighteen hundred horsepower, but the letter was kept for later models of higher power. E-units had an A1A-A1A wheel arrangement. They were used individually for shorter trains, while longer trains needed multiple locomotive units. EMD offered the diesel units as A-units with cabs and as cabless B-units. B-units had hostler controls but were not suitable for road use. Multiple units could be linked together and controlled by the leading A-unit. This was revolutionary in the late 1930s-early 1940s as diesels demonstrated their economy, versatility, and reliability over steam power.



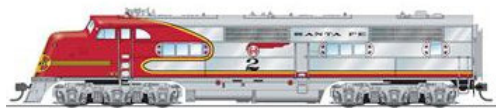
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placard, brake wheels, and shim washers for trucks. The modeler must supply the 0.010" wire for the ladder rungs, and 0.019" wire for the handrail. For additional information visit:

www.blackcatdecals.com



Broadway Limited has announced plans to release an HO scale version of

EMD's E series diesel locomotives in December. The ATSF E units in this production run will be available in two detail arrangements (pre-1946 and post-war), and three Warbonnet paint schemes – a 1940 version with the as-delivered red-orange color, a pre-1946 version with the traditional red, and a post-war version.



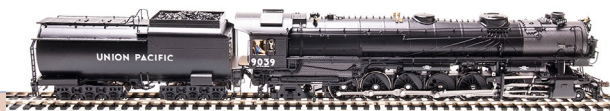
Since the E -units EMD built for Baltimore & Ohio and Gulf, Mobile & Ohio

were similar to the ATSF units, Broadway Limited has included them in the December release. The BLI models feature an ABS molded body on a diecast metal chassis. Details include etched metal grilles and individually applied grab irons, handrails, horn, bell, and windshield wipers.



The locomotives will be equipped with Paragon4 Rolling Thunder sound

and dual model DC and DCC control system. Features include efficient back EMF motor control, switcher mode for precise low speed control, built-in capacitor pack to ensure smooth operation over less-than-perfect track, individual control of all lights, adjustable horn for various whistle lengths and patterns, and individually adjustable sound volumes for each sound effect.



Broadway Limited

Imports is scheduled to release three versions of a Union Pacific 4-12-2 steam locomotive in December. The HO scale models will be detailed as the three-cylinder prototypes appeared late in their active life. This includes Boxpok main drivers, an enlarged stack, six external Brewster sand traps, and modernized air pump plumbing.

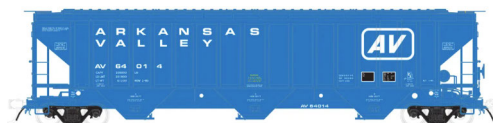


The model is of hybrid design with a brass tender and locomotive superstructure mounted on a diecast metal chassis. Details on the 18,000

gallon cylindrical tender include a stoker motor housing and crew grip box. Variations in this release include UP-3 (built in 1928) with standard cab, UP-4 (built 1929) with E-2 Nine cab, and UP-5 (built 1930) lettered for Union Pacific with some units sub-lettered for Oregon Short Line.

All versions will be equipped with Broadway Limited's Paragon4 DC/DCC sound & control system featuring synchronized puffing smoke with chuffing exhaust sound. A 22" minimum track radius is required for reliable operation. For additional information contact a dealer or visit:

www.broadway-limited.com



Home Shops has announced plans to release upscale models decorated for well-known model railroads.



The initial release is an HO scale Tangent PS-4750 covered hopper decorated for Arkansas Valley, Copper State Railway, Kansas

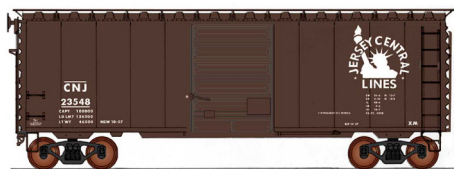


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Pacific, Gulf & Ship Island, Michigan Interstate, Texas & Great Northern, and West Falls Northern. For details visit: homeshops.net

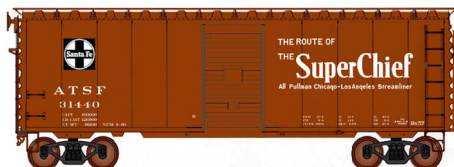


InterMountain is booking reservations thru September 30, 2021 for HO scale 40' PS-1 boxcars. If sufficient reservations are not received by the 30th, the project will be put on hold or possibly cancelled.



If the project goes into production, road names include MKT, Norfolk Western, Mississippi Central, Port Huron & Detroit, Central

of New Jersey, Ann Arbor, Lake Superior & Ishpeming, Louisville & Nashville, Frisco, and Columbus & Greenville.



The scheduled includes four Santa Fe class Bx57 boxcars displaying Grand Canyon, El Capitan, Chief, and Super Chief.



InterMountain is also taking reservations through October 31, for an HO scale 42' flatcar with fish belly side sills.



Popular road names being rerun with new road numbers include New York Central, Denver & Rio Grande Western, Chesapeake & Ohio, and Chicago & North Western.



New road names are Rock Island, Frisco, Boston & Maine, and Duluth, South Shore & Atlantic. All InterMountain HO scale models mentioned in this report will have metal

knuckle couplers and appropriate trucks with machined metal wheels. For additional information contact a dealer or visit: www.intermountain-railway.com



The newest release from **Kadee** is a 40' PS-1 boxcar decorated for Akron, Canton & Youngstown. The HO scale model reflects a prototype car built by Pullman-Standard in

1947 for New Haven with a seven panel Superior door. ACY later acquired the car and repainted it in the road's distinctive yellow scheme. The ready-to-run model comes with Kadee couplers and Kadee Bettendorf-style solid-bearing trucks with metal wheels. For additional information contact a dealer or visit: www.kadee.com



KatoUSA has added five new cars to its lineup of HO scale Amtrak Phase VI Superliner cars. The new Phase VI cars include a coach, diner, sleeper, coach/baggage, and lounge with upper windows.



Kato's HO scale Superliner cars feature prototypical fluting on the exterior, full interior detailing, flush tinted windows, authentic trucks with rotating bearing caps

and shock absorber details. Optional lighting kits are available. Optional Kinematic couplers allow prototypical close coupling while still navigating tight track radii. For additional information contact a dealer or visit: www.katousa.com



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Prairie Shadows Model Railway Co. has announced the company's first HO scale car model, the Trenton Works 5250 cu. ft. covered hopper. Built in several lots between 1995 and 1996, over 12 different variations of the 5250 exist, with five different body styles. Variations include different cage ladders, rivet patterns, reinforcement bracket placement, and three different outlet gates. The model will feature see-through etched metal walkways, and Kadee couplers. Both straight back and sway back Barber S2 trucks will include 36" machined metal wheels. Road names in the first release include



R. Bale

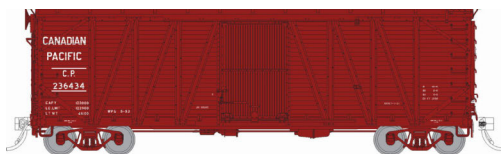
CANADIAN USRA CLONE BOXCARS

In 1920 and 1921 the Canadian Pacific acquired 3,500 40' boxcars that were closely based on the standard USRA single-sheathed design. The CP cars were given a 7/8 Murphy corrugated steel end which differed from the 5/5/5 USRA design. Other less-obvious variants were the clamps located along the base of each side. Like the USRA original, the Canadian clones were built with 5" tongue & groove siding and utilized an underframe composed of two 12" steel channels. Unlike the originals, the CP ordered the clones built with grain hoppers in the floor, however, these were removed when the cars were rebuilt in the 1930s. During rebuilding the Canadian cars also had the original vertical shaft hand brake replaced with Ajax power hand brakes. Copying the USRA design was a sound idea with nearly 2,500 of the CP clones still in service in 1960. Many were converted to MOW service with a few lasting as late as 1983.

CN (as delivered), Saskatchewan Lease (Pool), First Union Rail (FURX), Prairie Malt Limited, Northwest Oklahoma/NOKL (ex-Pool), and Norfolk Southern (ex-Pool). For more information visit the website at: www.prairieshadows.com.

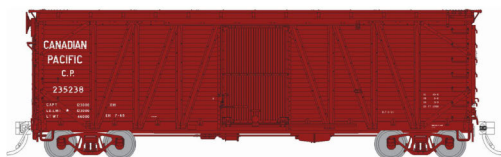


A major new project underway at **Rapido Trains** is the development of an all-new Canadian Pacific clone boxcar based on the proven USRA single-sheathed design.



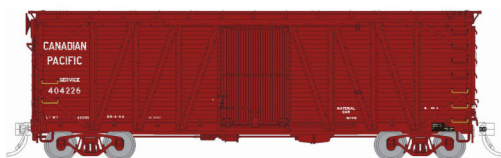
Rapido's version of the USRA clones will have the correct 7/8 Murphy ends,

Ajax power hand brake, the siding retaining clamps and sill reinforcements added under the doors on many of the CP cars.



The ready-to-run model will be equipped with Rapido's semi-scale couplers

and correct Symington Bettendorf-style trucks with Simplex bolsters and blackened machined metal wheels.



Decorating schemes scheduled for the HO scale model include Canadian

Pacific (early), Canadian Pacific (post 1960 scheme), and Canadian Pacific (service scheme). Orders are being booked now with a release date TBA.



Rapido has



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announced plans to re-run its HO scale 52' 6" mill gondola. The authentically detailed model closely follows a prototype built continuously between 1943 and the late 1950s for several Canadian railroads.



Features on the accurately detailed model include delicate Z-shaped bracing or hat channel ribs where appropriate, separate wire grab irons, positionable drop ends, and ratchet style hand brakes. The diecast metal floor features full underbody detail. Interior details include rivets and tie-downs.



Three different 70-ton trucks (solid-bearing, roller-bearing, and solid-bearing side frames with roller-bearing inserts) are all offered as appropriate to the road name being modeled. Each type includes machined metal wheels. The models come with metal Macdonald-Cartier knuckle couplers.



Six new road numbers will be available for Algoma Central, BC Rail (Dogwood scheme), Canadian National, Canadian National (12" lettering), CN Rail (wet noodle), Canadian Pacific, CP Rail (action red), Ontario Northern (Progressive scheme), Ontario Northern (Chevron scheme), Pacific Great Eastern, and Toronto, and Hamilton & Buffalo. Unlettered models will be available with both brown and black bodies.



In an ongoing effort to produce prototypically accurate models, Rapido has announced that its initial release of USRA single-sheathed

boxcars decorated for Baltimore & Ohio and Pennsylvania Railroad will have Hutchins roofs.

No other changes including details, decorating schemes, and road numbers, will be made to the PRR and B&O cars. All other



road names in the initial release will have Murphy metal roofs as originally announced. For

additional information on all Rapido products contact a dealer or visit: rapido-trains.com



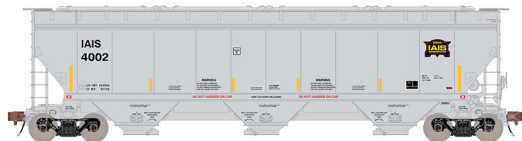
ScaleTrains.com is booking advance orders for an HO scale 58' Gunderson-

GIMSA/Concarril 5188 cu. ft. triple-bay covered hopper. Like the prototype, the Rivet Counter model has trough-style loading hatches and numerous road-specific details.



Models decorated for AOK, GACX and KCS will have fiberglass ATP Quantum Plus roof hatches, Miner

Autolock II gravity/pneumatic outlet gates, and roping eyes on the underside of the car bolster. Cars decorated for BNSF and STLX (ex-BNSF) are similar to the AOK group except they will have metal rather than fiberglass roof hatches.



Variable details on Union Pacific, CMO (Building America slogan with UP shield), and Iowa Interstate cars are the

same as the AOK group except the roping eyes are located on



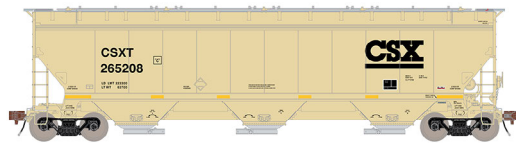
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the stub sill. CSX cars have the same details as BNSF versions except they are equipped with ATP 30x30 outlet gates.

Features on all of ScaleTrains.com's Rivet Counter series 5188 car include see-through photo-etched stainless-steel metal



accurate brake and underbody details, and Type E lower shelf knuckle couplers. The trucks will be ASF Ride Control with 33" machined metal wheels and rotating bearing caps. Availability is planned for June 2022. For additional information visit:

www.scaletrains.com.

crossover platforms and roofwalks, metal grab irons, photo-etched metal stirrup steps,



auto parts cars built by Greenville during the 1960s.

Tangent has made another release of its 86' Greenville double plug-door boxcars. The well-executed model is an accurate HO scale replica of the prototype



combinations, and three underframe styles which incorporate Center-of-Car Cushioning and End-Of-Car Cushioning options.

Tangent offers seven versions of the car including three body variations, four different brake arrangements, four different draft gear



All versions come with Kadee couplers and

machined metal wheelsets. Several of the paint schemes display unpainted aluminum doors.



Road names include Baltimore & Ohio and Missouri Pacific which both feature Apex crossovers, Barber S-2-C 100-ton trucks with 36"

wheels and rotating Timken roller bearing caps.



Erie-Lackawanna and Conrail versions have 70-ton trucks with rotating Timken roller-bearing caps.



Additional road names available now include Chicago, Burlington & Quincy; Baltimore & Ohio, Penn Central, and a 1965 Wabash car with

70-ton trucks fitted with 33" wheels.



Reruns with new road numbers include Southern Railway, and Detroit, Toledo & Ironton. Due to the car's size, Tangent

recommends track curves of 24" or larger for these models. For additional information visit: www.tangentscalemodels.com



Walthers plans to release a Trainman



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series 72' centerbeam flatcar this month. The HO scale model is based on a prototype developed in the 1980s. Models with a braced centerbeam will be available decorated for Burlington Northern, Columbia & Cowlitz Railway, CSX, Southern Railway, and Tomahawk Railway.



The earlier style centerbeam with oval opera window openings will be available decorated for Union Pacific.



Walthers is quoting an October release date for an EMD SD50 diesel locomotive. Features on

the Mainline series model include upgraded power trucks with HT-C sideframes, see-through steps and dynamic brake air intake, anti-slip detail on walkways, and ESU LokSound dual mode system for DC or DCC operation.



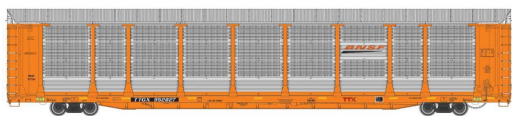
The molded plastic body will have drill starter points to simplify the installation of grab irons

sold separately in a diesel detail kit (item 910-256).



Road names will be Denver & Rio Grande Western, Kansas City Southern, Norfolk

Southern, and Reading, Blue Mountain & Northern.



Also coming from Walther in October is a new production run of 89' enclosed bi-level

auto carriers. The HO scale model will have factory-installed grab irons, ladders and brake equipment. Road name/flatcar combinations available in this run will be BNSF/TTGX, Canadian National/ TTGX, CSX /TTGX, Ferromex/TTGX, Norfolk Southern/TTGX, and Union Pacific/ TTGX. Due to the excessive length of the model a minimum track radius of 24" is suggested.



Walthers has scheduled an October release for an eight-wheel wood caboose based on a Duluth, Missabe & Iron Range class G2 car.



The Proto series model will have over 30 factory applied details including separate wire grab irons, running boards, brake detail and interior details. The ready-to-run

model will come with appropriate trucks with 33" machined metal wheels.



Road names will be Duluth, South Shore & Atlantic; Burlington Northern, Chesapeake & Ohio, Great Northern, New York Central, Northern Pacific, and Soo Line.



Available in late November is a Mainline series 50' ACF exterior post boxcar.

Introduced into service in 1974, the plate B car was used for general freight throughout North America. It features 33" metal wheelsets and Proto MAX metal knuckle couplers. Road names include Railbox (pictured), Green Bay & Western, Railbox (BN patch), Richmond, Fredericksburg & Potomac; Southern, and Wisconsin Central. For additional information contact a dealer or visit:

www.walthers.com



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N SCALE PRODUCT NEWS



Athearn has announced plans to release five N scale

versions of a Union Pacific 4-6-6-4 Challenger steam locomotive in October 2022. The model will represent modernized prototypes built by Alco during World War II. (See the sidebar in the H0 scale report for prototype information).

Features of the N scale locomotive include LED headlights and indicator number boards, cab interior details with boiler backhead with printed gauges, individually applied piping, valves, and generators, operating eccentric cranks on both sides, and pivoting front and rear engines for negotiating tight radius curves.



UP road numbers will include No. 3985 (oil burning

modern excursion version), and No. 3933 (1940s coal burner with dual smoke stacks).



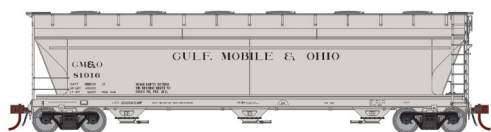
The 2022 release will include No.

3967 (smoke lifters, coal bunker, dual smoke stacks), No. 3997 (dual smoke stack, extensions on coal bunker), and No. 3976 (two-tone grey, yellow lettering and striping, oil tender).



Athearn has included Denver & Rio Grande Western No. 3803

(dual smoke stacks, coal tender) in the October 2022 release. DCC models will be equipped with a tender-mounted decoder with SoundTraxx Tsunami2 sound. DC models will be DCC-ready with a Quick Plug for installing an after-market decoder.

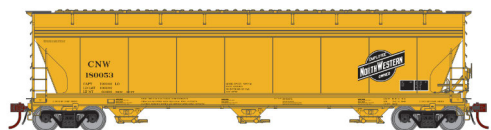


Athearn has included an N scale ACF 4600 Center Flow covered hopper car in its October 2022 production schedule.



Details on the triple-bay hopper will include photo-etched metal roofwalks, separately applied wire

grab irons, body-mounted couplers, and screw-mounted 100-ton trucks with 36" machined metal wheels.

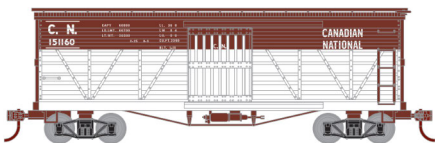


Road names and the era they represent include Gulf, Mobile & Ohio (1966), Grand Trunk Western (1973), and Detroit, Toledo & Ironton (1973 white scheme).

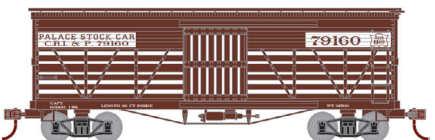


Additional roads will be Chicago & North Western (1977), Detroit, Toledo & Ironton (1979 brown

scheme); AEX-The Andersons Inc. (late 1980s, Primed for Grime), and ACF Leasing (late 1990s).



An N scale 36' wood stock car with a truss-rod underframe and arch bar trucks is coming from Athearn in 2022.



Road names scheduled for this release will be Canada Cattle Car Co., Canadian National, Union Pacific, SSW-Cotton Belt,

Rock Island, Santa Fe, and St. Louis & Iron Mountain.



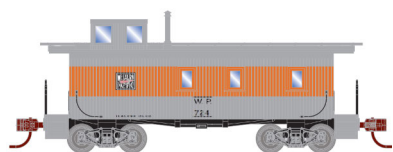
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A wood 36' truss-rod era cabooses is included in Athearn's October 2022 production. The N scale model will have body-mounted knuckle couplers, Andrews style trucks, and truss-rod with turnbuckles molded into the underframe.



Road names will be Burlington Northern, Grand Trunk & Western, Union Pacific, Soo Line, Western Pacific, and Elgin, Joliet & Eastern. For additional

information contact a dealer or visit: www.athearn.com



Bowser is booking advanced reservations for an N scale class H21 quadruple-bay hopper.

Availability is planned for summer 2022.

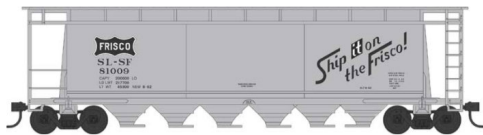
The ready-to-run models will have body mounted couplers and roller-bearing trucks with Fox Valley Models metal wheels.

Road names will include Norfolk & Western, Virginian, Penn Central class H5, Penn Central class H21G, and six Pennsylvania Railroad schemes: class H21a (Circle Keystone), class H21a (Coal Goes to War slogan), class H21a (Shadow Keystone), class H21a (early lettering scheme), class H21a (block lettering on a black car), and class H21a (black car with Keystone).



Also coming from Bowser next summer is an N scale cylindrical hopper car based on a prototype built

in the early 1960s. Models with triple outlets will be available for Baltimore & Ohio, Erie Lackawanna, FMC Chemicals, Maypo, New York Central, Norfolk & Western, Sterling Salt, Old Dutch Cleanser, Phillips Chemical, and U.S. Industrial Petrothene.



N scale cylindrical covered hoppers with six outlets will be available for Frisco, and Wabash. The cars will have

body-mounted couplers and roller-bearing trucks with Fox Valley metal wheels. For more details contact a dealer or visit:

www.bowser-trains.com



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R. Bale

USRA 2-8-2 MIKADO

Among the many locomotives ordered by the USRA during WWI were light and heavy 2-8-2 Mikados.

The first USRA light Mikado was delivered by Baldwin in July 1918. One month later American Locomotive unveiled the initial USRA heavy Mikado. Both light and heavy USRA Mikados utilized the same cylinders, running gear, and 63" drivers, but the diameter of the boiler on heavy Mikes was 10" greater. The result was 10 percent more pulling power, but it also put 19,000 more pounds on the drivers and rails. The USRA Mikados were designed as coal burning, superheated locomotives. They proved to be effective performers with a good balance between the boiler size, grate area, and running gear. After the war many railroads ordered virtual clones of USRA designs including the two Mikados. Ultimately, more 2-8-2s were built than any other type of steam locomotive with a trailing truck.



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USRA 2-8-2 Mikado steam locomotives in November.



Quincy, Great Northern (Glacier Green), Southern Pacific, and Northern Pacific with both a black and gray boiler.



Broadway Limited's N scale light Mikado will be available decorated for Baltimore & Ohio, Chesapeake & Ohio, Denver & Rio Grande Western, Pennsylvania Railroad, Southern Railway (Candy apple green), and Texas & Pacific (Russian iron boiler).



Broadway Limited has announced plans to release a group of both heavy and light

Road names for the heavy USRA Mikado will be Santa Fe, Chicago, Burlington &

Broadway Limited's N scale light Mikado will be available decorated for Baltimore &

Unlettered models with black boilers will be available for both heavy and light Mikados.



R. Bale

PRR P5 ELECTRIC LOCOMOTIVES

The Pennsylvania Railroad class P5 electrics comprised 92 locomotives constructed in the early 1930s for high-speed passenger service along the PRR's Northeast Corridor. The success of two initial locomotives resulted in orders for 90 class P5a electrics with production split between General Electric and Westinghouse. The GE examples were assembled at Erie, Pennsylvania. Final assembly for the Westinghouse order was subcontracted to the Baldwin Locomotive Works. The P5a designation reflects a modification to the original cab design after a fatal grade crossing accident. In daily high-speed service P5 locomotives suffered from reliability issues centered on high torque from the dual traction motors causing heavy damage to the axles. Development of PRR's highly-successful GG1 electric locomotives in the mid-1930s bumped the P5s to slower freight service.



will include a 1930s-era scheme with dark green locomotive enamel (DGLE), a brown roof, and gold Roman lettering.



A freight version of the P5a will be painted DGLE, a brown roof, and buff yellow Roman lettering. Painted but unlettered

models, and models with variations in coved and round Futura lettering, will also be available in this production run. All versions will have positionable pantographs.

Both the USRA Mikado steam locomotive and the P5a electric locomotive mentioned in this report will have Broadway Limited's Paragon4 Sound & Control System with Rolling Thunder and dual-mode decoder. Tractive effort is enhanced with a diecast metal body and chasses and all-wheel electrical pick-up. For additional information contact a dealer or visit: www.broadway-limited.com

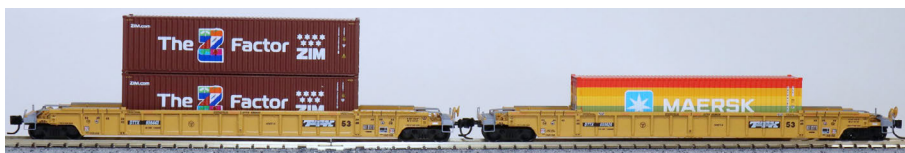


Jacksonville Terminal Company has released a 17-post NSC double-stack well car, suitable for containers up to 53' in length and have been tested with several manufacturer's 48' and 53' containers. The cars are equipped with floor pins suitable for 20' and 40' containers. The body of the well car is die cast metal, with etched steel walkways. The model features Micro-Trains 100-ton trucks and #1015 couplers with a suggested minimum radius of 18", but they have been tested successfully on 15" curves coupled with other cars. Road names for this model are TTX and Canadian Pacific.

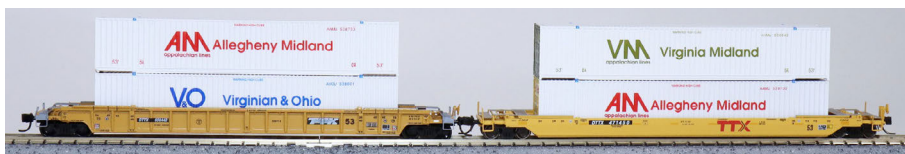




JTC has also released a controlled entry kiosk model, sold as a three-pack of the same color. Six different color schemes are available: red, green, and Maersk blue have solid yellow curb stripes while orange, yellow, and silver have alternating color curb stripes. The entry kiosk contains a camera tree, gate cabinet, and positionable gate with a non-lighted stop/go signal.



Recent container releases include a Zim "The Z Factor" two pack and a Maersk Rainbow single pack. Both containers are 40' high-cube corrugated containers and are pictured in the JTC 17-post NSC well car above.



Also new from JTC is the Visionary Series, which are containers painted as if they belonged to famous model railroads and other non-prototypical schemes, such as holiday containers and other special releases. The first three model railroad containers celebrate Allen McClellan's Virginian & Ohio, Tony Koester's Allegheny Midland, and Steve King's Virginia Midland. See JTC's website at: jtcmodeltrains.com to sign up for early notification of Visionary Series products or for information on all new releases.



KatoUSA has announced scheduling information on a series of N scale Union Pacific EMD70ACe locomotives decorated in Heritage schemes.



UP locomotives in Chicago North Western, Missouri Pacific, MKT, and Western Pacific heritage schemes will be available in

October. The same schemes with Digitrax DCC will be available in November, followed a month later by units with sound.



Union Pacific heritage units for Southern Pacific and Denver & Rio Grande Western will be released in December with

Digitrax DCC versions coming in January and sound equipped models arriving in February.



Union Pacific Flag units will begin their three month staggered release schedule in January. For additional information contact a

dealer or visit: www.katousa.com



Micro-Trains has released an N scale model of a 70' Denver & Rio Grande Western

heavyweights baggage car. The N scale model has gold lettering on a Pullman green body.



Also new from Micro-Trains is a 100-ton triple-bay open hopper car. It is available decorated for Santa Fe and Norfolk & Western. Both road names

of the N scale model come with removable loads.



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This 39' single dome tank car decorated for Miranda Sugar Company rides on arch bar trucks. Contact a dealer for additional information about Micro-Trains models including availability.



Rail Smith Models is booking reservations for two N scale Frisco coaches, the *University City* and the *Webster Groves*.

Built by Pullman in 1947-48, these coaches were built for use on the Frisco Meteor passenger train that ran from St. Louis, IL to Oklahoma City, OK.



Also available for pre-order is the *Picardy Lane*, built by Pullman in 1955 for service on the Texas Special, a joint

passenger train of the MKT and Frisco railroads. It ran between St. Louis, IL and San Antonio, TX. For more information or to order, see your dealer or visit:

lowellsmith.net



At first glance, **ScaleTrains.com's** carbon black hopper cars resemble a boxcar or a ribbed-side covered hopper. A more

detailed look at the N scale Rivet Counter series models reveals multiple round roof hatches, three unique butterfly outlet gates, and spigots on the sides for sampling the fine, powdery carbon black lading.



with enclosed ends, and a 4727 cu. ft. car with open end cages.



Road names for the 5750 enclosed version will be CABX-Cabot and WITX-Witco. The 4727 car with open ends will be available for TCMX-Transportation Company of America and CTNX-Continental Carbon. Cars decorated for SRCX-Sid Richardson and CCX-Columbian Chemicals will be available in both body styles.



All versions will have photo-etched stainless-steel running boards and end platforms, separately-applied end ladders, full underbody brake detail, and body-mounted Type E knuckle couplers. The N scale models will ride on Barber S-2 70-ton trucks with 33" machined metal wheels. For additional information contact an authorized dealer or visit:

www.scaletrains.com

NEW STRUCTURES and SCENIC SUPPLIES



Athearn has announced an October 2022 release date for a series of Ford F-100 pickup trucks. Six of the 1:87 scale models will be decorated as railroad service vehicles. Two additional trucks will be custom painted.



Decorating schemes include Union Pacific, Santa Fe, Southern Railway, Chesapeake & Ohio, Canadian Pacific, and Pennsylvania Railroad.



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Non-railroad pickups coming in 2022 include a two-tone blue over gray, and a black street rod with flame scheme.



All of the pickup trucks will have molded cab interior with a separately applied steering wheel, clear window glazing, and rubber tires. For additional information

contact a dealer or visit: www.athearn.com



Blair Line has both N and HO scale kits for Sunset Motel, a classic mid-century motor hotel. The laser-cut kit includes an office structure, a pair of four-room motel units and

numerous signs. Components include tab and slot walls, floors and sub-roof, laser-cut peel-n-stick windows, doors, roofing and trim. Laser-etched materials include curbs and sidewalks and an optional flagstone wainscot for the office. Vehicles are not included. For additional information visit:

www.blairline.com/sunsetmotel



East Coast Circuits has announced two new fire trucks in their line of modified 1:87 scale vehicles. The Walthers Scenemaster hazardous

material truck has 42 LED lights added, including twelve cool white scene lights, a red LED light bar, red LED bumper lighting, eight red and blue LED rear perimeter warning lights, four red LED cab perimeter warning lights, operating amber hazard lights, and alternating headlights. It features nine flashing patterns.



The Walthers Scenemaster pumper truck has been modified with 28 LED lights, including alternating

headlights, six cool white scene lights, a red LED front light bar, red LED rear beacons, red led bumper perimeter lighting, eight red LED cab and rear perimeter warning lights, two amber side clearance marker lights, and amber hazard lights. The pumper truck has six flashing patterns. Videos demonstrating the LEDs flashing and ordering information can be found at: eastcoastcircuits.com



The Electric Wallpaper Co. has released a new Roomettes HO scale interior kit titled Stan the Record Man. The cardstock kit is designed to fit The Other Corner Café structure manufactured by Woodland Scenics/Design Preservation Models.



Stan the Record Man features three laser-cut rooms with printed record racks, shelves, store counter, posters and exterior signs. The Roomettes kit includes LEDs with plugs that are compatible with lighting systems from Woodland Scenics Just-Plug™, Model Train Technology and

NCE. For more information visit: www.roometteslighting.com



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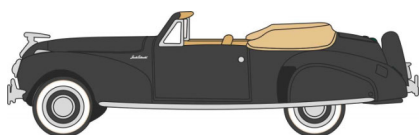
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miniprints has released several new 3D-printed figures, including two Rosie the Riveter figures and CustomCrews05, which has figures for a locomotive crew change. Rosie is featured in two poses, the

first the classic “We can do it!” pose from the WW II poster, the second holding a rivet gun. CustomCrew05 includes four figures with backpacks, coolers, and duffel bags. For more information visit: miniprints.com

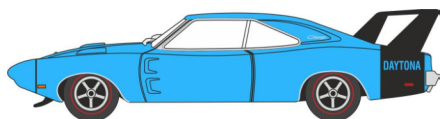


car is black, with a tan boot cover and interior.

New 1:87 scale ready-to-use vehicle models from **Oxford Diecast** include this classic 1941 Lincoln Continental. The

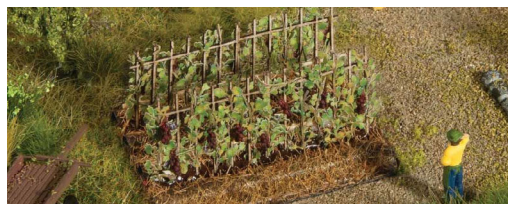


Oxford’s latest version of a 1946-48 DeSoto Suburban has a roof rack with luggage, and white wheel covers over black wall tires.



This 1:87 version of a 1969 Dodge Daytona Charger features red-line tires, a 23” tall stabilizer wing on the rear

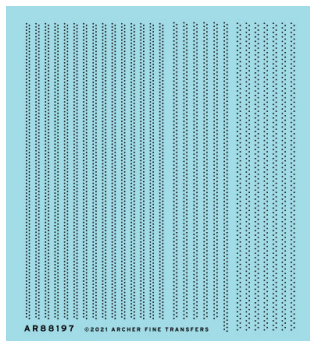
deck, and a nose cone that replaced the standard 1969 front grille. For additional information contact a dealer or visit: www.walthers.com



New HO scale SceneMaster items from **Walthers** include grape vines (#949-1401), rose plants (#949-1400), and a

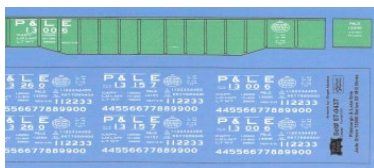
Nativity scene (#949-1402) which includes carved figures of Mary, Joseph, Baby Jesus, three wise men, and a donkey. For more information contact a dealer or visit: www.walthers.com

NEW DECALS, SIGNS AND FINISHING PRODUCTS

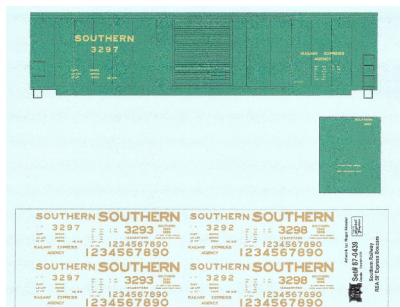


Archer Transfers has released 3D rivets in staggered double-row and triple-row patterns. The zig-zag rivet patterns are based on aircraft prototypes but can be utilized in a variety of modeling applications. The resin surface details are printed on clear Nano tape. They are available in 1/72, 1/48, 1/32 and 1/24 scales. For additional information visit

www.archertransfers.com.



Mask Island had issued HO scale decals for Penn Central, New York Central and Pittsburgh & Lake Erie mill gondolas. Each set has sufficient material to accurately decorate two cars.



Also new from Mask Island are new decal sets for two Southern PS-1 boxcars: as delivered and in gold lettering for an REA Express boxcar. For additional information visit:

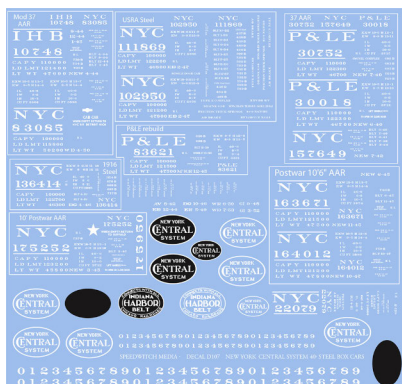
www.maskislanddecals.com



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National Scale Car has reissued several popular HO scale lettering sets including a 40' New York Central boxcar that has been reworked by Ted Culotta to include paint code marking stencils. Other restocked decals for HO scale freight cars include Southern Pacific and Texas & New Orleans 1937 AAR boxcars, Milwaukee Road 22188-23937

rib-side boxcars, and SP/T&NO S-40-5 stock cars. For additional information visit: nationalscalecar.com

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BRIEFLY NOTED AT PRESS TIME ...

Rail Smith is taking advance orders for Missoula, a lightweight Duplex Pullman sleeper Northern Pacific assigned to its 1947 North Coast Limited. Availability of the N scale model is scheduled for the first quarter of 2022. Visit: lowellsmith.net to reserve

ScaleTrains.com has scheduled a mid-winter delivery for a new run of Operator series 5188 covered hoppers. HO scale Operator models have the same body as Rivet Counter models but fewer road specific details. Road names will be KCS, BNSF, CSX, NW and UP/CMO. The deadline to order is September 27, 2021. Go to: scaletrains.com to preorder...

Tangent has released an all-new HO scale steel bay-window caboose that accurately replicates prototype Class N7 and N7A cabooses built by Despatch Shops Incorporated and St. Louis Car Company. Road names with road-specific details include New York Central (two schemes), Boston & Albany, Penn Central, Conrail, Alton & Southern, and three Illinois Terminal schemes. Visit: www.tangentscalemodels.com for details...

Walthers plans to release a Mainline series 50' ACF exterior post boxcar in November. Road names for the Plate B car will be Richmond, Fredericksburg & Potomac, Southern Railway, Wisconsin Central, and three Railbox schemes. Walthers has scheduled delivery of an HO scale kit for Brick Millworks for next February. The brick building, which includes an overhead traveling crane, can serve as a wide range of trackside industrial structures. More info at: www.walthers.com ... ■



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SELECTED EVENTS



Model Railroad Hobbyist | September 2021

SEPTEMBER

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

Ongoing 2021

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

ONLINE, Zoom & YouTube, Wednesday & Saturday, see Facebook page. “New Tracks” Meetup, hosted by Jim Kellow, MMR. See: newtracksmodeling.com for more information.

ONLINE, Facebook & YouTube, dates vary, see Facebook page. “NMRax” organized by Gordy Robinson, Martyn Jenkins, Gert Muller, Jordan Kramer.

See: facebook.com/groups/nmragroup for announcements.

ONLINE, YouTube, every other Saturday. 4th Division, Pacific Northwest Region, NMRA hosts online layout tours and clinics. Archive available at: www.youtube.com/c/4DPNRMovies

ONLINE, Zoom, Second Tuesdays, 8pm EST. “Off the Beaten Track” featuring Narrow Gauge layouts, clinics and manufacturers. For more information visit: groups.io/g/NNG



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AROUND THE USA, IN-PERSON, Various dates.

ScaleTrains.com Road Trip. See: www.scaletrains.com/roadtrip for information on future destinations.

September-October 2021

POSTPONED - AUSTRALIA, SYDNEY, October 16-17. Great Train Show, sponsored by the Epping Model Railway Club, Grand Pavilion, Rosehill Gardens Racecourse, James Ruse Drive, Rosehill. For more information visit:

www.eppingmodelrailway.org.au/exhibition

CANCELLED - NEW ZEALAND, CHRISTCHURCH, October 2-3. The BIG Model Train Show, Pioneer Stadium, Lyttelton Street.

For more information visit: trainshow.co.nz

UNITED KINGDOM, DERBY, October 22-24, 2021. 75th+1 Grand Junction Convention, British Region regional convention. Derby Conference Centre. For more information visit: www.black-diamonds.org.uk/convention

CANADA, ONTARIO, OTTAWA, October 23. Capital Region Model Railway Tour, Virtual Tour of home layouts in the Ottawa area. Details at: capitaltrains.ca

CALIFORNIA, BELLFLOWER (LOS ANGELES), October 2. LA Area Prototype Modelers Meet. Encounter Christian Church, 10012 Ramona St. For more information visit: www.laapm.org

CALIFORNIA, OCEANSIDE, October 9, Swap meet sponsored by the North County Model Railroad Society and PSR-NMRA San Diego Division. Heritage Park, 230 Peyri Dr. For more information visit: ncmrs.org

FLORIDA, PLANT CITY, October 14-16. Sunshine Express II, Sunshine Region Regional Convention. 2102 Park Rd. For more information visit: www.sunshineregion.org/region-convention

GEORGIA, CARTERSVILLE, October 2-3. Piedmont Division Model Train Show, Clarence Brown Conference Center, 5450 GA-20. For more information visit: themodeltrainshow.com

ILLINOIS, BELLEVILLE, October 2-3. Great Train Expo. Belle-Clair Fairgrounds and Expo Center, 200 S Belt E #2650. For more information visit:

bcfairgrounds.net/belleville-great-train-expo

NEW DATE - ILLINOIS, WHEATON, October 17. Great Midwest Train Show, Dupage County Fairgrounds. For more information visit: trainshow.com

INDIANA, NAPPANEE (ELKHART), October 16. Elkhart Model Railroad Club Annual Train Show. Claywood Event Center, 13924 N W (County Line Road). For more information visit: www.emrrc.com/index.php/2021-train-show

MARYLAND, HUNT VALLEY, October 21-24, Mid-Eastern Region Convention – Mount Clare Junction – NMRA membership not required, Delta Hunt Valley, 245 Shawan Road, email: mtclarejct.com

MASSACHUSETTS, GARDNER, October 2. O Scale Model Train Show sponsored by The Southern New England Model Railroad Club. Chestnut Street United Methodist Church, 161 Chestnut Street. For more information visit: www.snemrr.org

MASSACHUSETTS, WESTFORD, October 8-11, Mill City 21, the NER Convention. Westford Regency Inn, 219 Littleton Rd. For more information visit: millcity21.org

MICHIGAN, WYOMING (GRAND RAPIDS), October 9, 2021. The Greater Grand Rapids Train Show, presented by the Grand River Valley RR Club. HSB Inc., 5625 Burlingame Ave. SW. For more information visit: grvrrc.org

MISSIOURI, KIRKWOOD, October 9-10. 30th Annual Greater St. Louis Metro Area Train Show, sponsored by the Mississippi Valley N Scalers. Kirkwood Community Center, 111 S. Geyer Rd. For more information visit: mvns.railfan.net

MONTANA, MISSOULA, September 21-25. Annual Convention of the Northern Pacific Historical Association. Big Sky High School, 3100 South Ave. West. For more information go to: www.nprha.org/Pages/NPRHA.aspx



NEW YORK, BATAVIA, October 17, 2021. The Great Batavia Train Show, Richard C. Call Arena at Genesee Community College, 1 College Rd. For more information visit: gsme.org

NORTH CAROLINA, DENVER, September 23-25, Sipping and Switching Society of NC modular display. Salem United Methodist Church, 378 N Pilot Knob Rd.

For more information visit:

facebook.com/Sipping-Switching-Society-of-NC-352084328982

OHIO, CAMBRIDGE, October 17. Third Annual Buckeye Division Train Show, Pritchard Laughlin Center, 7033 Glenn Hwy. For more information visit: div6-mcr-nmra.org/trainshow.html

OHIO, TOLEDO, October 21-24. Black Swamp Junction – NCR 2021 Convention, hosted by the NMRA, open to all, featuring clinics, tours, layouts, op sessions, and door prizes. Radisson Hotel at the University of Toledo, 31100 Glendale, Ave. For more information visit: www.divisiononencr.com/2021

OHIO, TOLEDO, October 22-24, Public modular displays (HO Free-Mo and G scale) in the Toledo Union Terminal. Martin Luther King Jr. Plaza, Emerald Avenue. In conjunction with the NCR 2021 Convention (see above) but free for all to visit.

OKLAHOMA, TULSA, October 6-10, 2021. Tulsa Union Convention, Indian Nations Division, Mid-Continent, and Lone Star Regions joint convention. Embassy Suites by Hilton Tulsa I-44, 3332 S. 79th East Avenue. For more information visit: www.2021tulsaunion.com

PENNSYLVANIA, ALLENTOWN, October 8-10, 2021. 25th National Trolley Meet, Agriplex at Allentown Fairgrounds, 17th and Chew Streets. For more information visit: www.eastpenn.org

WASHINGTON, CHEHALIS, October 9-10, 2021. Lewis County Model Railroad Swap Meet. Blue Pavilion, Southwest Washington Fairgrounds, 2555 N. National Ave. For more information contact: TedsTrains@LewisCounty.com

WASHINGTON, SPOKANE, October 10. Fall Model Train Show, presented by The River City Modelers Train Club. Spokane County Fair and Expo Center, Buildings A, B, & C, Gate G, 404 North Havana. For more information visit:

www.rivercitymodelers.org

Future 2021-2022 by location

FLORIDA, MELBOURNE, December 4, 2021. Original Melbourne Train and Toy Show, sponsored by Schultz Space Coast Trains, Azan Shrine Center, 1591 W Eau Gallie Blvd. For more information visit: schultzspacecoasttrains.com

ILLINOIS, WHEATON, October 17, November 14, December 12, 2021. Great Midwest Train Show, Dupage County Fairgrounds. For more information visit: trainshow.com

INDIANA, DANVILLE, November 20, 2021. Danville Train Show, presented by the Central Indiana Division-NMRA. Hendricks County Fairgrounds, 1900 E. Main St. For more information visit: cidnmra.org

INDIANA, FORT WAYNE, November 20, 2021. Model Railroad Show & Swap, sponsored by Maumee Valley Railroad Club, Inc.. Coliseum Bingo, 911 W. Washington Center Rd. For more information visit: maumeevalleyrailroad.com

MASSACHUSETTS, MARLBOROUGH, December 4-5, 2021. New England Model Train Expo, sponsored by the NMRA HUB Division. Best Western Royal Plaza Trade Center. For more information visit: www.hubdiv.org/fallshow

MASSACHUSETTS, WEST SPRINGFIELD, January 29-30, 2022. Railroad Hobby Show sponsored by the Amherst Railway Society. Eastern States Exposition Fairgrounds, 1305 Memorial Avenue. For more information visit: www.railroadhobbyshow.com

MICHIGAN, EAST LANSING, November 14, 2021. Lansing Model Railroad Club and Sale. Michigan State University Pavilion. For more information visit: www.lmrc.org



MICHIGAN, SALINE, November 28.2021. Rails on Wheels' annual Southeast Michigan Train Show. Washtenaw Farm Council Grounds, 5055 Ann Arbor Saline Road. For more information contact: cdjhyoung@yahoo.com

MISSOURI, St. LOUIS, August 7-14, 2022, NMRA National Convention and National Train Show. St. Louis Marriott Grand Hotel, 800 Washington Avenue. For more information visit: gateway2022.org

MISSOURI, SEDALIA, November 6, 2021. 9th Annual Sedalia Rails Trains Show, sponsored by the Pettis County Historical Society. Liberty Park Convention Hall. For more information contact: klbird530@gmail.com, 660-668-0899.

NEW ZEALAND, LOWER HUTT (Wellington), November 14-15, 2021, RailEx Model Train Show, Walter Nash Centre, 20-22 Taine St., Taita. For more information visit: www.railex.org.nz

OHIO, LIMA, December 11, 2021, Train Town Train Show and Swap Meet, sponsored by NMRA NCR Division 3. Allen County Fairgrounds, 2750 Harding Highway. Contact Jim Marquardt, 260-437-3844 for more information.

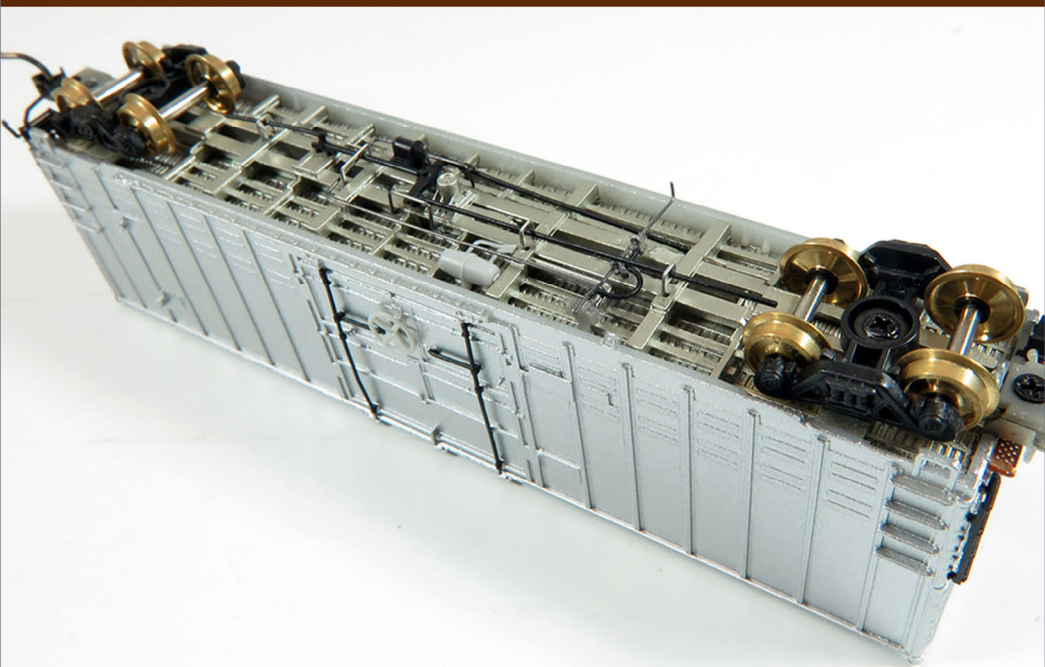
OREGON, EUGENE, May 10-14, 2022. PNR 2022 Regional Convention, Valley River Inn.

OREGON, RICKREALL, December 4, 2021. Willamette Valley Model Railroad Annual Train Show and Swap Meet. Polk County Fairgrounds, 520 S. Pacific Hwy. West. For more information visit: wvmrm.webs.com

PENNSYLVANIA, MALVERN, March 24-27, 2022, Valley Forge Railroad Prototype Modelers 2022. Desmond Malvern Conference Center. For more information visit: www.rpmvalleyforge.com

WASHINGTON, KENT, November 13, 2021, 42nd Annual Railroad Swap Meet, sponsored by the Boeing Employees Model Railroad Club, Kent Commons, 525 4th Ave N. For more info visit: bemrrc.com ■

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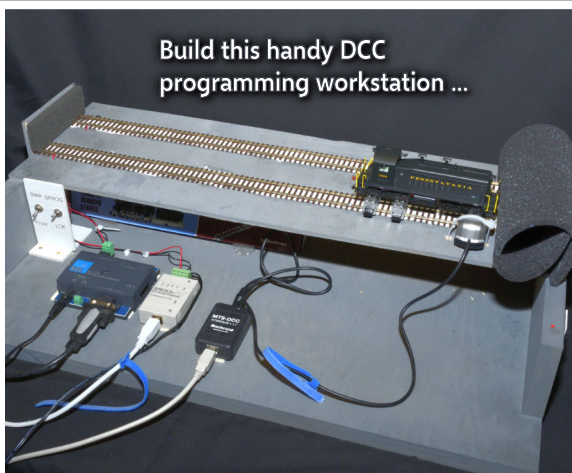
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