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[INDEX](#)

[TABLE OF CONTENTS](#)

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Tablet or phone: Swipe from the page edge to change pages

TABLE OF CONTENTS | RUNNING EXTRA

July 2020



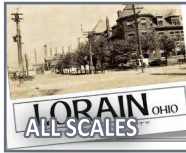
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Publisher's Welcome: Eyesight augmentation ...

JOE FUGATE



Limited Modeler: Modeling Lorain, OH, part 3

JIM SIX



Getting Real: Better railroad crossing signs

TONY THOMPSON



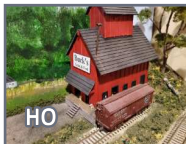
Detailed harvester load on a flat car: 2

GEORGE TOMAN



Cutting Central Valley bridge girders

GEORGE DUVE



Building Buck's Grain & Feed

SHAWN BECHER



Ah-Hah Moment: Fixing lead rot

JOE FUGATE

TABLE OF CONTENTS | MRH

July 2020



Publisher's Musings: MRH updates, looking at 2021 ...

JOE FUGATE



MRH Website this month: N scale shelf layout update ...

Compiled by JOE FUGATE



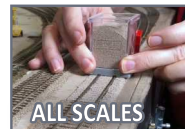
What's Neat: All about soldering

KEN PATTERSON



Installing a LokSound decoder

JASON MILLER



Zip Ballasting

JOE FUGATE



Double-duty layout

MICHAEL VESETH



Modeling a ready-mix cement plant

EVAN NEUBEE



Savvy Modeler online: Perfect ME flex track curves

Compiled by the MRH STAFF



July 2020 news and events

RICHARD BALE and JEFF SHULTZ



[SUBSCRIBE](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

PUBLISHER'S WELCOME

introduction



MRH Running Extra | July 2020

JOE FUGATE HAS A COOL EYESIGHT AUGMENTATION TOOL ...

★★★★★
RATE THIS ARTICLE

ACCORDING TO OUR 2020 READER SURVEY, 80% OF OUR READERS now say they're age 50 or older. That means the vast majority of our readers likely no longer have 20-20 vision. For me, I left the ranks of those with 20-20 eyesight back in the late 1980s.

Modeler Dr. Richard Meetz has been spreading the good word about vision, aging, and the modeler in his clinics at conventions for over 15 years now. I have found Dr. Meetz's suggestions for better vision to be quite helpful.

One cool tool the good doctor mentions to enhance your eyesight as you work on models (which seem to be getting more tiny every year) is an endoscope [1]. Believe it or not, you can get a very useful endoscope for less than \$30!

The endoscope connects to your PC, Mac, tablet, and/or smartphone and uses a small tube-like camera with LED lighting allowing you to examine your model up close from any angle while you conveniently study the high-definition image on your screen.

Using a helping hand tool (to the right), I can hold the camera at any angle and work on HO figures or tiny electrical components and finally see exactly what I'm doing on my iPad screen. Very helpful for these aging eyes.



To get a shopping list for this article, visit the MRH website at this link: mrhmag.com/magazine/running-extra/2020-07/publishers-welcome

PUBLISHER'S WELCOME | 2



1. An inexpensive endoscope comes with its own bright LED lighting and a tiny camera that lets you get up close to the details

of your model and study them. This endoscope shown here works with an Android phone and costs about \$30.



2. This endoscope kit on the right connects to a tablet or smartphone with WiFi, or you can plug it directly into a PC or a Mac. The included CD has the viewer software for a laptop or desktop computer. On a mobile device, you just install a viewer app and connect with Wifi.

If you have an Android phone or tablet, you can get an endoscope that plugs into your device. If you have an iPhone or iPad, you need to use an endoscope that uses WiFi. Most endoscopes can also plug into a USB port on your laptop or desktop.

I provide links to both kinds of endoscopes in the shopping list. Once you get one of these, you will find all kinds of uses for it and will wonder how you ever managed without one! ☑



SUBSCRIBE

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

THE LIMITED MODELER

column

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

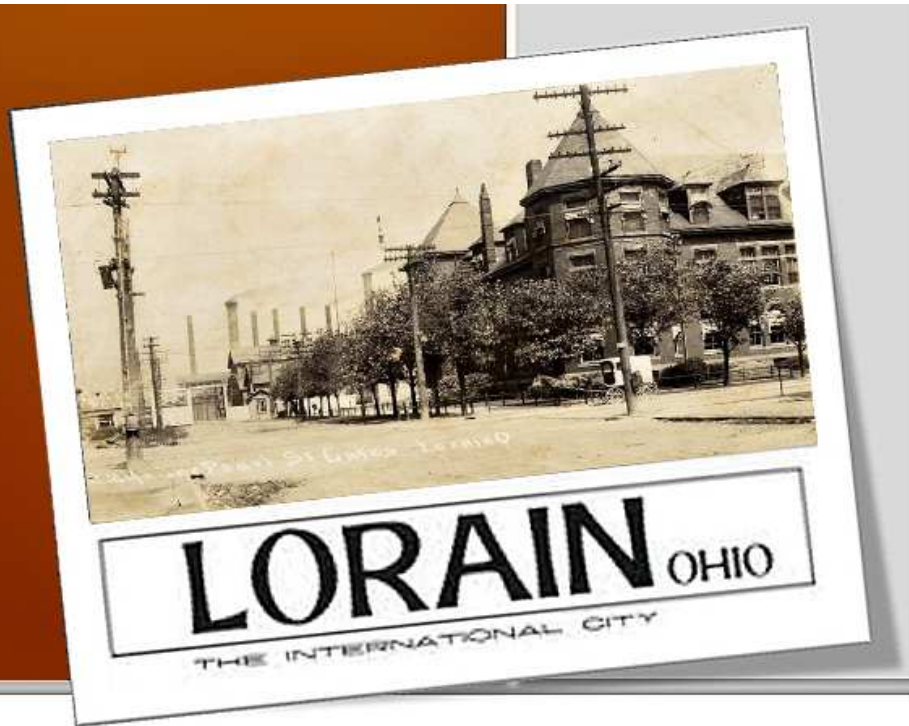
JIM SIX FINISHES HIS LOOK AT
MODELING LORAIN, OHIO ...



MRH Running Extra | July 2020



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DOING MORE WITH LESS

THE LIMITED MODELER | 2

I would be remiss not to mention the COVID-19 virus and what it has done to us. My daily life has radically changed, hopefully only for the short term, but I am not counting on that. I have been retired for the past two years but have continued to teach two or three Engineering Design classes at the local community college. Instead of going to the school for classes, I now teach via the internet from home. We are calling it distant learning. This new process has taken more time and effort for me to develop and present the courses.

My current COVID-19 virus work situation and the resulting lock-down has cut into my hobby time. I'm sure many of you are experiencing similar changes. Some of you may have contracted the virus. My heart, thoughts, and prayers go out to all of you. May we all return to some form of normalcy in the not too distant future albeit while taking great care.

THE LORAIN ASHLAND AND SOUTHERN RAILROAD - A RAILROAD YOU CAN MODEL

In finishing my presentation of Lorain, Ohio, I need to address the little-known Lorain Ashland & Southern. The LA&S was a small railroad resulting from the 1914 consolidation of several smaller, early northern-Ohio railroads. The original rail line, the Millersburg, Jeromeville, and Greenwich Railroad (MJ&G RR), was constructed in 1894-1895 and connected Brown's Junction and Jeromeville. Owner Horace Camp built a brick and tile plant, and used the railroad to ship finished products to customers throughout Ohio and New York. In 1898-1899 the railroad extended the line to Ashland where it built a large freight and passenger depot [1 & 4]. The MJ&G served many large industries in Ashland.

Horace Camp sold the railroad to Charles French in 1903 and the company name was changed to the Ashland and Western Railway (A&W Ry). After a few years of financial difficulties, the line went into receivership and eventually sold to Joseph



[SUBSCRIBE](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

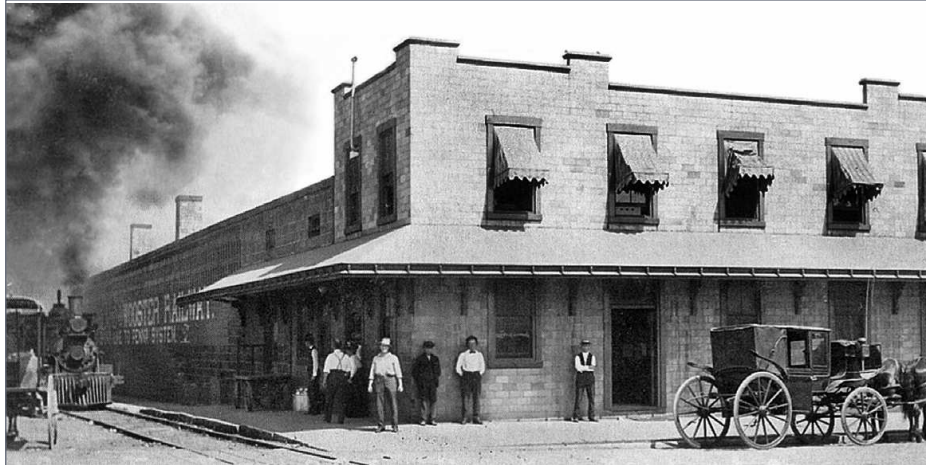
[INDEX](#)

[TABLE OF CONTENTS](#)

THE LIMITED MODELER | 3

Ramsey Jr, who had constructed the Lorain and Ashland Railroad between Wellington and Lorain. Cash-short, the L&A fell into disrepair. With financial backing from the Pennsylvania Railroad in 1913, the L&A was refurbished, but remained with 55-pound rail and two light capacity trestle bridges. The Pennsy added a connection between Ashland and Wellington in 1914. At this time, the A&W and the L&A were consolidated as the Lorain Ashland & Southern Railway (LA&S).

All of these railway consolidations can set your head spinning! However, the Pennsylvania Railroad purchased the LA&S in June 1916 in order to access to the National Tube steel mill and port facilities in Lorain. Under Pennsy ownership the railroad operated between Lorain and Custaloga, Ohio, where it connected with the Pennsylvania mainline between Pittsburgh and Chicago [6].

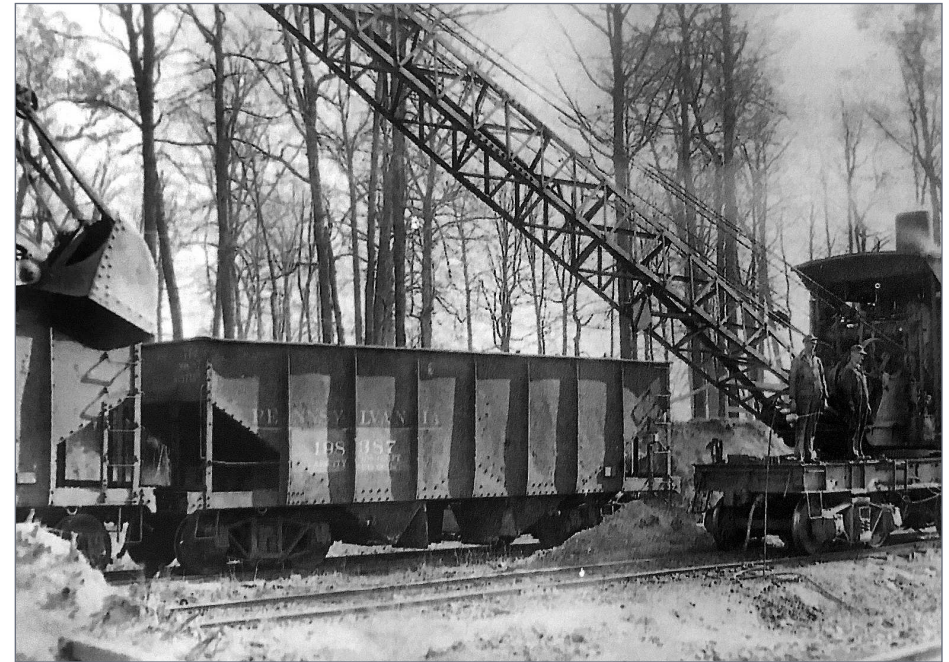


1. The LA&S's Ashland freight house and depot was located on Union St. The First World War was just starting in Europe when this photo was taken in 1914. *Robert Chilcote photo, The Rattlesnake and the Ramsey*

THE LIMITED MODELER | 4

Following the 1916 purchase, the railroad began a three-year plan to upgrade track to 100-pound rail, improve roadbed, and add new sidings [2]. A new, larger yard was to be built at Custaloga. The original yard was so small that trains were limited to 15 or 16 cars in length. Political infighting within the Pennsylvania and bickering with the Erie Railroad, which was ceded trackage rights, stopped the yard work. Complicating matters was the impending U.S. entry into the Great War in Europe.

With the 1916 takeover, additional motive power was leased from the Pennsylvania RR, primarily older H6-class 2-8-0 Consolidations. Larger locomotives could not negotiate an old wooden trestle over the B&O near Nova. Sections of 55-pound rail between Ashland and Lorain also limited train and locomotive weight.



2. LA&S rail work in 1916 as new owner PRR was upgrading the line. *William Snyder photo, The Rattlesnake and the Ramsey*



SUBSCRIBE

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

The LA&S needed an improved locomotive terminal in Lorain and planned to build one in 1917. However, a dispute with the city of Lorain blocked construction. The city wanted the railroad to pay for a highway underpass where the LA&S crossed Broadway Avenue. Without this underpass the city would not allow construction of the locomotive facility. The railroad didn't have finances for both, so the locomotive terminal was never built. Locomotives continued to be turned by the B&O, an expense the LA&S could ill-afford.

Of course, the upgrades and plans would not have happened without the PRR absorbing the LA&S in 1916. Internal Pennsy feuding and concern about U.S. entry into the war in Europe led to the demise of this promising railroad. During its short existence, the LA&S operated in the red. The PRR had counted on a profitable LA&S after completing the upgrades.

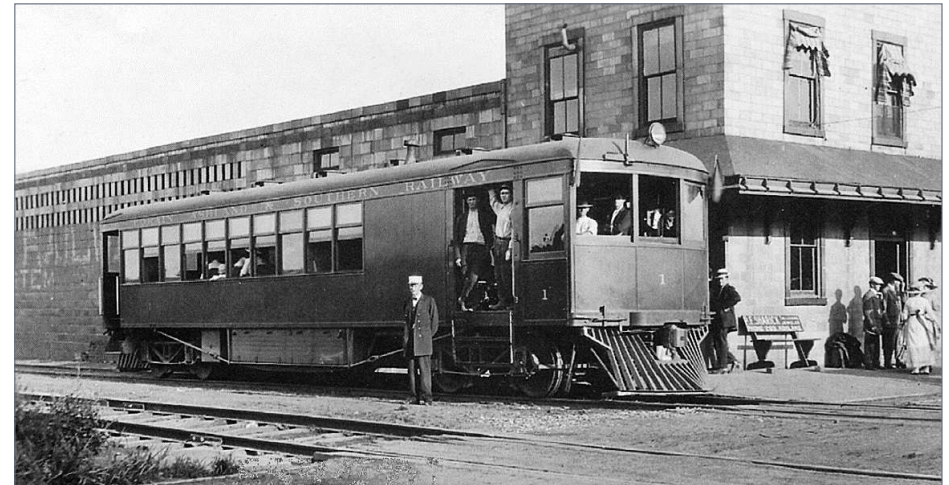


3. This trestle over the B&O mainline near Nova, Ohio, restricted train speeds and weight. One of the leased PRR Consolidations heads north in this late 1916 photo. Note that it is lettered PENNSYLVANIA on the tender. William Snyder, *The Rattlesnake and the Ramsey*

LA&S FACILITIES

The Lorain Ashland & Southern entered Lorain from the south, with a depot and a yard at East 28th St. This yard was sandwiched between the Lake Terminal yard and East 28th Street. LA&S crews working out of the yard switched Thew Shovel [5], a few manufacturing facilities, a couple of coal dealers, and a nearby bulk oil dealer. Thew Shovel was across East 28th Street from the yard, and was a loyal customer until the end in August 1925.

The LA&S also hauled outbound ore shipments in an interesting arrangement with National Tube. Hoppers and gons were loaded at National Tube's docks on the Black River. The Lake Terminal brought these up the hill and handed them off to the Lorain Ashland & Southern for shipment to other steel mills located throughout the region.



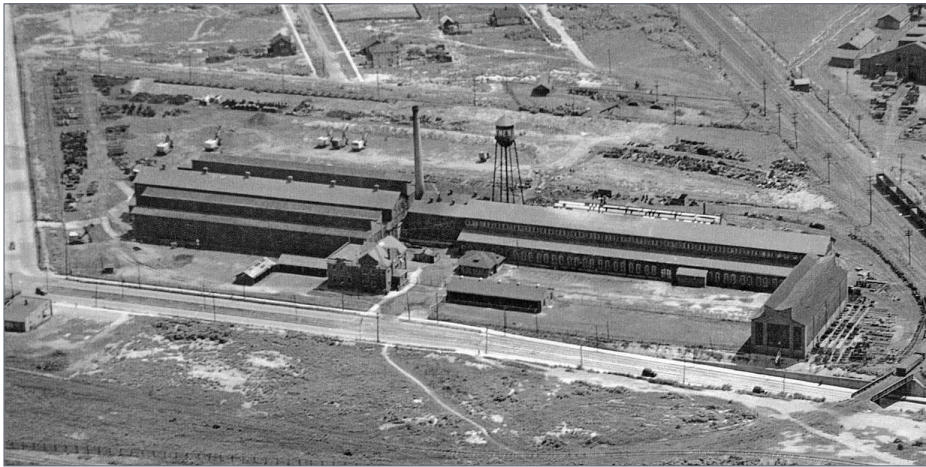
4. LA&S motor car #1 at the railroad's Ashland depot on Union St. in 1920. Look at that "cow catcher!" William Snyder, *The Rattlesnake and the Ramsey*



Passenger service operated over the entire line using motor cars like LA&S No.1 [4]. Short passenger trains and mixed trains also ran on the railroad.

The PRR decided the line would never operate profitably without completing the upgrades. In 1922, the Pennsy stopped work and began the process of abandonment. The company struggled on for a few more years, but in 1925 the PRR filed for abandonment of the Lorain Ashland & Southern, and the railroad ceased operation in August 1925. The railroad had existed as the LA&S for a mere 11 years.

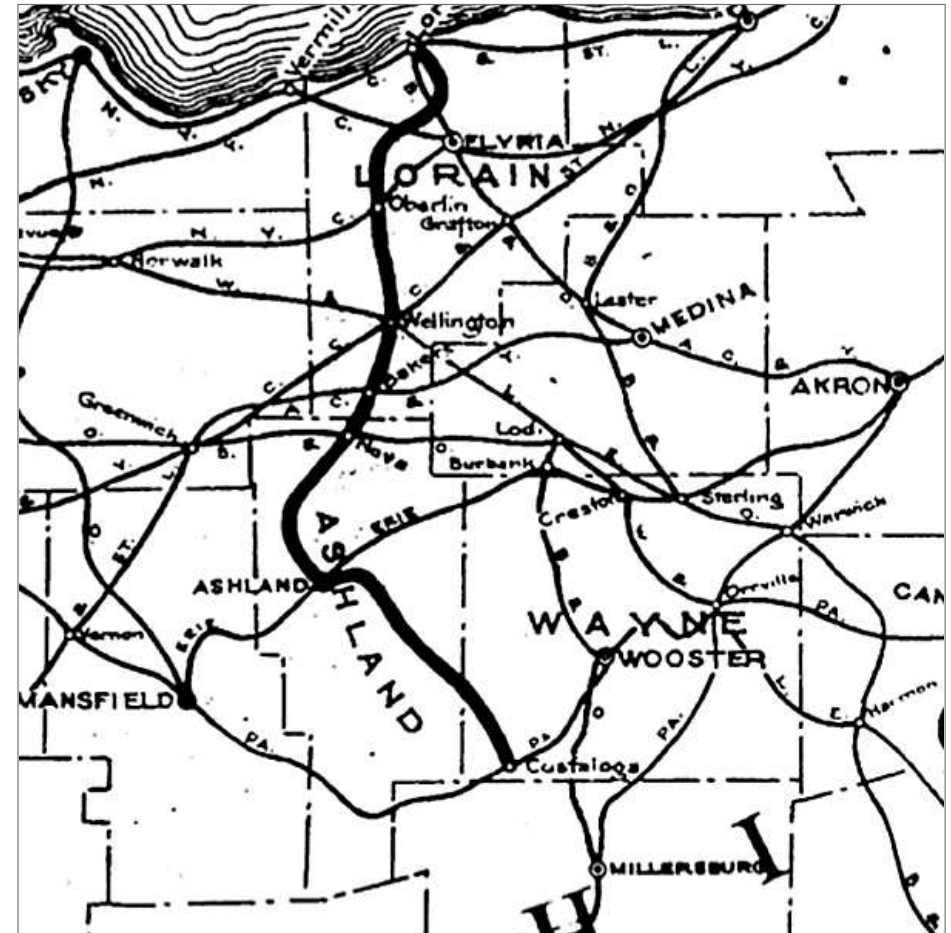
The LA&S ran south from Lorain at Lake Erie to Oberlin (NYC), Wellington (NYC, W&LE), Nova (B&O), Ashland (Erie), then on to Custaloga (PRR) [6]. At Custaloga the LA&S connected with the Pennsylvania Railroad mainline from Pittsburgh to Ft. Wayne and on to Chicago. North central Ohio was loaded with many different rail lines.



5. One of LA&S's best Lorain customers was Thew Shovel. The LA&S track is seen curving across E. 28th St. with the cut of gondolas. The E. 28th St. yard is just out of sight to the lower left. The cut of hopper cars at the right are on the B&O tracks. At the time of this 1930s photo, the LA&S tracks were part of the B&O. *Brady's Bunch of Lorain County*

LORAIN ASHLAND & SOUTHERN MOTIVE POWER

The primary locomotives used by the LA&S were Pennsylvania H6-class 2-8-0 Consolidations [8, 9, 10]. The H6 was the heaviest Pennsy locomotive that could be used on the line due to light rail and the old Nova trestle. 100-pound rail had been installed only on about half of the railroad.



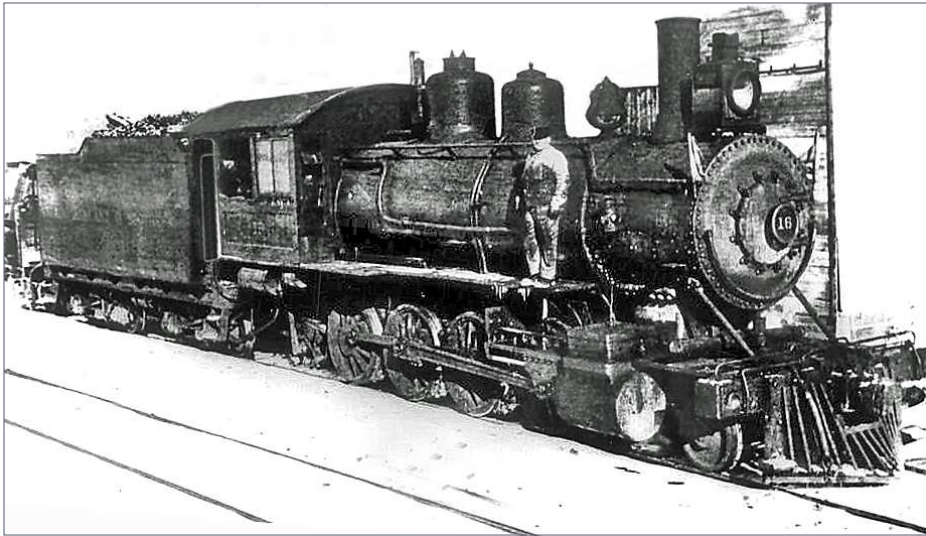
6. Interstate Commerce Commission route map of the Lorain Ashland & Southern Railroad, 1917.



THE LIMITED MODELER | 9

The Pennsy had planned to use heavier H8, H9, and H10 locomotives once the LA&S was upgraded, but that never happened. A few H8s were tested at restricted 10 mph speed on light rail areas for a short time. Inspectors had to “walk” the locomotives across the wooden trestle at Nova at 5 mph. After a few months, railroad Superintendent W. H. Holliday discontinued the experiment.

When the Lorain Ashland & Southern was formed in May of 1913 there were only two locomotives on the roster – engines #7 and #8. Interstate Commerce Commission (ICC) reports show only two locomotives on the roster until June 30, 1914 when additional locomotives were purchased. Here’s the updated LA&S roster before PRR control in 1916.



7. Lorain, Ashland and Southern #16 rests at Lorain near Thew Shovel. This locomotive is typical of the three locomotives purchased from the P&LE in 1915; LA&S 16, 17, and 18. *William Snyder, The Rattlesnake and the Ramsey*

THE LIMITED MODELER | 10

LA&S #1 0-6-0 PRR built in 1894, class B-4

LA&S #5 2-8-0 built in 1898 by Pittsburgh Locomotive Works for P&LE, returned to P&LE in 1916

LA&S #9 2-8-0 built in 1900 by Brooks for PRR, off roster in mid-1916 [8]

LA&S #10 2-8-0 built in 1900 by Brooks for PRR, wrecked and off roster in 1915

LA&S #11 2-8-0 built in 1900 by Brooks for PRR, lasted to abandonment in 1925

LA&S #12 2-8-0 built in 1900 by Brooks for PRR, sold in 1917

LA&S #15 2-8-0 built by Pittsburgh Locomotive Works for P&LE, purchased in 1915

LA&S #16 2-8-0 built by Pittsburgh Locomotive Works for P&LE, purchased in 1915 [7]

LA&S #17 2-8-0 built by Pittsburgh Locomotive Works for P&LE, purchased in 1915



8. LA&S #9, former PRR 6310, H-class hand-me-down. Bridges on the north end of the railroad were too light for larger locomotives. The bridges were not upgraded due to a business downturn in the 1920s. *William Snyder, The Rattlesnake and the Ramsey*



SUBSCRIBE

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

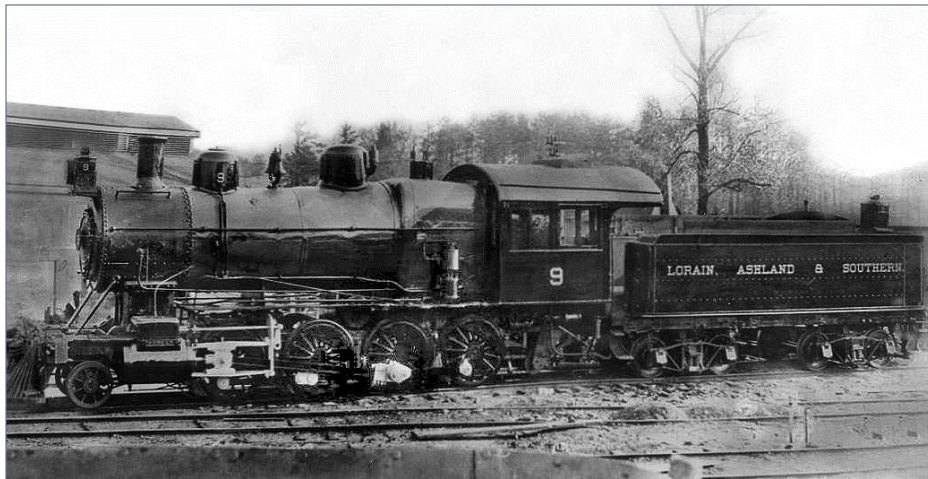
[TABLE OF CONTENTS](#)

After the Pennsylvania took ownership in 1916, the LA&S operated with the following five locomotives: #1, #11, #15, #16, and #17. Many PRR locomotives show up on ICC records right up to abandonment in August 1925. These include H3a, H3b, H4, and H6b class 2-8-0s. A couple of H8s were tested on the railroad but proved to be too heavy [11].

LORAIN ASHLAND & SOUTHERN FREIGHT CARS

I have struggled to find photos or any information about freight cars. The fleet wasn't large. A review of LA&S listings in *Official Railway Equipment Registers* (ORER) reveals very few freight cars in the eleven year history.

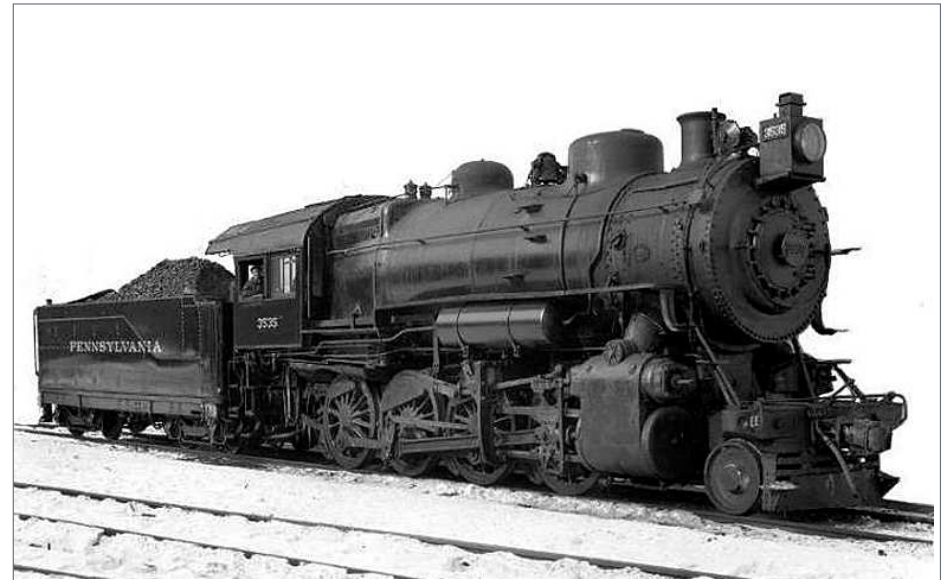
The December 1914 entry lists 20 gondolas 24 boxcars. A couple of years later, the 1917 ORER lists 13 total cars: seven



9. Here's the fireman's side LA&S #9. This is a classic locomotive that was considered a heavy hauler when built. I noticed that there is a single-phase air pump on both sides of the firebox instead of one dual-phase pump. #9 looks like it is fresh out of the paint shop in 1916. Note the empty tender, missing air tanks, and loose piping. *William Snyder, The Rattlesnake and the Ramsey*



10. LA&S #11, former PRR 6306, poses in Ashland with the whole train crew. Note the distinctive Belpaire firebox, just like #9. *William Snyder, The Rattlesnake and the Ramsey*



11. PRR H8 locomotives were tested on the LA&S but it was determined they were too heavy for a couple bridges between Ashland and Wellington. Because of this, the Pennsy H6 class locomotives were the largest used in regular service. *Hagley Museum and Library*

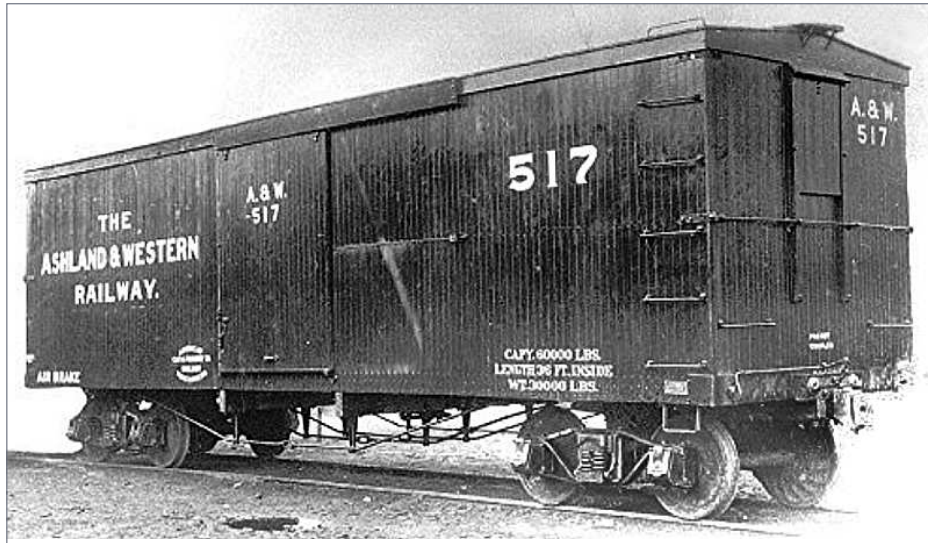


gondolas and six boxcars. By the 1925 edition, the fleet was down to three boxcars and three flat cars. The flat cars were noted as work service and may have been converted from gondolas.

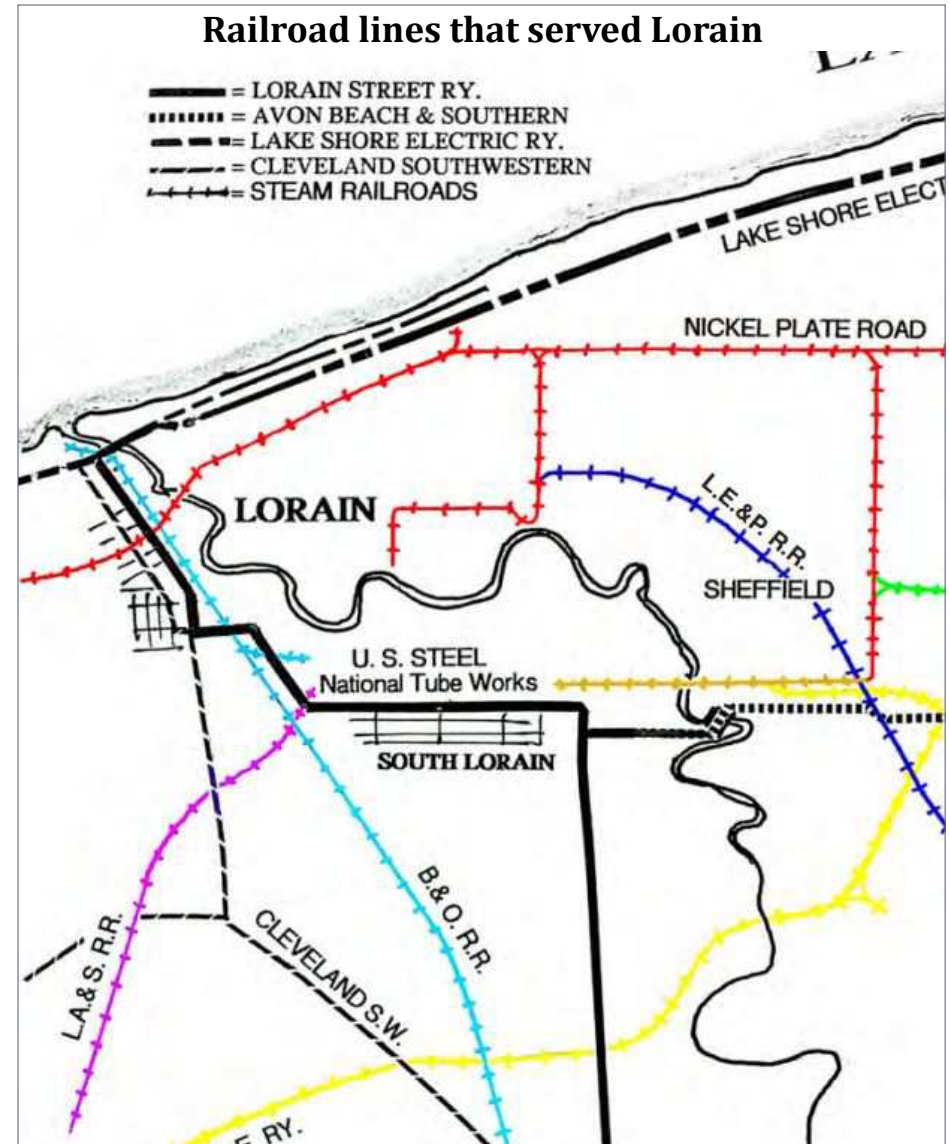
The only boxcar photo that I found [12] is of predecessor Ashland & Western 517 – an AC&F product. I have found photos of Pennsy hoppers on the LA&S but that is all. I assume the freight cars on the LA&S were Pennsy and foreign road freight cars. The only caboose photos I have seen are of early Pennsy cabin cars. If anyone can point me to LA&S freight cars and/or cabooses, please do so. I will share them in a future column on the *MRH* forum.

LORAIN AS A MODEL RAILROAD SETTING

I hope this third installment on Lorain, Ohio isn't burning out anybody. I feel it justifies Lorain as a modeling setting. I have



12. The Ashland & Western is a LA&S predecessor. A&W boxcar 517 was one of 24 built by the American Car and Foundry at a cost of \$800 per boxcar. *William Snyder, The Rattlesnake and the Ramsey*



13. A map illustrates the four interurban and street railways, and the five class-one railroads that served Lorain. The yellow line is the Wheeling & Lake Erie Railway, which was leased by the Nickel Plate in 1949. *Jim Six collection*



INTERURBAN RAILROADS IN LORAIN



the avenue. It's the midst of the Great Depression and there is a lot of traffic. *Lorain Historic Photos*

When we talk about railroads today, most folks envision big diesels painted for BNSF, CN, CSX, NS, UP, or other mainline railroads. Rail power was far different 100 years ago. Streetcar and interurban lines were once a familiar sight in American cities, linking many communities before WW2. They made center-city access easy from smaller communities several miles away [14].

Several interurban rail lines served Lorain. The Lorain Street Railway served the main arteries in Lorain and eventually ran south to Elyria. The one-time famous Lake Shore Electric Railway (LSE) stretched from Cleveland to Toledo. A third was the Cleveland Southwestern. All these lines moved people and freight around Lorain [15].

The Lake Shore Electric was a big player in northern Ohio [16]. Several books have been published about the LSE. Business was great until 1925 when automobiles became common and more roads were paved. A 1934 strike by LSE

14. Lorain had several interurban and street railways. This is West Erie Avenue looking west, circa 1936. Two Lorain Street Railway cars are rolling down

freight agents pushed the discontinuance of freight service. Regular passenger service continued until 1937 when all operations ended.

I find it interesting that today's society is connected via the internet with social media, email, texting, etc. It's an interesting comparison to long ago when a network of electric interurban railways connected cities and towns.



Shore Electric and the motor on the right is Lorain Street Railroad. Lakeshorerailwaymaps.com

15. A 1910 era view of Station-C in the middle of the photo on West Erie Ave. The sign says ticket office and waiting. I believe the motor car at the left is Lake



photo. Note the Chrysler Automobile billboard at the left. The sign above the motor coach reads CARS STOP HERE. Lakeshorerailwaymaps.com

16. Lake Shore Electric No.169 express to Toledo is at Leavitt Rd. on the west side of Lorain. The Ford sedan provides a nice touch to this classic 1937

much more Lorain material in my personal archives and can share upon request.

As the place where I was raised for the first 15 years of my life, I have a good feeling for railroading there. Every city or town has unique qualities. I thought there is much to learn from a look at Lorain.

Lorain has many modeling options ranging from a heavy-duty harbor to a shipyard, a large and medium steel mills, varied small and medium industries, and several railroad facilities. The west side had B&O, Nickel Plate [17], and Lorain Ashland & Southern areas to model, while the east end of South Lorain had the NKP, NYC, and W&LE in close proximity. One or two of the electric railroads could be added into a layout mix.



17. A Nickel Plate freight out of Bellevue is bound for National Tube steel in South Lorain in this 1920s scene. The engineer is trying to keep ahead of an approaching rainstorm. Ray Breyer set up and captured the action on his home layout. I had fun adding the sky and backdrop using Photoshop. Ray is a noted NKP modeler, early railroad historian, and Editor of the NKP Technical & Historical Society's modeling magazine. *Ray Breyer photo*

These columns on Lorain now have me considering the LA&S and the B&O in Lorain. I have room for the LA&S operations, plus interchange with the B&O. Should I really get crazy, I could include a short section of the Lorain Street Railroad that crossed where the B&O and LA&S interchanged at East 28th St. This would make for an interesting mix set in the mid-1920s.

With these Lorain installments, what do you think? I hope you are encouraged to research your favorite model railroad setting for more information. The more you know about the setting and what it looked like, the more realistic it will feel while operating. It's not just a building you assemble. It becomes a customer you have to switch. You need to know what type of freight cars to spot, what they carry, and why. You become drawn into the operation. It is no longer just a game of moving cars about.

Modeling any prototype setting presents its challenges. With a 1950s population of only 64,000 citizens, you might conclude that Lorain was not a big town. Yet it was one of the industrial giants of the Great Lakes region loaded with heavy manufacturing, great railroading, and great people. Lorain was an international city with many ethnicities making up its population. If Lorain interests your modeling senses, I recommend modeling before 1970, preferably before 1960.

MY MODEL LORAIN

As mentioned, I'm considering modeling the LA&S in the early 1920s before it collapsed. As a terminal railroad ending in Lorain, it has great possibilities for this limited modeler. The B&O interchange, Thew Shovel, and other local industries offer local switching. Coal traffic moving north to National Tube Company and ore headed south from the National Tube docks would make for interesting trains. I envision one staging yard to for LA&S trains to and from the modeled scenery.



I can play a little loose with history for motive power. I would model this line with the completed upgrades, which would enable using my Broadway Limited H10 2-8-0 and L1 2-8-2 locomotives. This would be all the power needed for the LA&S.

As for B&O power, I have a USRA Mike [18] that can be detailed for B&O service on the interchange. I have lots of early freight cars and several Pennsy cabin cars for an early 1920s setting. My 12' x 24' space would work for modeling this part of Lorain.

In general, I see Lorain as having too much to model. I think I would need a gymnasium-size space to model it all. Modelers with limited spaces would need to pick and choose the parts to model. Such is the plight of us limited modelers.

The key is to choose an area and place for your focus. Don't try to do it all. Don't crowd the layout. Set reasonable goals. It is better to have less that looks and works well than to build more that doesn't work well. As modelers, we tend to fill the



18. A USRA Mikado could be detailed as a B&O 2-8-2 and used at the interchange with either the LA&S or the NKP. *Photographer unknown*

space we have available. With less space, you will be able to model defined scenes and locations. This ain't unique to Lorain. Be smart, not greedy.

I considered modeling the B&O, but I couldn't do much of the railroad. The coal and ore docks are big. A lake boat in HO scale would be about six feet long. Back-to-back lake boats for coal and ore would take up lots of space. I don't have the that space, but you might.

The Nickel Plate also has potential on its east-west dash across Lorain. The May column noted plenty of industries to model and switch along the NKP. I can see me doing that. For me though, there is a big "however," as I haven't any NKP locomotives and only one NKP caboose. I would have to rebuild my New York Central locomotives to represent the NKP. I really don't want to do that.

If I were to model a limited area of the B&O or the NKP, it would most likely be the downtown area where the two railroads crossed and interchanged. There was plenty of switching by both railroads and it could be done in a bedroom-size layout [19].

The area where the B&O and NKP cross [20] would fit into a corner, allowing both railroads to be modeled. A limitation is the run-through trains on the Nickel Plate would need a staging yard and the NKP tracks folding back onto themselves at the staging yard. Still, it's possible with a little more space.

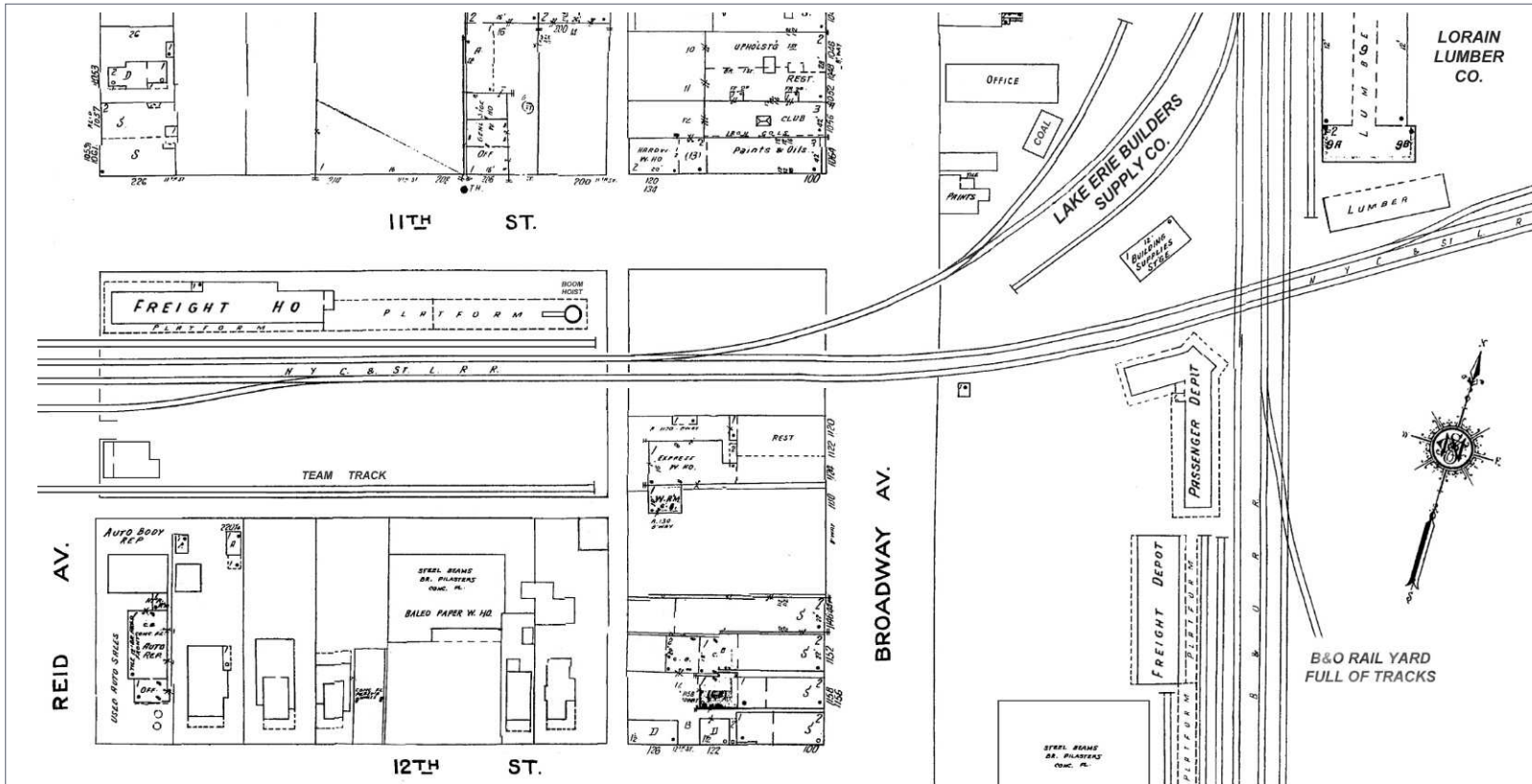
Modeling the B&O would be problematic for modelers who need EM-1 2-8-8-4 locomotives [21] as they only operated a couple of hundred yards north of the roundhouse and yard in South Lorain. Modeling the B&O without using the fabulous Bachmann EM-1 models would be almost unthinkable for me. Such a large model does not lend itself to a prototype-based smaller home layout. The Bachmann model works well on a club layout or on a display shelf.



LAYOUT PARAMETERS

I have a 12' x 24' basement area for my layout. My previous layout was 24" wide. I prefer a 16" width for switching on-line industries and not just running through scenery. But that may be too restrictive.

I need more shelf depth as room for industrial buildings. I do not like building flats and prefer to model an entire building, or at least four inches of it. The 24" width provided room for industries but may be more than I would need. I'm leaning towards a width between 18" and 24" for the new layout. Whatever I decide, the width will be uniform for the entire layout.



The layout would follow the one-town concept I have been promoting. An around-the-walls option would allow trains in and out of Lorain in either direction from a staging yard. I would plan for local freight trains and even passenger trains to pass through town. The pull of a B&O- and NKP-themed layout is very strong.

I'm attracted to Lorain industries, especially the National Stove Company, which was served by the NKP. It has a simple design that could be represented by several available kits. I've partly finished buildings that would work [22].

I could have National Stove as the focus near one end of the 24' room and the interchange with the B&O at the other end.

19. This part of Lorain would make a great little layout for switching. The crossing diamonds could be located in the corner of a small room with the B&O on one wall and the NKP on another, forming an L-shaped layout.





20. This is the same area of town as on the Sanborn Map [19]. This scene dates before the Great Depression, but with updating would work for any era from 1930 to 1960. Looking closely at the area to the immediate left of the depot, you can see a platform indicating the B&O still operated passenger trains when this photo was taken.



21. The Bachmann B&O EM-1 2-8-8-4 model. These articulated steam locomotives have been produced in HO and N scale. Modeling the B&O without this model is inconceivable to me. I can see owning a pair of these beasts to enhance with detail and weathering. *Bachmann photo*



22. While not a replica of the National Stove Company factory, this model I've been building for a while has the feel of the prototype. The inset prototype image shows the street side of the factory. I'm modeling the railroad side of the facility. The Nickel Plate served this company. *Jim Six photo*

There were additional railroad customers, plus the NKP freight house and a team track [23]. There's room for the depot, interchange with the B&O, and a spur to Lake Erie Builders Supply. Yes, this setting would work well. Refer to the Sanborn map [19] and details in the May and June Limited Modeler installments.

I confess that Lorain is on my short list of towns to model on my next layout. A focus on the B&O and NKP would mean giving up on the NYC and PRR opportunities. These two railroads have long been a foundation of my modeling. All my locomotives are either NYC or PRR. Lorain has no real NYC option but with the LA&S, the Pennsy is a contender. Giving up the Central is almost unthinkable for me.

But there is an NYC option. The LA&S had planned to extend its tracks along the east-west length of the National Tube plant to connect with the NYC and NKP at Sheffield yard. Had it not

been for the First World War, that could have happened. Using my modeler's license, I could adjust history so the Pennsy had completed the Sheffield connection and LA&S upgrades. I could also assume the railroad was not abandoned in 1925.

It's an interesting proposition that would allow me to retain my NYC and Pennsy locomotives and cabooses. I could also



keep my USRA 2-8-2 as B&O power for interchange duty.

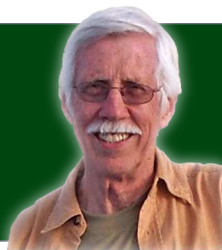
This closes out my three-part series about Lorain, Ohio. I have a lot more material to share in discussions on the *MRH* Forum. Thank you for bearing with me as I brought you this presentation about my hometown. ☑

23. This view looks west along the Nickel Plate close to the B&O interchange. The team track is obscured by the crossing gate at the left. The interchange track diverges to the right in front of the shanty. Four boxcars are spotted at the freight house. You can see the long loading dock with a swivel hoist on this end of the freight house. west2k.com



GETTING REAL

column



MRH Running Extra | July 2020

TONY THOMPSON ON
MODELING RAILROAD CROSSING
SIGNS ...

★★★★★
RATE THIS ARTICLE

AS MODEL RAILROADERS, we primarily model the railroads and the railroad environment, but of course streets and highways are part of that environment. And when we include those roadways, at least a few of them will cross the tracks in our layout scenes.

So then there are crossbucks alongside roads at railroad crossings. No model railroad should be without them. Right?

Well, my layout has not had them for quite some time. I installed some molded plastic ones years ago, and they were soon broken off by careless elbows (owners of which shall remain nameless).

I then made up two of them out of brass, using square brass tubing for the post and brass strip for the blades. These were durable, and in fact one of them once drew blood from one of those careless forearms.

When I moved the layout from its original location in Pittsburgh, Pennsylvania, one of the guys who helped with dismantling, packing salvaged stuff for moving, and scrapping the rest, asked if he could have the pair of brass crossbucks.

► MODELING REAL RAILROADS AND WHAT THEY DO

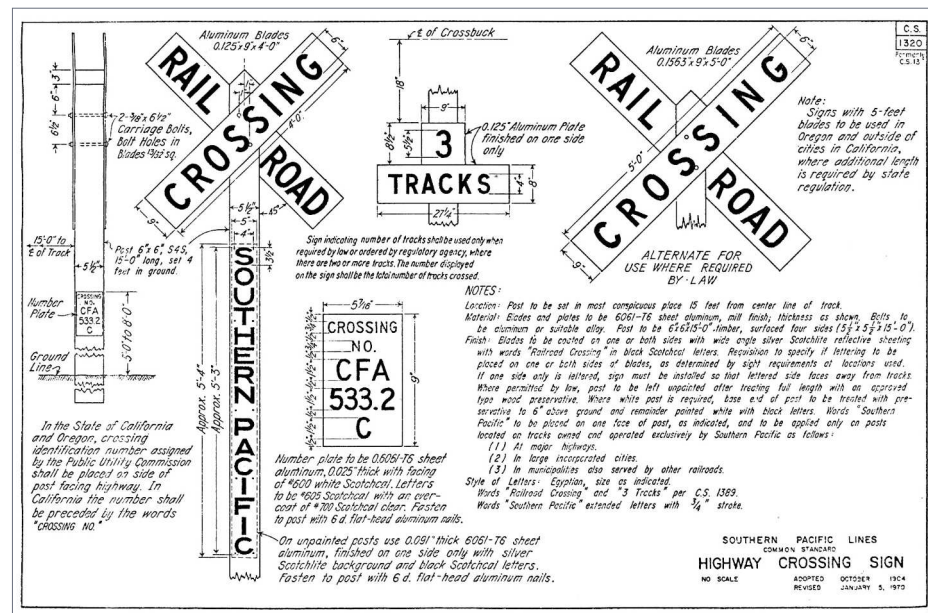
GETTING REAL | 2

I said “sure,” having no certainty that any of what I was going to move would ever be resurrected. Well, no regrets, but now I need to replace them.

Once again, I want to make sturdy ones that can be placed in potentially vulnerable locations on the layout and have a hope of surviving.

BACKGROUND

The right first step for any such project is to know how your railroad built and lettered its crossbucks or, as the Southern Pacific called them, “highway crossing signs.” As a Southern Pacific modeler, that is my starting point. Illustration [1] shows the SP design in the form of the Common Standard no. 1320



1. The Southern Pacific Common Standard drawing no. 1320 for “Highway Crossing Signs” or crossbucks, as revised in 1970 from the original C.S. no. 13 drawing (see *Common Standard Plans*, Bibliography).



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INDEX

TABLE OF CONTENTS

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INDEX

TABLE OF CONTENTS

drawing, which can be found in a volume of *Southern Pacific Lines Common Standard Plans* (Bibliography).

This drawing had been created as Common Standard or C.S. no. 13 in 1904, while the C.S. 1320 drawing is updated to 1970, by which time the signboards themselves had become aluminum plate. In 1953, however, these were all wood.



2. This photo was taken near Monterey, California in January 1980, and shows the vertical lettering SP applied to some crossbuck posts. Note also the asphalt preservative, to be six inches above ground level on the post. *Author's photo*



3. This is the Osos Street crossing of the SP yard in San Luis Obispo, looking westward, with the depot out of view to the right. Note the "vertical cross" advance warning sign at far right, and also note lack of vertical lettering on the crossbuck post; any multiple-track sign; and any pavement marking or striping. The 4-8-4 locomotive is Class GS-1 no. 4401, heading up Train 72, the eastward "Coast Mail." *Richard Steinheimer photo, 1953, DeGolyer Library collection*

I also discussed this drawing [1] and its use, in a blog post some years ago (see Bibliography). Since the drawing contains extensive text which may be difficult to read, I will summarize the vital parts.

First, the drawing calls for 6" square posts (surfaced to not less than 5.5" square) and 5' or 6' blades "outside of cities in California." The 15' post is to be set 4' into the ground.

Note that the railroad, not the local road authority, was responsible for providing, erecting, and maintaining crossbucks.

Like many railroads, SP placed the two crossed blades on opposite sides of the post. In addition, there were railroads that did not place the crossbuck boards at 90 degrees to each other, but SP did. Lettering is 6" Egyptian (the lettering style used also for SP depot names).

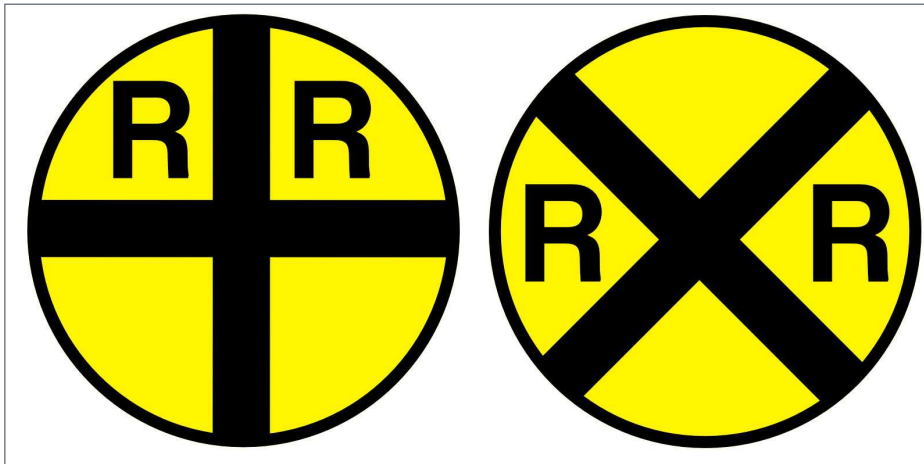


The drawing of the post includes the railroad name in vertical lettering. This can be found in some SP examples [2] but not all [3]; but as the drawing notes, only when (i) at a major highway, (ii) in large incorporated cities, and (iii) in municipalities also served by other railroads.

If needed, that lettering is now available in decal form from Microscale, in their set no. 87-1376. The vertical lettering isn't needed on most of my crossbucks, though, because the foregoing three conditions rarely apply on my layout.

Next is the location of the crossbuck. Both railroad and state highway standards specify these aspects. In brief, crossbucks are to be placed essentially "at" the crossing (warning you to slow down, look, and listen). The SP specified that crossbucks be 15' from the centerline of track.

There may also be an added sign for multiple tracks "when appropriate." The SP drawing [1] states that the number of



4. Shown here are old (left) and the new (right) Advance Warning Signs. Into the 1950s, examples of both could be found at railroad crossings.

tracks shall be signed "... only when required by law or ordered by regulatory agency."

State highway standards typically specify that up to 100 feet of distance between multiple tracks can be served with a single crossbuck on each side, provided there is a sign listing the number of tracks.

A further point to recognize is that the crossbuck is only part of the warning sign system for railroad crossings. A yellow "Advance Warning Sign" is also installed, and its appearance and location are specified in the appropriate edition for any modeling era of the *Manual of Uniform Traffic Control Devices* (MUTCD).

First issued in 1932, and revised and reissued about every decade, the MUTCD is now under the auspices of the Federal Highway Administration, but until 1971 was a national standard issued by a committee of state highway department officials.

The current issue is online, and historical ones can all be found on an excellent website by H. Gene Hawkins (see Bibliography). The one in force at the time I model, 1953, was the 1948 edition.

The Advance Warning Sign was still in the process of changing in 1953. Until 1935, it had often been a vertical cross, but in that year it changed to a diagonal cross [4]. Of course signs were not replaced for the design change alone, and many older signs remained in use for years [3].

This is an important point to recognize about street signage: it is era-dependent, and even after the adoption of national recommended highway standards, also place-dependent.

Every state, for many years, had its own standards with minor differences from the MUTCD. So it is necessary to research your time and place to make accurate sign selections.

One more brief comment. In this article, I won't be discussing modeling of the roadways themselves.



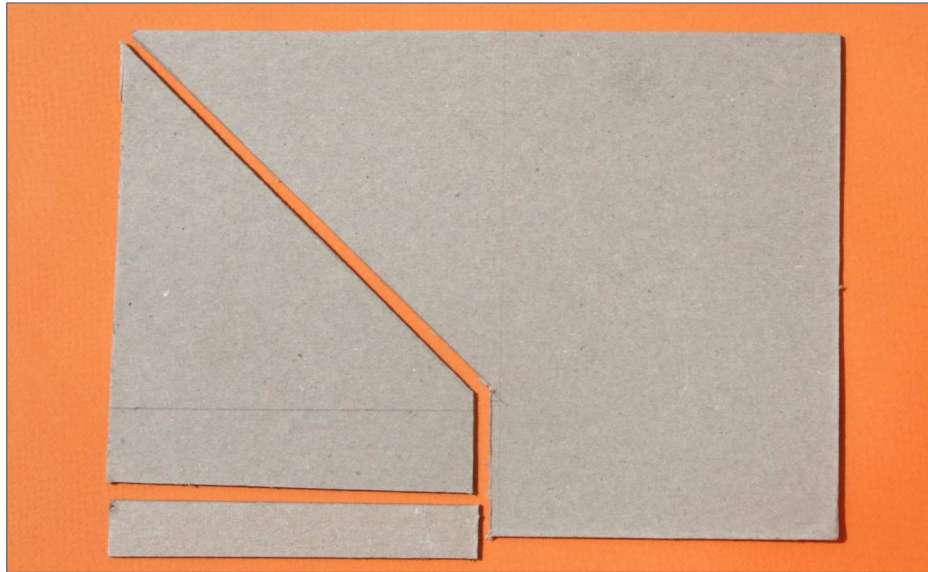
But if you haven't done that yet, or want to improve the ones you have, one good source of information and inspiration on this topic is Lance Mindheim's recent book (see Bibliography).

MODELING MATERIALS

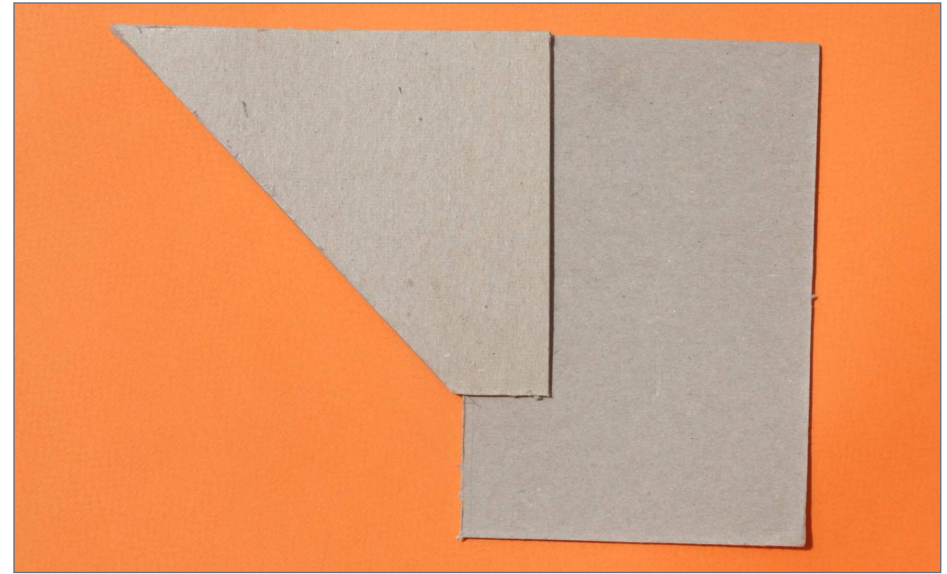
I decided to repeat my previous idea, using all brass for the crossbucks, to make them sturdy. Soldered brass assemblies of this kind had proven to hold up as I wanted.

My starting point was 3/32" square brass tubing, purchased from K&S Precision Metals (see Materials list). As crossbuck posts, this size is close to 8" square in HO scale, so a little oversize, but since I was aiming at a sturdy crossbuck, that should be OK.

The blades are nominally 9" wide, which is just over 3/32" in HO scale. I was able to find some 1/16"-wide red-brass strip



5. The sheet of 3/32" cardboard used to make a soldering fixture, with the first three cuts made. The 45-degree angle was simply laid out in pencil.



6. The medium-size piece in [5] is flipped and glued atop the larger piece. This makes the 45-degree angled piece high enough for a second blade to be added, on top of the post and first blade.

on the internet, which is too narrow but, I decided, good enough for my blades. The strip (about 0.020" thick) was simply cut into scale 6' lengths.

I did consider cutting strips from brass sheet of about the same thickness, and did cut a few, and cleaned up the cut strips with a file. This is certainly feasible but is also more work than starting with strip. Almost all my crossbucks ended up being made from strip.

MAKING A SOLDERING FIXTURE

Next I needed to make a fixture for soldering, to accurately place the blades at 45-degree angles to the posts. I began with a piece of heavy, solid cardboard, received as packing.

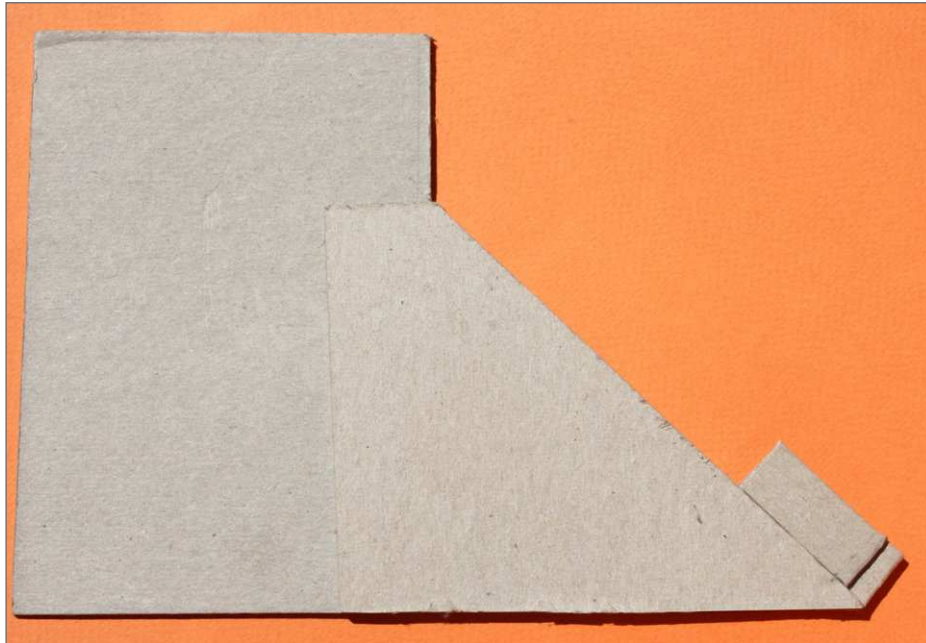


It's easy to lay out a 45-degree angle – just measure equal distances in two perpendicular directions and draw a line to the intersection.

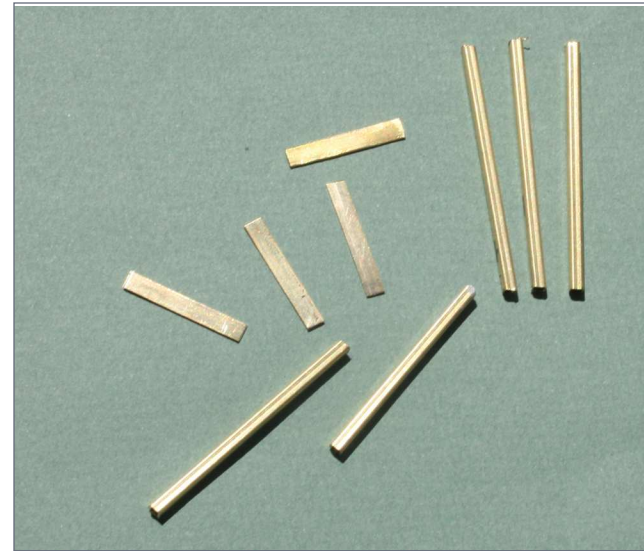
(Incidentally, the choice of cardboard is not arbitrary. I love to work with styrene, but really didn't want to use a soldering iron around a styrene fixture.)

I made just three cuts: first the long 45-degree cut, then removing that piece from the original rectangle, finally cutting one shorter strip to use as material for stops [5].

I then glued the larger removed piece on top of the starting piece, to make a thick enough fixture to accommodate placement of the second blade, after the first blade is underneath the post. This worked well with the second blade atop the 3/32" tubing [6]. I used canopy glue for this.



7. The stop pieces have been added to the soldering fixture, in two parts, as described in the text.



8. A few freshly cut brass posts and blades.

The last step in making the soldering fixture was to add a stop and support for blades. Note that the stop is double-height. The lower part is to ensure that the blade is the right height to support it at the same height as the post, and the second part locates the blade length so its length is centered on the post [7].

This latter part requires care in measurement; I had to adjust my stop location twice.

ASSEMBLING THE CROSSBUCKS

Now the process is to cut however many posts are needed, to a length of 13 scale feet or so (unlike the SP, I don't need to embed my posts four scale feet into the layout). I cut lengths of posts with a fine-tooth razor saw.

Tubing is reputedly difficult to cut this way, but my experience is that cutting slowly and lightly works fine, or a cut-off disk would work too. I used side cutters to cut the blades from the brass strip, and cleaned up the ends with a file. Soon you have a bunch of posts and blades [8].



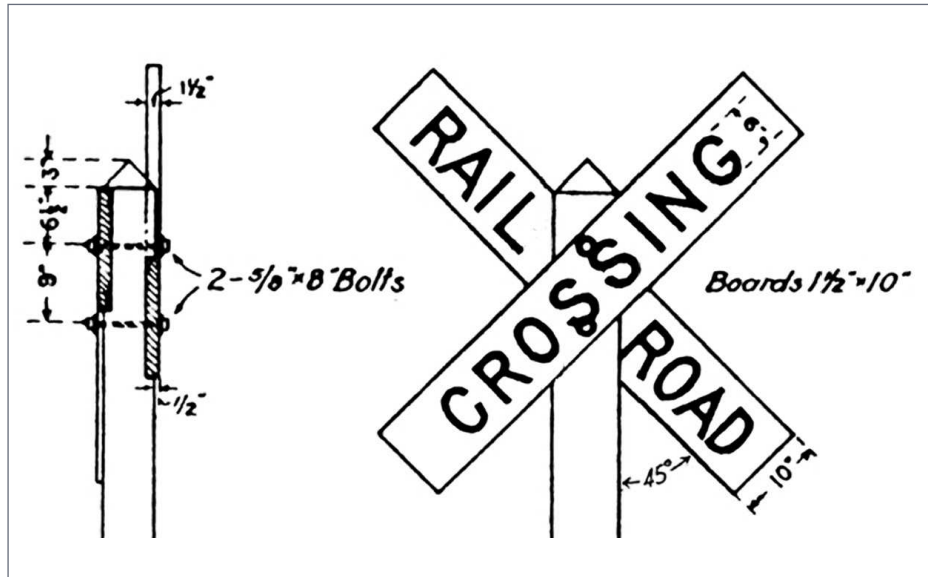
My next step was to taper the top of the post as seen in the SP drawing detail [9].

Some SP signposts had a “four-way” taper, that is, all four sides were tapered toward the top, but this post is only a two-way taper, at 45 degrees.

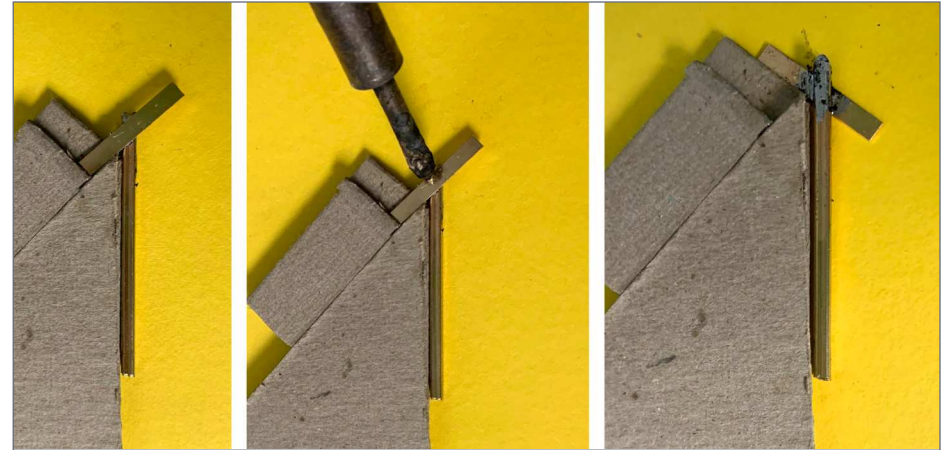
I filed this taper on the tubing, then filled the tube end. I tried two methods for filling. First, you can simply allow solder to flow into the top of the tube; second, you could use modeling putty. I started with putty, but changed over to solder.

The first step in preparing for assembly is to tin both sides of the post where the blades will go, and also tin the center of one side of each of two blades. (This is also the time to fill the top end of the tubing with solder, if you wish.)

Then set the post in the fixture, and place the blade on top of it.



9. A detail of the original CS 13 drawing, showing the top taper of the post and the use of boards for the crossbuck blades.



10. These three photos show the assembly sequence. Left, place the tinned post against the fixture, and place the tinned side of the first blade atop the post. Center, touch blade with iron, wait until solder flows at blade edges. Right, flip over the post with its first blade attached, and the assembly is ready to receive the second blade, soldered in the same way as was the first one.

Then touch with a soldering iron to complete the joint. Once it cools, turn the assembly over and repeat to add the second blade [10].

With a little practice, this is actually pretty quick and easy. But I did need a few tries to get my actions to work consistently. Care with position of both post and blade is essential for accurate centering.

The good news is that solder joints, if not exactly what is wanted, are easily re-made, as many times as necessary [11].

I cleaned up any excess solder with a fine file, and made sure the top taper on the post looked right. (The solder might not



quite fill the taper, in which case modeling putty works.)

PAINTING AND LETTERING

Once I had a fair number of crossbucks completed, I placed a bunch of them upright in a piece of foam (I used a block of the foam that comes in some InterMountain kit boxes), for convenience in painting them [12].

I used “rattle-can” gloss white to paint these [13] – glossy because they will be lettered with decals. Be careful here not to insert the posts too far into the foam, or subsequent touch-up will be necessary.

And by the way, rattle cans have a deservedly bad name, but Tamiya paints are a major exception. Their spray nozzles give a



11. Two completed crossbucks, as soldered. Any excess solder will be cleaned up with a small file. The one at left does not have the post perfectly centered (note that the blade crossing is not exactly on the post), so I simply unsoldered and

re-soldered to get it right.

fine and dependable spray. I use them without hesitation.

The last painting task is the black area at the bottom of the post [1].

Since the 15-foot post is supposed to be 4 feet into the ground, and the black area extends up 6 inches above the ground, you can paint black on your posts below 10 feet, 6 inches (scale) on your crossbucks. This also helps get them to stand 11 feet tall when placed.

Once painted, you have several options for lettering. First, the SP drawing [9] can be reduced to HO scale and printed on white paper, then cut out and glued to your crossbuck blades. This is an easy way to get the SP Egyptian lettering, though the

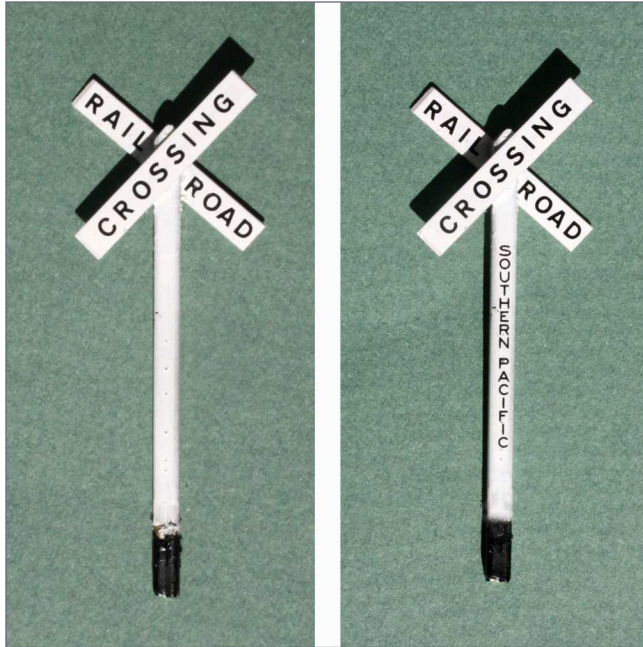


12. The first group of seven completed crossbucks, inserted into a foam block for painting. This is about as many as I could paint at once.



13. The same group of crossbucks shown in [12] has been spray-painted white.





14. Two completed crossbucks, one with the post lettered, using Microscale decals. Posts have a black bottom, and a coat of flat finish.



15. This photo of no. 91, the westward "Coast Mail," working at Gilroy in 1959, shows at right the roadway approaching the crossing with typical California stop lines. This crossing is also protected by lights and a wig-wag signal. The train appears to have 14 cars, five of them refrigerator cars. *Bob Morris photo, courtesy John R. Signor*

characters are a little slender compared to photos [2].

Second, there are a couple of decal sets I have looked at (likely others exist too). One is from Microscale, set 87-206, which is not specific to SP but does have fairly good-looking lettering (see Materials list).

Another possibility is a decal set produced for the Santa Fe Modelers Organization by Microscale, intended of course to letter Santa Fe crossbucks, but the lettering is quite similar to SP's lettering.

Only problem is that the characters are distinctly taller, perhaps reflecting Santa Fe lettering practice. To look right with this lettering, the crossbuck blades would have to be wider than the SP ones I modeled.

I chose to use Microscale 87-206. It looks entirely adequate when applied to a crossbuck, and it fits the 6' blades I used on my models. The result [14] was very much what I wanted and will certainly serve my purposes.

I mentioned in the introduction, that the SP drawing [1] states that the vertical lettering on the post, as shown in [2], was only required at more important road crossings.

I chose to designate one of my crossings as sufficiently important to include that interesting lettering, as I show here. The completed post is shown in [14].

LAYOUT PLACEMENT

When it comes to layout placement, the crossbucks are located 15 scale feet from the centerline of the nearest track. They are also specified in the MUTCD to be set at least 6', but not more than 12', from the right edge of the pavement. As with so many things in model railroading, you may need to selectively compress these dimensions to fit existing road crossings, as I had to do in a place or two.





16. This view from the layout edge shows Nipomo Street in my layout town of Ballard crossing the SP branch line. An SP locomotive happens to be in town. Geographical names are called out on the layout fascia.

To place posts like these, I drill a hole in my layout materials (ordinarily the immediate subsurface is Homasote) for a press-fit of the posts, and I insert them with canopy glue.

But before placing the crossbucks, the pavement markings, if any, need to be added. Here is a good example of the need to rely on period photos from the area you model, and not to depend on the MUTCD.

What I have seen in period photos from my area of central California in the early 1950s most certainly does not follow the MUTCD, including the example already shown [3].

One place to begin is with the “stop” lines on the roadway, clear of the crossing itself. Even roads with no center line are supposed to have a stop line for railroad crossings.

The MUTCD recommendation is for a pair of 12" lines, 12" apart, and a double center line approaching the stop lines, to emphasize traffic remaining in the right lane. In California, however, a single center line was often used [15].

In all, I have eight crossings on my layout that need protection, which is why I made 14 of the crossbucks like I showed [14]; it's 14 because not all eight crossings require two crossbucks. Rather than go through all of them, I want to show just three crossings that will illustrate what I am doing.

To begin, I want to describe the process of applying stop and center lines, and I will show how I added all these elements to just one of the railroad crossings on my layout, step by step.

This crossing is Nipomo Street in my layout town of Ballard, and the track here is the Santa Rosalia Branch of the SP [16].

The process of applying the pavement striping is fairly quick and easy. I use drafting tape for this kind of masking, as it has less “grip” than masking tape. I cut one 12" scale strip to mask between the two stop lines [17].

I then either brush-paint (as in this case) or airbrush the striping with SP “Lettering Gray” [18].

These lines would have been white in the prototype, but pure white is too stark a color to my eye in the layout environment. Thus I usually use Lettering Gray for lines on roadways, including this project. The exception is when the roadway surface is a light enough gray that white is necessary to be visible.



The final step is to install a crossbuck, six or so feet from the edge of the road, and the crossing arrangements are complete [19].

But of course the crossing has a second side, and there should be a crossbuck there too (though we can only see the



17. This is the same crossing shown in [16] but now the striping on the pavement has been laid out with drafting tape.



18. The pavement stripes have been painted with SP Lettering Gray and the tape removed. Note that stripes are parallel to the tracks, not perpendicular to the center line.

unlettered side of it), and since this is a stub street at this point, no stop lines would have been applied [20].

That raises an important point. The rules recommended in the MUTCD and in local manuals are all very well, but pavement painting is expensive, and it wears out, requiring replacement.

Accordingly, small towns or rural counties will economize on pavement painting to the extent that they can. Especially with rural grade crossings, they may feel that a full set of warnings isn't needed for locals and not worth the cost for non-locals.

This is why one can readily find photographs of what look like non-compliant pavement markings at railroad crossings.

Now I turn to two other crossings. For at least one of them, I wanted to use a crossbuck with the post lettered, as shown in



19. The crossbuck is installed in its proper location, completing the protection of the crossing shown in [18].



the SP example [2], and accordingly chose a location where the more important road might call for such posts.

As mentioned the post lettering is from Microscale set 87-1376 (see Materials list) and is shown here [14].

My choice for this was Willow Lake Road's crossing of the Santa Rosalia branch track near its end. This is also an interesting crossing in that it is skewed at a pronounced angle [21].

As with the Nipomo Street crossing, I applied tape to the crossing area as appropriate, then painted the lines. In this case, because the color I chose for Willow Lake Road is a rather faded asphalt color, really a light gray, I decided to make the lines white.

Then the lettered-post crossbuck could be installed on the near side of the crossing. There is the back side of another one on the other side, of course [22].

Finally, I wanted to model at least one location where the warning sign for multiple tracks would be needed.



20. This is the “other side” of the same Nipomo Street crossing, and it too has a crossbuck, though the unlettered side is toward the aisle. It has no stop line, as mentioned in the text.



21. This crossing is Willow Lake Road, in my layout town of Santa Rosalia, near the end of the SP branch line. You can see that it's a skewed crossing. The depot is at left, the Harbormaser's temporary office is at right. A motor car pullout is at lower left. There seems to be a fog bank out over the Pacific.

My layout town of Shumala has such a crossing, where the tracks crossed are not only the Coast Division main line and siding (in the foreground) but also a part of the engine terminal lead (back from the layout edge).

Chamisal Road passes under the branch line track between the two, obscuring motorists' view, from one side of the crossing to the other, so the multiple-track warning is needed [23].

But it may be immediately obvious in this view [23] that the stop lines are incorrect. These were painted some years ago, before I had researched what they should look like.



So my first step was to mix up some acrylic tube paints, blending Neutral Gray and Black to match the existing road surface (which was originally painted just that way). This gave me scope for new lines [24].

To make the multiple-track warning sign, I used the same Microscale set used to letter the crossbucks (set 87-206).

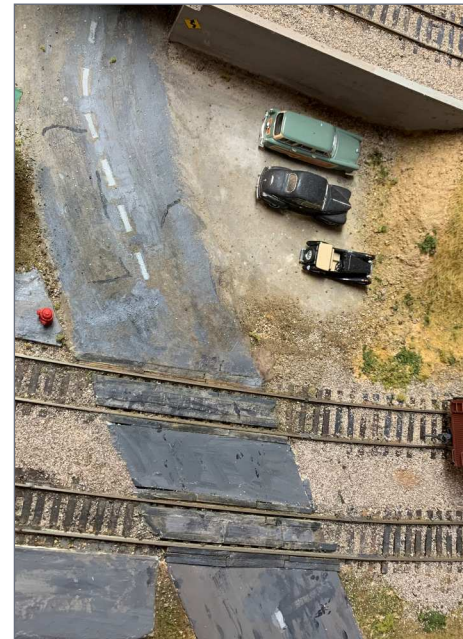
I applied the appropriate decal to some 0.010" white styrene, cut it out and used canopy glue to attach it to the crossbuck post. Following the standard [1], the top of this sign is located 18" below the centerline of the crossed boards.



22. With the pavement striping added and crossbucks installed, this crossing is now appropriately protected. You can see how close it is to the layout edge, making the sturdy crossbucks essential. Note that the crossbuck post at right has the vertical lettering. In this relatively confined space, the prototype distances from track centerline and road edge have been reduced a little.



23. The crossing of Chamisal Road over the Coast Division main line (foreground), at my layout town of Shumala. These stop lines, painted some years ago, are incorrect, being perpendicular to the road center line instead of parallel to the track.



24. With acrylic tube paints mixed to match the existing road color, the offending lines were readily removed. The elevated track at photo top is the Santa Rosalia Branch departing from Shumala.





25. The crossbuck at the Chamisal Road crossing of the Coast Division main line, with a three-track warning sign. Two of those tracks are the main line and siding that are visible here.



26. Where Chamisal Road descends to track level, west of the overpass (compare [23] for location), a conventional crossbuck and stop lines were added.

Next, new stop lines were added at the tracks, the usual double lines for a crossbuck location on the side of the tracks at the edge of the layout, and with the crossbuck installed there, that part of the crossing was complete [25].

The other side of the two tracks visible in [25] is an interesting challenge. The three-track warning means that motorists are already warned before reaching this track from the far side (there is a crossbuck beyond the overpass, protecting the engine lead), as shown [26].

One way that a warning can be provided at a location like this mainline siding is with a single stop line and a suitable sign, an intermediate warning sign. This is another use for the Advance Warning Signs, which I have seen in several photos, using them as a kind of auxiliary railroad crossing sign. I show just a single example here [27].

I made an Advance Warning Sign with the Microscale decal set 87-206. I painted some 0.010" styrene sheet a bright yellow, then added the decal, gave it a coat of flat finish, cut it out carefully, and glued it to a post of 6 x 6-scale inch styrene. I also added the SP's black asphalt preservative at the bottom [28].

This sign was placed at the intermediate track crossing in the set of three at Chamisal Road. From the layout aisle, it can only be seen from the back, but someone standing on the branchline bridge would see something like this view [29].

With all the road striping added, including on the far side of the branch line's overpass, and insertion of crossbucks at the outside of the three-track crossing, and the Advance Warning Sign by the main line and siding, the completed Chamisal Road project looked like this [30].

On my layout the road crossings do not have much associated road length. I mention this because if space is available, you would need to locate where the round yellow Advance Warning Signs would go.



Distance from the crossing is another part of the standard for Advance Warning Signs, which were to be 400' from the track in rural areas, or as little as 100' in towns and cities where lower speeds prevailed, but location could be varied as required by curves or other visibility limitations.

So these signs are normally placed at least 100' from the crossing itself. That distance in HO scale corresponds to about 13-3/4", farther than usually available for most layout road crossings. (We can, of course, selectively compress this distance if desired.)

But if visibility is restricted, this sign can be placed otherwise to ensure warning for motorists.



27. This photo was taken during arrival of troops at San Lucas, California in May 1940, en route to Camp Roberts for maneuvers preparing for wartime. The foreground siding track crossing has a wig-wag on the near side and a crossbuck on the far side, at the main line. Note also the Advance Warning Sign, right at the tracks, with an added sign, "3 TRACKS" on the post. *Southern Pacific photo, John R. Signor collection*



28. This Advance Warning Sign is the old-fashioned version, like the ones seen in [3] and [27].

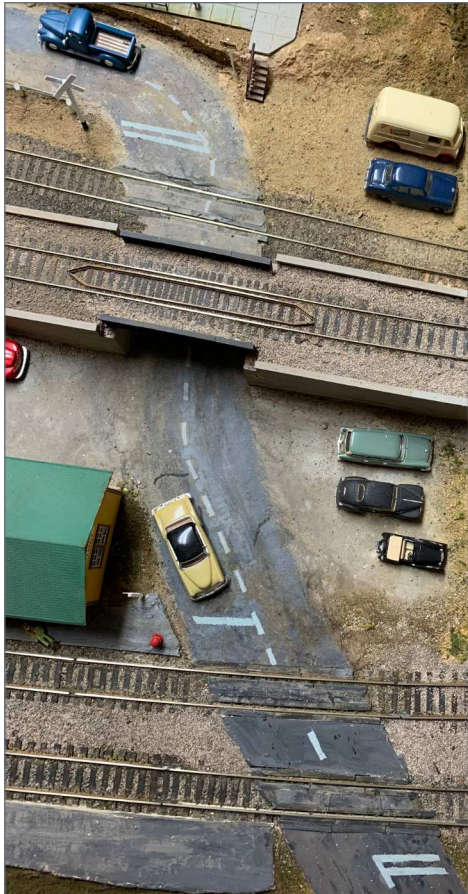


29. A view from the branchline bridge (compare [23] for the bridge location) of the Chamisal Road warning sign, just short of the siding of the Coast main line. The idea here derives from the prototype photo shown [27]. The Shumala depot is at right.



I should also mention that the road signage I have discussed here is just that associated with railroad crossings. As every motorist knows, there are a great many other road signs in common use, and a realistic modeling of roadways on a layout should include at least a representation of them.

The example I might add here, just in the spirit of indicating that more may be needed, is a warning sign [31]. For a great deal more advice and illustration of realistic road modeling, I commend Lance Mindheim's book (see Bibliography).



30. The overall Chamisal Road project when completed, with varying road striping as needed (described in text).



31. The underpass that conveys Chamisal Road beneath the SP branchline track at Shumala conceals, for a motorist heading in the direction of this view, a sharp dogleg in the road ahead. The appropriate warning sign has been added to the abutment.

In closing, I want to thank Jack Burgess, retired traffic engineer, for help and guidance in navigating the MUTCD and associated issues.

CONCLUDING REMARKS

Although the familiar railroad crossbuck is readily modeled with commercial products, I chose to make my own out of brass for sturdiness. There are plenty of resources to learn about the dimensions and placement of crossbucks, which were and are a railroad responsibility.

Accompanying crossbucks are a range of pavement markings and other signs, such as the Advance Warning Sign, and the recommended rules for all this can be found in the MUTCD for your era.



But be aware that states as well as localities have their own rules and practices, which may differ in considerable detail from the MUTCD standard, and for any era, prototype photographs are your best guide.

Addition of these standard safety warnings to your grade crossings is relatively easy to do, and easy to do in a prototypical way, which is what I hope to have conveyed in this article's description. 



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-----, "Streets, Roads and All That, Part 2," blog post:

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MATERIALS

K&S Precision Metals no. 8150, 3/32" square brass tubing

Microscale Decals, set 87-206, "Signs, Railroad Crossbucks, Yard Signs, etc."

Microscale Decals, set 87-1376, "Station Signs, Signal Milepost Numbers, P-Plates, etc." (as revised June 2012)

Santa Fe Modelers Organization, "Santa Fe Standard Roadway Sign Decals" (produced by Microscale), 1992.

Tamiya Products, spray and brushable paints.

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[TABLE OF CONTENTS](#)



Detailed load for a flat car

Part 2



RATE THIS ARTICLE

MRH Running Extra | July 2020

GEORGE TOMAN ON OPEN TOP LOADING OF FARM EQUIPMENT ON A FLAT CAR ...

LAST TIME, I showed how I assembled these two nicely detailed Massey Ferguson combine kits.

Now that the two MF-830s are finished, it is time to load them on a flat car and ship them out. At one time in my modeling I would have just placed these on the flat with minimal thought about how and why various blocking and tie-downs were used.

I want this pair of models to be loaded as accurately as possible. In reality, the header and various other components

would not be attached to the body until after delivery. These parts were normally shipped on skids and secured to the flat car floor with various tie-downs and blocking to prevent damage. This was done to protect the equipment from shipping damage and for safety.

Moving equipment as an open top load takes special considerations and must follow American Association of Railroads rules, in a slightly earlier period known as ARA. Using the internet, I found and purchased an AAR rules book that has almost 1,000 pages. Why so many rules? The answer is simple: safety and damage prevention.

The last thing the railroads wanted was to damage products falling off or out of a car and causing an accident that could result



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[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

“At one time in my modeling I would have just placed these on the flat with minimal thought about how and why various blocking and tie-downs were used. I want this pair of models to be loaded as accurately as possible.”

in injury or even death. There are forces on a load in forward, reverse, right, left, up and down directions.

What happens when a train starts or stops and goes around curves? All these are important and must be factored into loading for damage-free delivery. Another source of information is from internet discussion groups. Two that I found are RealSTMFC.groups.io and groups.io/g/Resin-FreightCarBuilders.

My AAR *General Rules Governing the Loading of Commodities on Open Top Cars* book is divided into sections. Section 1 discusses all rules that all shippers must follow.

It covers in depth the use and size of blocking, nails, cable, chains, weight and positioning the load and other items to secure loads on open top cars. Just as a point of information an open top car can be a flat, gondola or hopper car.

Section 3 of the book covers the loading of farm equipment machinery and has the information necessary to load the MF-830 combines.

The AAR rules started back in the 1890s and were continually updated. A 1960 printing may have drawings going back many years, as many of the practices have not changed.

I found pages showing farm machinery loads that sort of resembled my combines. As with any modeling, I had to make a best guess as to the rules and blocking materials.

In [36], there is a farm combine similar the Massey Ferguson MF-830 but without the header attached. Information below the diagram lists the options that would be acceptable for proper safe loading on a flat car. Notice that there is an item number showing the number of pieces along with a description.

Item E mentions using six-strand 9-gauge black annealed wire. So what is annealed wire? To create annealed wire, the manufacturer starts with a low carbon steel wire.

Annealing involves heating the wire to a specific temperature before cooling it at a prescribed rate to achieve the desired result, of increasing the ductility of the wire and reducing the hardness. This allows the wire to be flexible while remaining durable. With these properties, annealed wire can stay in place when wrapped around itself.

A single strand of 9-gauge black annealed wire is about 0.148" in diameter. Six strands, as commonly used, are about 0.888". In HO that scales to about 0.012". I started with magnet wire to make annealed wire for my model.

Another item in [36] is item B showing the blocking for each wheel. Looking at the description shows that blocks per pattern 11, 18, 24 or 30 may be used and nailed to the floor with four 40d nails. [36, 37] show the patterns for these items.

The blocking material used to load and secure cargo during transportation was often made of inexpensive or waste items. See Item E.

Diagrams [37, 38] show blocking patterns. When choosing my blocking patterns, I considered the size of the tires and clearances from the deck of the flat to the underside of the model.

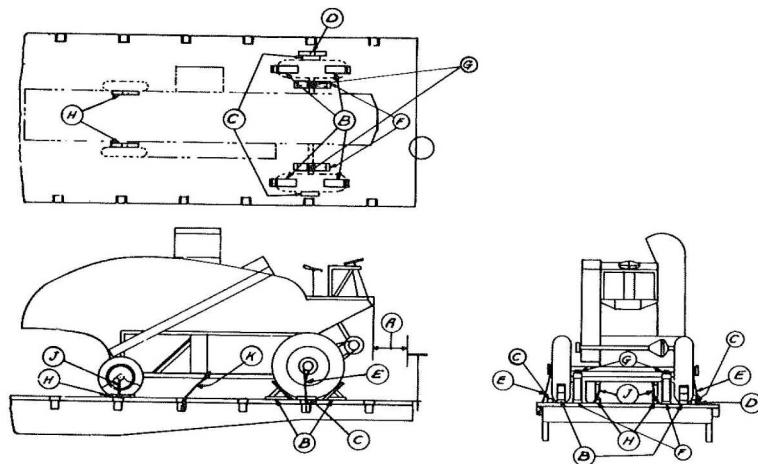


DETAILED LOAD FOR A FLAT CAR | 5

Sec. 3—Fig. 55 (Rev.—12-1969)

43

HARVESTER—THRESHERS (COMBINES), OVER 4,000 LBS., TO 7,500 LBS., INCLUSIVE—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	4 ea. machine.	Blocks, per Patterns 11, 18, 24 or 30. Locate in front and back of each front wheel. Nail each to floor with five 30-D nails.
O	2 ea. machine.	Blocks, per Patterns 3 or 13. Locate both against either inside or outside of front wheels. Nail each to floor with four 40-D nails.
D	As required.	Blocks, per Pattern 5. Locate against Items "O", as shown. Nail each to floor with six 40-D nails. Not required where Items "E" are attached to stake pockets.
E	2 ea. machine.	6 strands, No. 9 ga. wire. Pass around hub cap of axle, or through holes in plate of wheels, and through stake pockets, or underneath Items "D". Twist taut.
F	2 ea. machine.	Support, per Pattern 12. Locate under axle, as shown. Nail each to floor with eight 30-D nails.
G	1 ea. Item "F".	1 in. No. 14 B. W. ga. hot rolled steel, length to suit. Pass over axle, as shown. Nail each to Item "F" with four 16-D nails.
H	2 ea. machine.	Blocks, per Pattern 5. Locate both against either inside or outside of each rear wheel. Nail each to floor with six 40-D nails. Substitute, if desired, blocks, Pattern 2, at each location nailed to floor with five 30-D nails.
J	2 ea. machine.	6 strands, No. 9 ga. wire. Pass around axle and underneath Items "H", Pattern 5 or plate per Pattern 32 secured to floor with 10-D nails. Twist taut. Substitute, if desired, where Items "H", Pattern 2, are used, 1 in. No. 14B. W. ga. hot rolled steel, length to suit, passed over frame and secured to floor with four 20-D nails.
K	2 ea. machine.	6 strands, No. 9 ga. wire. Attach to frame of machine and pass through stake pockets, or underneath blocks per Pattern 5 secured to floor with six 40-D nails, or underneath plate per Pattern 32 secured to floor with ten 10-D nails. Twist taut.

Where Item "K" cannot be applied, use two additional Items "E".

Items "F" and "G" required only where width of units above tires equals or exceeds width of car floor.

If so equipped, hand brakes must be tightly set and levers wired.

4 in. x 4 in. side stakes may be used for securement of auxiliary farm machinery attachments weighing not more than 2,400 lbs.

See General Rules 4, 5, 9, 14, 15, 19-A and 19-B for further details.

1969

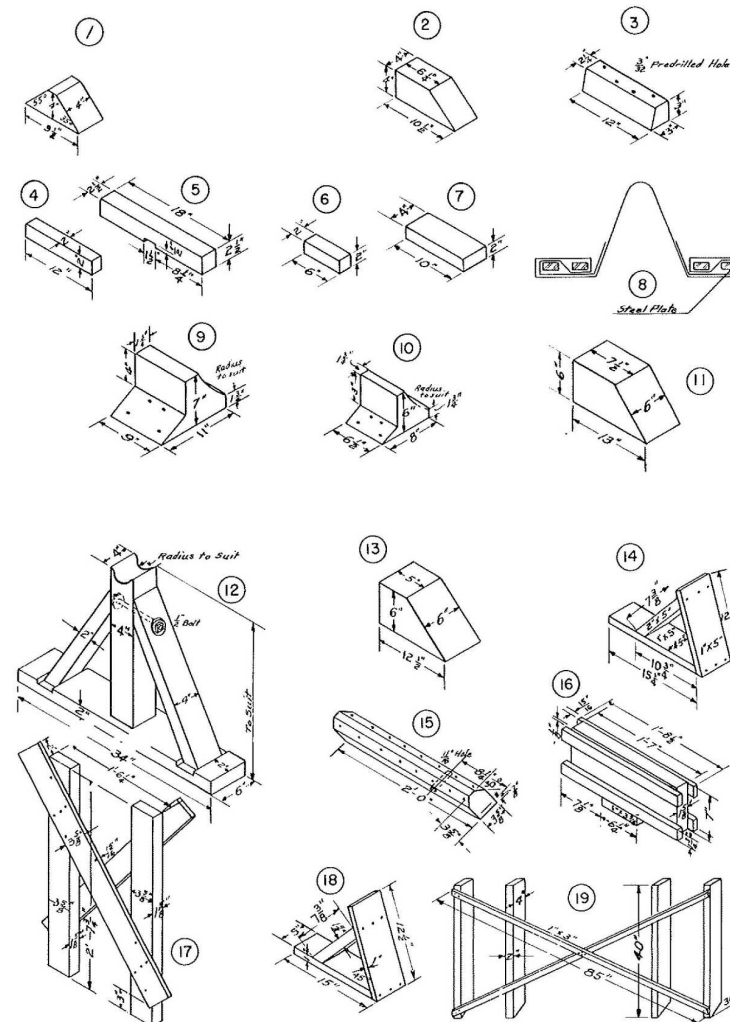
36. A diagram from Section 3 of the AAR Farm Machinery Open Top Load Rules for a combine.

DETAILED LOAD FOR A FLAT CAR | 6

Sec. 3—Part 2 (Rev.—9-1963)

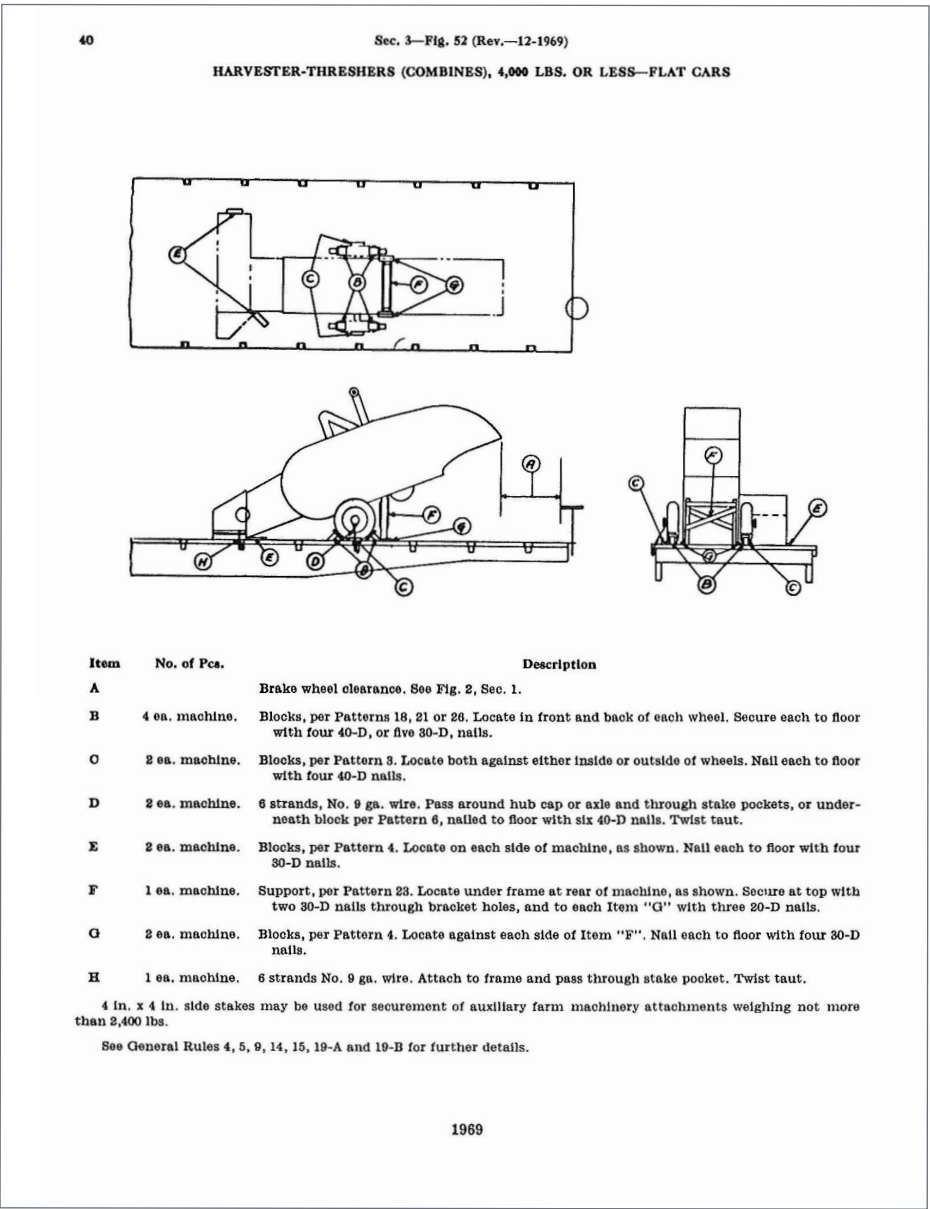
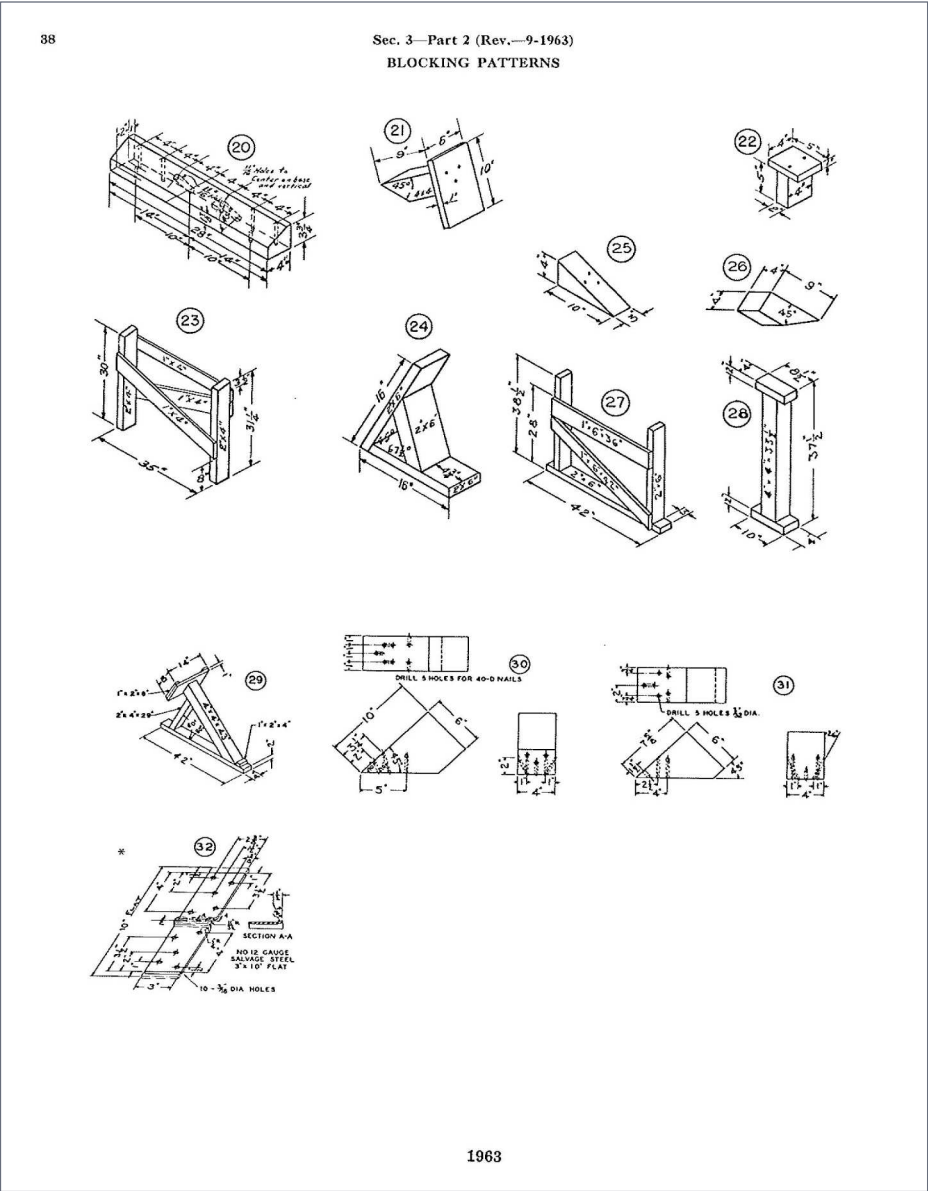
37

BLOCKING PATTERNS



1963

37 (above), 38 (next page). Blocking patterns for various loads.



★★★★★
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39. Top, side and end views showing loading of a combine with a header like the MF-830.

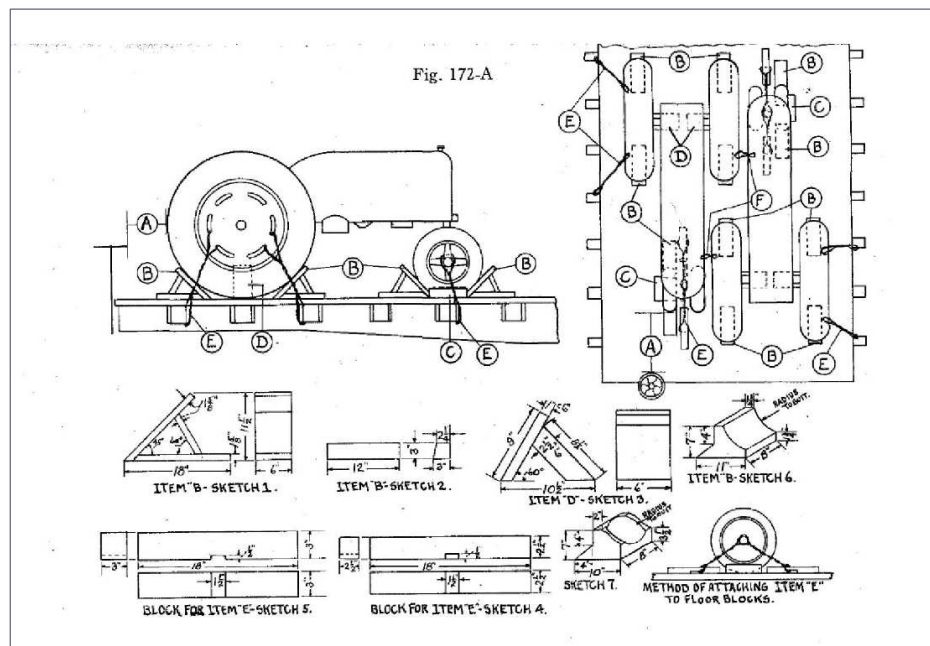
DETAILED LOAD FOR A FLAT CAR | 9

For the annealed cables and how they are attached, one must consider if stake pockets or other methods will be used to attach them to the deck. Look at items 5 or 32. I chose items 4, 18 and 20 for my blocking.

Two loading drawings that helped by showing blocking for another style of harvester with a header attached are shown in [39]. I have also included tractor loading info as seen in [40] and it shows a good view of the blocking for both the large and small wheels like the MF-830 combines.

Making the blocks and wire tie-downs

After looking at the blocking needed for the loads, I decided to use styrene, as it cuts clean and is easy to work with. I could

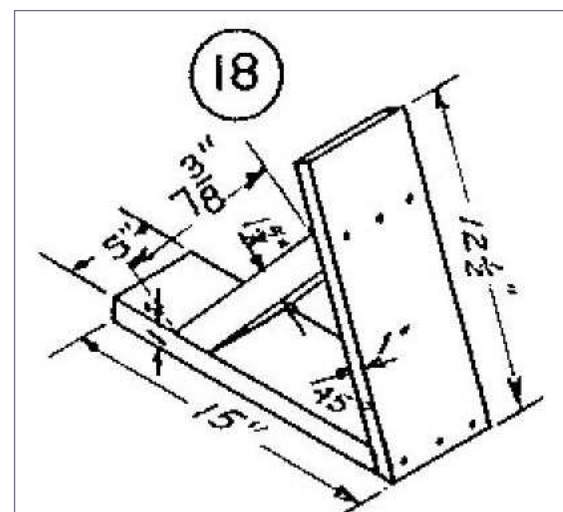


40. Typical loading arrangement of a tractor with large and small wheels that are like those on the MF-830.

DETAILED LOAD FOR A FLAT CAR | 10



41. Sharp blades and accurate measuring tools are essential to produce the precise angles and dimensions for scale blocking.

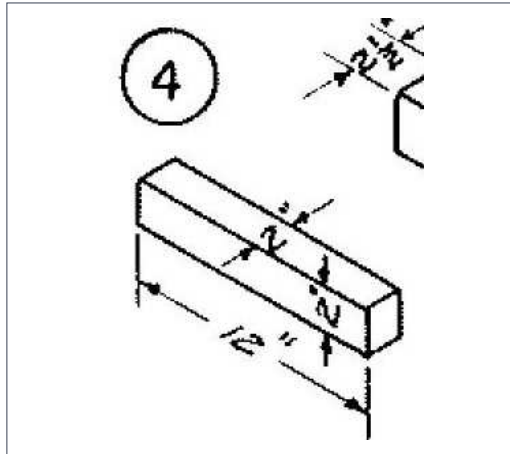


42. Pattern 18. For the 1 5/8 x 5" piece I used scale 2x6 and for the 1" thick boards I used scale 1x6 material.

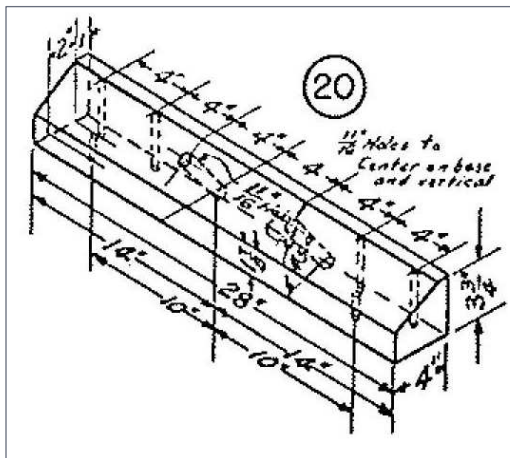
DETAILED LOAD FOR A FLAT CAR | 11

have used wood but really enjoy working with styrene for the ease of cutting and gluing.

Making the blocking required cutting quite a few angles, and I utilized my Chopper by RP Toolz, a micro saw, and miter boxes from UMM-USA, as well as the usual knives, blades, and measuring tools. Some are pictured in [41]. With the small size of the various blocking, I felt accuracy was key in creating believable blocks as called for by the loading rules.

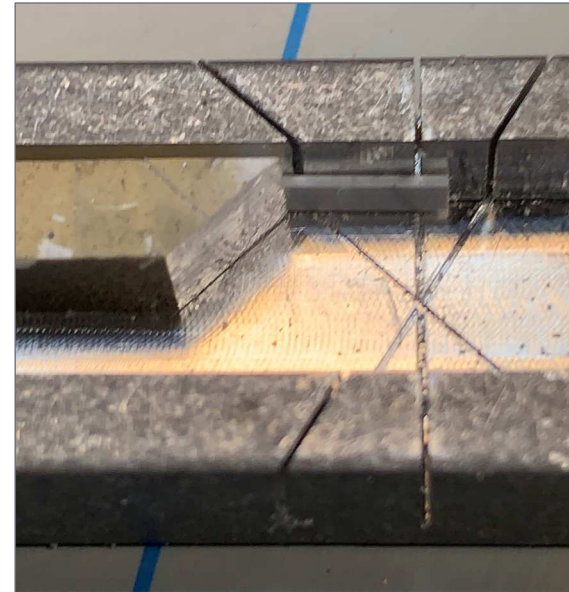


43. Pattern 4. For the 2x2 material I used 0.030 x 0.030" stock.



44. Pattern 20. For the 4x4 use 0.040 x 0.040" styrene. I customized the lengths shown to fit my model.

DETAILED LOAD FOR A FLAT CAR | 12



45. I use a wood block to hold the styrene 2x6 styrene tightly in the miter box, close to the 45-degree angle cut opening.



46. Cutting 2x6 styrene being securely held in the miter box.



DETAILED LOAD FOR A FLAT CAR | 13

In constructing the blocking for pattern 18, I used the dimensions seen in [42], as these worked for both the small and larger tires.

When cutting the various angles, it is important to hold the material tightly so it will not move during the cutting or sawing operation. I use various wood or styrene pieces to help hold them in either the Chopper or miter boxes. See [45, 46, and 47] for my methods to help get a straight accurate cut. Note my use of scrap wood pieces to hold the styrene. All have an angle cut to give the blade or saw enough room for clearance.



47. Using the cutter and a wood piece to cut a straight and repeatable angle. You can cut on the back side of the angle guide as well, but really need a holder as pictured.

DETAILED LOAD FOR A FLAT CAR | 14



48. Homemade miter box for use with micro saw.



49. A 2x6 being cut at 75 degrees.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

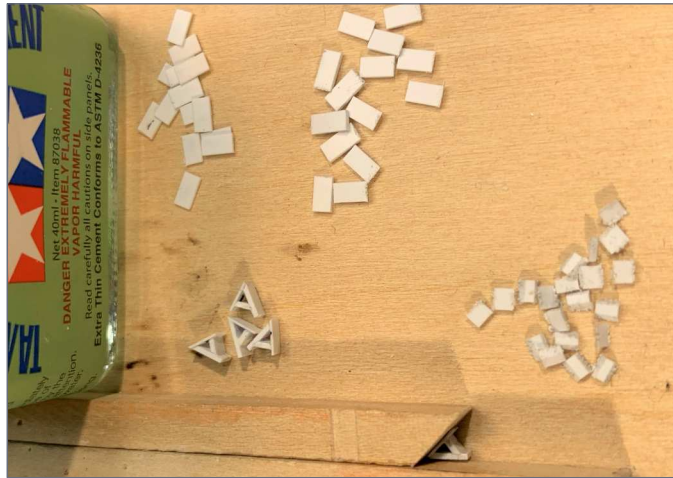
[TABLE OF CONTENTS](#)

DETAILED LOAD FOR A FLAT CAR | 15

Sometimes you need to cut an angle other than the standard 30, 45, or 60-degree angle using the miter box. Making my own miter box from styrene for one-time use is how I made my 75-degree cuts. I started by making a base from 0.040" scrap styrene. Next I took a 0.10"x0.10" styrene strip and marked it with the 75-degree angle that is needed for blocking pattern 18. I carefully cut straight down at 75 degrees.

After checking that I had an accurate cut, I glued both pieces to the 0.040" styrene base, keeping them aligned, and put a 0.005" spacer between the two pieces. The blade of the micro saw is 0.005" wide. This gives me a miter box good for enough cuts for this project. See [48, 49].

Using the above tools for cutting, I proceeded to cut my blocking. I also used my scale ruler and dial caliper to help in measuring and setup of the cutters and made the following:



50. Assembling the wheel blocks as seen in Pattern 16. I have made an assembly fixture from scrap basswood strips that are glued to a wood base. I made a 45-degree cut to form the basic fixture to hold the small pieces in position and glue them together with Tamiya Extra Thin styrene cement.

DETAILED LOAD FOR A FLAT CAR | 16

Pattern 18 blocks

Qty 16 blocks used on all wheels and made from scale 2x6 and 1x6 cut to dimensions and assembled as in [42].

Pattern 4 blocks

Two lengths required.

- Qty 4 longer for the large tires made from 0.030 x 0.030" and cut to a length of 0.150"
- Qty 4 short for the small wheels and made from 0.030x0.030" and cut to a length of 0.135"
- Pattern 20 blocks for header
- Qty 4 long made from 0.040x0.040" and cut to a length of 0.275"
- Qty 4 short made from 0.040x0.040" and cut to a length of 0.170"



51. I made another assembly tool by filing at a 45-degree angle and leaving an 0.020" edge at the top and bottom.



DETAILED LOAD FOR A FLAT CAR | 17

Photos [50, 51, and 52] show making Pattern 16 wheel blocks and Pattern 20 blocks to secure the header.

Photos [51, 52] show the simple wood fixture I used to hold and file work at a 45-degree angle to remove material to shape as seen for Pattern 20. I used a panel scribe to create an angled groove that would hold the 0.040x0.040" styrene that was used. I varied the length to fit my model.

After I made all my blocks, I put them on a piece of sticky-side-up masking tape for painting [53]. I simulate wood by spraying them a base color of D&RG Bldg. Cream, followed by random light coats of Mud, Depot Buff and Earth. I try to vary the color a bit, but with these being small, there is little difference. Use the *MRH Guide to Acrylic Painting* found on the MRH website in the Goodies section.

For annealed wire I tried a couple of different materials to capture that twisted look of the real wire and be close to scale



52. Make the finished block for securing the header using the V-groove wood fixture to hold 0.040x0.040" styrene at a 45-degree angle, allowing you to file straight across or parallel to the work piece.

DETAILED LOAD FOR A FLAT CAR | 18



53. Blocking painted "wood" uses PollyScale or other quality acrylics as shown. Note the actual wood stick used for color matching. Some PanPastels will help vary a bit if you want.

size. I had some fine E Z-Line brand material but found it too small in diameter, and it did not have a twisted look.

I had some magnet wire that I use to solder my own SMD LED lighting, and thought that could work. I tried two different sizes: #38 magnet wire is 0.0045" in diameter and #36 is 0.006" in diameter.

I took three strands #38 and twisted them together to give me 0.0135" or a bit over 1" in HO. I also twisted three strands of #36 wire, and used a permanent black marker to color the wire black.

After twisting and measuring [54] I found the #38 looked best. I made five lengths of twisted wire about 5" long. Only four were needed, but I often will make extra of something just in case one is needed later.

I needed a method to keep individual strands from getting tangled, and something to hold the strands when twisting the strands together. I drilled three #80 holes in a scrap of 0.040"

DETAILED LOAD FOR A FLAT CAR | 19

styrene, then threaded the wires through the holes and twisted the very end and inserted into a pin vise.

This allowed me to easily rotate the wire between my fingers while applying a bit of drag [55] at the rear of the 0.040" styrene guide. Once you are done you can use a permanent marker or paint to color it flat black.



54. From top to bottom. EZ-Line fine, #38 magnet wire twisted, #36 magnet wire twisted.



55. To simulate annealed wire, three strands of #38 magnet wire are threaded through the styrene guide and held in a pin vise.

DETAILED LOAD FOR A FLAT CAR | 20

The annealed wire will be attached to the underside of each combine to secure the load. I installed an etched eyelet from the scrap box and threaded the wire through the eye when it was ready to secure.

In reality, the wire would attach to the frame of the combine, but I found it easier to use this method [57].

Loading the MF-830 on a flat

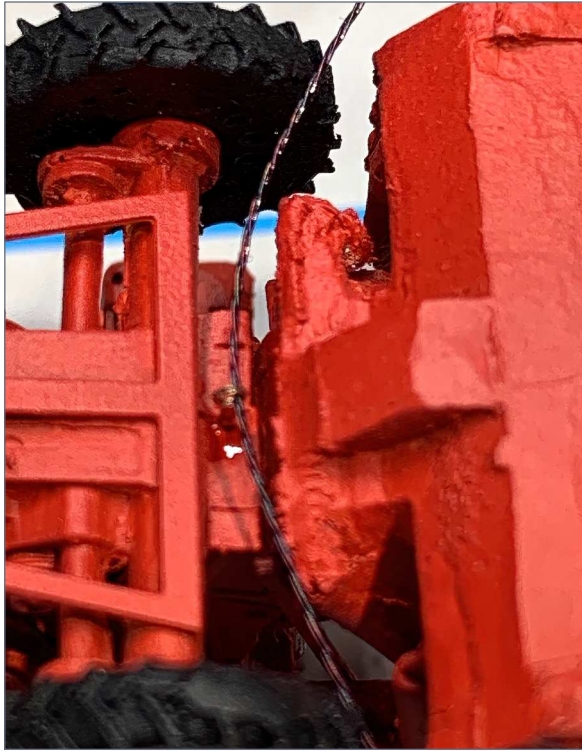
Now we are at the actual loading of the two combines on the NP 52' flat car. In [2] at the start of the story last month, a prototype load of these show as loaded on one end with the header and other parts detached. My models are all assembled,



56. Putting the magnet wire under a little tension and twisting it forms the cable.



DETAILED LOAD FOR A FLAT CAR | 21



57. A small eyelet inserted into the underside of the combine provides a tie-down point the wire can be threaded through and secured to flatcar.



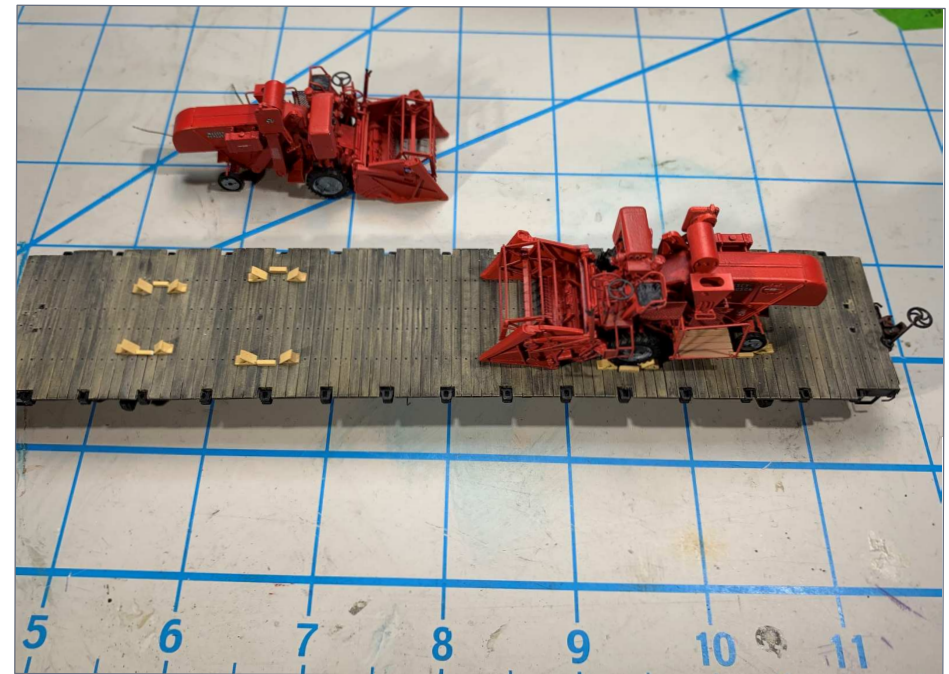
58. Add another eyelet to the frame above the rear axle using canopy glue.

DETAILED LOAD FOR A FLAT CAR | 22

and I decided to place these on the flat car in various directions and positions [60]. Flat car dimensions and the number and spacing of stake pockets may differ so I have not included them.

I centered the combines on the flat and adjusted them left-to-right, making sure the annealed wire did not interfere with the wood blocking or rub against the tires. Once I had the combines positioned as I liked, I used canopy glue to secure the blocks to the floor [59, 60].

The annealed wire was attached to the rear frame [61, 62]. I took a length of my black twisted wire and used canopy glue here to secure it. I also inserted another length centered in the front eyelet. After it was dry, I test-positioned the combine in the blocks fastened on the deck, and made sure my wire ties would reach the stake pockets.



59. One option for positioning the two MF-830s.



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[INDEX](#)

[TABLE OF CONTENTS](#)

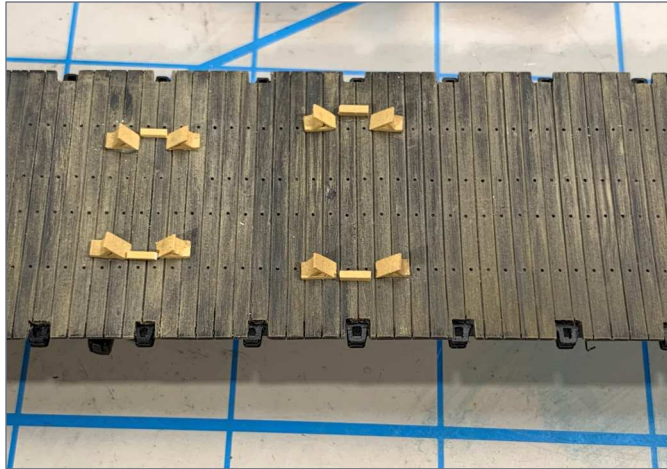
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[INDEX](#)

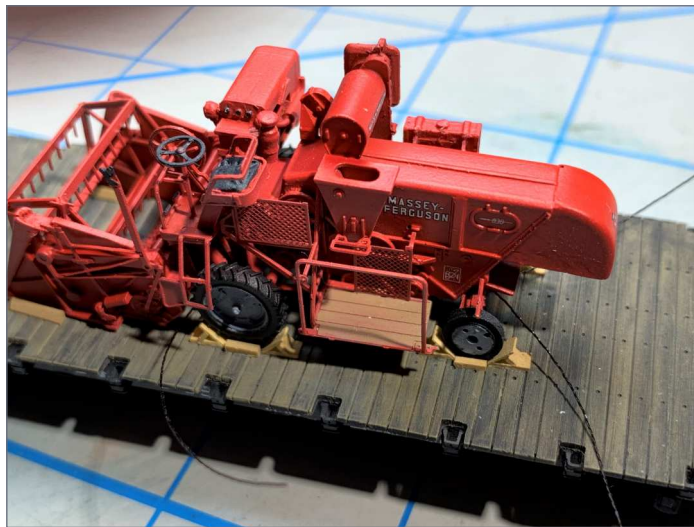
[TABLE OF CONTENTS](#)

DETAILED LOAD FOR A FLAT CAR | 23

I used canopy glue to secure the bottom of each tire to the deck. Once the tires' glue dried, I threaded the wire through the stake pockets and twisted each one to secure it.



60. I secured the blocking with drops of canopy glue once I had them in position.



61. The annealed wire is attached to the combine and I'm doing a final test fit before securing the combine to the deck with canopy glue.

DETAILED LOAD FOR A FLAT CAR | 24

This brings my project to a close. It was fun to model something I was unfamiliar with. I learned a little about farm machinery and shipping these as open loads! ☑

You can find a shopping list for this project at: mrhmag.com/magazine/running-extra/2020-07/flat-car-load#shopping-list

See the final finished model on the next page ...

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GEORGE TOMAN



George is currently enjoying retirement from a 40-year career with Xerox Corporation.

He has been a model railroader for as long as he can remember. His first train was a Lionel Santa Fe in classic War Bonnet paint, then he switched to HO with a Varney Dockside. He did model in Sn3 for a few years, where he learned a lot of skills because there were not many kits readily available. He switched back to HO to model the trains he remembered growing up.

He enjoys scratchbuilding and superdetailing. He is an RPM Modeler who enjoys trying new techniques, materials and research. Besides model railroading, George enjoys spending time with his wife Sue gardening, working in the yard, and spending time with family and grandchildren. ■



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[TABLE OF CONTENTS](#)

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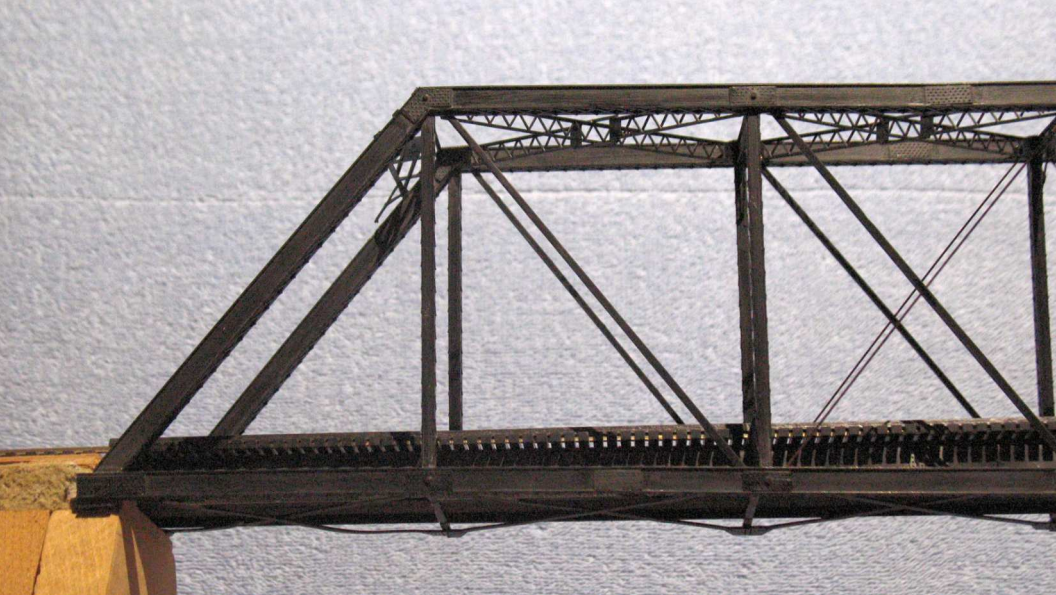
[INDEX](#)

[TABLE OF CONTENTS](#)



62. Annealed wire cables are secured to the stake pockets. Note how cables avoid rubbing on the blocking. Careful positioning helped avoid interference.





Cutting Central Valley Girders

MRH Running Extra | July 2020

GEORGE DUVE BUILDS AN ADJUSTABLE MITER BOX FOR ACCURATE CUTS ...

CUTTING SMALL PLASTIC OR WOOD STRIPS TO AN ACCURATE ANGLE and length, such as girders for a Central Valley truss bridge [1], can be a challenge. I have an electric compound miter saw (chop saw), but I would never use it to cut small parts as it is much too dangerous. I use a razor saw for cutting smaller hobby pieces, but these require a miter box. Most miter boxes cut at 90° and 45° angles. The angles on a bridge truss are usually not 45°. Therefore, I decided to build an adjustable miter box.

CUTTING CENTRAL VALLEY GIRDERS | 2

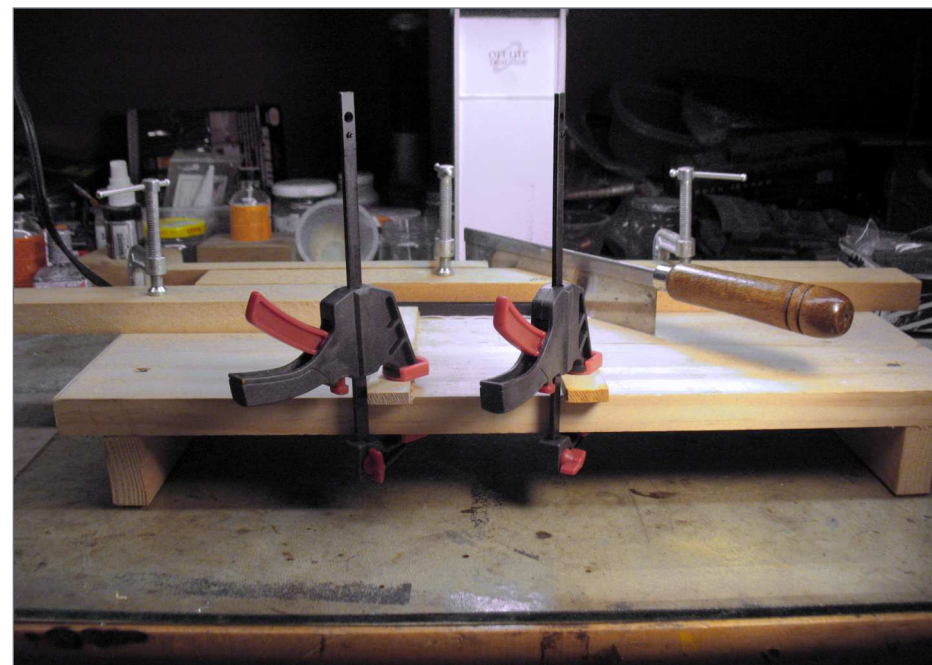
1. Cutting accurate girder angles is key to the fit and finish of model truss bridges.

★★★★★
RATE THIS ARTICLE

MITER BOX CONSTRUCTION

I used a flat $\frac{3}{4}$ " wood plate, approximately 7"x16" for the miter box base. I attached a 1x2 fence with a slot for the saw to the long side. I added two 1x2s attached underneath the base so small clamps can be used [2].

The miter box needs two guides to hold the razor saw at the proper angle. I cut a 1x2 about four feet long, set my chop saw table to zero and made a cut close to one end. I then set the chop saw to the desired angle and made a cut about eight



2. The elevated base makes it easy to clamp pieces to hold small parts when cutting the special angles.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

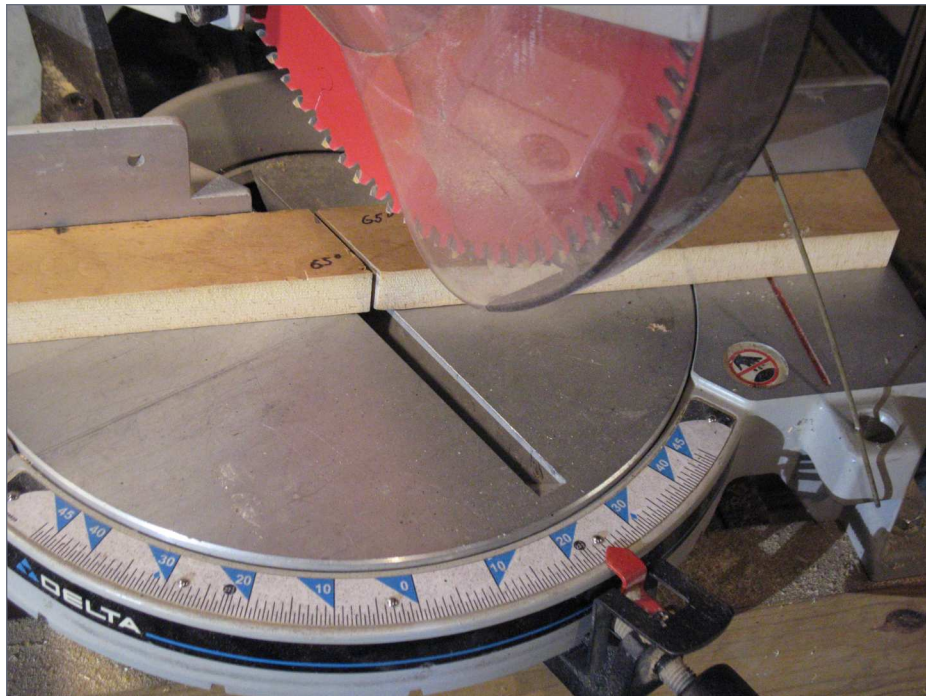
[TABLE OF CONTENTS](#)

inches away [3]. I reset the saw to zero and made another cut about eight inches away. To calculate the complement of an angle, subtract it from 90° . Note that when the miter saw is set to an angle on the protractor, the angle cut will be the complement of that angle.

A set of saw guides is now complete. Each new miter angle will need a new set of saw guides. I mark the miter angle on the saw guides for each set I've made.

CHOP SAWS

Most chop saws cut 90° when set to zero on the gauge. These electric saws were made for roofers and framers who use the



3. The chop saw is used to make accurate cuts for the razor saw guides.

top of the rafter as the reference. They also use speed squares and roofing squares to mark the rafters. Finish carpenters use actual angles.

When finish carpenters want to miter molding, or when modelers want to miter bridge girders, they use the same method. First, measure the inside angle between the girders. Divide this angle by 2; the resulting angle is the miter angle. For example, when cutting a picture frame, the inside angle is 90° and the miter angle is 45° .

Bridge girders are not usually 90° . Let's use an example where two girders join at 130° , so each girder is mitered at 65° . Remember now, the angle on the chop saw gauge is not the actual angle of the saw cut. The actual angle is the complement of the angle, which is the difference between 90° and 65° . The angle on the chop saw table must be set to 25° .

This is even confusing to carpenters. Some DeWalt chop saws have two scales. When the pointer is 0° on the regular scale, the pointer reads 90° on the other scale. Therefore, after finding the miter angle you must find its complement (90° - angle desired) to set the saw.

Please remember the chop saws are not safe for cutting small pieces. The saw guides needed for a model miter box are about eight inches long and can be safely cut on a chop saw.

CUTTING GIRDERS TO LENGTH

It is difficult to measure or cut a girder to length when both ends are angled. I make photocopies of the truss template then I cut around the desired girder. I make sure I keep the outline of the girder intact [4].

I check these cutouts by placing them on the truss template and comparing the cut lines, because the copies may not be an exact copy of the truss template. Cut lines are drawn at the locations where the girders are cut. These cutouts are placed under the saw guides [5].



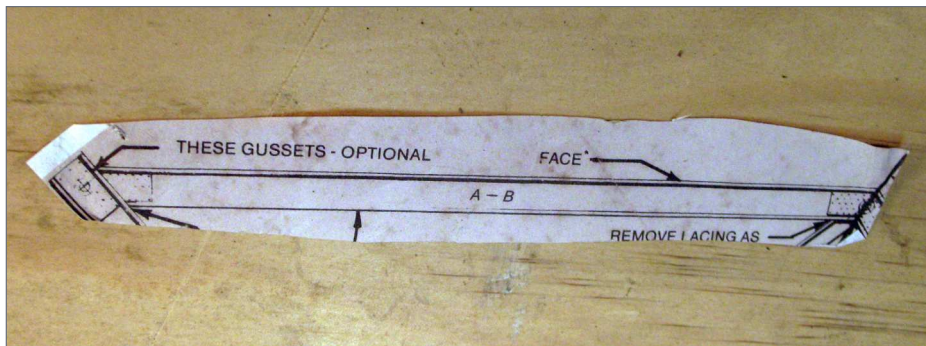
STOPS

A bridge truss is symmetrical about its center, with a truss needed on each side. A minimum of four girders with the same shape will be required per bridge. I place stops against the saw guides to position the girder for cutting to the correct length. I use one setup to cut four or more girders to the same length and angles. Stops are made with the saw guides. The saw guides used to position a girder must have the same angle as the girder [4, 5].

PUSH STICKS

Razor saws are either push-to-cut or pull-to-cut. My X-Acto saw is a push-to-cut, while my Zona is a pull-to-cut saw. If you are using a push-to-cut saw, the saw handle should be over the flat base. If you are using a pull-to-cut saw, the saw handle should be on the other side of the fence.

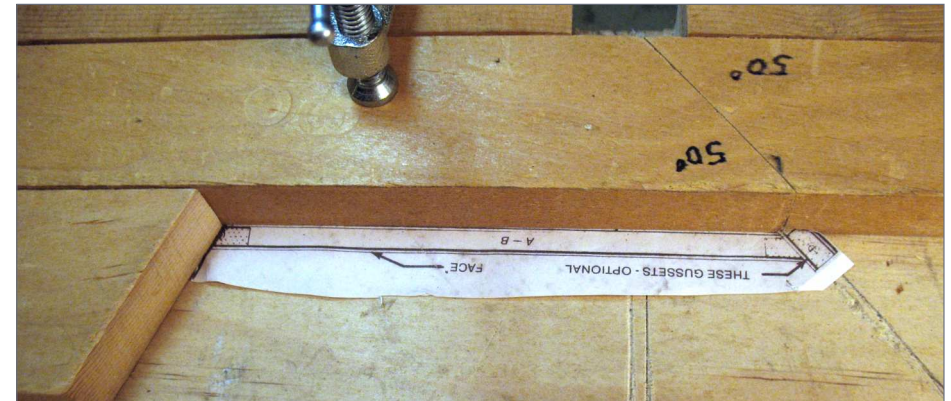
When cutting girders or other mitered pieces, you must hold the piece tightly to cut accurate angles and lengths. I made two five-inch-long push sticks from 1/4"x3/4" wood. I use these push sticks to hold the girder tight against the saw guide. The stop keeps the girder from sliding side-to-side along the saw guide [6].



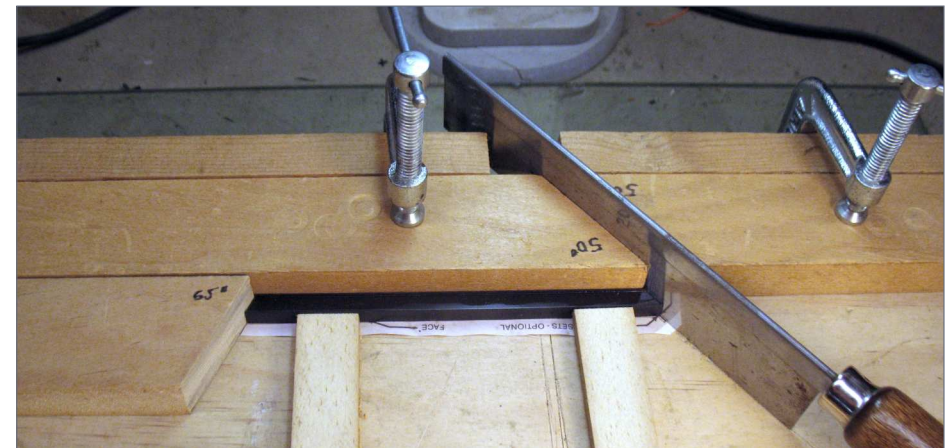
4. A copy of the Central Valley bridge kit girder cutting template is cut out to use on the miter box.

USING THE MITER BOX

Select four, or a multiple of four, glued girders and square one end, cutting at the middle of each girder's X. This will be the reference edge for all the girders. Align the paper template of



5. The girder cutting template is slid into place with the end angles aligned.



6. With the girder cutting template in place, a plastic girder is fit against the 1x2 saw guide. Push sticks are clamped to hold the piece for cutting.



CUTTING CENTRAL VALLEY GIRDERS | 7

the girder so the cut line goes to the slot in the fence. Place the saw guide against the fence and on top of the paper template.

Carefully adjust the template so the cut line matches the angle edge of the saw guide. Also, adjust the template so the girder is against the saw guide.

Clamp the saw guide in place. Take the other saw guide, the mate of the angle being cut, and place it next to the clamped saw guide at the cut line so the razor saw fits between the guides. Make sure the fit is snug but the saw can move, then tighten the saw guide clamps.

Select a saw guide from the unused guides with a miter angle matching the other end of the girder. Place this saw guide on the template to fit. This guide is used as a stop to position the girders for cutting.

Fit the plastic girder over the template and clamp the two push sticks to hold it in place. When all is set, cut the girder [6]. After cutting the girder, check it against the template.

ACCURACY

I've found this method quite accurate [7]. The average model railroader should be able to achieve a similar level of accuracy. The most difficult part of this method is finding the miter angle from the truss template.

Here are a couple of plane geometry points to remember. The sum of the two other



7. The cut girder piece is set against the bottom of the protractor to measure the angle, which hits the 65° mark.

CUTTING CENTRAL VALLEY GIRDERS | 8

angles on a right triangle (90°) is equal to 90° . If a line is crossed by another line, the acute angle formed and the obtuse angle formed will add up to 90° .

Now you can break out that Central Valley truss bridge kit and build with confidence. ✓

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GEORGE DUVE



George's brother was a model railroader and lured him into the hobby. When George's family moved, the old layout didn't fit into the new basement. He and his son decided to build a new one, which became George's layout when his son moved out.

George is currently updating his layout control panels and installing motor-driven switch machines. The layout has little scenery. George focuses on running Milwaukee Road heavy electrics.

George is a retired electrical engineer in his 80s. After earning master's degrees in engineering and physics, he worked for Area Lighting Research. George was chief engineer at this manufacturer of photoelectric controls.

Earlier in life, George enjoyed sailing and skiing. He keeps his focus closer to home these days. ■



[SUBSCRIBE](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)



My wife was gracious enough to allow my 18" x 60" module to live in the corner of our bedroom, where it is safe from our curiously playful cats.

I was also able to explore another avenue of this wonderful hobby – scratchbuilding. I'd never scratchbuilt anything for a model railroad before.

I have a number of home remodeling projects under my belt, so how hard could this be? This should be no different than these projects, it's just a smaller scale.

MY FIRST ATTEMPTS

I did my first couple of builds without a scale rule. I built a wood boxcar from blueprints I obtained via *"The 1895 Car Builders Dictionary"* on Google Books, which was free.

I bought an \$8 pack of assorted basswood from Fleet Farm. I used a regular old ruler and a calculator to convert my measurements to scale.

For a first project, it turned out OK. It looks like a beat up, old boxcar that is starting to fall apart.

As my second project, I built a water tower where my steamers could top off their tenders.

I found a unique plan online and modified it to fit my space, adding a steam-driven pump house next to it, where ground water is pumped up and into the tank. I built this from the same pack of basswood I used for the boxcar.

LEARNING FROM MISTAKES

Through those two builds, I learned a lot about what works and what doesn't. It's important to have matching angles when



Building Buck's Grain & Feed

MRH Running Extra | July 2020

SHAWN BECHER MODELS A STRUCTURE WITH A BUDGET-FRIENDLY APPROACH ...

WHEN I CHOSE TO MODEL THE EARLY 20TH CENTURY, I knew I would be limited in my choices of commercially available structures and equipment.

That didn't bother me, because I also knew I needed to take my time. Three years after starting my first module, I still don't have a room for a real layout.



[SUBSCRIBE](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

BUILDING BUCK'S GRAIN & FEED | 3

trying to line up pieces without odd gaps. Accurate measurement also are critical.

So, I bought a scale ruler and a razor saw miter block. I also learned that scenery and structures should be built and installed from the back of the module, working your way towards the front.

I say that because I have broken the water pipe off the top of the water tower at least 15 times now – it's located near the center of the module. This hard-knocks learning led me to build this structure, as it sits in the right-rear corner of the module.

PLANNING THE BUILD

I have seen many pictures of grain elevators online, but most of them were far too large for the space I had for my grain and



1. The old Stellmacher's elevator located in Fairwater, Wisconsin immediately caught my attention as I was passing through town. It was roughly the shape and size of the building I envisioned for my grain and feed mill.

BUILDING BUCK'S GRAIN & FEED | 4



2. At some point in time, the building was added to, but I would not be including anything like this addition off the back of the building. The front of the building is easily three stories tall, not including the head house. I had to compress that or the building would have dominated the scene on the module.

feed mill. I traveled a lot for my previous employer, and that was when I happened across an elevator that was the perfect size and proportion for what I needed.

After reviewing my example structure and evaluating the space I had on my module, I decided to go with a building that was twice as long as it was wide, and two stories tall, not including the head house [3, 4].

BUILDING THE BASIC STRUCTURE

After splicing two large flat pieces of basswood together for my base, I started building in earnest.



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[INDEX](#)

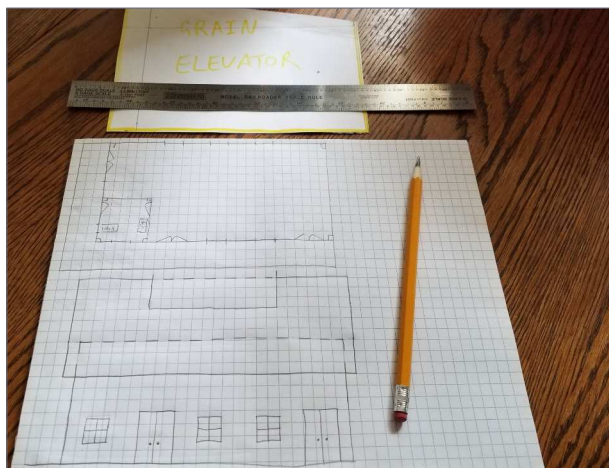
[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

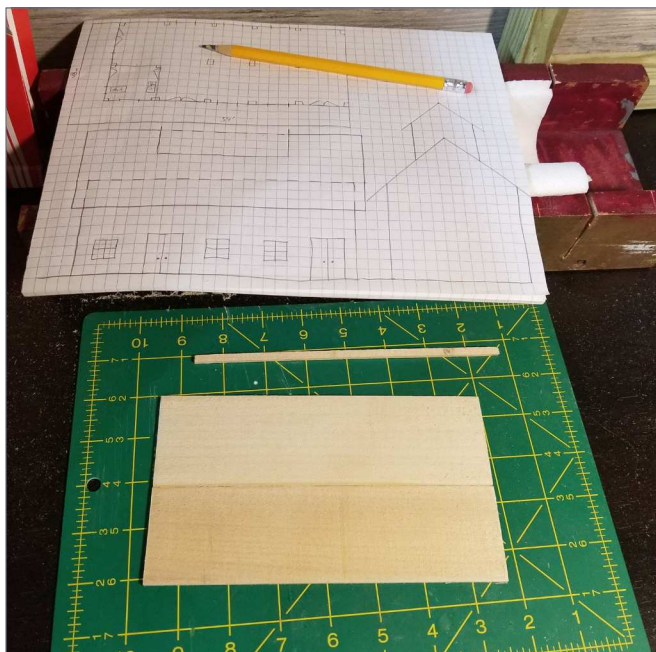
[INDEX](#)

[TABLE OF CONTENTS](#)

BUILDING BUCK'S GRAIN & FEED | 5

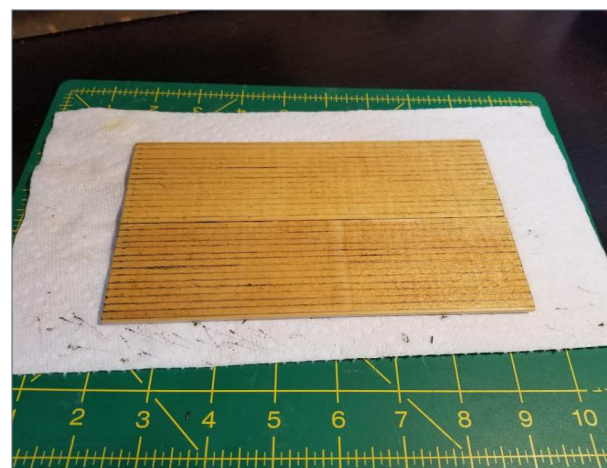


3. As I started drawing my plans, I immediately had to rationalize several things. My example building didn't have any windows, but the era I'm modeling (early 1920s) didn't yet have electricity in rural areas, so my structure needs windows. You wouldn't want too many oil lamps burning in an area loaded with grain and feed dust! And there had to be an office for owner Buck to complete his paperwork.



4. While finalizing my plans, I realized I didn't have a single piece of basswood large enough for my base, so I carefully spliced two pieces together.

BUILDING BUCK'S GRAIN & FEED | 6

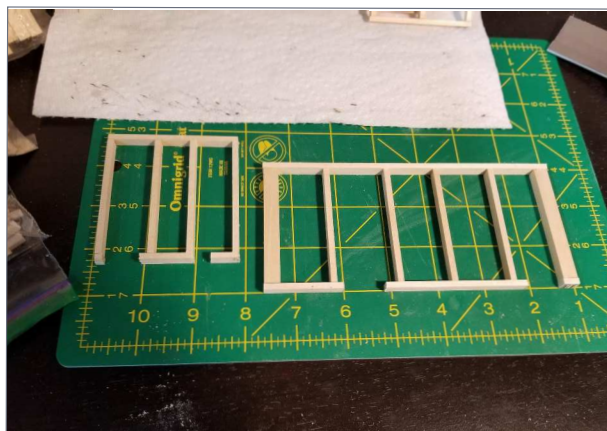


5. After reviewing a couple images of the inside of grain elevators, I decided I was going with a stained floor to seal up the wood. I carefully stained my basswood base with regular wood stain that I had left over from replacing the railing for our basement stairs. I then used my scale ruler to mark off every foot on both ends of the base, and then moved a pencil along the ruler to create the board lines.



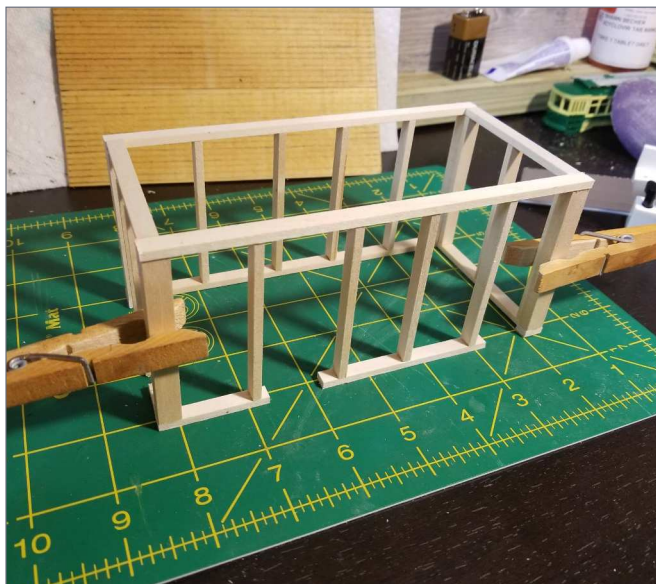
6. I had to be careful when building stud walls so I didn't end up with a stud in the middle of a window or door opening. My wall framing is not to scale, but it is meant to create a sturdy building, and most of the framing will not be visible in the final product anyway. With two walls framed, I made sure I had enough left of the base for the loading docks for wagons and rail cars.

BUILDING BUCK'S GRAIN & FEED | 7



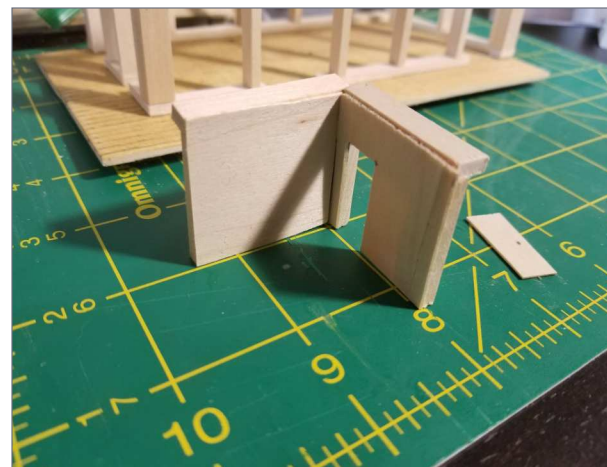
sill for the door openings, which made these walls flimsier.

7. The other end wall framing turned out very different on account of the dock doors and office door. The studs on the rail-side wall had uneven spacing due to doors and an office window. I had to notch the bottom



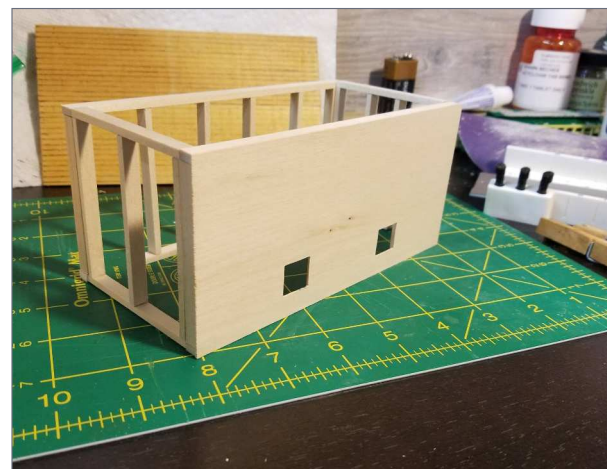
8. Attaching the exterior frames together added a little strength, but I still had to be careful with a couple of sections of the two dock-side walls. Once I had everything squared-up, I glued the pieces together, using clothespins to clamp them together.

BUILDING BUCK'S GRAIN & FEED | 8



office are exterior walls of the building, so those did not need to be built.

9. While the exterior wall framing was drying, I started putting together the office walls. I put the framing on the wall boards first since there wasn't much to them. Once the individual office walls dried, I put them together. The other two walls of the

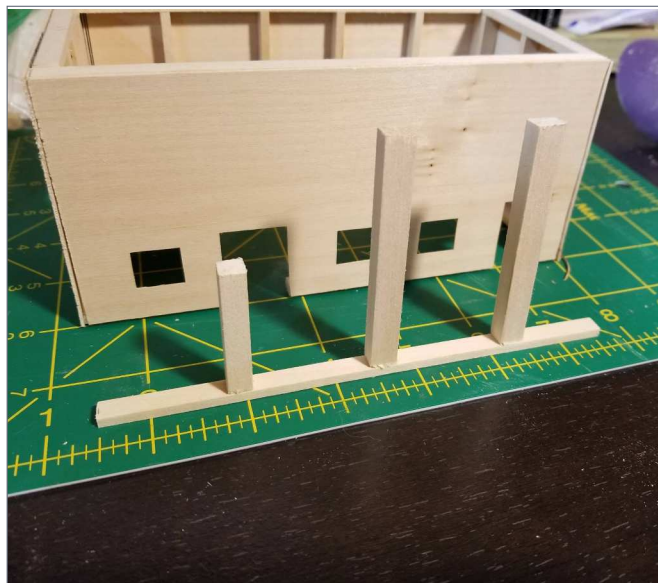


10. Then as the office walls were drying, I test-fit various exterior walls on the frame, checking for squareness. It wasn't too far off, so I began gluing on the walls, which stiffened up the flimsy framing.

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11. The thin basswood wanted to warp when moist, so every time I added a piece of wall, I had to weight the framework to keep the piece flat while the glue dried. A couple of small rattle paint cans did the trick.

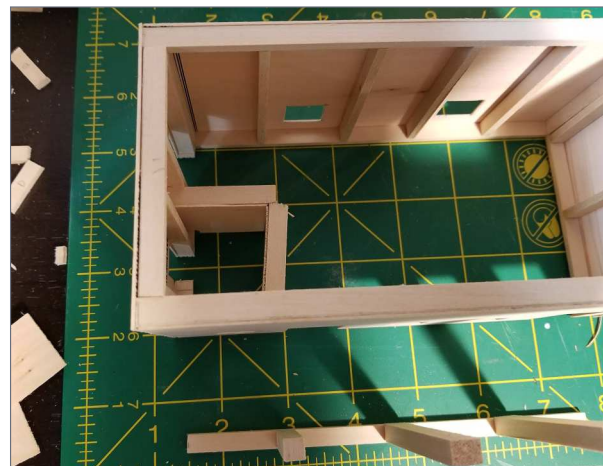


as it will land on the corner of the office walls.

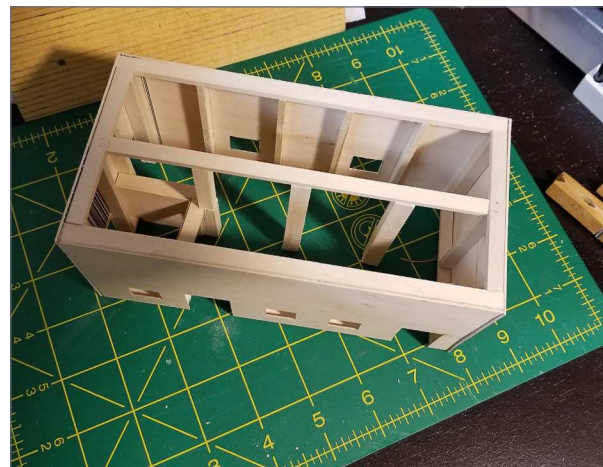
12. Next, I constructed the center beam of the building and the supports. I didn't need this beam for structural integrity, but I did need it so the supports had something holding them up. I will be hanging a few details from them later. One of the supports is shorter,



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13. I installed the office walls next, and they ended up being not completely square, but since this isn't structural, it won't be noticeable once the roof is on, so I wasn't worried about it.



trim a little off the support that landed on the corner of the office walls.

14. I installed the center beam and support assembly next. This took a couple of tries, as my measurement for the supports was a little off. I had to do some shimming of the longer supports to get them to touch the "floor," and I had to



[SUBSCRIBE](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

ADDING THE ROOF AND A RAISED BASE

With the basic core structure body taking shape, I turned my attention to building a roof.



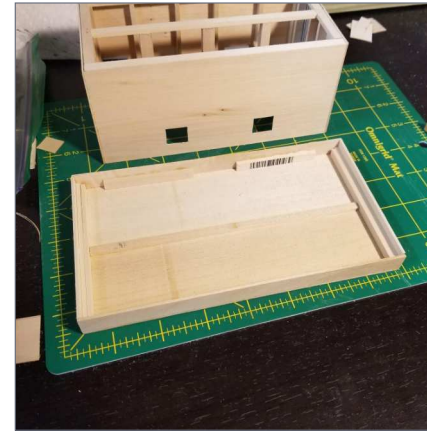
16. I started building my roof trusses. I left one side longer to create an overhang over the rail dock. Getting the angles exact on these was important so the roof material sat flat on all of them. I cut and set the main beam on the top of the building, and then slipped each of the trusses

underneath, standing them up in their final location and gluing them into place.



17. When I decided I was going to put an interior in this building, I hadn't thought about painting the inside. I was just going to leave it bare wood. Then I realized a few of the pieces on the inside had printing on them from the factory. Looking at some pictures of the inside of old wooden buildings,

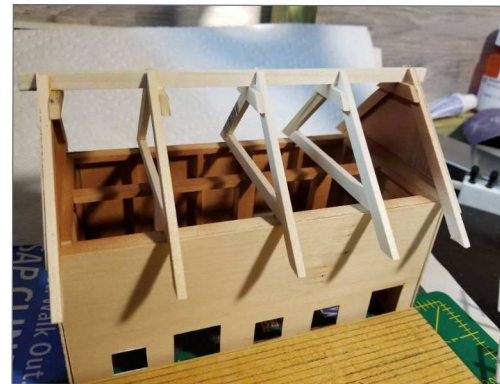
the wood had a brownish-looking color to it, so I broke out my airbrush and fixed the wood color and printing issue. I also painted the office walls an off-white. In hindsight, I should have painted the office walls before I installed them! I had to spray the walls through the door and window openings, and from underneath while holding the building.



18. I had to build up the base to a proper dock height for the rail cars. I layered some pieces to add strength to this, as I didn't want the sides of the base to break off easily, since it would be handled for a while yet. Eventually I will install posts in the corners that extend down into the ground surface to secure the building to my module.



19. I test-fit the building on the module. My measurements were spot-on. The small overhang on the rear of the building almost touches the backdrop. I did realize my ground cover was a little off, as the road didn't line up with the wagon dock. I fixed that later.



20. OK, back to the roof. I added more roof trusses but I kept the roof removable so I can show off the interior – and if I ever need to fix anything inside.



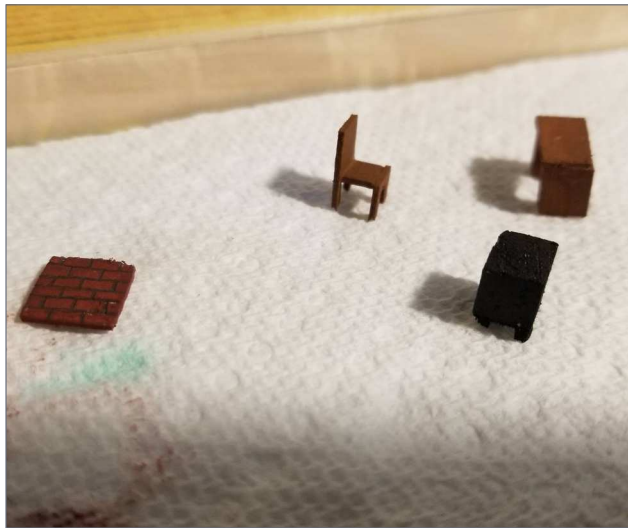
WORKING ON SOME FIGURES AND DETAILS

I took a break from building the structure to work on another necessary piece of several projects, and I really wanted to try out the airbrush I had bought from a friend, so I painted my unpainted figures with a skin tone.

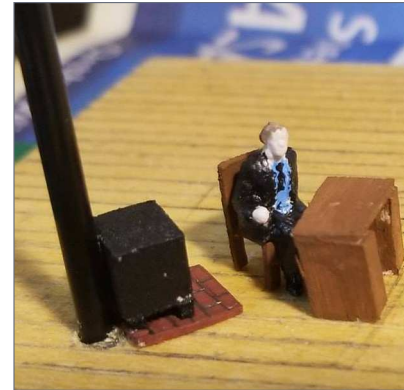
At least one figure will end up on this building, and I needed passengers in my passenger cars.



21. Elevator owner Buck now has a painted shirt, and is taking a break from supervising the build, sitting on the dock. I painted Buck's shirt with a #0 brush, a magnifying glass, and lots of controlled breathing.



22. I built furniture for the office from small wood scraps I had accumulated from the build. Buck has a chair, a desk, and a wood stove for heat in the harsh Wisconsin winters.



23. I had a second purpose in mind for the stove smoke stack. It goes through the base and serves as a wire chase for the LED I installed later. Using the location of the smoke stack as a guide, I installed the brick sheet under the wood stove. Using very faint marks I made on the base from the office walls, I installed Buck's desk and chair. I also completed painting Buck's suit with the #0 brush.



24. I had to measure five times the location where the smoke stack exits the roof. The smoke stack doesn't actually go through the roof, but I wanted the top section to line up above the bottom section so it would at least look like the stack does go through.



25. Looking down at the interior of the office, something seemed to be missing. I added papers to Buck's desk, cut from an actual sheet of paper. He has a one piece in front of him, and a stack of three or four more on the corner of the desk.



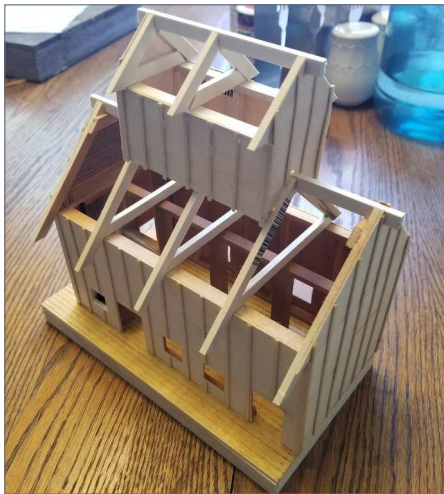
BUILDING THE REST OF THE EXTERIOR

After my little diversion into some of the detail work, I went back to constructing the rest of the structure exterior.



26. My example building had corrugated metal siding on it, but I'm pretty sure that's not how it was at the turn of the century, and I've seen many other structures with wooden exteriors that look like board-and-batten siding, so I chose to do that. I

took the same thin sheets of basswood I used for the exterior wall and cut thin strips. I then applied the strips to the outside of the building at approximately four-foot intervals, spaced so that the gaps at the ends of the building were even.



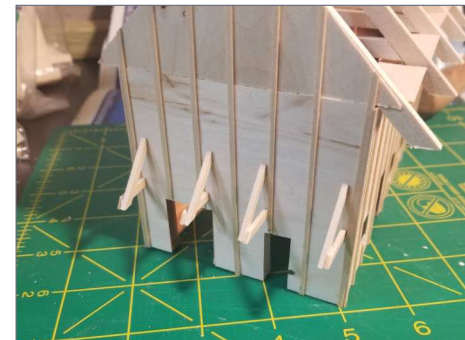
27. I framed out the head house to be exactly half the footprint of the building, and attached it to the roof truss structure. I added exterior wall covering and strips to the head house. I started worrying this building would dominate the scene. It was turning out larger than I had envisioned.



28. I some basswood packs with textured boards that looked like siding. I knew immediately I wanted to use it as roof material. Cutting out the roof for the head house wasn't hard. Cutting out the roof for the main building was a bit harder, because I had to have the cutouts go around the head house.



29. When I looked at LED placement, I realized that I was going to have massive light leakage through gaps between the roofs and the buildings, so I installed soffit around both roofs. The soffit on the main roof has gaps in it where the bottoms of the trusses come through, which helps to lock the roof structure to the building – and in some cases makes it hard to get the roof back on after taking it off!

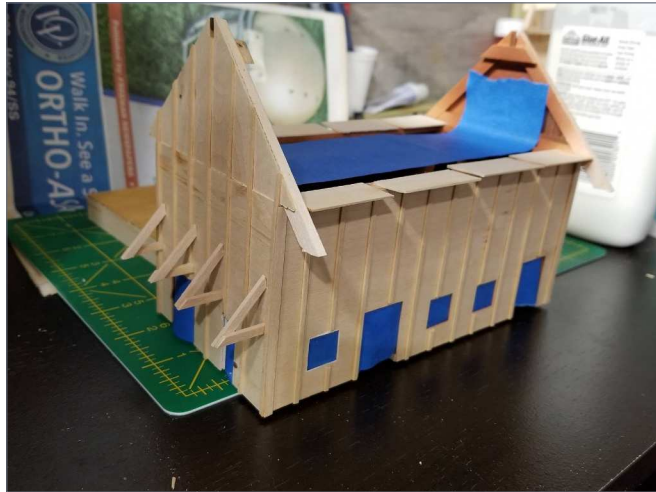


30. If I had a roof overhang for the rail dock, I needed an overhang for the wagon dock and office door as well. So I added framework for a canopy on the front of the building.



PAINTING THE BUILDING

With the structure now basically done, I wanted to paint the building before I added the windows, doors, and details.



31. I had to mask the interior of the building so I didn't mess up the office walls or the patina that the rest of the wood took on.



32. I loaded up my airbrush and was off to the races again, painting the building and head house red, and the roof panels black. As you can see, the roof panels took on a warp from the moisture in the paint. I would have preferred to have the panels attached to the framework so they wouldn't have warped, but I also had to paint the underside of the overhangs, which would have

required massive amounts of masking, so I decided to paint them before installing them.



33. I couldn't resist putting it together to see how it looked, and I liked the results so far.



34. I had to use extra clamps when gluing the roof panels on because of the warping. When this side was dry, I flipped the whole assembly and glued and clamped the other side, which proved to be more

difficult, since this side of the roof was in the way for the clamps at the top of the roof panels. Instead, I had to position the clamps on the roof peak, clamping the tops of the roof panels together.

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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)



35. I also installed the canopy roof panel. Clamping this piece proved to be extremely difficult, as I broke one of my canopy supports off with the clamp, and had to quickly re-glue it in place before my roof panel glue dried.



36. With all of the roof panels in place, I set the model back on my module for a quick check. Again I was happy with the results.



ADDING DETAILS AND LIGHTING

With the building and roof now nicely painted, time to move on to finishing things up with windows, doors, lighting, and various details.



37. I started playing around with the location of my flickering LED, trying to find where it would give the best light. In this shot, the LED is over the office area, and it's washing out the interior, so this won't be the final location of the light.



38. I was talking to my wife about how to make feed bags, and she had the idea to use Sculpey clay. She took a small chunk of tan clay, rolled it into a ball, and then rolled it into a $\frac{1}{4}$ " diameter string. Then she cut it into $\frac{1}{2}$ " sections and pinched the ends to make them look like feed bags. A quick bake in the oven dried and hardened the clay.

I added a "label" to the feed bags with a quick swipe of red paint across the middle of each bag. Then I assembled piles of bags with glue. These will be installed in the interior of the building in a few strategic locations. I also painted the ladder that will go on the side of the conveyor housing.

BUILDING BUCK'S GRAIN & FEED | 21



39. I constructed the conveyor housing from scraps of basswood. I couldn't figure out how to detail the conveyor, which was used to take grain and feed to the upper level of the building for storage. Instead, I

built the housing and installed it so you cannot see the side where the conveyor would be exposed.



40. I installed feed bag filler spouts that come down from the upper level storage by putting a piece of basswood across the top plates of the walls. I drilled two holes in the wood, and then slid a couple of cocktail straws

through, positioning them to stop about four feet above the floor. Workers would put a bag under the spout, and the grain or feed would come down the spout into the bag.

BUILDING BUCK'S GRAIN & FEED | 22



41. I discovered that painting and installing trim is another exercise in patience. I also cheated a little. I didn't want to get paint all over the place while coloring all of the little trim pieces, so I stuck them on a piece of tape,

and then colored them with a black Sharpie. I did the same thing with the door panels. I made the door handles with small snippets of solid copper wire that were slipped through holes in the door panels.



42. At this point, I have installed all the trim and finalized the position of the LED. I ended up putting a piece of aluminum foil inside the roof trusses to better reflect the light into the

production part of the building.



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[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

BUILDING BUCK'S GRAIN & FEED | 23



43. I measured very carefully, marked, and drilled the hole for the external portion of the wood stove smoke stack, and then constructed the stack with more cocktail straws. Once the glue dried, I put the

roof back on the building, and was happy to find that my measurements weren't off by much at all. It looks like the smoke stack is one continuous piece from the stove all the way up to the outlet, above the peak of the first roof.

I weathered the smoke stack by dry-brushing it a rust color. I then carefully dragged rust streaks down the roof with the same technique, going lighter the farther away I got from the stack.



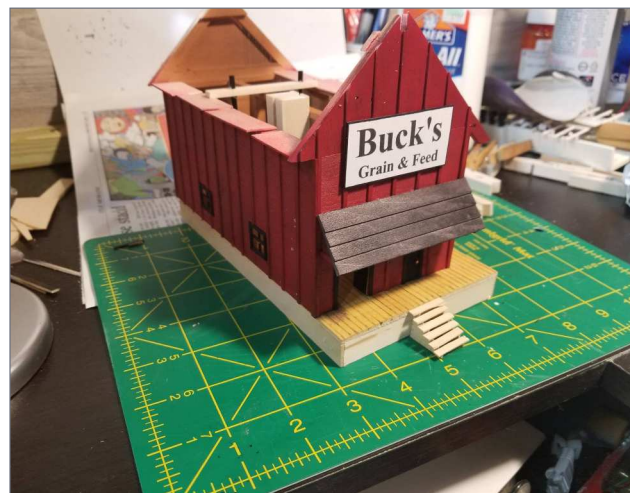
44. I used clear styrene for window glazing, and then carefully glued the dividers between the window panes to the styrene. I had a few spots where some glue leaked out. I didn't bother cleaning it up because white glue dries cloudy, so it looks like some of the windows have dirty spots on them.

BUILDING BUCK'S GRAIN & FEED | 24



45. Building the stairs was the biggest challenge of this project. I used thin basswood cut into treads and risers. I lucked-out because two clothespins side-by-side made the perfect spacing for the risers. I then

glued the treads to the risers and let everything sit overnight.



46. I used Google Docs to make the sign for Buck's Grain & Feed. I then glued it to a thin sheet of basswood by brushing a very thin layer of white glue on the basswood. I glued the sign and the stairs to the building.



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[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)



47. I weathered the stairs and dock area with a black acrylic paint- and-alcohol wash. I dragged a little wash in through the open doors to fade the weathering into the building. I did not weather the sign because Buck

just had it repainted. I did weather the exterior of the building with the black wash, as the bright red needed to be toned-down.

I added a single feed bag next to the wagon loading dock, and a pile of wood for the wood stove next to the office door. I made the wood pile from twigs from my yard, cut and split with my razor knife.



48. My lazy cat, Maxwell, is on guard, keeping out the mice. Seriously, this little guy really does look like my cat Max!

CONCLUSION

Despite the building being completed, I didn't permanently attach it to my module. We had a divisional NMRA meeting scheduled at the museum where I volunteer, and I wanted to enter it in the popular-vote contest.

I took first place for Structures at the Wisconsin South Eastern (WISE) Division NMRA meet, but lost out on best-of-show to the runner-up in the Structures category. Oh well.

I fixed the ground foam in front of the building by using a brown acrylic wash and a pipette, dripping the wash onto the ground foam that I needed to look like dirt. It looks pretty good – like rough uneven dirt.

At this point I still don't have the building permanently attached to my module, but that will be happening soon. Then I can hook up the wiring for the LED to my lighting bus. Up to this point, I've been using a 3.2V button battery.

I want to add a wagon with a couple of horses backed up to the wagon dock, and possibly a farmer or worker on that side of the dock. Then my tribute to my late grandfather will be complete. He didn't own a grain elevator, but he did grow up on a farm!

For this module, I need four more structures, and at least two or three of them will be scratchbuilt.

Even though scratchbuilding takes time, patience, and planning, I find it to be a very enjoyable aspect of this great hobby! ☒

We're always looking for more articles and videos. We do pay for articles and videos, too!





49. I set the finished model on my module and rolled a car over in front of it – still looks great!



SHAWN BECHER



Now in his 40s, Shawn Becher is a husband, father to five, and grandfather to three.

He currently works as a technical support specialist for Rytec, a high-speed industrial door company.

Shawn got started in the hobby at age 12 when he received his first Bachmann train

set as a birthday present. He enjoys building detailed models with interiors and lighting, scratchbuilding, and weathering.

Shawn currently models the Soo Line in 1923 at home, and the transition-era Milwaukee Road and Chicago North Western on the Milwaukee Northwestern layout at the Oconomowoc Historical Museum. ■

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THE AH-HAH MOMENT

column



MRH Running Extra | July 2020

JOE FUGATE ON CAR WEIGHTING "LEAD ROT" AND WHAT TO DO ABOUT IT ...



RATE THIS ARTICLE

IN A RECENT CAR WEIGHTING DISCUSSION ON THE MRH forum, several posted concerns over "lead rot" and the problems it can cause if you glue lead shot in your car's underframe to weight your railcars. Gluing lead shot inside a locomotive shell likewise might be susceptible to lead rot.

I did some research on this problem and found this seems to stem more from the lead itself than the glue used. I can find reports of lead expanding due to a chemical oxidation reaction when secured in place with both PVA (white glue) and with CA (super glue).

Even lead miniatures can exhibit lead rot and they're not in contact with any glue – so this degradation seems to be more from certain impurities in the lead reacting to the air over time. Some lead will be fine, other lead will react – but you can't easily tell in advance the "good lead" from the "bad lead."

One interesting recommendation I found is to coat the lead shot with Pledge Future first before using it. That somewhat seals the



1. This #9 nickel-plated lead shot has a diameter of only 0.082" (2.1mm). Ballistic Products double-plates this shot, first with copper and then with nickel.

THE AH-HAH MOMENT | 2

Weighting method	Cost / oz.	Oz / cubic in.	Notes
Pennies	\$0.10	4.2	Some may dislike "defacing" currency
Steel wheel weights	\$0.15	4.7	Magnetic, best for car interior only
Plaster	\$0.15	1.7	60% less dense than metal weights
Lead sheet	\$0.55	6.6	Average cost (varies by sheet thickness)
Lead weights	\$1.00	6.6	Pricy but convenient
Woods metal/Cerrobend	\$1.20	4.2	Low melting point metal w/cadmium (158F)
Tungsten powder*	\$3.37	4.3	Weight is average for putty made with powder
Fusible Bismuth	\$4.16	4.0	Very low melting point metal w/cadmium (117F)
Fields metal	\$20.80	3.9	Safe non-toxic low melting point metal (144F)

*Tungsten powder is very dense (8.6 oz per cubic in), but must be mixed with some glue or plaster to make a putty; that reduces the density. The oz per cubic inches figure is an average for the putty.

2. This table from my [Run like a Dream: Rolling Stock](#) book shows the cost per ounce and the density of different weighting methods in oz / cubic inch.

lead shot with an acrylic coating and keeps it from reacting to the air, CA, or PVA (white glue).

It looks like an even better option to avoid lead rot is to use nickel-plated lead shot from places like Ballistic Products. *Ah-hah!*

Plated #9 shot seems to be the best, since it's the tiniest ball size: 0.082" – making it fit better into nooks and crannies. And since it's copper *and* nickel plated, this lead shot is thoroughly protected from the air and any possible lead rot!

At \$50 for 11 pounds plus \$15 shipping, that works out to be about 37 cents per ounce – compared to the other inexpensive lead method – lead sheet at 55 cents per ounce [2].

If you mix the lead shot with Portland cement, you can add water when you're ready to use it. Then you have a coarse slurry you can put into nooks and crannies to add weight.

I recommend Portland cement because it's a lot more dense than PVA, CA, or epoxy. And it will harden up nicely, holding the shot in place. See the shopping list link below for where to order! ☑

To get a shopping list for this article, visit the MRH website at this link: mrhmag.com/magazine/running-extra/2020-07/ah-hah-moment#shopping-list



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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

Bonus section!

Here are all the pages
from the July issue of
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Hobbyist* magazine
as well!

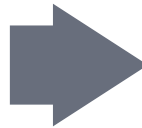
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[INDEX](#)

[TABLE OF CONTENTS](#)

[INDEX](#)

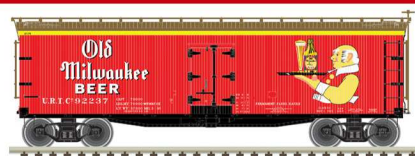
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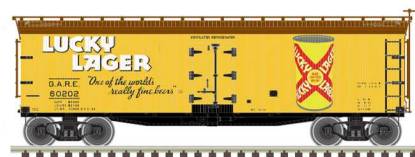
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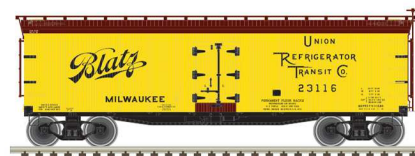
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[INDEX](#)
[TABLE OF CONTENTS](#)
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[INDEX](#)
[TABLE OF CONTENTS](#)

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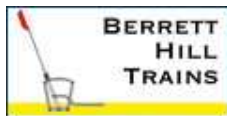
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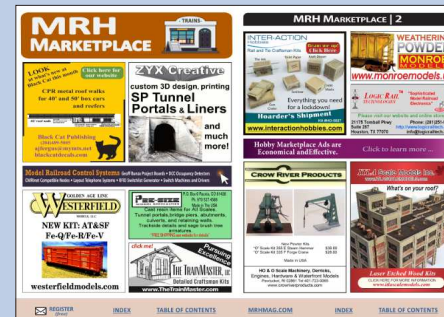


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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

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Model Railroad Hobbyist | July 2020

JOE FUGATE *MRH* CHANGES
AND A LOOK AHEAD AT 2021...

★★★★★
RATE THIS ARTICLE

OUR NEW SIMPLIFIED *MRH* MAGAZINE DEBUTS WITH this issue. Let me explain what it is and how it works. I do hope you can see the advantage for both you and us with this change.

The new “smarter” PDF formatting

We have made many changes to both the back end process of producing the magazine and to the final deliverable PDF. The main big change on the back end for us is that we’re moving from Adobe to Affinity software for the magazine production.



1. The new Adaptive Edition has “smarts” built into it. More robust PDF readers detect the extra coding smarts and try to display the magazine either portrait or landscape (two facing pages), depending on screen width.

For those who can’t get the adaptive to work with their favorite PDF reader, we also provide a “Wide Edition” that simply has the two facing pages hard-coded in the PDF. But both are now based on a single portrait master magazine.



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[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

PUBLISHER'S MUSINGS | 2

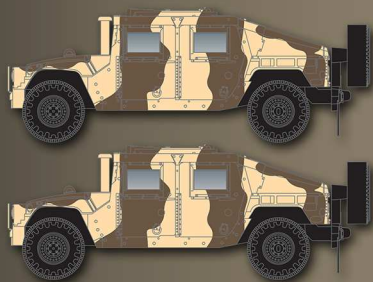
We not only get to give Adobe's bloated software the boot, but we also have dropped the monthly payment to Adobe to use their "Creative Cloud" software suite.

Affinity's Publisher, Designer, and Photo programs do most of the same thing Adobe's aging suite does, but with a newer, more modern streamlined interface. And the real clincher is you buy a perpetual license to the Affinity software, rather than rent the software for a monthly fee.

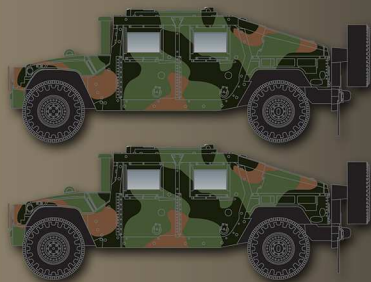
In these tough times, we've had to do a lot of belt tightening to cut costs every which way we can – and this change helps us save *a lot* on our back-end software costs.

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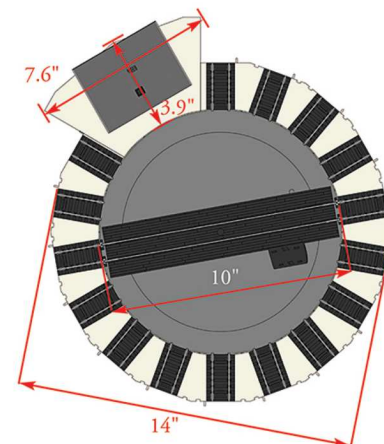
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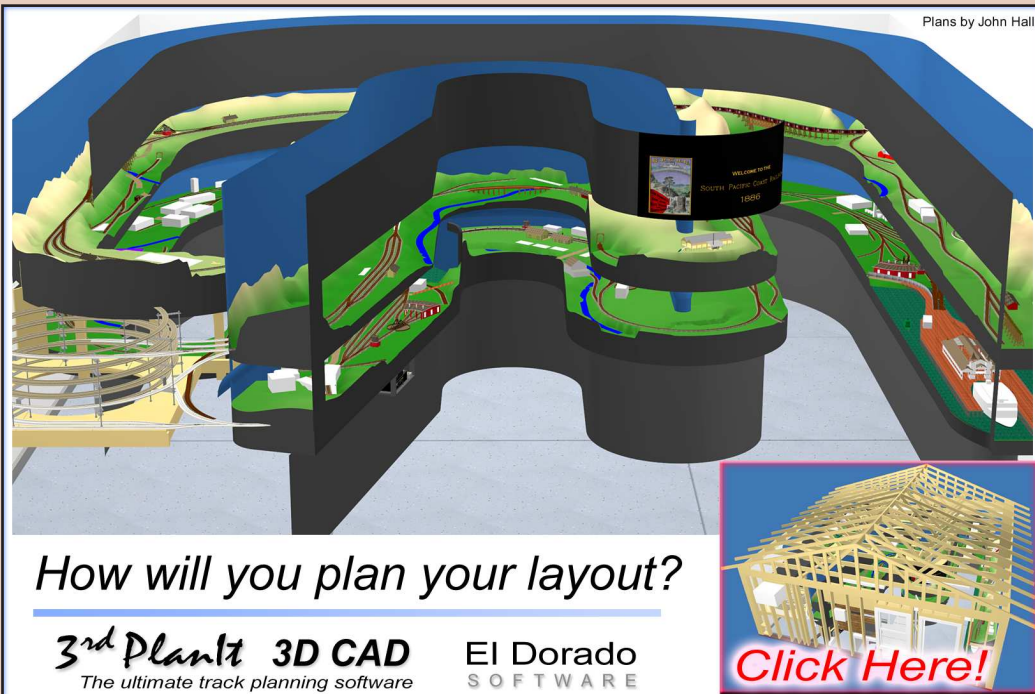
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[INDEX](#)

[TABLE OF CONTENTS](#)



PUBLISHER'S MUSINGS | 3

The new PDF versions: Adaptive and Wide

The new recommended version of *MRH* is the Adaptive Edition. What makes this version so nice is a robust PDF reader will adapt the PDF to the screen width.

For example, if you're reading the Adaptive Edition on a tablet and holding it the wide way (landscape), the PDF reader will show two facing pages similar to how the old landscape edition looked.

But if you turn your tablet the tall way (portrait), then the PDF reader will adapt and show only a single portrait page. Oriented this way, the single portrait page will be larger, making it easier to read. But if you reach a page with a layout plan or a nice wide photo, just turn your device to landscape



 Tri-clops Railfan ► **Athearn**

Thanks Athearn for yet ANOTHER run of the 2-window SD60Ms. What would be REALLY cool would be the 3-window Tri-clops versions. They're good for more than 3 railroads now. If we could get these in Genesis that would be grraaaat 🙌👍👍👍👍👍👍😏😏😏



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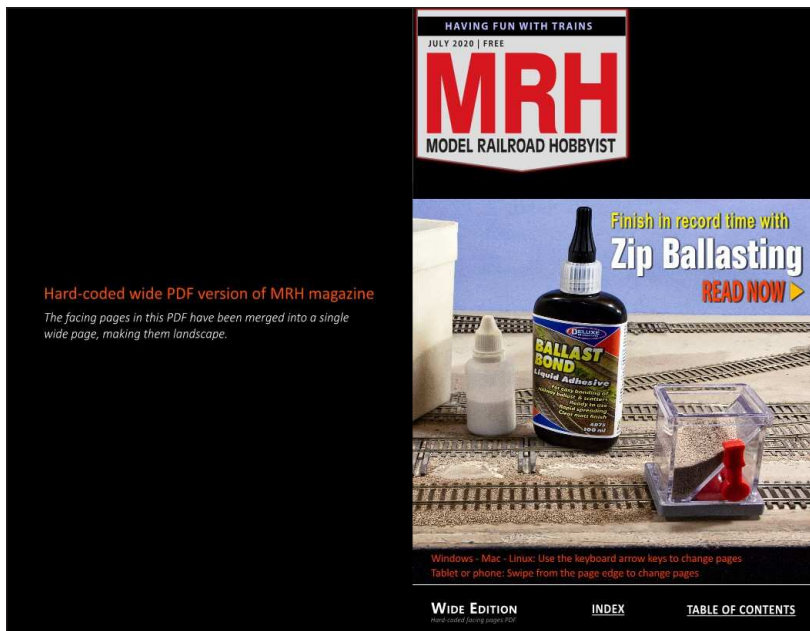
PUBLISHER'S MUSINGS | 4

and voila! Now you can view the two page spread in all its glory. Nice!

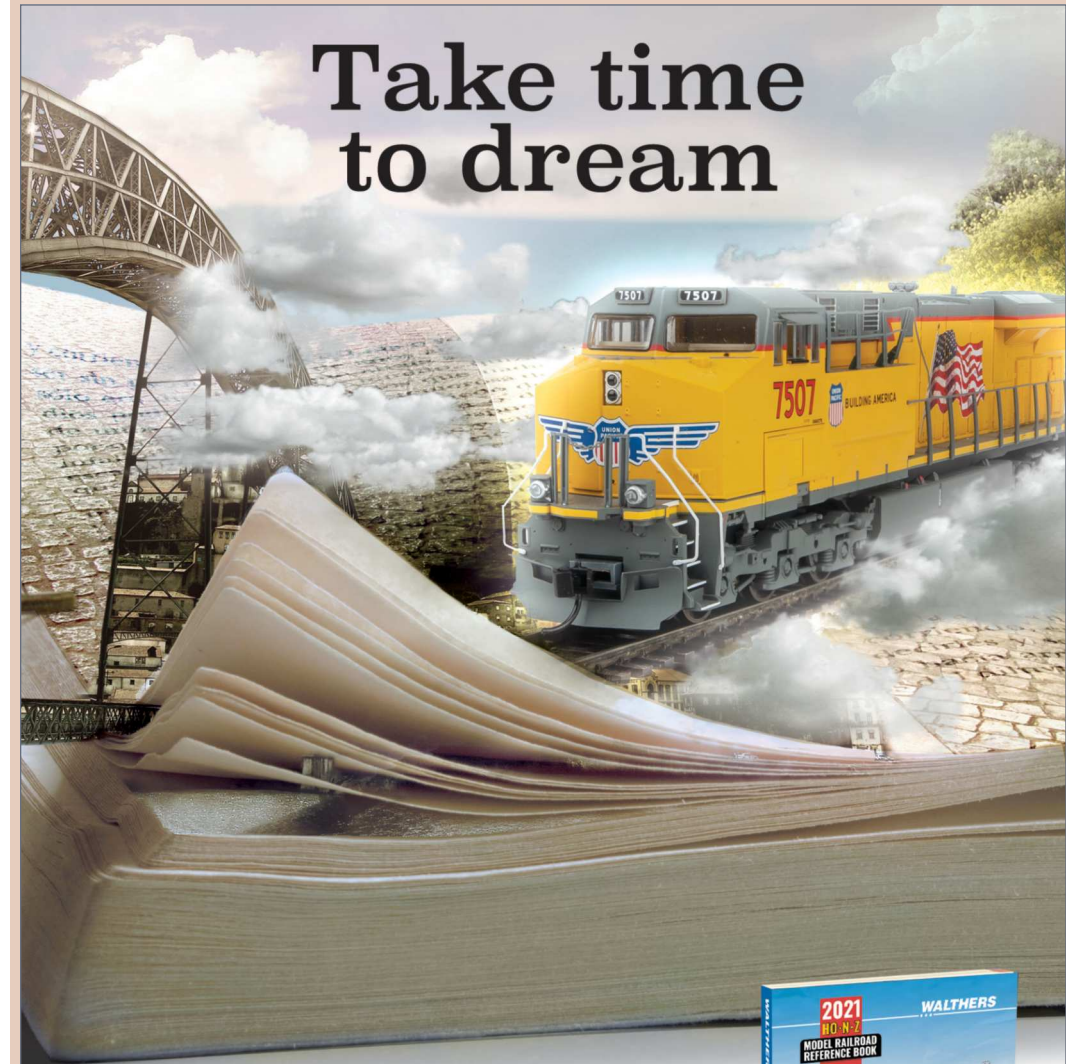
On mobile devices, the best PDF reader app we've found that gives this behavior is Sidebooks (*not* Adobe Reader). You can get Sidebooks for free on the Apple App Store and on the Android Google Play store. Did I mention the app is free?

On PCs, Macs, and Linux desktop or laptop computers, the best free PDF reader is still Adobe Reader. But on mobile devices, get the Sidebooks App instead, Adobe Reader on mobile devices is badly hobbled – if I was Adobe, I'd be hanging my head in shame – Adobe Reader mobile is a very poor app.

If you aren't willing to use the apps I recommend above, then you may find your "go to" PDF reader just doesn't cut the mustard.



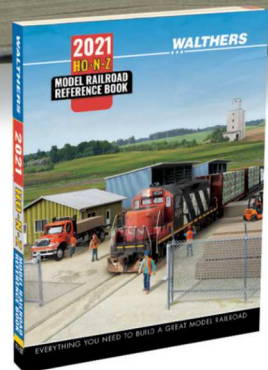
2.The Wide Edition is virtually identical to the old landscape edition. However, the cover is now always the portrait cover.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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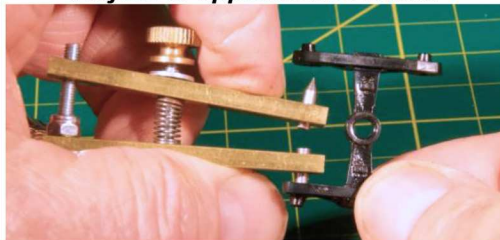
[INDEX](#)

[TABLE OF CONTENTS](#)

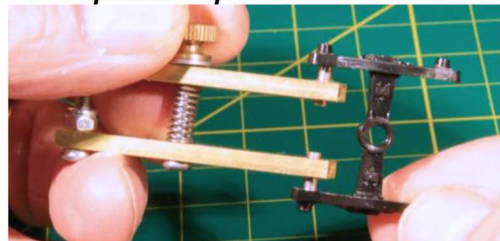
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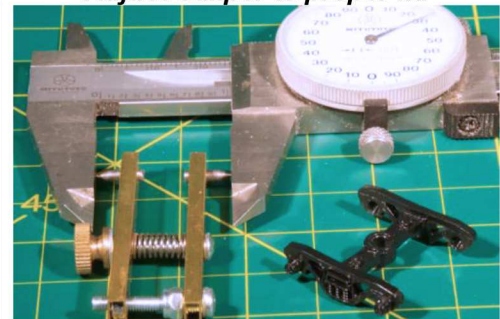
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In that case, we also produce the Wide Edition where we hard-stitch the two facing pages together in the PDF.

Since we're now standardizing on a single master format that uses portrait pages, we're only making the portrait cover.

That means, the new "landscape look alike" PDF has a portrait cover [2]. Otherwise, the rest of the Wide Edition magazine should look identical to the beloved landscape edition.

We see the advantages of this change as two-fold:

1. You now have a smart 21st century PDF that adapts to the screen size. Very handy, especially if you have a tablet, smartphone, or a Windows Surface laptop.
2. We now have a single portrait-based master throughout the entire magazine production process, saving us a couple days or more each month on the magazine production process.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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We had to completely redo all our magazine pages in Affinity Publisher this month, which took us extra time. However, that's a time-and-effort cost we only need to do once and we're now ready to rock and roll going forward!

Looking ahead at 2021

It's no secret our society is experiencing major upheaval from the global pandemic and from tough social issues. Will there be a second wave of the pandemic this winter? Who knows.

And this being an election year, what lies ahead come November and beyond into 2021? How will things play out in cities that actually do defund the police?

For this reason, we have decided to sit out 2021. We're not going to any shows, nor will we be travelling to layouts or having guests come in studio for TrainMasters TV.

In short, we're just going to wait things out until we can see what the new normal looks like. We don't believe that will become clear until we get well into 2021.

In the meantime, we'll be staying close to home here at the MRH offices, producing lots of fun magazines, books, and videos on this hobby we love.

Thanks to the internet, we can all stay connected and talk about *having fun with trains!* ☑

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[INDEX](#)

[TABLE OF CONTENTS](#)



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LAST ISSUE'S RATINGS

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

- 4.7 Make your own StayAlive
- 4.7 June 2020 news
- 4.5 The K10 hobbyshop layout

Issue overall: 4.2

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

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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

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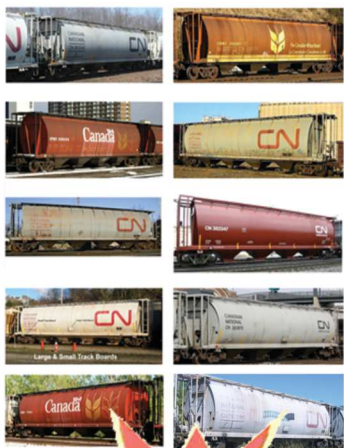
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Model Railroad Hobbyist | July 2020

Compiled by **JOE FUGATE**

★★★★★
RATE THIS ARTICLE



N scale shelf layout

MRH forum member **scroteau** maintains a running video blog of his shelf layout, the N Scale Midland & Dorchester Railroad. In the video linked to this particular thread, he talks about adding a photo backdrop to the scene above. Also scroteau discusses his brick freight terminal building and the process he used to paint and weather the building.

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

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

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[INDEX](#)

[TABLE OF CONTENTS](#)



1, 2. Peter Soulikias embarked on a project to renovate this old brass 0-8-0 switcher, and he chronicles the process on the *MRH* forum.

Redoing a brass 0-8-0

MRH forum member **Deemiorgos** (*Peter Soulikias*) has a thread discussing his renovation of this old brass 0-8-0. Peter cleaned it up, lubed it, weathered it, as well as painted the rods and the rims of the drivers.

Follow Peter's progress on the *MRH* website thread link below.

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



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[INDEX](#)

[TABLE OF CONTENTS](#)

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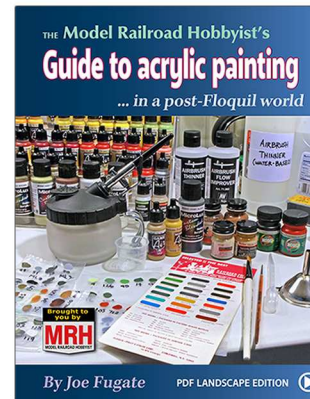
[INDEX](#)

[TABLE OF CONTENTS](#)

Floquil/PollyScale stash running out?



MRH has mapped the old familiar colors to readily-available acrylic paints.



Floquil / PollyScale	Color (approx.)	Model Master	Valley Model	Model Master	Notes
Primer Grey		MM 4302	VMA 71.020	16-12	
Engine Black		MM 4308	ML 28000 VMA 71.201	16-01	
Steam-Power Black		MM 4309	VMA 71.037	16-40B	
Grey Black		MM 4317	VMA 71.031	16-40*	
Weathered (Charcoal) Black		MM 4310	ML 29002 VMA 71.034	16-05	
Rail Grey		MM 4307	VMA 71.041	16-04	
Rail White		MM 4312	ML 29004 VMA 71.030	16-02	
Grass Black		MM 4301	ML 29002 VMA 71.030	16-03	
Caboose Red		MM 4307	ML 29002 VMA 71.030	16-08	

Floquil / PollyScale	Color (approx.)	Model Master	Valley Model	Model Master	Notes
Tussock		MM 4305*	VMA 71.036	16-15	
Rail Orange		MM 4302*	VMA 71.033	16-09	
Rail Yellow		MM 4309	VMA 71.036	16-10	
Rail Brown		MM 4304	ML 29000 VMA 71.209	16-09	
Rail Red		MM 4305	ML 29000 VMA 71.039	16-40*	
Rail Blue		MM 4308*	ML 29000 VMA 71.039	16-40*	
Rail Green		MM 4308*	ML 29000 VMA 71.039	16-13	
Rail		MM 4305	ML 29000 VMA 71.039	16-102	
Concrete		MM 4306	VMA 71.036*	16-10*	
April Concrete		MM 4305	ML 29000 VMA 71.039	16-08*	

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3, 4. These scenes show Jeff Bulman's excellent modeling, illustrating how a small layout can look very nice indeed.

12x9 HO Aberdeen Carolina and Western

Forum member **JeffBulman** posted photos of his small HO layout. We have to say, this looks like one very nicely done layout! Jeff says about his layout:

"I started it in July 2018 and it is mostly complete. I am modeling the ACW Railway in the modern era. It is a 12 by 9, point-to-point design with a peninsula. Now the weathering and detailing will start! Control is Digitrax, it is set at 53" height."

To see all the photos Jeff posted, use the button below.

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



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[TABLE OF CONTENTS](#)

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5. As Chris Adams develops this scene on his layout, he's studying the prototype and trying to get something that looks "right." Note all the prototype photos taped along the fascia for reference.

Backed up at the Backdrop

MRH forum member **Chris Adams** shares his struggle and mental block dealing with the backdrop in an area on his layout in this thread on the *MRH* website.

Note the photos on the fascia Chris is using to get some sense of the right look and feel of the area.

Chris relates, however, that so far he is thoroughly stumped. He's looking for suggestions to get him past this roadblock.

Visit the *MRH* website post any suggestions you have as Chris continues to ponder this problem!

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

Latest *MRH* "Weekly photo fun" thread

As of this writing, here's a couple interesting photos from the latest *MRH* Weekly photo fun thread. Check it out!

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



4. *MRH* forum members **mevans** and **rcgrabbag** posted these photos on the latest new *MRH* weekly photo fun thread. Visit this link to view all the great photos on this thread.



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WHAT'S NEAT

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Model Railroad Hobbyist | July 2020



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KEN PATTERSON'S COLUMN THIS MONTH ...

- Using the right soldering tool can improve the quality of your soldering
- Soldering wiring, track, and various models
- Repairing a damaged \$5000 1/24th scale brass steam locomotive ...



WHAT'S NEAT!
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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

THIS MONTH KEN DEMONSTRATES SEVERAL SOLDERING TOOLS, including soldering track joiners, wire feeders, electronics, and models. He also shows how to use a resistance soldering station to repair both a brass locomotive and a light tower.

Ken describes his soldering tools



1. In this month's What's Neat, Ken Patterson demonstrates several soldering tools and their use in model railroading. From right to left in this photo are two pencil-type adjustable-temperature soldering irons with digital readouts and assorted screw-on tips, a PBL resistance-soldering station, a combination pencil iron/air soldering station, and a switch selectable 20/40-watt pencil iron station. In front is a Weller soldering gun, which Ken describes as "your old grandpa's handgun."



2. Shown here are some of Ken's common soldering supplies, including 60/40 rosin core solder on the spool, rosin flux paste in the plastic tub, de-soldering braid, a bottle of PBL liquid acid flux, and Micro Engineering metal darkener. Acid flux cleans brass better and faster than rosin flux, but should never be used for electrical soldering and must be cleaned off the joints you use it on. Otherwise the acid will slowly eat through the joint, causing it to eventually fail.

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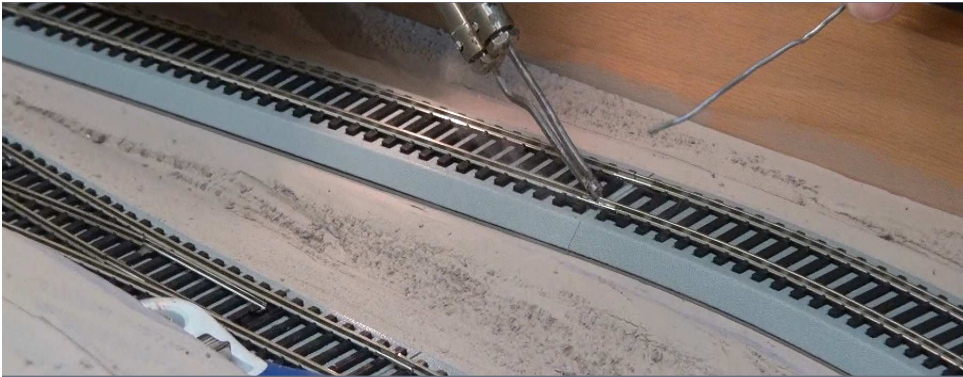
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3. Ken shows that with a little care and practice, you can use a soldering gun to solder track without melting the surrounding ties. The gun has two trigger settings, with 100 watts on the first click and 140 watts on the second.



4. Ken is using a handheld soldering iron set to 650 degrees with a knife-type tip to solder rail joiners on code 70 weathered track. Before soldering, the rail is cleaned with a wire brush until it shines. Ken is using rosin core solder and holds the side of the blade tip to the side of the rail. In two or three seconds, the solder flows into the rail joiner.



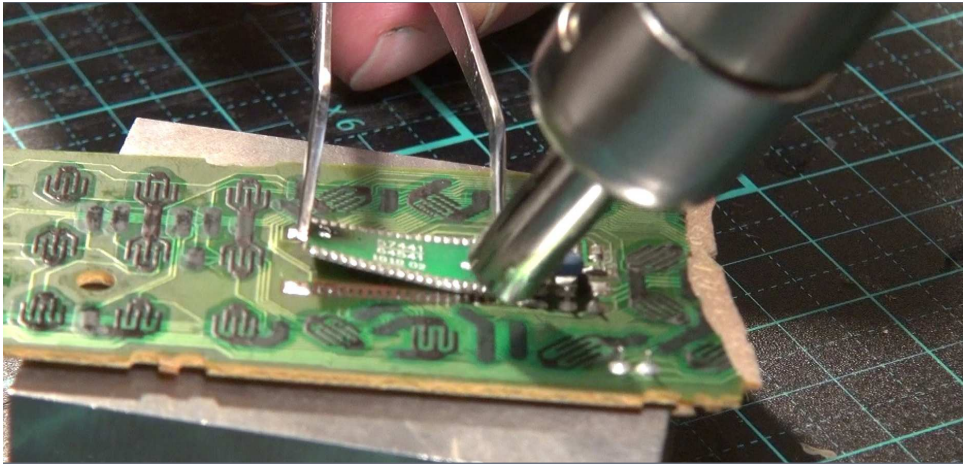
5. Using a simple pencil tip soldering iron, Ken solders a 22-gauge wire for block switches. He tins the wires with rosin core solder, and then touches the wires together and applies heat to solder them together permanently.

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6. Ken removes a computer chip from a circuit board with the hot air soldering rig. The air temperature is set to 700 degrees with a quarter-inch diameter nozzle. It heats the solder on the board evenly, allowing the user to pull the chip off with tweezers. The heat gun comes with various flat and round nozzles for different applications.

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Harvester load on
a flat car, part 2

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7. An additional use for a soldering iron is as a hot knife. Here Ken has attached a hobby knife blade to the soldering iron by wrapping wire around them. He uses it to melt lines into plastic kits, such as forming the mortar joints in the decorative stonework seen here.

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Resistance soldering methods



8. Resistance soldering simplifies making models from brass stock, pre-etched kits, or brass locomotive repair and construction. With his 5-setting adjustable PBL soldering rig, Ken can solder the finest small parts and heavy brass stock. Resistance soldering uses an electrical current between a grounding wire and a carbon cathode, turned on by a foot switch. It allows the user to precisely place a great deal of heat instantly, soldering the joint without softening other nearby solder joints or melting nearby plastic.



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[INDEX](#)

[TABLE OF CONTENTS](#)



9. A \$5000 1/24th scale brass K-27 had its pilot smashed in shipping. Ken will show how to make this look as good as new using resistance soldering.



10. Because brass is such a soft metal, it is easy to bend the pilot back into shape. Here Ken is applying plumbers paste solder to the reshaped pilot on the model.



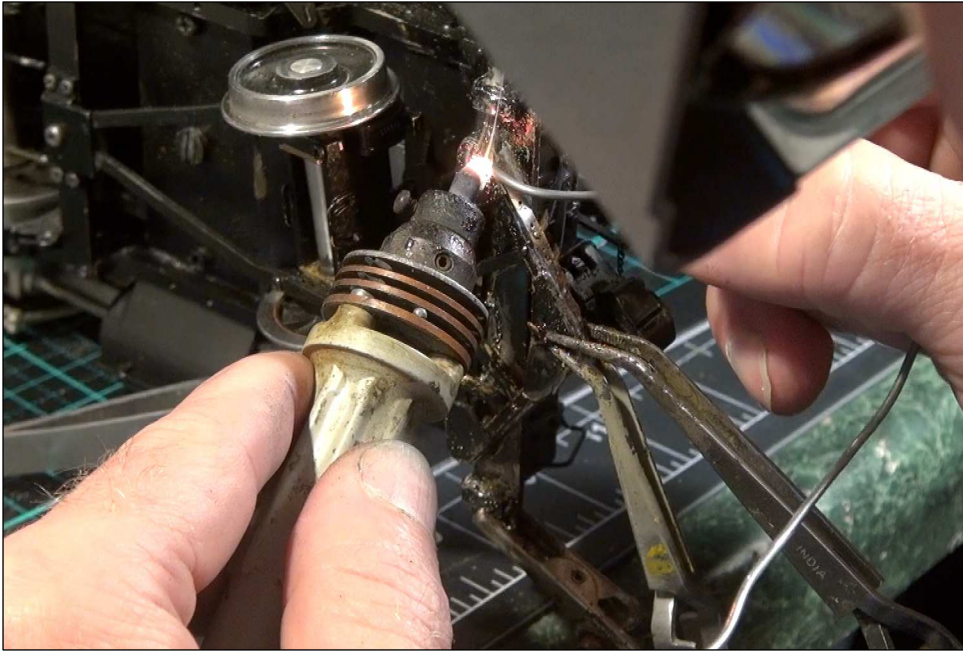
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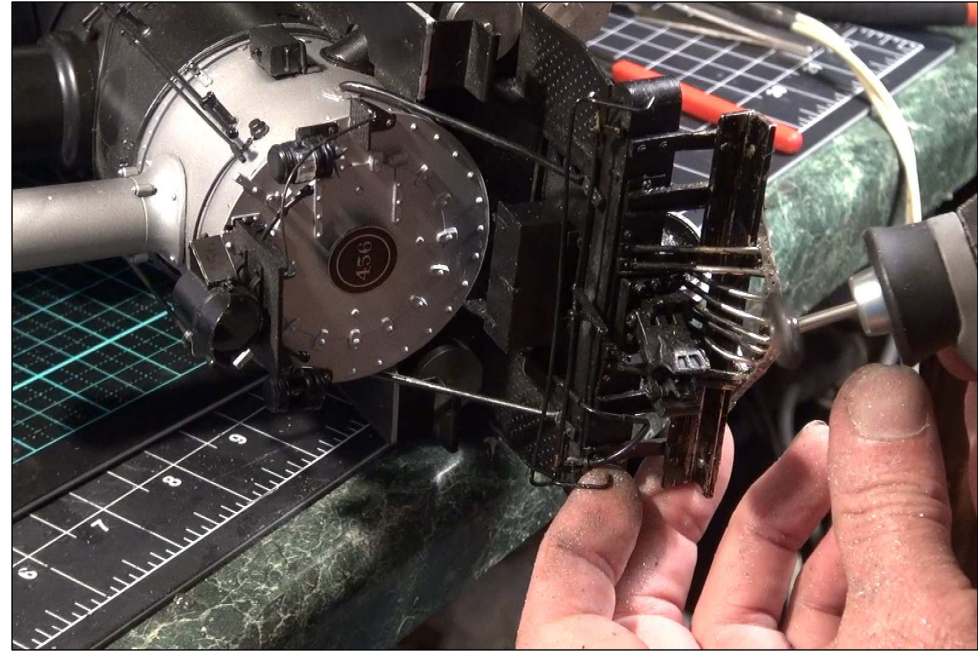
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[INDEX](#)

[TABLE OF CONTENTS](#)



11. After brushing on PBL liquid acid flux, Ken uses tweezers to hold the parts together as he clamps the grounding clip to the model and touches the carbon probe to spots where the parts join together. The carbon tip glows white as it instantly melts the solder for a permanent bond.



12. Using a wire brush attached to a rotary tool, Ken cleans up the newly solder joints, smoothing out the solder for a factory new appearance. He wiped down the brass areas to clean off any remaining acid flux residue before airbrushing the model black.

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Other uses for a resistance solderer



13. Here Ken solders jumper wires to his code 250 garden railway track with rosin core solder and his resistance soldering machine. Because of the mass of metal in the track, trying to heat it all up with a normal soldering iron would take a very long time and give the heat time to damage the plastic ties.

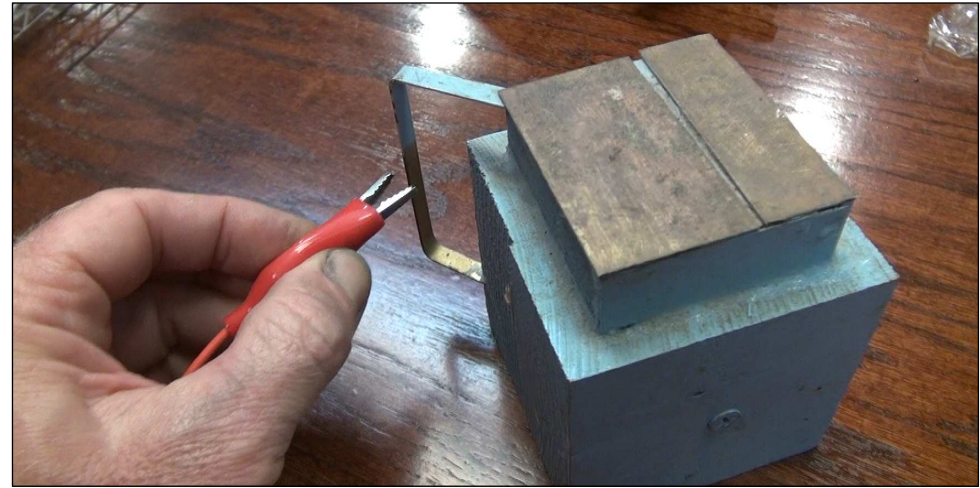
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14. To assist in brass construction, Ken constructed a brass base, using a block of wood and flat brass stock. Measuring about three inches square, the brass handle provides a convenient place to clip the grounding wire, and the base provides conductivity to the model and carbon tip.



15. Ken scratchbuilt this tugboat, using photos to guide him. The walls are Plexiglas and the base is styrene. All the handrails, steps, and roof details were built from brass stock.



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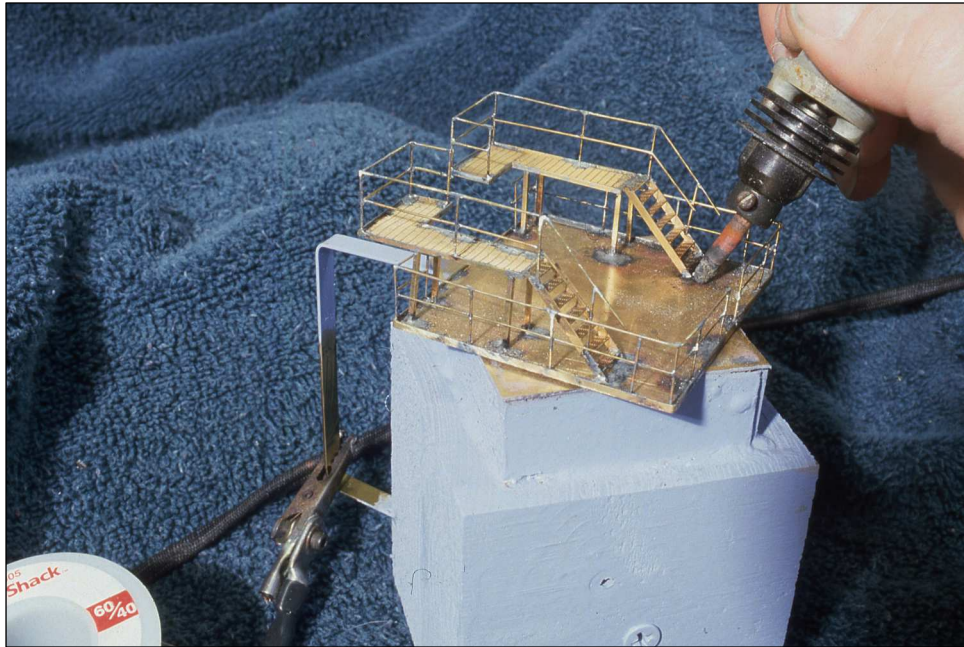
[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)



16. Here Ken uses his brass base to assemble the handrails and steps for the tugboat model. Ken used liquid solder paste and the PBL resistance solder system's lowest setting to avoid burning through the fine handrail parts. It is important to have the carbon probe in solid contact with the brass structure before switching on the current with the footswitch. Otherwise, if the current is already turned on, it will arc from the thin brass wire to the carbon element as it gets close, vaporizing the brass wire.



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17. Ken built the roof of the tugboat cab on top of the brass base, using prototype photos to create and locate the spotlights, handrails, and antennas. The photos were also used to form the curved edges of the roof. The brass base kept the entire assembly grounded during the construction process.



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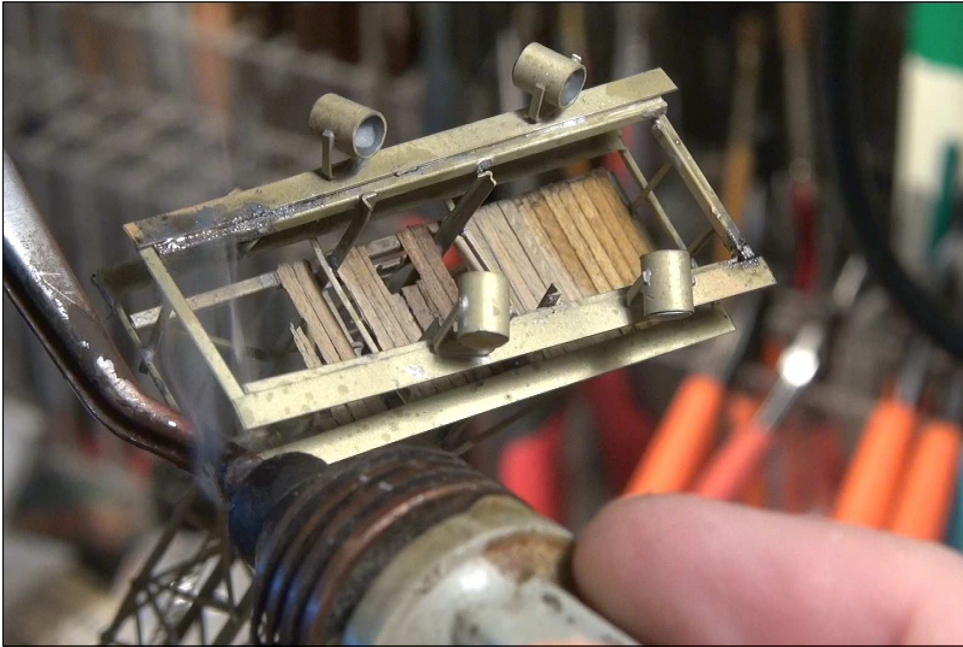
[INDEX](#)

[TABLE OF CONTENTS](#)

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)



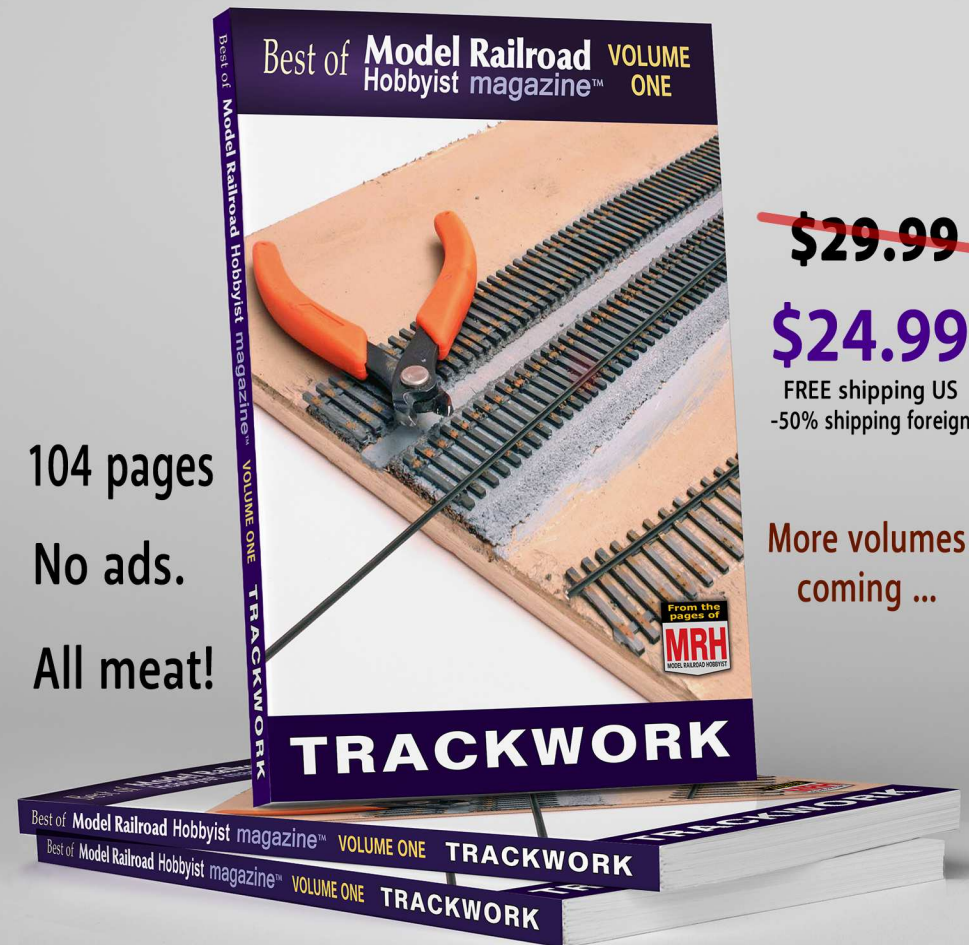
18. At the end of the video, Ken shows how he repaired a scratchbuilt brass switchyard light tower. The entire structure was built from fine brass angle stock and measures a scale 110 feet tall. The lights were cut from brass tube and everything was soldered together using resistance soldering before being airbrushed silver.

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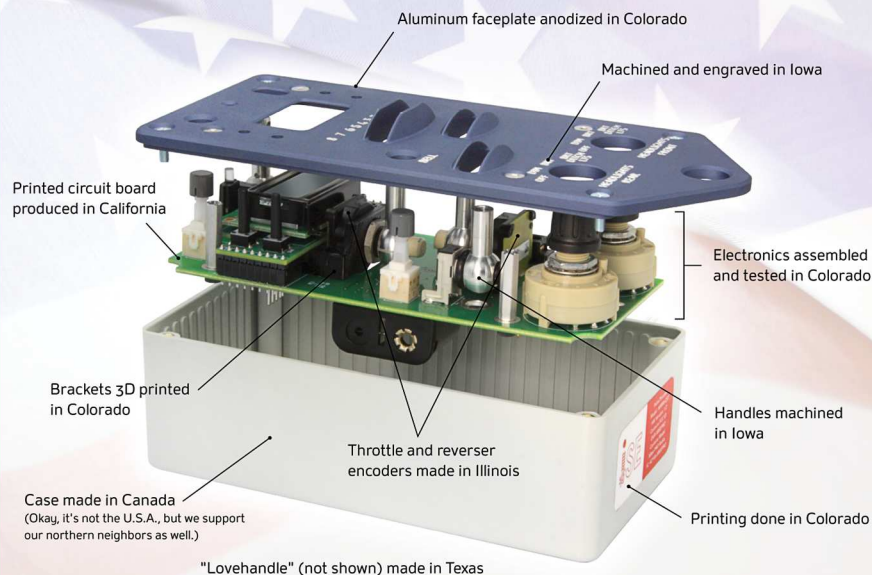


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Model Railroad Hobbyist | July 2020

JASON MILLER UPGRADES AN ATHEARN SWITCHER WITH ESU LOKSOUND, LED LIGHTS, AND STAY-ALIVE ...

Jason has been working on his HO layout for the past eight years. It's based on the Reading Railroad from the early 70s into the Conrail merger era (1976).

Jason put the layout in a standalone 36' x 13' (11m x 4m) shed in Victoria, Australia. He uses DCC and plans on installing ESU Loksound decoders into all of his locos to take full advantage of the ProtoThrottle for his operations.

★★★★★
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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

A DEFINING MOMENT FOR ME CAME WHEN VISITING MY FIRST model railroad layout – hearing the sound of that diesel prime mover and the turbo whine as it throttled up.

I had purchased a few DC locomotives and had one converted to DCC to run with my NCE system, but once I heard that sound I was hooked. My layout had to have sound!

I bought my first locomotive with sound: an Athearn Genesis Reading FP7. Hearing that EMD 567B V16 with a Roots blower had me hooked!

I did my first solo sound installation by putting a Soundtraxx Tsunami GN1000 into an Atlas Silver series Conrail MP15DC. Once I knew I could install sound into my DC locomotives, I knew all would have sound.

Over the years, the leaps in electronics technology within the model railroad industry have been astonishing. One recent addition has been the Iowa Scaled Engineering's ProtoThrottle. It makes operating a layout much more realistic, and works extremely well with the current crop of sound decoders from ESU, TCS, and Soundtraxx.

Buying my second ProtoThrottle lead me to commit entirely to ESU's Select Direct decoders in all of my HO locomotives. I based my decision on the work that ESU and Iowa Scaled Engineering did to ensure the two platforms work flawlessly together, and take full advantage of new ProtoThrottle features.

A person can use any of the three sound decoder vendors I mentioned above. The conversions I'm doing could also assist with non-sound DCC installations too.

This installation into a SW1500 turned out to be quite tight and challenging. But if a person can do one of these, most other installs come easier, as they generally have more room.

DOING THE INSTALL

There are several steps involved when I convert a standard DC model to one with DCC with sound. For this article, I converted the decoder to a DCC with sound version, that fixed a common power pickup issue, upgraded the Athearn bulbs to LEDs, and added a stay-alive device.

REMOVING THE STOCK COMPONENTS

First, I removed all of the detail parts from the locomotive. I removed anything that was likely to get damaged by handling the shell and/or frame.

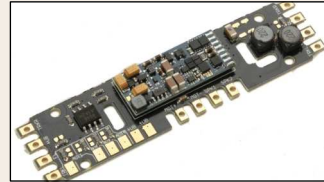


1-4. I removed all the detail parts from the switcher first.

PARTS, MATERIALS, TOOLS, AND THE PROCESS...

Sound decoder

ESU - Loksound - Select Direct V4 decoder 73700 (discontinued). You can use a Loksound 5 DCC Direct as well.

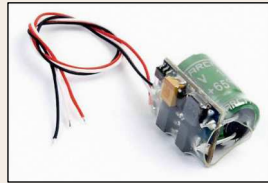


V4 - www.esu.eu/en/products/lok-sound/lok-sound-select-direct

V5 - www.esu.eu/en/products/lok-sound/lok-sound-5-dcc-direct

Power Pack Mini - stay-alive capacitor

ESU - Power Pack Mini (54671). www.esu.eu/en/products/accessories/powerpacks/powerpack-mini

**Super Thin/Flexible Decoder Wire**

ESU - Thin/Flexible -AWG 36 Stranded Decoder Wire. www.esu.eu/en/products/accessories/thin-cables-cable-harness

**Sugar cube speaker with enclosure**

DCC Solutions - Thunder - High Performance Dynamic Speaker.

**Locomotive headlight lenses**

Plastruct 1/16" (1.65mm) Clear Acrylic Rod.

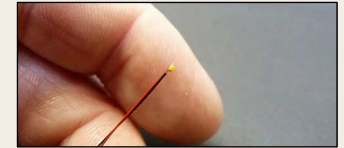


www.dccsolutions.com.au/apps/web-store/products/show/4335990 Locomotive headlight lenses

plastruct.com/collections/strip-amp-rod-2/products/90291-ar-2h

0402 micro LEDs

Pre-wired 0402 (Warm White) Micro LEDs for locomotive lighting.

**Kapton tape**

For securing decoder wires, decoders and other electrical components.

**Tools and other materials:**

- Adjustable-temperature soldering iron with fine-tip
- Solder
- Flux pen or paste
- Wire cutters
- Wire strippers
- Spring tweezers
- Tweezers
- Small phillips screwdriver
- Small flat blade screwdriver
- 1/16" (1.65mm) thumb drill
- X-Acto knife
- Double-sided tape
- Foam locomotive cradle
- Hobby gear lube ■



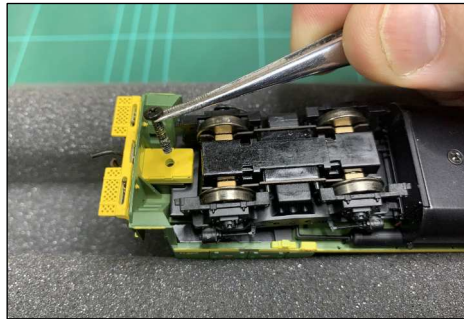
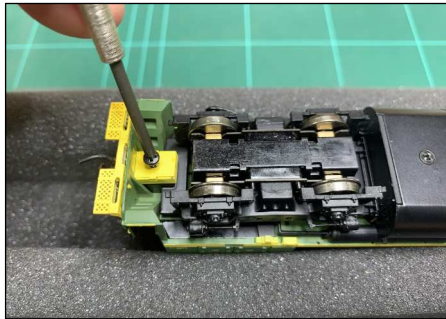
UPGRADE AN ATHEARN SWITCHER | 6

I also removed the stanchions, grab irons, and horn from the cab [1-4]. The cab itself needed to be removed to upgrade the stock Athearn bulb lighting to LEDs, and to install the stay-alive.

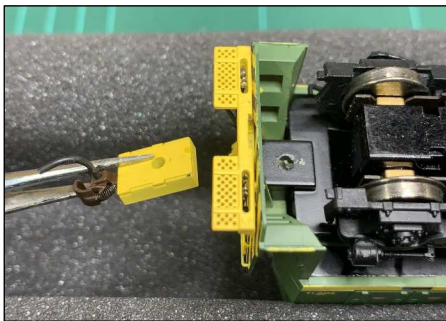
To remove the outer shell, I needed to first remove the couplers and coupler pockets. I removed the screws holding the couplers and pockets in place [5, 6, 7].

Removing the shell with most Athearn locomotives is easy. I placed the locomotive on a foam pad, gripped the rear power truck, holding only the truck and not the shell and/or cab. Then I placed a finger just under the rear of the shell, gently dropped the locomotive onto my finger that was resting on the foam pad. This released the shell from the frame [8, 9, 10].

The shell should then lift up off the frame, revealing the power trucks, Athearn circuit board, and wiring [11].

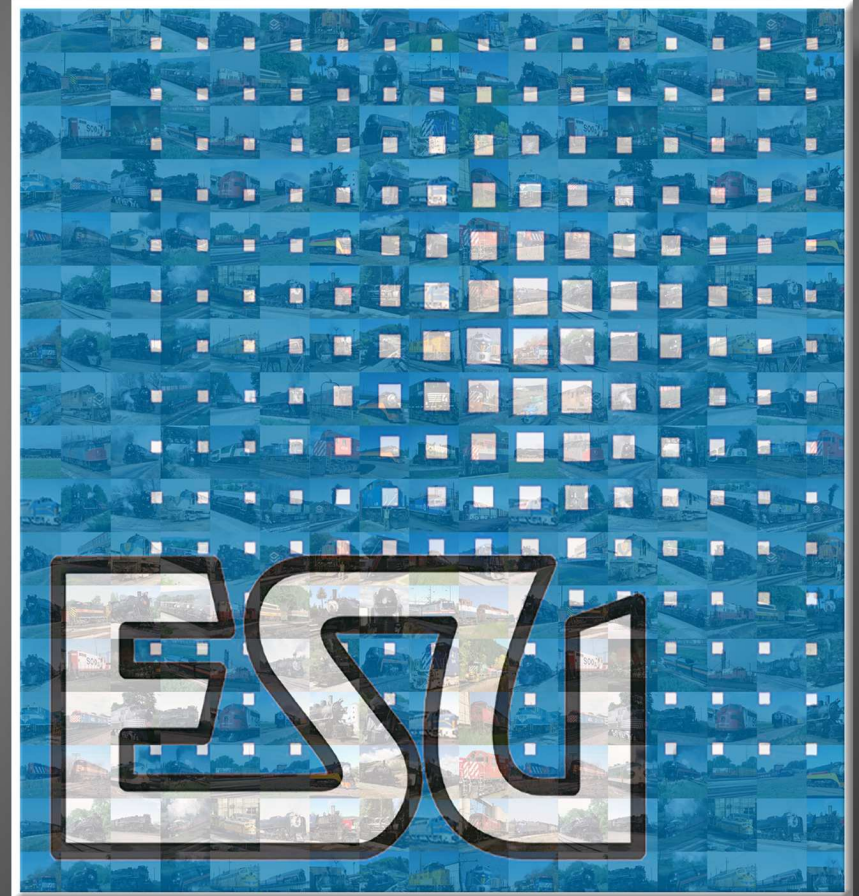


5, 6, 7. Next, I removed the couplers and coupler pockets.



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[TABLE OF CONTENTS](#)

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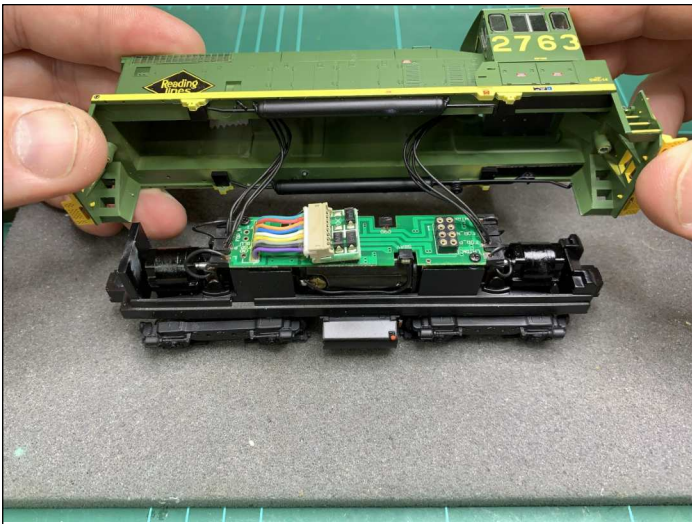
[INDEX](#)

[TABLE OF CONTENTS](#)

UPGRADE AN ATHEARN SWITCHER | 7



8, 9, 10. I removed the shell by gently dropping the edge onto my finger.



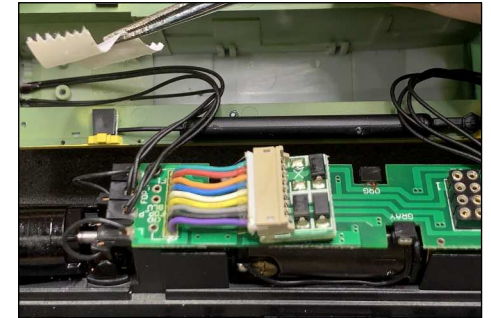
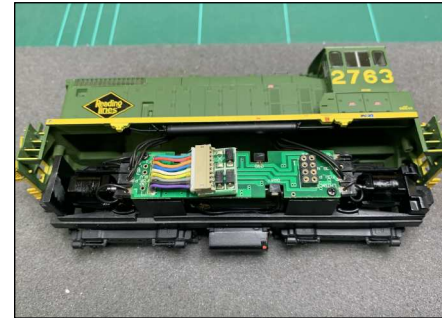
11. The shell removed from the frame, showing the circuit board and wiring.

UPGRADE AN ATHEARN SWITCHER | 8

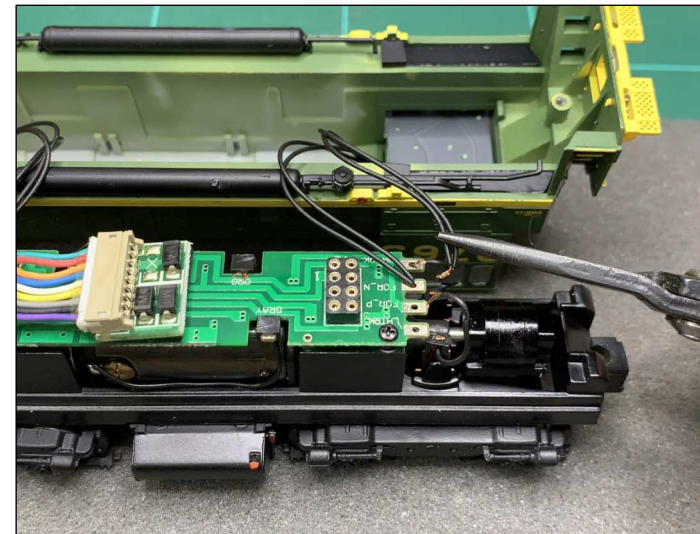
Once I got the shell off the frame, I needed to remove the shell completely. I started by removing the small piece of white tape that held the front headlight wiring to the underside of the shell [12a-b].

Then I removed the stock Athearn bulb wires so that the shell could be disconnected from the circuit board [13].

Once I removed the two sets of bulb wires, I set the shell aside [14].



12a, 12b. Next, I removed the tape holding the Athearn bulb wiring to the shell.



13. Removing the bulb wiring and plastic retainer clips.



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[INDEX](#)

[TABLE OF CONTENTS](#)

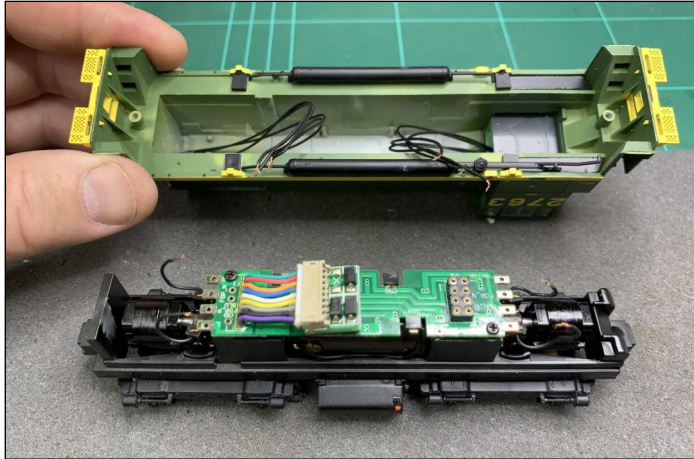
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[INDEX](#)

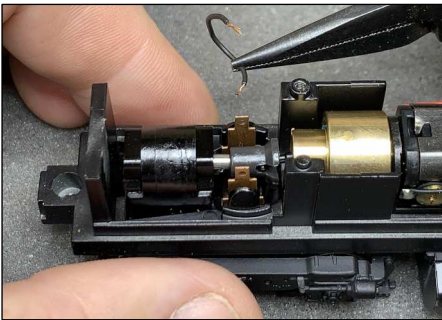
[TABLE OF CONTENTS](#)

UPGRADE AN ATHEARN SWITCHER | 9

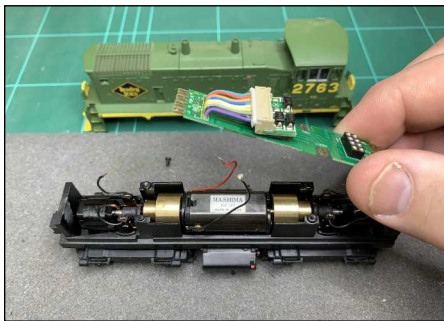
Next, I removed the remaining power truck and motor wires from the circuit board, and then removed the circuit board by undoing the two small screws [15, 16, 17].



14. With the bulb wires disconnected, the shell can be totally separated from the circuit board.



15, 16, 17. I detached the final sets of wires from the trucks and motor connections, then removed the circuit board.



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MAKING THE POWER TRUCK/POWER PICKUP MODS

One issue that bothers many model railroaders comes from sporadic power pickup.

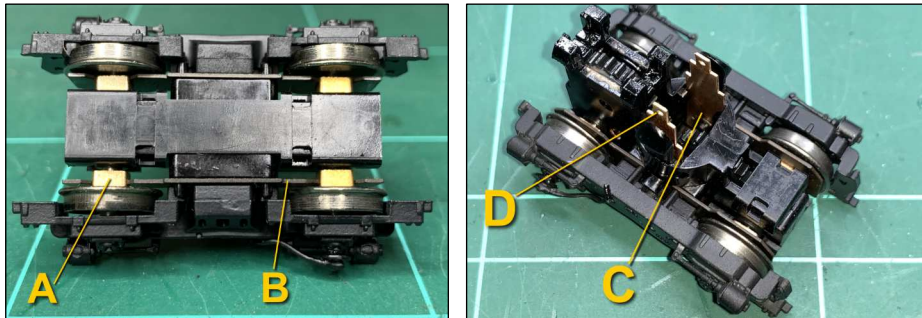
Some of the problem comes from the design, and the multiple connections between the wheel contact with the rail, and the decoder.

This is the first upgrade I always do for a locomotive – improve conductivity.

On the Athearn SW1500 switcher, I found the weak points for electrical connectivity. I traced the path from the rail to the decoder, and found those weaknesses to be:

- A. Wheel axle to square bearing [18]
- B. Square bearing to bearing plate [18]
- C. Bearing plate to decoder wire truck tab [19]
- D. Decoder wire truck tab to the decoder [19]

Those four points [18, 19] can cause electrical continuity issues. One of the best ways to eliminate this problem is to replace the multiple connections with one direct-soldered connection to the decoder.



18, 19. The lettered points above show connections that could cause poor electrical conductivity.

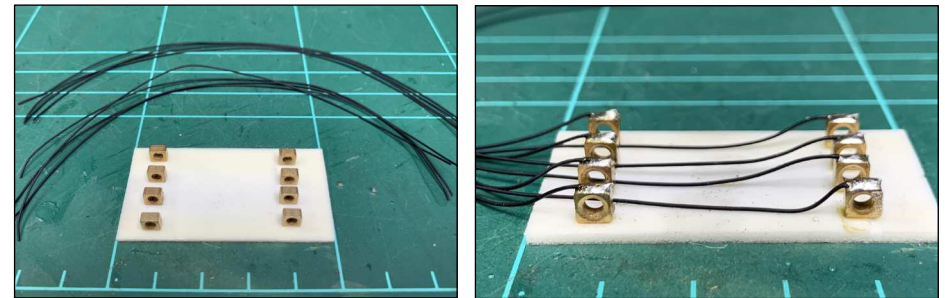
This also got rid of the plastic push connectors securing the wires to the decoder tabs. Those can create yet another poor connection.

To make a good electrical path, I soldered a decoder wire directly to a square brass bearing on all the wheels, and I soldered the other end of the wire to the decoder. By making four of these connections per truck, I created an “all-wheel pickup” on each truck, ensuring the best possible power route between the rail and decoder.

Before soldering the decoder wire to the wheel bearing, I disassembled the wheels/axle from the plastic gear so heat from the soldering did not damage the gear or wheel gear sockets.

When soldering the decoder wire to the square wheel bearing, I first cleaned the surface with a Dremel motor tool with a wire brush attachment. I then soldered on a black flexible 36AWG stranded decoder wire – I used black to keep the color consistent. I stuck the four square bearings onto some double-sided tape to hold them in position [20, 21].

Once the wheel bearings cooled, I reassembled the wheel/axle, plastic gear and wheel bearings, then checked the wheel gauge.



20, 21. I used a piece of double sided tape to secure the worm bearings while soldering the decoder wire. In [21], the completed wheel bearings with their wires.

LUBRICATING THE SQUARE BEARINGS

To further improve running and electrical performance, I added a small amount of graphite powder to the inside of the wheel bearing [22].

I used a wooden skewer with a small amount of graphite on the pointed end, using a twisting motion to apply a small amount inside the brass square bearing [23, 24, 25].

I then reassembled the wheel axles and bearing.

LUBRICATING THE POWER TRUCK GEARS

While I had the trucks apart, I removed the Athearn grease from the inside frames and gears, then applied Hob-E-Lube Premium - Gear Lube. I placed a small drop on each gear axle, and on the gear teeth once I had the gears placed back into the trucks.

Next I placed a wheelset into the truck and rotated it with my fingers so that the gear lube is spread throughout all the gears [27-30].

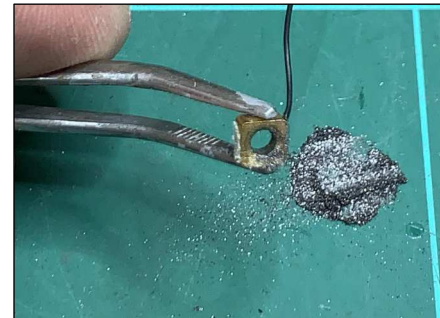
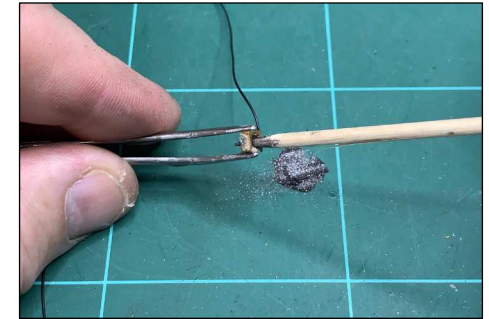
I added a bit more lube once the trucks had been installed into the frame.



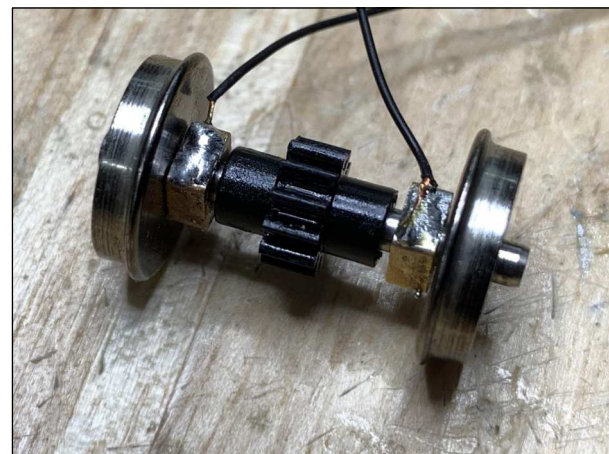
22. I used this graphite powder to lubricate the wheel bearings.



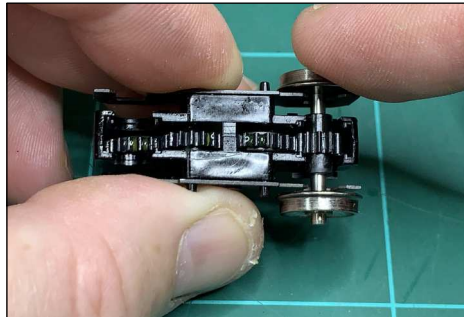
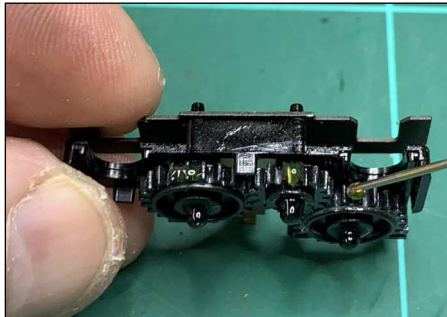
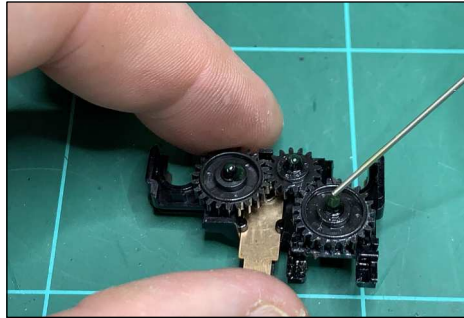
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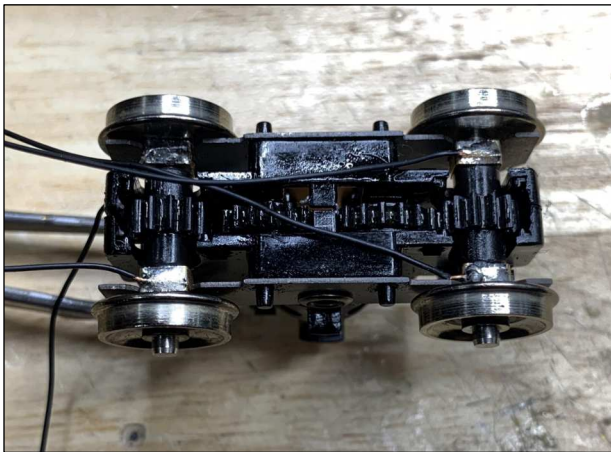
23, 24, 25. I used graphite powder on the wheel axles to lubricate and assist with electrical conductivity.



26. The reassembled wheel, axle, gear, and bearings with decoder wires attached.



27-30. Lubricating the truck tower gears with Hob-E-Lube Premium - Gear Lube.

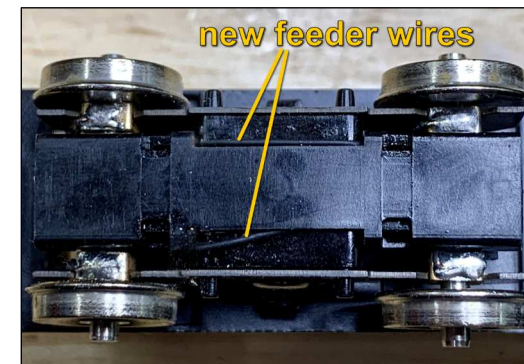


31. The reassembled power truck frame with the decoder wires facing toward the motor end.

Once I had the wheelsets reassembled, I put the power trucks back together. When inserting the wheelsets into the truck frames, I checked that the square bearings faced the right way, and that the decoder wires went toward the motor-facing end of the truck frame [31].

I carefully secured the longer “rear” decoder wires underneath the bottom truck clip [32], to ensure that they did not snag anything when the loco was running.

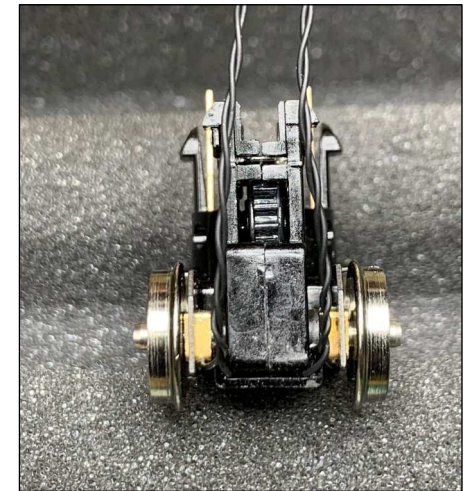
Once I had the decoder wires secured, I twisted the two left decoder wires together, and then the right ones.



When I had the two pairs twisted together [33], I soldered the two ends in each pair together. This ensured a solid electrical connection. This wiring fix now made each truck a far more reliable all-wheel-pickup.

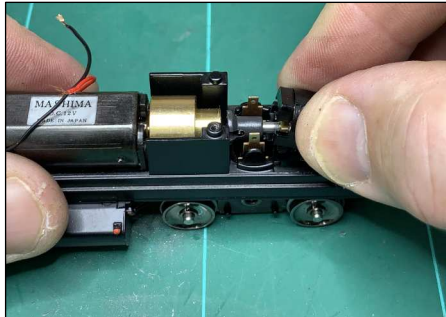
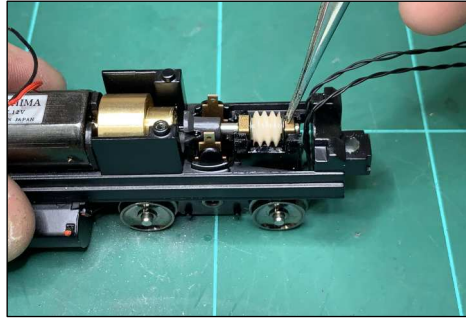
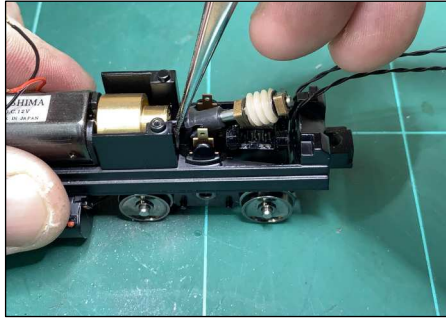
32. ↑ The longer “rear” decoder feeder wires secured underneath the bottom gearbox clip.

33. → The left and right side decoder feed wires twisted together.

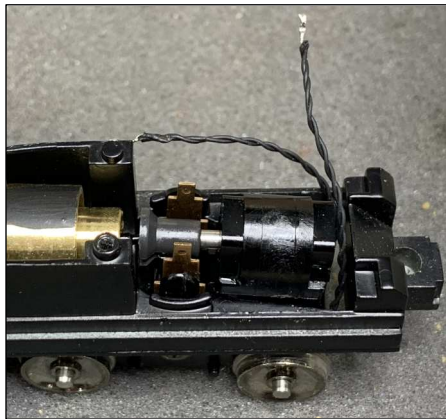


UPGRADE AN ATHEARN SWITCHER | 16

Photos [34, 35, 36] show the truck reassembly. I added a drop of gear lube onto the worm gear and shaft connection as well.



34, 35, 36. I put the truck assembly back into the chassis, and connected the motor worm shaft back to the truck.



37. The completed left and right power pickup wires ready to be soldered onto the decoder.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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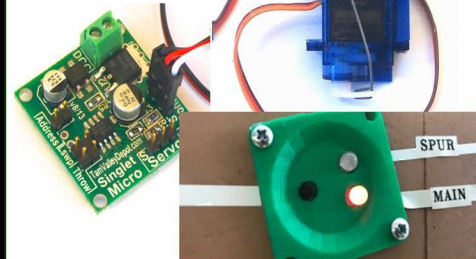
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[INDEX](#)

[TABLE OF CONTENTS](#)

UPGRADING STOCK ATHEARN BULB LIGHTS TO LEDs

Whenever I add decoders to my locomotives, I upgrade the older Athearn incandescent bulbs to warm white 0402 LEDs. In the past I added a single warm white 3mm LED, and added some 1.65mm light pipes that fit into the headlight openings.

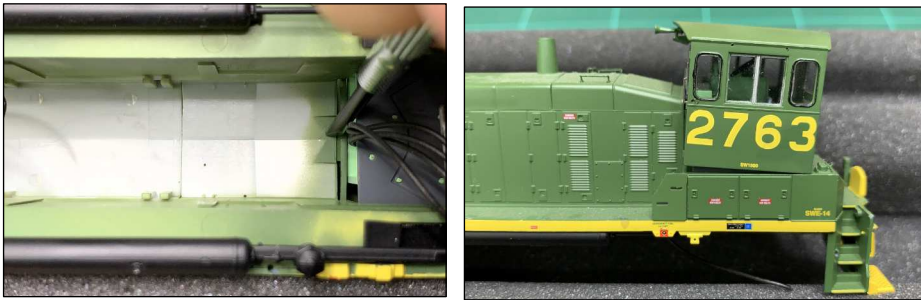
Before moving into the LED upgrade, I first removed the old bulbs.

To access the cab lights, I removed the cab from the shell first. I turned over the shell and located the three plastic locking lugs that secured the cab to the shell. The front lug was wider than the two at the rear.

Using a flat blade screwdriver, I gently pushed the front locking lug back toward the front of the cab, pressing down at the same time to release the lug. With the lug released, the cab was sitting off the shell tilting toward the front of the cab [38, 39] and [40, 41].

The cab was now removed from the shell by pulling out the bulb wiring from behind the control stands.

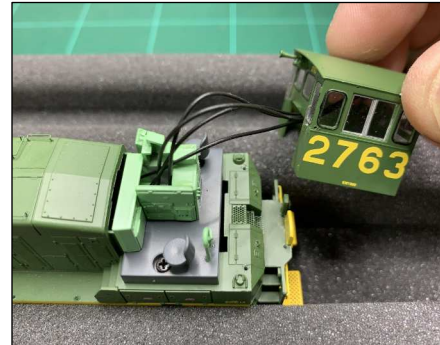
The bulbs might be attached with glue, but they should loosen from the plastic without issue. I had in the past had the wire break away from the bulb, if this occurs you may need to use a skewer to push the bulb out of its housing [42, 43, 44].



38, 39. I released the cab front locking lug with a small flat-blade screwdriver.



40, 41. Using the flat-blade screwdriver, release the last two locking lugs to finish releasing the cab.

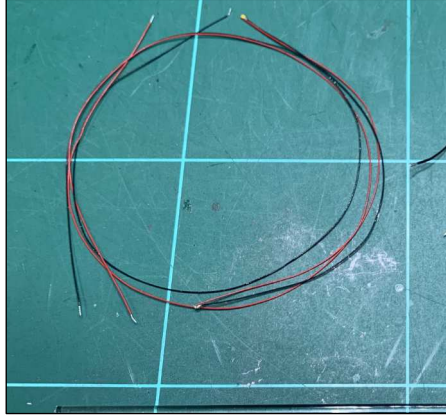


42. I removed the cab and pulled out the bulb wiring. Also see [43, 44].



43, 44. I removed both the front and rear bulbs and wiring.

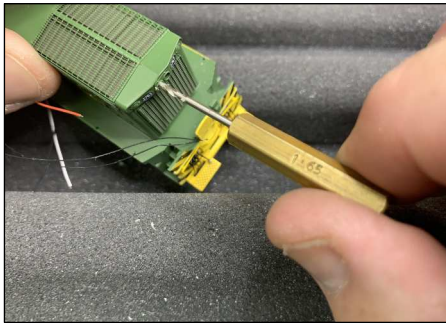
For the next step, I installed the light pipes and 0402 LEDs into the cab and front hood. For the light pipes, I used Plastruct clear solid tube 1.65mm / 1/16" in diameter. It fits perfectly into the



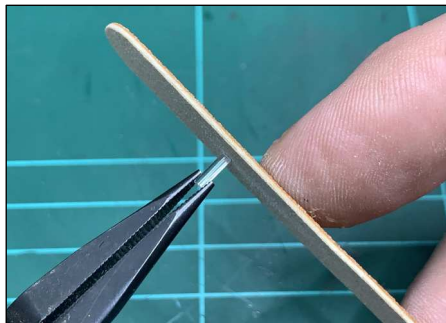
Athearn openings [45].

The back half of the front shell and cabin needed to be drilled-out with a 1.65mm drill so the light pipe can slide the entire way through [46].

45. The 0402 pre-wired LEDs and clear light pipe I used for headlights.



46. I drilled out the back half of the shell to insert the light pipes for the headlight.



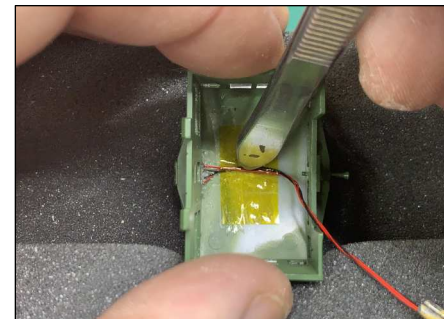
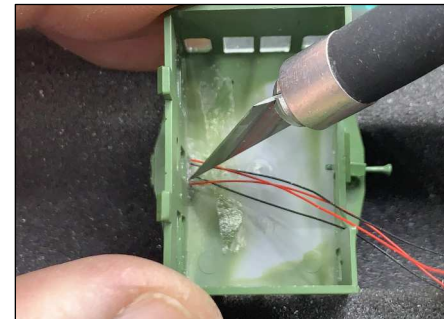
47. I smoothed the face of the light pipe with a fine emery file.

Next, I inserted the light pipes into the headlight openings and glued the 0402 LEDs into place. Due to their small size, I used one LED per headlight.

When cutting the light pipe to length, the face may be on an angle or not smooth. If this happened, I smoothed the face with a fine emery file [47]. This ensured the front face looked like a headlight lens, and ensured a flat surface on which to bond the LED.

I placed a piece of Kapton tape across the cab to hold the LEDs in place while gluing them. Once the glue dried, I folded down the two sets of wires and secured them with Kapton tape to the roof of the cab [48, 49, 50]. I used a multimeter set on "diode mode" to check that the LEDs worked.

When connecting the two sets of wires, I wired them in parallel, the red wires to +UB (common) on the decoder, and the black wires to the FL tab.

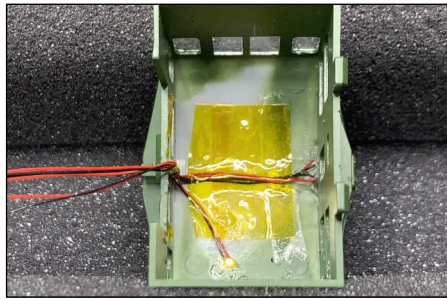


48, 49, 50. I installed the light pipes and 0402 LEDs using CA, then secured the wires using Kapton tape.

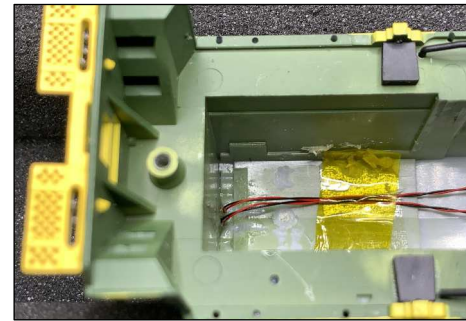
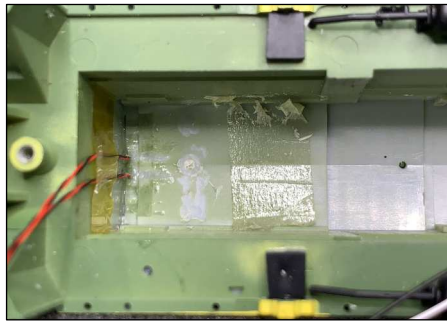
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UPGRADE AN ATHEARN SWITCHER | 21

I then installed the cab lighting, using just a single 0402 LED connected to the AUX6 lighting tab on the ESU decoder. Due to their small size, the 0402 LEDs can be used in many places not previously thought of in HO locomotives. I placed this LED centered over the engineer's seat, and just above the front sliding window [51, 52].



51, 52. I installed a single cab light to add some "pop" to cab interior.



53, 54, 55. I installed the front LEDs into the headlight openings.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

I then installed the front headlights, again inserting the light pipes into the headlight openings and gluing the LEDs to them [53, 54, 55].

When the glue dried, I carefully removed the Kapton tape and bent the wires down so they ran along the center of the inside top of the shell. I secured the wires with more Kapton tape and tested the LEDs again with a multimeter to ensure they worked correctly.

INSTALLING THE STAY-ALIVE: ESU POWER PACK MINI

There have been many discussions online about solving the problem of poor-running locomotives on model railroads.

I took a two-part solution. First I upgraded the wiring to get the best electrical connectivity from the rail to the decoder by using direct wires with soldered connections.

While this has improved the reliability on my locomotives, I've gone farther to bulletproof them completely by adding a stay-alive capacitor to them all.

The ESU Power Pack Mini (PPM) isn't a cheap solution [56], but then it did have some special features that made it worth the extra dollars.

A big one: the ESU Power Pack Mini did not need to be disconnected/removed when programming the decoder on a LokProgrammer. It also had an integral charging circuit controlled by the decoder to avoid the inrush current that could trip boosters.



56. The ESU Power Pack Mini, I instal this stay alive circuit with all my DCC upgrades.

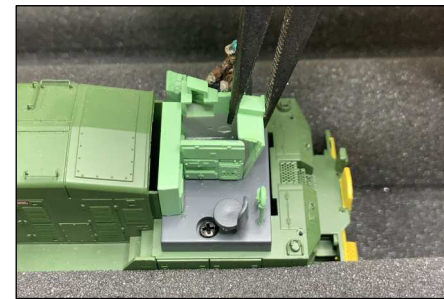
To install the PPM in a switcher, I used the small space left between the control stands. I needed to make some alterations to get it to fit, but they're quite easy to do.

First, I removed the cabinet facing toward the back of the cab interior [57, 58].

Next, I removed the side panel facing the conductor's chair; again with the small pliers. I gently pried the panel away from the plastic floor and the front control panel [59].

I then placed the PPM into its final location [60], and marked along the edge with a marker for the side panel to be glued back.

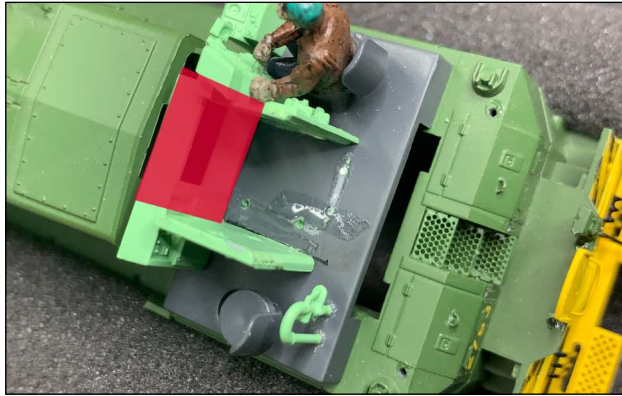
When I had the side panel glued back into its new location, I allowed the glue to cure overnight.



57, 58. I removed the rear cabinet panel with small pliers.



59, 60. I took out the side panel using the same method as the rear panel, and marked the position of its new location.



61, 62. I glued the side panel in place and removed the red section (bottom image) from the front wall of the interior.

Once the glue cured, I then removed the back section of the cab interior to allow the PPM to be positioned as far forward as it can go.

Once I had the front section removed [62], I secured the PPM to the floor with a little CA. I then added the real panel back over the end of the PPM with CA. The rear panel needed to be shortened a little to fit over the PCB at the bottom of the PPM.

When I have all of the reinstalled pieces secure, I re-installed the cab back onto the shell [63, 64, 65]. Before I did this, I painted around the LEDs with some silver paint to mask any light bleeding through from the cab headlight LEDs.

Text continues on page 30 →

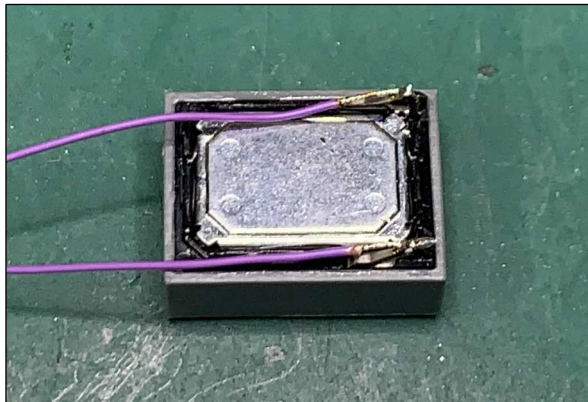


63, 64, 65. I reinstalled the cab back onto the shell.

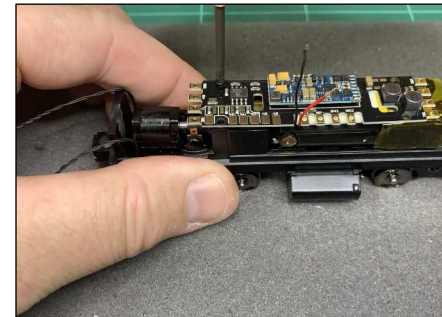
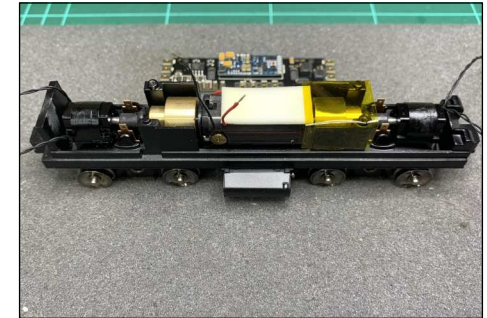
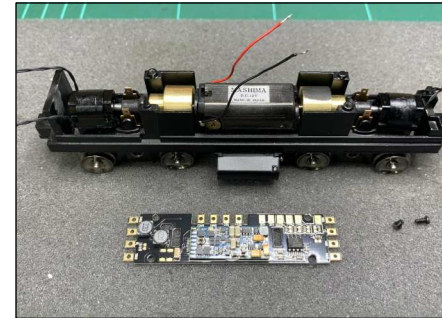
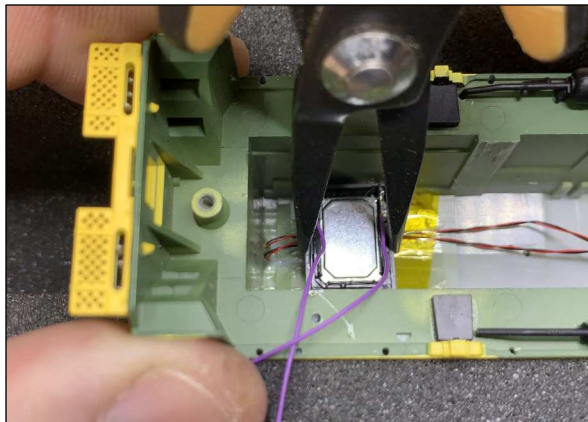




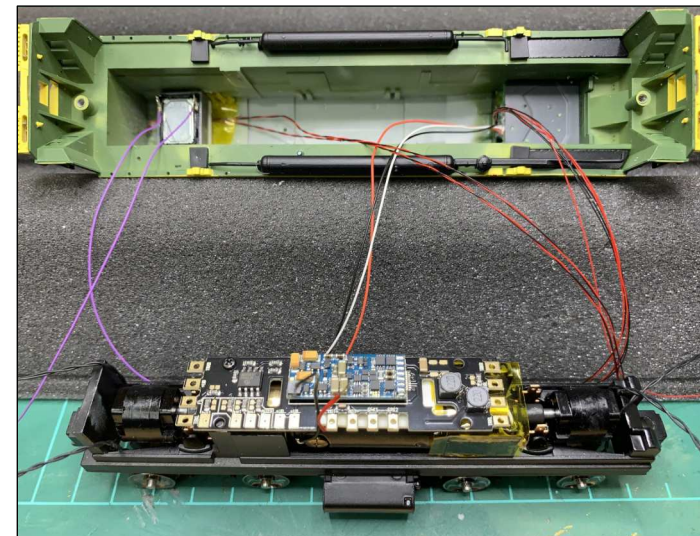
66. The DCC Solutions "Thunder" Speaker.



67, 68. I installed the sugar cube speaker into the front of the shell with double-sided tape.



69, 70, 71. I used some double-sided tape to secure the decoder, and added Kapton tape for insulation.

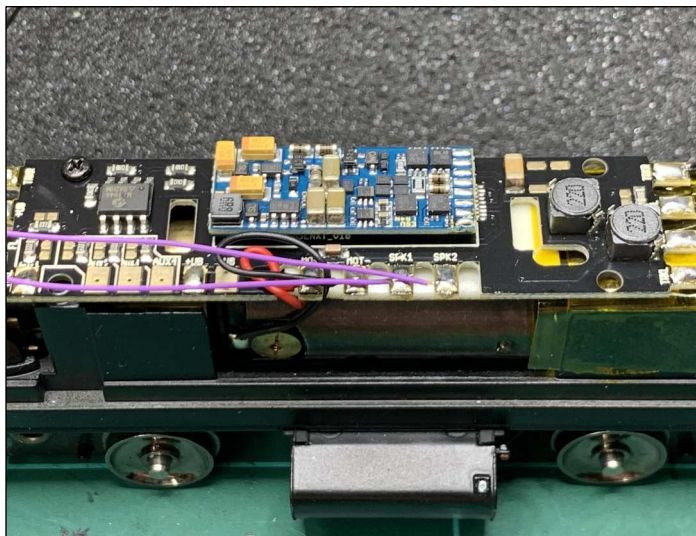


72. The installed ESU Select Direct Decoder, ready for wiring soldering.

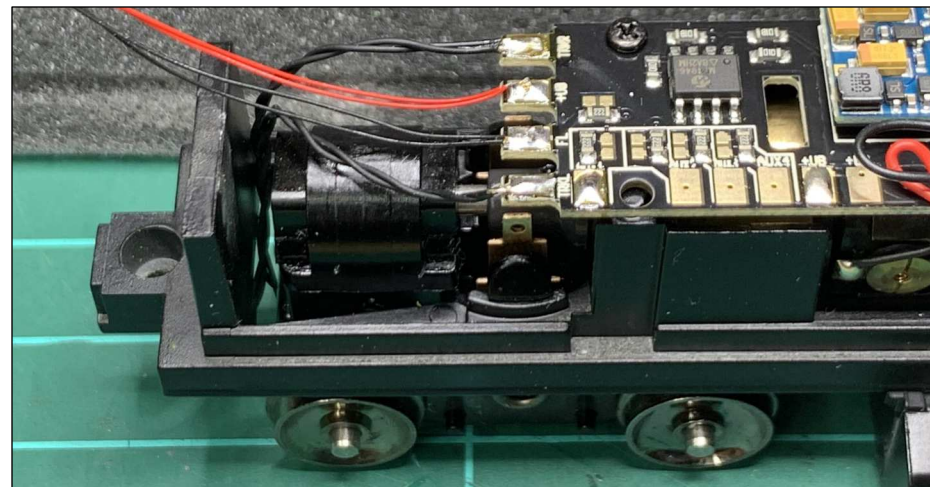




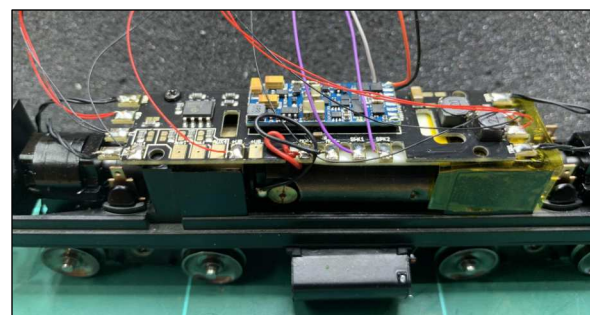
73, 74. I soldered the truck to decoder wires first, then soldered the motor wires. Finally, I checked that the motor and gears functioned correctly by running the locomotive on the layout.



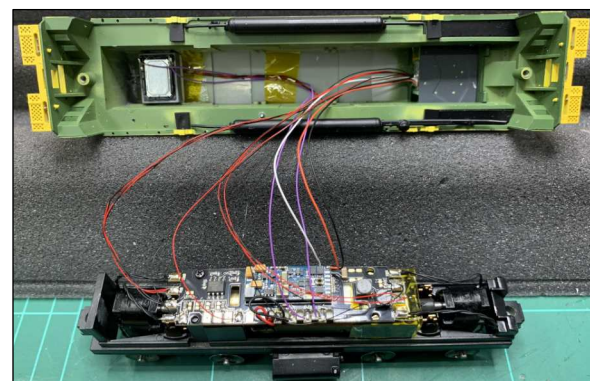
75. I soldered the speaker wires to the decoder tabs.



76. I soldered the remaining lighting circuits to the circuit board.



77, 78. The completed installation of the decoder, LED lighting upgrade, stay-alive and speaker into the Athearn SW1500 switcher.



79. My LokProgrammer screen showing the programming of the Power Pack Mini timeout.

I also tested the LEDs again to ensure they still worked.

INSTALLING THE SUGAR CUBE SPEAKER

With advent of sound in HO scale locomotives, the hobby took a huge step forward. Since then, there have been many advances in quality, and ever-smaller speakers for sound.

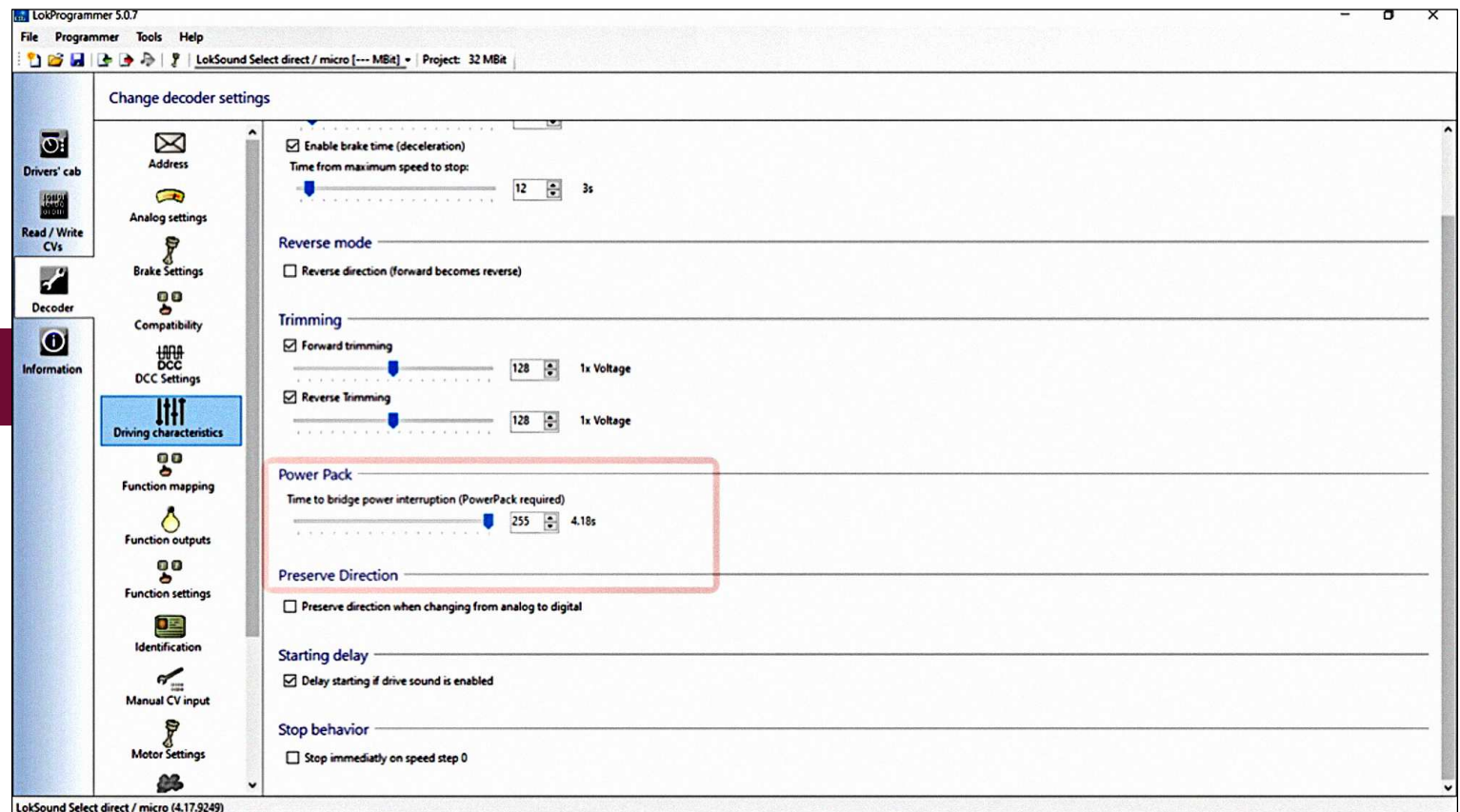
I had been using ESU's small sugar cube speaker, but didn't enjoy having to put the enclosure together.

I since discovered a supplier here in Australia that had a similar sugar cube design incorporated into a 3D-printed sound enclosure. Those produced great sound and fit into some very tight places [66].

To install the speaker into the locomotive, I cut and stuck a piece of double-sided tape to the bottom of the speaker. I then soldered the speaker leads on.

I placed the speaker so it would clear the decoder tabs. I also had to remove the small plastic nubs from inside the shell to secure it in the right position [67, 68].

Once I had the speaker secured, I moved on to installing the decoder onto the frame.



For this, I placed a small piece of double-sided tape onto the frame near the rear of the motor.

I also placed a piece of Kapton tape over the frame to cover the two lugs of the frame so that they did not contact the decoder bottom and accidentally short it out.

I then screwed down the front of the decoder and secured the rear with double-sided tape [69, 70, 71]. Once I had the decoder mounted, I started the process of soldering all the wires to their decoder tabs [72].

I began by soldering the wires from the trucks to the decoder tabs, then soldering the motor wires. I did this first so I could test the motor, gears, and wheel gauge on the layout before adding any more wiring, and before attaching the shell [73, 74].

Next, I soldered the speaker wires to the decoder [75].

I then soldered the remaining front and rear headlights and the internal cabin light to the decoder [76].

One of the added bonuses of using an ESU - Select Direct Decoder (V4) is that the lighting outputs all have a 2K resistor preinstalled on the board. That means I could solder the LEDs directly to the circuit board without having to also install inline resistors.

Once I finished the installation [77, 78], and before I reinstalled the detail parts back onto the shell, I placed the loco back onto the layout and checked all the functions.

By running the switcher, I could test that nothing was binding, rubbing, or interfering with either of the trucks. I could also check the sound and speaker.



80. I operated the SW1500 switcher with newly installed LokSound V4 - Select Direct decoder with my ProtoThrottle.

Once I had done this, I let the switcher run for at least 45 minutes to give it a good run-in. I did vary the speed roughly every 10 minutes.

Now it was time to load the SW1500 sound file into the decoder and adjust any necessary CVs. Two CVs controlled the ESU - Power Pack Mini (PPM) operation: CV315 and CV 113.

www.esu.eu/en/downloads/instruction-manuals/accessories

CV315 sets AUX 6 = 0; this allowed the PPM to operate.

CV113 sets the stay-alive timer [79]. For max time (around four seconds), I set CV113 = 255. A value 150 gave about 2.45 seconds.

Operating with the ProtoThrottle

One of the main reasons I decided to use ESU Version 4 and 5 decoders is because they work well with the Iowa Scaled Engineering ProtoThrottle.

This throttle has changed the way I operate my layout, taking operations to the next level. See the video [80] for a link to a short operating session highlighting using the ESU LokSound decoder with the ProtoThrottle.

CONCLUSION

This has been one of the most enjoyable decoder installs to date. The addition of the 0402 LEDs and the ESU Power Pack Mini have taken the reliability and operating potential to the next level for my loco fleet.

This is my the third Athearn SW1500 that I have completed. Even though these small locos can be challenging to install a full DCC, sound, and stay-alive package, it's an enjoyable project.

My next series of installations will have more lighting functions, as the use of the micro 0402 LEDs has opened up a whole new range of possibilities. I hope this article gives you the confidence to try a

UPGRADE AN ATHEARN SWITCHER | 32

decoder install with sound, and gives seasoned DCC installers a few new ideas to try with their DCC installations. ✓

JASON MILLER



Jason lives in Diamond Creek, Victoria, in Australia.

Jason has been a professional firefighter for 18 years. When not at work, he enjoys spending time with his family, coaching Toby's Australian Rules Football team.

Jason is married to Linden and has two sons, Lachlan, 12, and Toby, 9. ■

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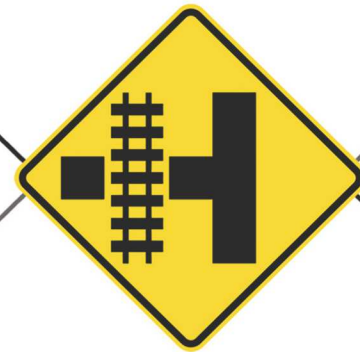
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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

A stylized illustration of a building with a sign that says "TRAINS". The building has a large window on the left showing several books on a shelf, and a dark door on the right. A small set of stairs leads up to the door. The background is a solid orange color.

Pursuing Excellence

A green-painted mechanical device, likely a model of a steam engine or pump, mounted on a dark wooden base. It features a central vertical shaft, a flywheel, and various connecting rods and valves.

A green metal crane model is shown. It has a vertical support structure with three circular cutouts. A horizontal arm extends from the top of the support. A pulley is mounted on the end of the arm, and a chain is attached to it, hanging down. A weight is suspended from the chain. The crane is mounted on a rectangular base.

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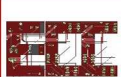


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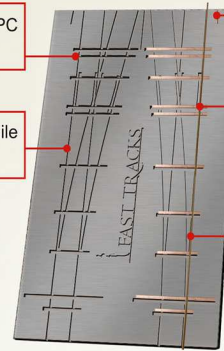


TRACK BUILDING SYSTEM

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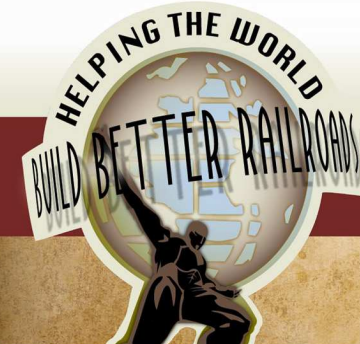


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1. These tracks here use my new method of zip ballasting. I have weathered the left-most track to show the finished product. The second and third tracks over has the ballast glued down but I have not yet weathered the track. The track on the extreme right representing an industry spur uses paver sand as ballast. I cover all these methods in this article.

Zip Ballasting

Joe Fugate presents a new streamlined ballasting method that will get your track looking great in record time ...

★★★★★
RATE THIS ARTICLE

Model Railroad Hobbyist | July 2020

WAY BACK DURING MY EARLY DAYS IN THE HOBBY, I first tried to apply diluted glue to my carefully manicured dry Woodland Scenics ballast – and quickly found out the stuff balled up and just made an awful mess.



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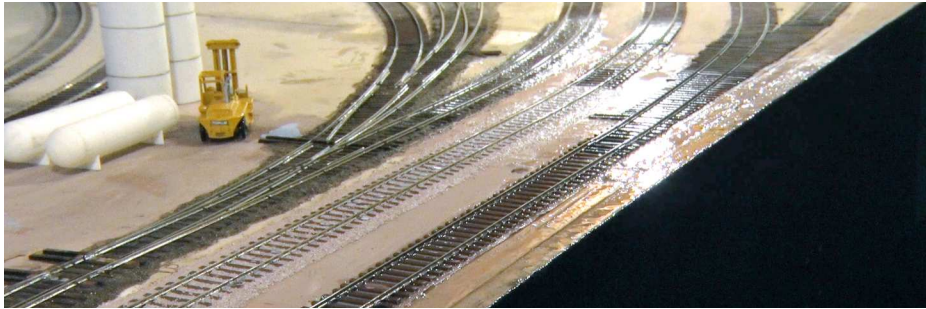
[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)



2. I dislike spraying wet water on dry ballast because it's hard to confine the spray to just the one track. The wet water spray gets lots of things wet, as you can see here.

I discovered that I needed to soak the ballast with wetting agent first. I started out using wet water¹ in a sprayer, but it took some real finesse to wet the dry ballast without disturbing it.

Even with wet water, spraying down the dry ballast can disturb the ballast if you're not careful. I also don't like how the spray can be difficult to control, getting everything in the general area of the track soaking wet [2].

As an alternative, I tried wetting down the dry ballast using isopropyl alcohol (IPA). It disturbs the ballast much less than wet water, but spraying the IPA also makes a similar mess and on top of that, it fills the room with foul alcohol fumes.

I moved to applying the IPA with an eye dropper, giving me much greater control. It also keeps down the strong alcohol smell to just a faint scent – much more tolerable.

However, as I've started doing my new TOMA² Siskiyou Line 2 layout, I'm taking this opportunity to rethink how we do layout

1. To make wet water, adding a few drops of dish detergent to the water reduces the surface tension. Wet water soaks in more readily without disturbing the ballast.

2. The "One Module" Approach. To learn more, see the [August 2017 Model Railroad Hobbyist magazine](#).

construction. I go back to ground zero on the process, and look at all the advancements over the last couple decades and try a fresh approach.

I keep asking, is there a better way? When it comes to ballasting the track, I asked myself if we could simplify and speed up the process.

After lots of research and experimentation, I found my answer: yes indeed, we can simplify and speed up ballasting!

THE NEW ZIP BALLASTING METHOD

The new zip ballasting method involves these three quick, simplified steps:

1. Apply the ballast rapidly and neatly with a premium ballast applicator tool.
2. Do a minimum of manicuring with your fingers.
3. Glue down the dry ballast with a glue formula that wicks right in without disturbing the ballast.

That's it! The process goes very quickly now. It's very rewarding to do ballasting now that it proceeds so quickly!



3. For HO, I like the Proscos ballast spreader model that includes a shutoff valve. I find the sloped divider helps smooth the ballast flow regardless of how much ballast is in the spreader. Bachmann and Walther's also sell this model of ballast spreader.



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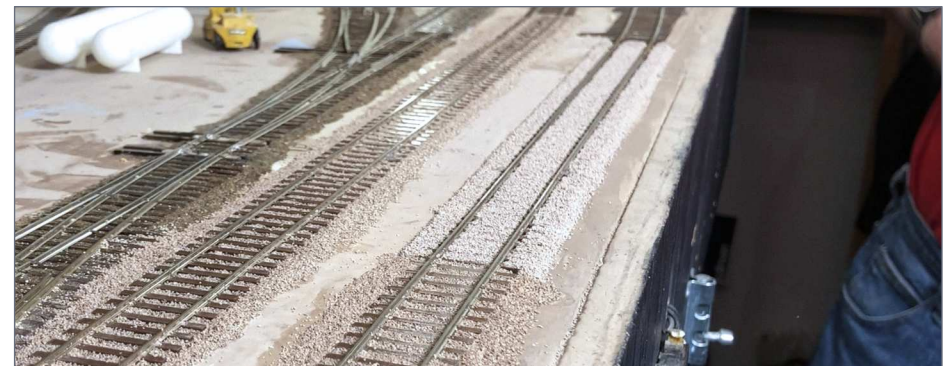
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4. This model of ballast spreader with the sloped divider is available for almost all the major scales, except for S scale. This screen grab comes from the Proses store in the UK (add about \$16 shipping if you're outside the UK). This model of spreader is also available online from Walthers, Bachmann, and Amazon. (See the end of the article for a shopping list link).

Applying the dry ballast

I have the best results using the Proses ballast spreader tool. I've tried a number of different ballast spreaders and find the Proses design with the diagonal divider gives me the most even flow of ballast.

In HO, they also make a version with a shut off valve, and that's the model I use [3]. This spreader can be found for most of the major scales from Proses, Walthers, Bachmann, and on Amazon [4]. (See the end of this article for a shopping list link.)



5, 6. I put some Woodland Scenics ballast in the spreader, open the valve, and slide it down the track. Once I'm done, I shut off the valve and remove the spreader. It does a decent job of applying the ballast smoothly, with just a bit of dressing needed.



7. I clean the ballast off the tops of the ties by rubbing my fingers down the middle of the track. I also run my fingers down the ends of the ties outside the rails. It can take several passes each direction to get the ballast removed from the tops of the ties.

Manicuring the dry ballast

I typically ballast about 12" of track at a time.

To manicure the dry ballast and get it ready for gluing, I just use my fingers. The process takes longer to explain than it does to do.

I first run my finger down the middle of the track, scraping the ballast off the tie tops and sliding any excess toward the end of the area I have covered with ballast [7].

Next, I run my finger down the tie tops outside the rail on each side. I also pat down the ballast edge to give it a smooth slope without any humps.

A bit of ballast will bunch up against the base of the rail - to remove that I pinch the rail with my fingers and slide them vigorously down the rail [8].

I go back and forth between these methods with my fingers until the ties and rail generally get clear of ballast grains [9].



8. The process of removing the ballast off the tie tops tends to stack ballast up against the base of the rails. To remove that, I pinch my fingers around the rail and slide them down the track. A combination of [7] and [8] back-and-forth effectively cleans the ballast off the tie tops, making the track ready for glue application.



9. Here's an up-close view of the manicured ballast ready for the glue. This took just a couple minutes to do with only my fingers. If there's an errant single grain of ballast here or there, I'm not concerned. I can take care of that easily after the glue has set. I just want the ballast generally off the tie tops and off the sides of the rails like I show here.



10. Here's my zip ballasting "secret weapon," Deluxe Materials' Ballast Bond. This special ballast glue can be used against many dry model ballast products without pre-wetting.



11. For Woodland Scenics ballast, I need to make a special formula of 2 parts Ballast Bond to 1 part IPA to get a glue mixture that wicks easily into the dry ballast.



12. I apply my special Ballast Bond + IPA formula to the dry ballast and it wicks right in. With no pre-wetting needed, this saves a tedious and messy step, making for a rapid transition from spreading the ballast to gluing it. I'm very pleased with how well this works – zip ballasting, indeed! (See the text for details.)

Gluing the ballast

Now, time for the real magic in this process – applying the glue *directly* to the dry ballast. No pre-wetting needed!

I use Deluxe Materials Ballast Bond instead of white glue (PVA to our fellow modelers outside the US) because it has a lower viscosity than white glue, allowing it to be used on dry ballast without pre-wetting. *Ah-hah!*

In my testing, Ballast Bond wicks right into dry ballast that's real rock without disturbing it, saving the messy pre-wetting step. True stone ballast includes materials like sifted paver sand or commercial ballast brands like Arizona Rock & Mineral.

However, Woodland Scenics (WS) ballast is a different story because it's made from crushed walnut shells – essentially a finely-ground wood-like product that they can dye different colors as needed. In other words, WS ballast is super lightweight, causing it to "float" or ball up very easily when gluing.

Straight Ballast Bond, which wicks great into dry natural stone ballast without disturbing it, causes dry Woodland Scenics ballast to just ball up. The result is an ugly mess. Bummer.

After some experimentation with Ballast Bond, I discovered I can mix two parts Ballast Bond with one part 70% Isopropyl alcohol and voila! Ballast Bond wicks into dry Woodland Scenic's ballast without disturbing it. Hooray!

Once my special Ballast Bond formula had set up, I checked the solidity of the bond of the WS ballast against some paver sand ballast I had glued with Ballast Bond straight. I found no difference in the quality of the dried glue bond.

I also talked to John Bristow at Deluxe Materials and he blessed the IPA + Ballast Bond mixture as a great idea that does not harm the setting action of Ballast Bond.





13. After the glue has fully set up, I use a small bladed screwdriver to remove any stray grains of ballast that got glued to the rails or that sits on top of the ties.

FINISHING THE TRACK

Once the glue has set up completely, it's on to finishing up the ballasted track.

Cleaning up the bonded ballast

I generally wait overnight for the ballast glue to set up solidly.

The next day, I closely examine the track for any stray grains of ballast on the top of the ties or on the rails and I remove them using a tiny bladed screw driver [13] and/or a dental pick³.

Once I have completed this process, I run a vacuum over the track to clean up these loose grains of ballast [14]. I find it helpful to rub my fingers back and forth on the track to stir up the loose grains so the vacuum won't miss them.

With this task done and the track now nicely ballasted, let's add a bonus topic next on how to weather up the track to take it to that extra level so it looks much more realistic.

³. Next time you visit your dentist, ask them if you can have a few of their old worn dental picks they were planning to throw away. Often, you can get a great selection of useful picks this way!



14. After knocking any stray grains of ballast loose from the tie tops or off the sides of the rails, I run a vacuum over the track. I find it helps to rub the track with my fingers to stir up the loose grains so the vacuum will easily capture them.



15. My ballasted Micro-Engineering flex track looks like this once I have cleaned up any stray grains from the bonded ballast. The tiny scale spike heads can be difficult to see, but they're there. Time to give the track a nice finished look with some weathering!



16. I always like to use prototype reference photos when I do weathering. Here is a photo I took on the Siskiyou Line several years ago now. That's my wife Patty in the background on the bridge.

Weathering the track

As my first step in any weathering project, I like to find prototype reference photos.

For this ballasting project, I checked my Siskiyou Line photo stash and found a likely photo of some prototype track I wanted to use as a weathering guide [16].

I also like to search the internet for further reference photos from real railroads, just to have some additional views to guide me. I found one photo of real railroad track that looks a lot like the track in [16], so I captured a copy of that photo as well [17].

Putting these photos on my iPad tablet allows me to have them at my fingertips for reference in the layout room right next to me as I work.

With my reference photos in hand, I moved on to weathering the track.

Recoloring the ties: Real railroad ties vary in color. I use Vallejo acrylic paints and mix them to create that natural variation by painting the ties various shades of dark gray, light gray, and different shades of black-brown or tan [18, 19, 20].



Railway Track and Structures

Laconia, N.H., faces opposition to removing active railroad tracks ...

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17. I also went online and did a Google search for some railroad track photos that could be helpful, such as this one.



18. Since I'm using acrylic paint to paint the ties various colors, I like to set up my three cups of thinner and my brush wet tray. For details on this, download the free [MRH Acrylic Painting Guide](#).



19. I'm using these four Vallejo/Microlux colors to do my tie painting: Reefer White, Burnt Umber, Rust, and Black.



20. I mix these colors on old business cards to various shades. I'm just doing colors by eye – some black-browns, dark gray, light gray, and light brown. You can see the tie colors in the lower part of the photo. This process removes that sameo-sameo plastic look to the ties and creates a more natural variation in the color.

Paint the rails: Once I've added some variation to the ties, I move to painting the rails.

From the reference photos, I can see the rails have what I would call a dark dirty rust color. To make this color, I mixed the Vallejo paints in [19] using this formula:

- 2 drops Rust
- 7 drops Burnt Umber
- 1 drop Black
- 1 drop Reefer White

I mixed up this color on a business card and painted it onto the rails with a fine-tipped brush. If I get some of the color onto the ties, I don't worry. If you study the prototype photos [16, 17], notice some of the rail color gets onto the ties and tie plates as well.





21. After painting the ties various different shades, then I mixed a dark rust color and painted the sides of the rails (see the text for the formula). The colors look rather stark right now, but once the paint dries, I will do some blending to soften and dirty up the track. Remember, the most realistic weathering comes by building up layers of color. If you try to do all your weathering in a single layer, it tends to look too garish and less realistic.



22. Here's how the track looks now that the wet paint on the rails in [21] has dried. Note paint dried to a slightly darker tone. Most acrylics have this behavior so it's something you should plan for when aiming for a given color.



23. As a blending step, I brushed on a layer of Neutral Gray Pan Pastels with a half-inch brush. Hold on, I know this doesn't look great, but it tones down and blends the colors. More layers coming!



24. Next, to bring back some of the color, I dip a small flat brush in acrylic thinner (Armor All Auto Glass cleaner makes great thinner for this and it's less than \$3 per pint), and I brush down the ties and the rails to wash off most (but not all) of the gray PanPastel. The photo shows the track after it has been washed but not yet dried.

Once the rails have dried, I then move to softening, blending, and dirtying the ballast.

Toning down the colors: The colors in [22] look too stark, so they need to be toned down and blended.

For this step, I like to use Neutral Gray Pan Pastel. I brush it on using a half-inch flat brush[23]. It may look bad, but hold on!





25, 26. Once the track washed in thinner has dried, I brush on Burnt Umber Pan Pastel in a blotchy fashion on the ties and ballast. Remember the shoulders too! I use a smaller brush to apply the Burnt Umber Pan Pastel to the sides of the rails also.



27. The track on the left shows my final result of all this process. It's the weathering using multiple layers that really brings the track to life. It looks a whole lot more realistic than the unweathered but ballasted track on the right. That stark plastic look is gone!

Next, I wash off most of the gray using a brush dipped in thinner [24].

After this, then I dirty up the track with Burnt Umber PanPastel [25, 26]. If needed, I will wash down the ties and the rails again with thinner. Depending on how vigorously I scrub the ties or rails, I can control how much PanPastel I remove.

Here's the final result in [27].

So there you have it – zip ballasting – applying ballast to your track in record time.

I'm pleased with this “re-invented” ballasting process and how much simpler and faster it is than the “old” way.

Ballasting your track has never been this fun! ☒

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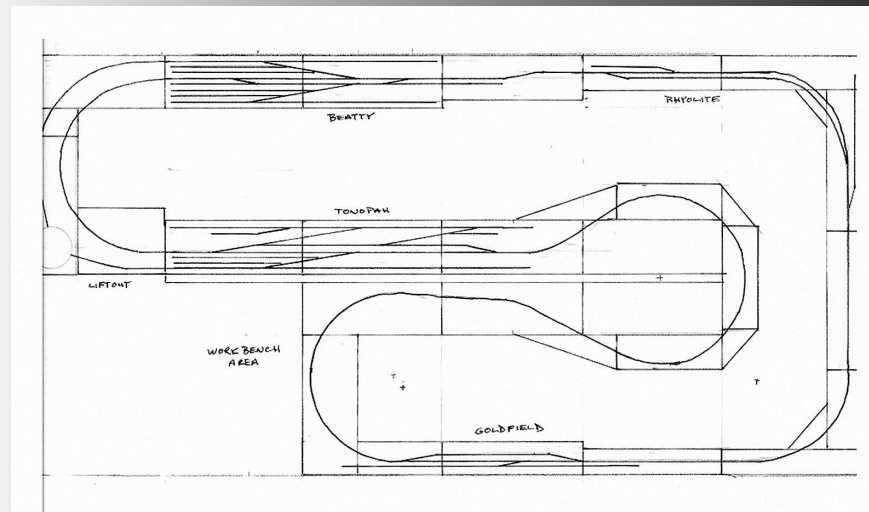


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[INDEX](#)

[TABLE OF CONTENTS](#)

Double duty layout design



Model Railroad Hobbyist | July 2020



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MICHAEL VESETH DESIGNS A GARAGE LAYOUT WITH OPERATIONAL FLEXIBILITY ...

I PLANNED AND STARTED CONSTRUCTING A MODEL RAILROAD LAST WINTER in my California basement.

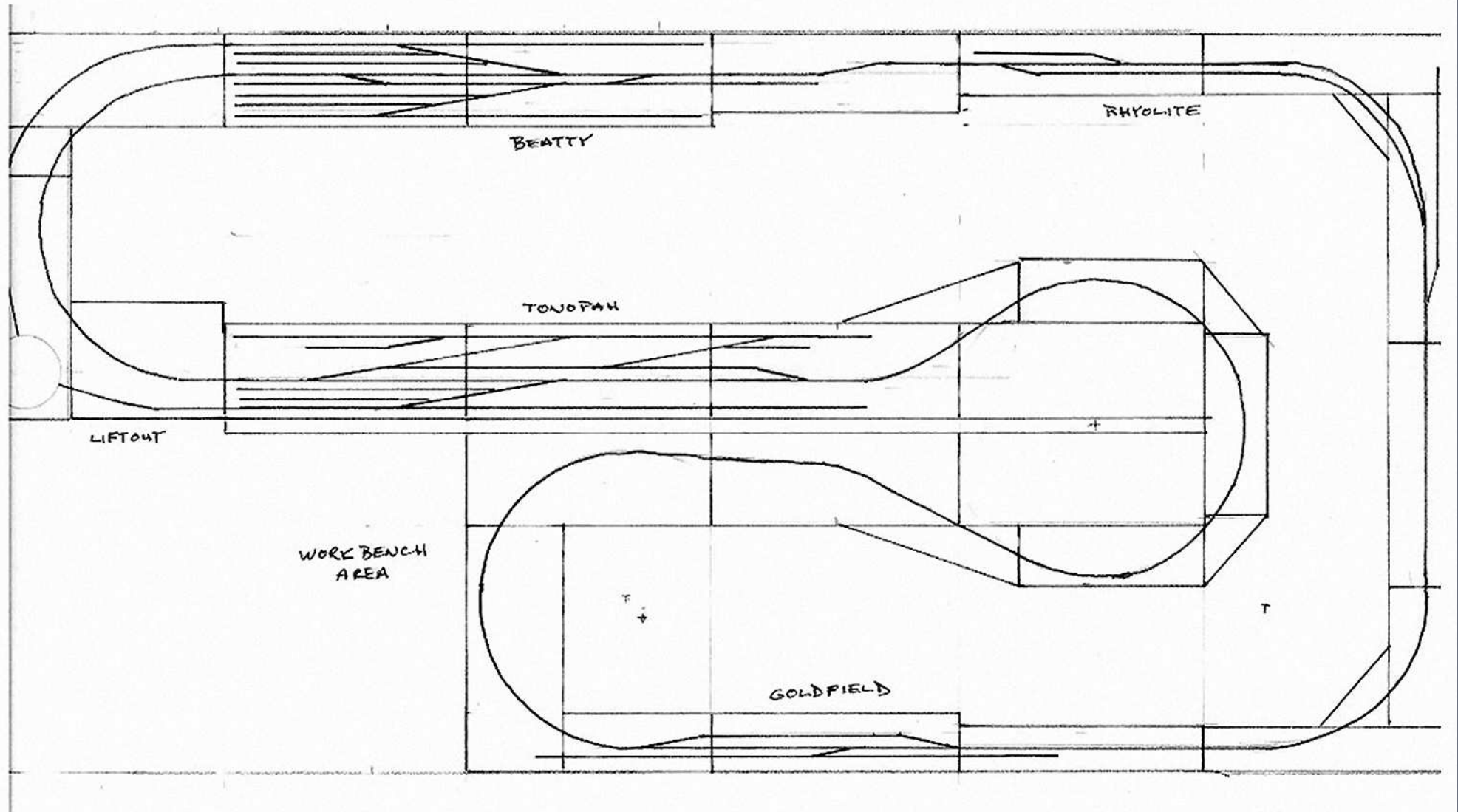
As my inspiration, I use David Barrow's South Plains District domino module format with minimalist scenery. I am modeling transfer runs between a yard at Beatty, Nevada and the city of Tonopah, Nevada.

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[INDEX](#)

[TABLE OF CONTENTS](#)

Layout Plan

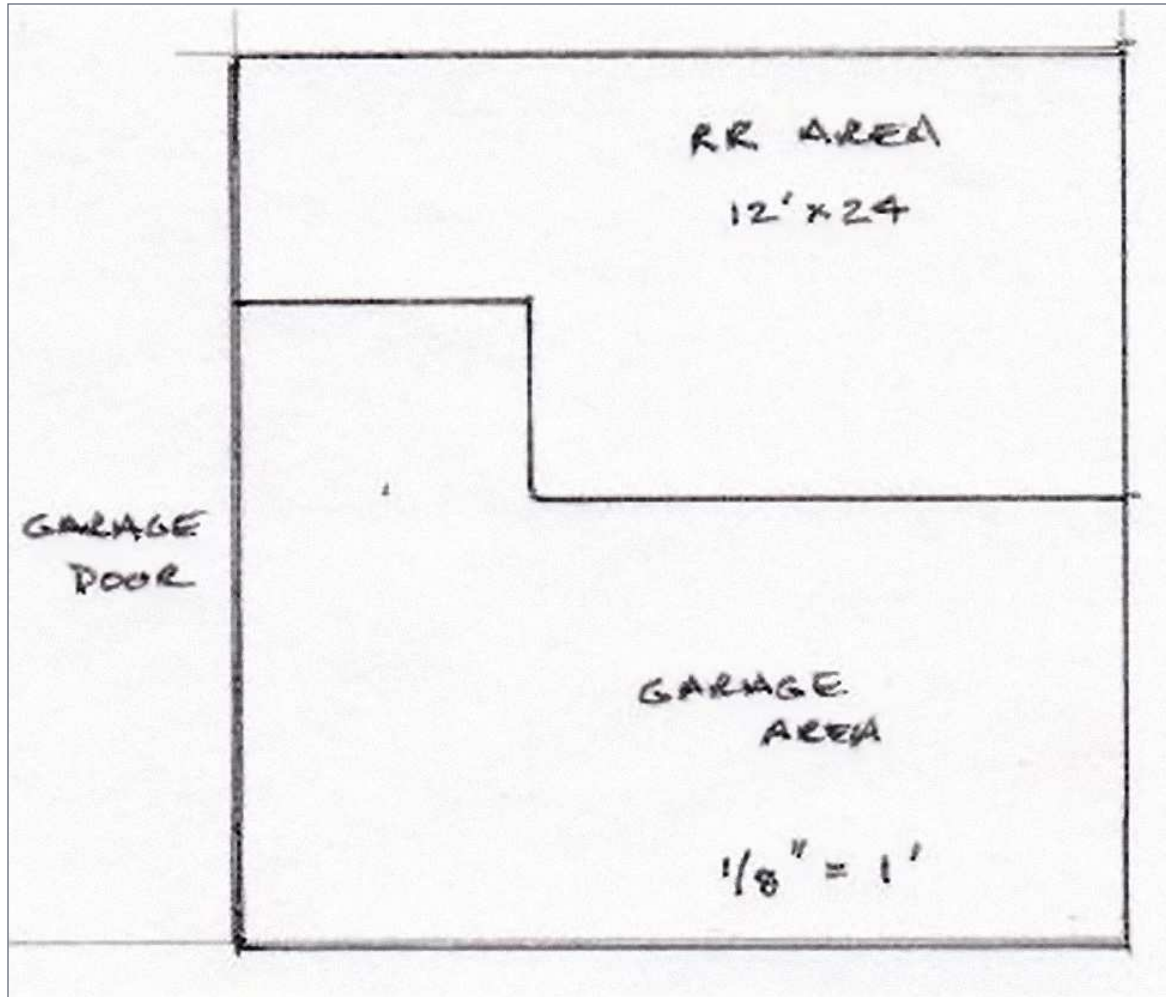


1. Michael's drawing of the railroad area showing the shapes and widths of his 4-foot modules.

DOUBLE DUTY LAYOUT DESIGN | 4

The benchwork consists of 18" by 48" modules constructed of $\frac{3}{4}$ " birch plywood with 2" x 2" legs at a height of 52". In places, I narrowed the width to 9", 12", or 15" to allow ample aisle width.

I used $\frac{3}{4}$ " birch plywood as the top of each module, and covered that with a layer of $\frac{3}{16}$ " lauan plywood. I also make my roadbed from lauan and spackle the edges to form ballast shoulders.



DOUBLE DUTY LAYOUT DESIGN | 5

I paint the table tops and sift sand into the paint. I use MicroEngineering code 83 flex track nailed to the roadbed. I predrill each nail hole and lay the track directly onto the sand-embedded painted surface.

In spots where the sand is too thick, I use a putty knife to level it.

SOME BACKGROUND HISTORY

I have a background in geology and worked as a geologist in rural Nevada and Utah prior to heading to graduate school. The area that I model covers roughly the 90-mile distance from Tonopah to Beatty, Nevada in 1905.

At that time, a capitalist with a mining interest built a railroad and created a city in the middle of nowhere. Prior to this, the location had little outside access other than by pack mule and an occasional rather difficult stage ride.

Two railroads converged and interchanged at Beatty: the Las Vegas and Tonopah RR (LV&T) and the Bullfrog Goldfield RR (BG RR).

The LV&T climbed a steep grade out of Beatty for roughly six miles to the silver mines of Rhyolite and Bullfrog. The line then proceeded north roughly 60 miles to the gold mines in Goldfield, finally continuing another 30 miles to the silver mines in Tonopah.

2. Floor plan of the full garage showing the railroad area, the work bench area, and the useable garage.

DOUBLE DUTY LAYOUT DESIGN | 6

The BG RR interchanged with the Tonopah and Tidewater RR (T&T), connecting with their track that ran south to the borax mines at Death Valley.

From there, the BG proceeded south to cross the tracks of the San Pedro and Salt Lake (Union Pacific) route at Crucero. Finally, the BG terminated at an interchange with the AT&SF at Ludlow, California.



3. The layout room with the modules frames in place, before adding the the top skin and center-of-the-peninsula backdrops.

DOUBLE DUTY LAYOUT DESIGN | 7



4. Roadbed and spackle with the first backdrop added for the city of Tonopah.

DOUBLE DUTY LAYOUT DESIGN | 8

This southern BG route opens up connections to Los Angeles – and to the mid-west and east beyond – crossing the continental divide at a typically snow-free low elevation – a real operational plus.

From a modeling standpoint, this route could include traffic from the midwest that came by ship or river boat. The southern continental divide route could also be attractive to passengers,



5. The station at Tonopah with the Mizpah Mine in the background.

DOUBLE DUTY LAYOUT DESIGN | 9

detouring around the cold and potential delays of the Rockies and Sierras farther north.

North of Tonopah, my railroad connects with the Carson and Colorado RR, serving the mines near Bishop, Nevada.

From there it connects to the Virginia & Truckee serving Virginia City, and the Southern Pacific at Reno connecting with the transcontinental route to San Francisco as well as to Salt Lake City and beyond.

REFINING LAYOUT OPERATION

A run from Beatty to Tonopah at a reasonable scale speed on my layout takes about 3½ to 4 minutes. I keep my trains short, five to six cars at most.

I use an 8:1 fast clock so every 15 minutes represents two hours, but I found the time between stations to be too short.

To solve this, I connected the mainlines of the two yards to allow running laps.

Beatty to Rhyolite is one lap, Rhyolite to Goldfield is two laps, Goldfield to Tonopah is an additional one lap. My scale time for a transfer run covering the 90 miles from Beatty to Tonopah becomes roughly 3 hours and 5 laps.

Trains don't stop while completing a lap until they arrive at the next station, other than to wait for an opposing train.

So I get double duty from the mainline by using it for laps, but I still have point-to-point operation between Beatty and Tonopah. The two yards share the turntable to turn engines.

A toggle I can throw permits me to choose either DC or DCC operation, as I have some nice old brass engines I enjoy.

I also have a battery-powered dead rail locomotive that came in handy before completing any layout wiring.

I like that my modules are reusable and movable, and since the track is only nailed in place, I have no waste if I take it up to make changes.

I also have a designated place for my workbench, plus I can still park a car in the garage! ☒



6. Goldfield with mockup of station and mine.

MICHAEL VESETH



Mike lives in Ventura, CA where he owns an insurance agency. When not working on his trains, he tries to stay active in outdoor sports, including wind-surfing, cycling, and golf.

Mike has a BA in Earth Science from UC Santa Cruz, and a MS in Geology from San Diego State.

Mike and his wife have been married 26 years. ■




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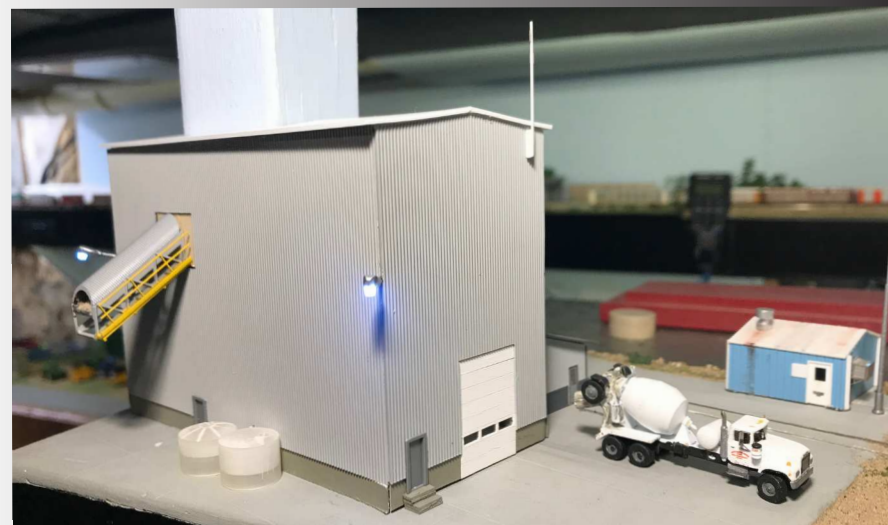


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[INDEX](#)

[TABLE OF CONTENTS](#)

Model a Ready-Mix cement plant



Model Railroad Hobbyist | July 2020



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EVAN NEUBEE USES AN ON-THE-FLY HYBRID BUILDING APPROACH ...

ON MY N SCALE I&M RAIL LINK LAYOUT, I have a small peninsula depicting a Mississippi River barge loading scene.

Since the peninsula gets its support from the ceiling rather than the floor, I have a 2x4 support post near the end of the peninsula. To make the support less conspicuous, I thought building a structure around the base of the support would be just the thing.

[MRHMAG.COM](#)

[INDEX](#)

[TABLE OF CONTENTS](#)

READY-MIX CEMENT PLANT | 2

Just down the road from my employer stands this concrete ready-mix structure [1]. It has unusual proportions because the configuration has the loading bins for raw materials enclosed inside the building, rather than on top of or beside it.

Being tall and narrow, it seemed to be a good fit for the location on the layout, and it fits in visually with the adjacent industries.

For this structure project, I used what I call a “hybrid building approach.” This involves using many different building materials, including foam board, styrene, wood, and laminated photographs for some building details.



1. A unique ready-mix plant with enclosed silos is the basis for this project. The narrow and tall structure fits the bill for disguising a support post.

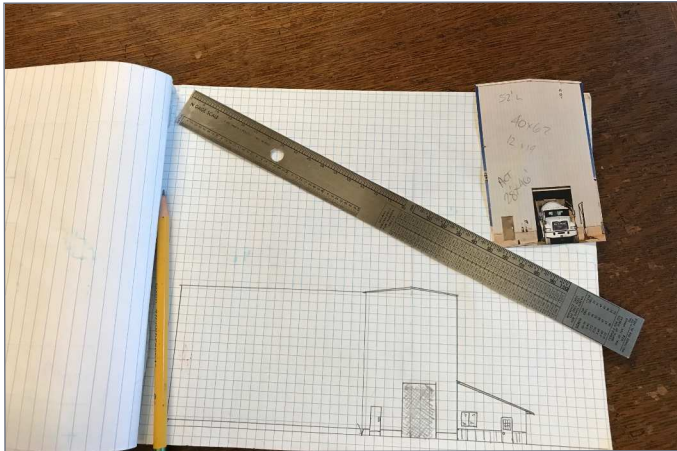
READY-MIX CEMENT PLANT | 3

Follow along as I walk through the design, build, and assembly process. Sometimes on a project like this, I tend to “wing it” rather than plan everything out in advance.

This may not be the approach for everyone, but it can make the project interesting!



2. I made this initial mockup structure as small as possible without modifying the support post. After creating the mockup, I used quick-set drywall mud to model the concrete pad surrounding the building. I painted the pad with a custom blend of economy acrylic paints I had on hand.



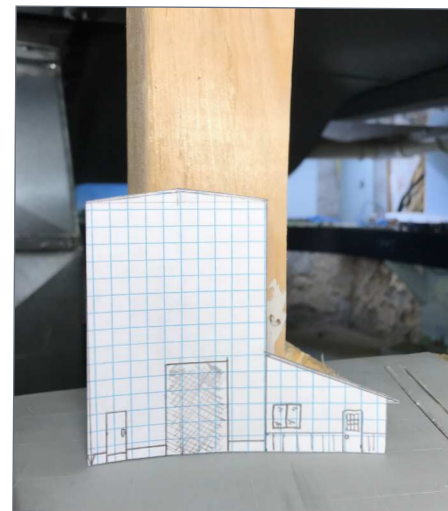
3. Being happy with the initial concept mockup, I sketched some scale drawings. I estimated the building size using an assumed garage door width of 12 feet, and proportioned everything else from there using photos.



4. After creating scale drawings, I realized the original mockup was way too big, and the post was going to have to be trimmed to get a better representation of the structure. I used a jigsaw to trim the post. Have a helper hold a shop vacuum nozzle up close to reduce flying dust while cutting.

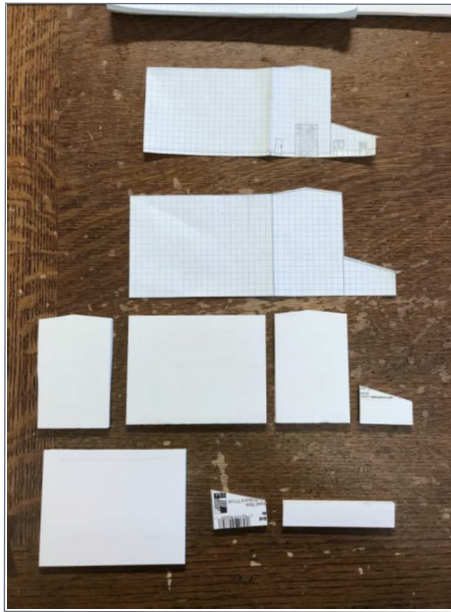


5. I had to hand-trim the bottom of the post with a chisel because the jigsaw wouldn't cut down this far. A hand saw would also work here. Since I had already made the concrete pad (poor planning on my part), I had to be careful not to get into the plaster and chew it up. Of course I had mixed a custom color for the cement, so touchup would have been difficult. More poor planning!



6. Next, I mocked-up the scale drawing with the post. Interestingly, the shape of the building fits the trimmed post shape quite nicely. The building is on a skew with the post, so the actual size of the building was a touch small. I also planned to use foam-core for the building structure, so an additional 3/16" on each side was necessary to clear the post. I opted to scale-up the building

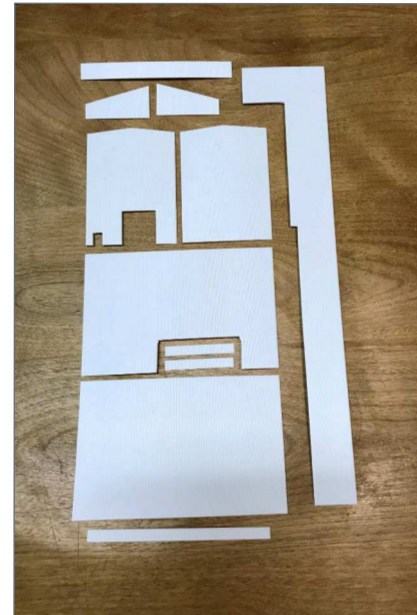
slightly to address these issues.



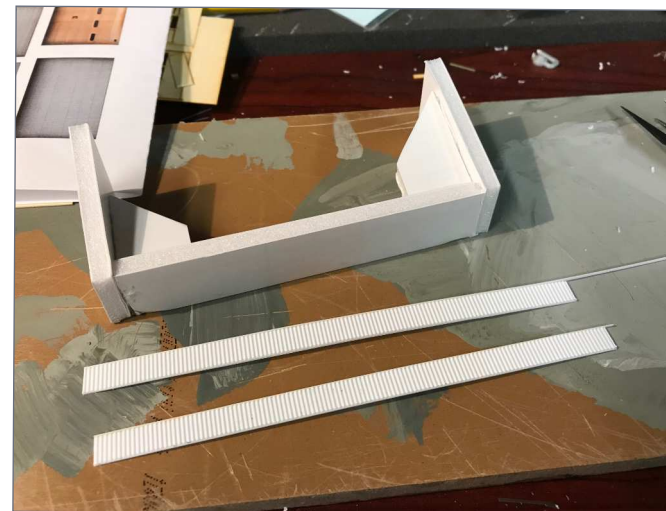
7. At the top is my original 1:160 scale drawing, and below that the revised drawing with a size increase. Under that are the foam-core components of the main structure. A note on cutting foam core: I use a hobby knife, but I always cut with a fresh sharp blade. A dull blade will tear and pull the foam out in chunks, leaving a poor-quality cut. Final assembly would have to happen after all of the wall detailing and painting was complete.



8. Next, I used a hot-glue gun to assemble the foam-core wall sections. I made various gussets from foam-core scrap to strengthen the corners and keep them square. I found it a bit tricky to determine the best way to assemble this around the post. I opted to split the lean-to section off with one main wall section, and put the other three wall sections of the tall building together in a "C" shape.



9. Originally, I had planned to overlay the foam with printed photos of the actual building. I am not the most fluent with Photoshop, so switched instead to using Evergreen #4526 0.040" corrugated styrene sheet. Things worked out nicely with minimal waste material, and all building siding components came from a single sheet.



10. For the wainscoting around the office lean-to section, I topped strips of the corrugated siding with 0.010" x 0.030" styrene strip. After the glue dried, I cut these sections to the proper length.





11. I painted the siding components with Ace brand spray paint, matching the colors as closely as possible with colors I had on hand. Next, I glued the siding components onto the foam-core shell using an Elmer's School Glue Stick. I find using this glue to be easy. It applies in a purple color, allows for some final adjustment after the parts are applied, and dries strong and clear.



12. For the details on the lean-to structure, I opted for photo cutouts of the real structure, printed with a color laser printer on label paper. The three windows on the side are all identical, but

appear different because of various blind and screen configurations, adding some interest. I also printed out the electrical panel, which looks decent, but lacks depth. After applying the air conditioner sticker, I decided it looked to fake, so I took it off.



13. Here is the final lean-to section, fastened to the main wall with hot-melt glue. This section is ready for installation on the layout. You can see the additional end doors, also made from photos and labels.



14. For the main building details, I used conventional detail items. The personnel door came from Tichy, and the overhead door from an RS Laser Kits #3984. I had to splice an additional panel to this door to get the correct height. The base of this structure has an exposed concrete

footing. I made this from painted water color paper, cut in appropriate height strips. This provided a little more texture than plain styrene, a tip I picked up from an old *Model Railroader* article. The square panel on the side wall needs a cutout for the material feed conveyor.





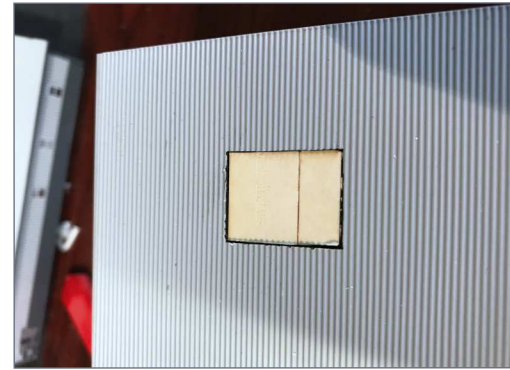
15. This photo shows my final building mockup. After placing the two building sections on the layout, I created two roof template sections from paperboard, and with trial and error, developed the cutouts for the post.



16. With some patience and several tries, I created templates for the roof panels that satisfied me. I traced these profiles onto corrugated siding sheet for the final roof panels. I painted them white.

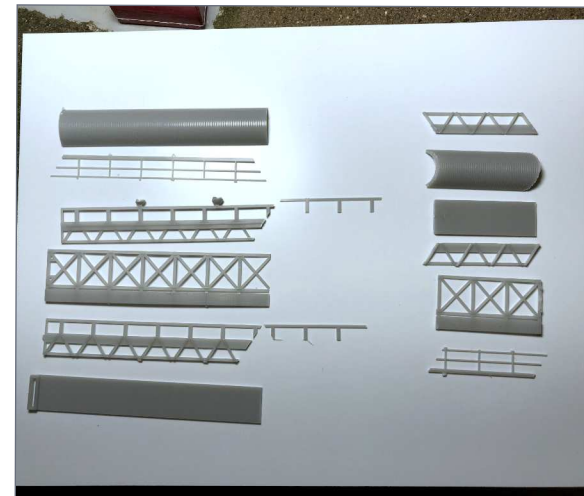


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17. The inlet panel where the conveyor protrudes out of the main building is covered with what appears to be plywood on the prototype structure. I cut the opening after mocking-up the building, which proved a little tedious. For the wood, I

used some edge scraps from the RS Laser-door kit. This material has adhesive on the back, making installation easy. After trimming and sanding, I stuck them in place onto the foam-core. Prior to installation of the wood inserts, I painted the edges of the opening black.



18. For the conveyor, I opted to model just a short section since this side of the structure is very close to the fascia. I used a conveyor section from Walthers #3247 Western Flood Loader kit. I cut all of the pieces to length, and mitered them

using the side lattice structure pieces as a guide for the angle. I'm using the parts on the right for the model.



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[INDEX](#)

[TABLE OF CONTENTS](#)

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[INDEX](#)

[TABLE OF CONTENTS](#)

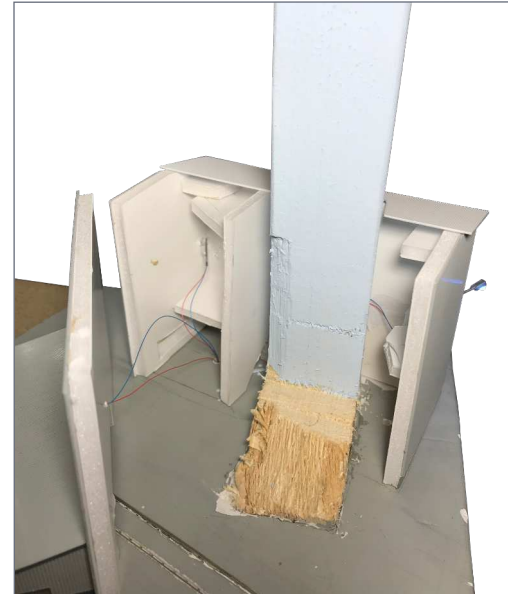


19. I assembled the main conveyor section and painted it gray, leaving the railing off prior to painting. Next, I masked and painted the walkway and railing piece safety yellow. To add some interest, I applied some goopy black paint onto the conveyor, and sprinkled it with fine gravel sifted from my driveway. Then I installed the railing and glued the whole assembly onto the building with CA.



20. As an afterthought, I decided to install security lights on two corners of the building. I had recently found some 1:150 scale working lamp posts on eBay for a great price, so I modified these. I removed the LEDs and cut the lamp post base off as shown. Then I straightened the neck a little, and reinstalled the LED. Next, I used some clear sprue material left over from a kit to fashion the conical lenses

common on this type of light.



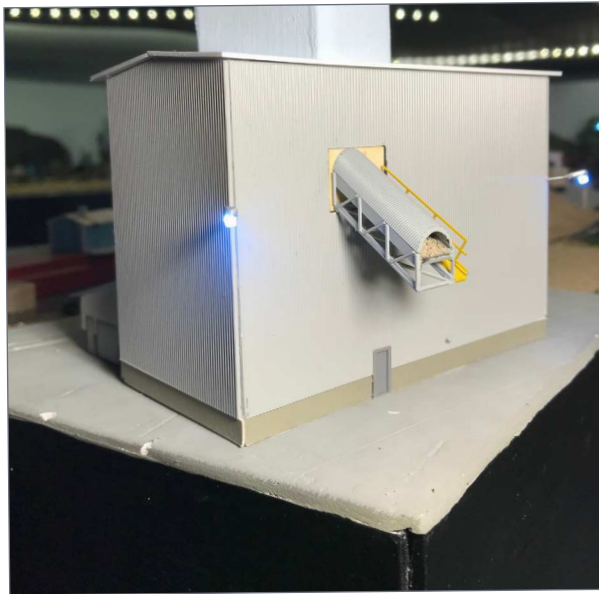
21. I drilled small holes through the siding and the foam-core and carefully inserted the lights. I also drilled a small hole in the layout base for the wiring. I purchased a power supply from Digi-Key, cut the end off, and wired all the connections. Also notice I painted the post sky-blue to match my backdrop.



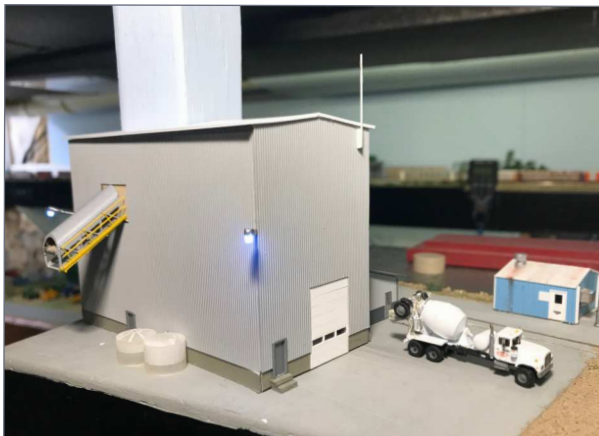
22. I hot-glued the two vertical joints and carefully assembled the building. Hot glue doesn't give you a lot of work time, but it's easy to redo if it isn't perfect. I used hot glue for the roof section as well. If you look closely, you will see

a glue blob still sticking out of the joint. I trimmed this off after the glue cooled.





23. To better hold the building in place, I cut the heads off small brads, and inserted them into tiny holes drilled in the foundation. I pressed the building down onto the brads, pushing them into the foam-core centers of the walls.



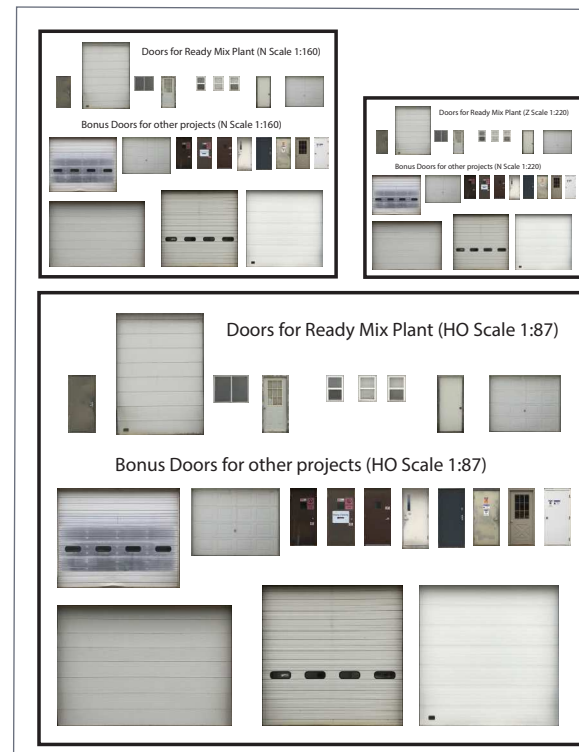
24. Here you can see the front final assembly view. Final detailing includes front steps made from balsa, a radio antenna made with styrene rod and leftover parts from a BLMA tower kit, and two 3D-printed water/

chemical tanks used for different concrete blends. I fashioned the mixer truck from a combination of 3D-printed parts and a GHQ kit.



experience. Overall I am pleased with how this turned out.

25. Wrapping a support post with a structure is not a new idea. It provides greater visual interest while keeping the post from detracting from the overall layout



26. I used the N scale version of these door images. I chose not to use the overhead door on the front of my building, but this is what it looks like. Other doors I have photographed are also included. Visit the bonus downloads [\[mrhmag.com/magazine\]](http://mrhmag.com/magazine) and give the "hybrid building" approach a shot! ☑



EVAN NEUBEE

Evan Neubee derives his pen name from his hometown railfan headquarters, the Avenue B Crossing on the CNW mainline. Originally a CNW modeler in HO scale, he has reentered the hobby after a 15-year hiatus, this time putting his efforts toward the I&M Rail Link in N scale.

“N scale for me was an obvious choice – space was somewhat limited, and starting fresh, I wanted to be able to run longer trains than what HO permits in my space”, says Evan.

Evan finds factory-painted items in the IMRL paint to be few and far between.

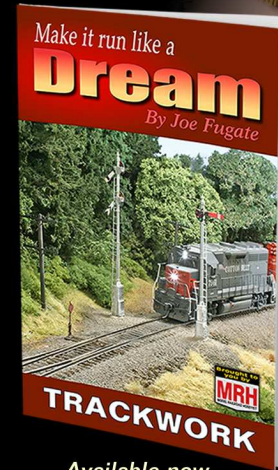
“I enjoy the painting, patching, and weathering of rolling stock. It’s a fun challenge to see what I can find for acceptable pre-painted models that are appropriate for patched-out IMRL units.”

The I&M Rail Link (IMRL) was a short-lived regional railroad in the Midwest, operating from 1997 to 2002. Its owner, Washington Corp, shares the same paint scheme as sister road Montana Rail Link.

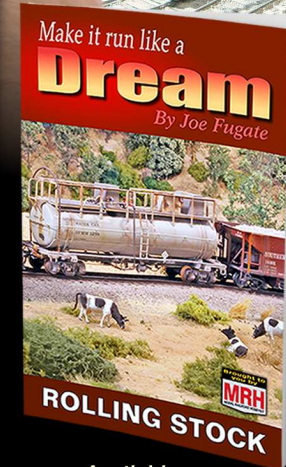
Evan says, “Montana Rail Link was one of my favorite roads, but living in the Midwest as a teenager, I had little hope of ever railfanning there. When IMRL came along, it was sort of a dream come true. I spent many hours railfanning the IMRL along the Mississippi.” ■



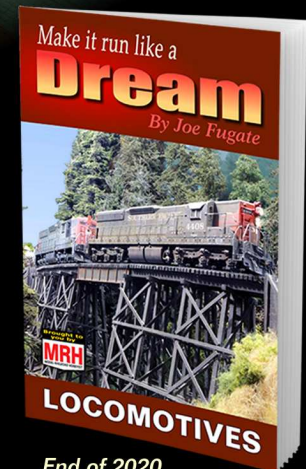
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[INDEX](#)

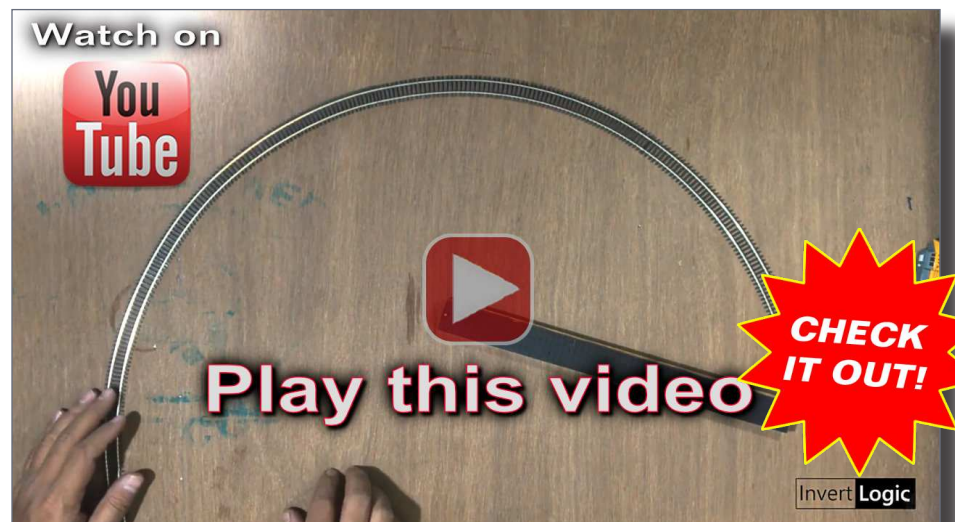
[TABLE OF CONTENTS](#)

SAVVY MODELER *Online*



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Model Railroad Hobbyist | July 2020



Get perfect radius curves with ME flextrack

Youtube modeler **InvertLogic** demonstrates a clever way to get precise curves in MicroEngineering flex track. ME flex track has been notorious among modelers for being difficult to bend into curves. Well, no more! Watch this demonstration video to see how easy it is to do. This method works best in the smaller scales such as S scale or smaller. Broad curves (60" radius or more) in O scale may be more of a challenge with this method. ■



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[INDEX](#)

[TABLE OF CONTENTS](#)

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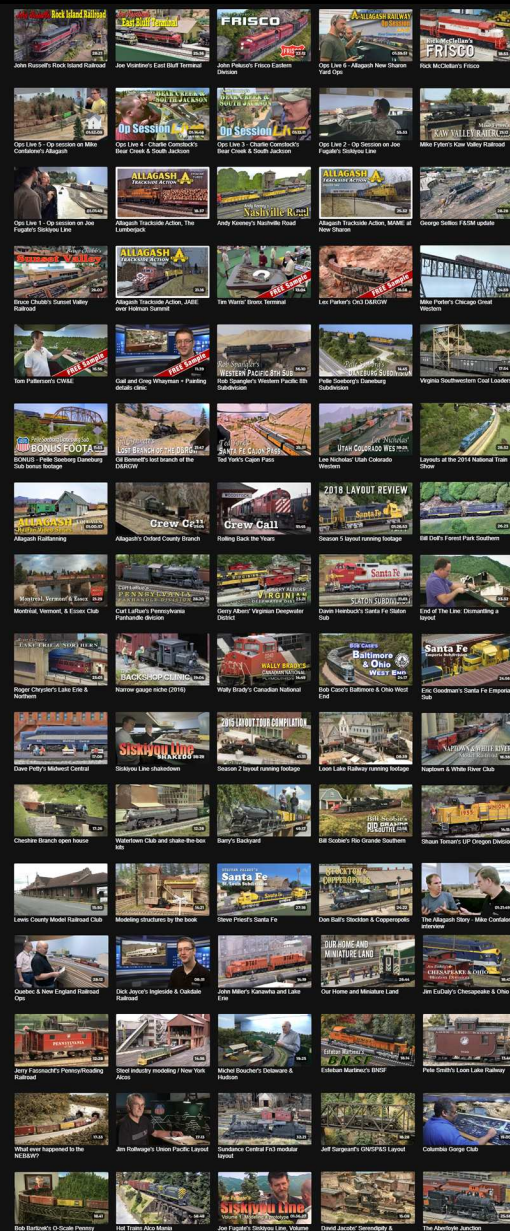
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JULY NEWS

column



Model Railroad Hobbyist | July 2020

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



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INDUSTRY NEWS

M.T.H. Closing

Mike Wolf, president and founder of **M.T.H. Electric Trains**, has announced plans to close his company and retire in 2021. New items featured in current MTH catalogs will be available through April 2021 and will carry a limited one-year warranty supported by M.T.H. and its Authorized Service Centers. After May 2021, plans call for the network of Authorized Service Centers to provide warranty coverage through April 2022.

Mike Wolf entered into the train business at the age of 12, when he began assembling and selling trains for Williams Trains, which had begun producing reproductions of vintage Lionel equipment in the early 1970s. By 1980, a thriving mail order business operating as Mike's Train House was selling Williams trains and parts out of Mike's bedroom in his parents' home. When Williams decided to end its line of Lionel reproductions, Wolf bought the tooling and continued

► THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

building the replicas. M.T.H. also sold Lionel products and by the early 1990s had become one of the largest mail-order Lionel dealers in the nation. In addition to O gauge models, M.T.H. later offered HO, S, and G scale products.

Over the years Wolf and his company have survived court battles with Lionel, Samhonga, Korea Brass, Quantum Sound Industries, and the Union Pacific Railroad. Wolf indicated he is considering various options and buyers for his company including the possibility of a new company organized and owned by current MTH employees.

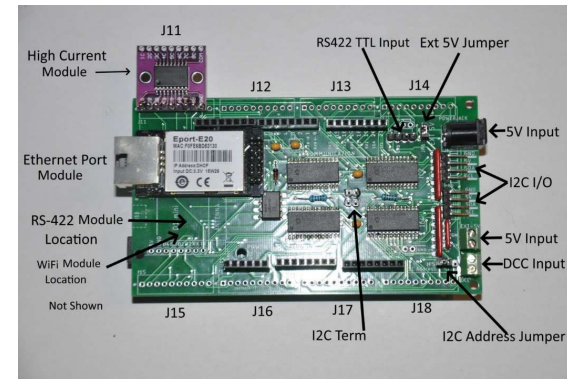
Club Cars



The **Chesapeake & Ohio Historical Society** is offering a limited-edition George Washington 7-car set in N scale. The premier passenger train on the Chesapeake & Ohio Railway, the George Washington was one of the first trains with all air-conditioned cars. Produced by Micro-Trains Line, the N scale heavyweight cars are suitable for the postwar version of the George Washington. The set includes a mail baggage car, a baggage car, a paired-window coach #725, a 10-1-2 sleeper Jack Jouett, a 12-1 sleeper Marquis Lafayette, diner Gadsby's Tavern, and a 3-2 open observation car named American

Revolution. A booklet on the train by the C&O Historical Society is included. For more information visit the C&O Historical Society at chessieshop.com.

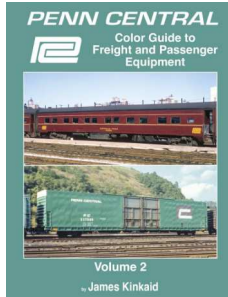
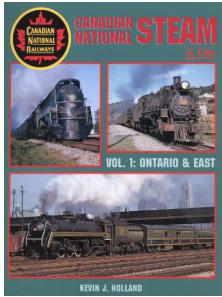
NEW PRODUCTS FOR ALL SCALES



Model Railroad Control Systems has introduced a new CPMega Node with a DCC Accessory Decoder option running C/MRI. The CPMega uses an Arduino Mega running C/MRI with

56 built-in input/output lines. An available option board named the Mega-I/O Card has 64 additional I/O lines allowing for a total of up to 184 I/O lines per node. There is also an optional High Current Module capable of handling 50V at 500ma. The CPMega can be controlled via Ethernet, RS422, or WiFi and is supported in JMRI Version 4.21, Visual Basic 6, C++, and other programming languages. The DCC Accessory Decoder option can run C/MRI or a DCC Accessory Decoder, controlling up to 184 turnouts per node. For more information visit modelrailroadcontrolsystems.com.

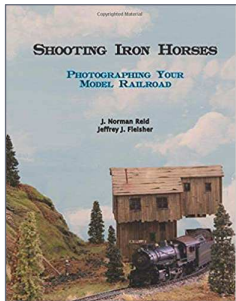
New publications from **Morning Sun Books** include *Canadian National Steam Volume 1*, which covers the final decade of CN steam as seen through the eyes of some of North America's most talented color photographers. In this volume editor



Kevin Holland focuses on steam operations in Newfoundland, New England, Quebec, and Central Ontario.

Also new is *Penn Central Color Guide to Freight and*

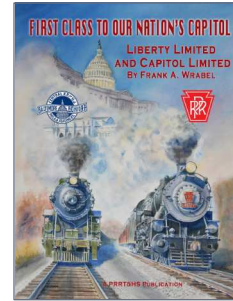
Passenger Equipment, Volume 2, by James Kinkaid. This second volume features rare and obscure passenger and freight equipment, including PC-era cars from the PL&E, B&A, IHB, P&E, and T&OC. For additional information contact a dealer or visit morningsunbooks.com.



Norman Reid and Jeff Fleisher have released a book titled *Shooting Iron Horses: Photographing Your Model Railroad*. Intended for model railroaders who want to take better photos and videos of their layouts, the book includes information on setting up photos, avoiding common mistakes, composing effective scenes, lighting trains,

and other useful techniques. Detailed instructions on using focus stacking to achieve a photo that is in focus from front to back are included. The 75-page full-color paperback book is available from www.amazon.com.

New from the **Pennsylvania Railroad Technical & Historical Society** is *First Class to Our Nation's Capitol – Liberty Limited and Capitol Limited*. Written by Frank Wrabel, the book covers the competition in first class travel between Chicago and



Washington DC between the PRR and B&O. For more information visit the PRT&HS website at prrths.com.

MULTI-SCALE PRODUCT NEWS



BPH Enterprises, after a four-year hiatus, is re-introducing its line of SceniKing Roll Outs interconnectable photo backdrops. "Senior" Roll Outs are 6' x 16.5", with 15 N scale, 54 HO scale, 19 S scale, and 32 O scale scenes available. All scenes are digitally printed with long-life inks on glare-free 24-pound paper with identical sky-top coloration. Sky scenes with clouds and deepening color are available to extend the backdrop upward. Structures on the backdrops are scale-sized, so they can be used as trackside structures. New "Junior" Roll Outs, available in HO scale, are 6' x 8" and include series such as "Farm Belt" that can be used to created continuous one-crop fields or multiple crop areas. For more information visit sceniking.com.



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[INDEX](#)

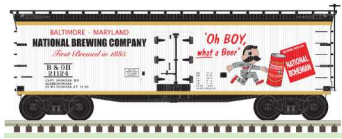
[TABLE OF CONTENTS](#)

MRHMAG.COM

[INDEX](#)

[TABLE OF CONTENTS](#)

O SCALE PRODUCT NEWS



Atlas O has announced a Summer Beer program covering beer cars and tractor trailers in multiple scales. Delivery is planned for the first quarter of next year. The O scale model is based on 40' wood refrigerator cars built by Pullman for the Northern Refrigerator Car Co. in 1930. Decorating schemes include Old Milwaukee, National Bohemian, Lucky Lager, Jax, Eastside, and Blatz Beer. The model will also be available decorated for Producers Produce, Marshall Kirby Frozen Eggs, Milwaukee Road Ice Car, ART Ice Service, MKT, and Rath's Black Hawk Bacon.



Features include rooftop ice hatches, USRA-style fish belly underframe, vertical brake shaft, separately-applied door hinges, handles and latches; operating doors, and 40-ton Bettendorf-style sprung plain-bearing trucks with metal wheels.



The release includes O scale 40' steel refrigerator beer cars with plug doors. Features include see-through running boards, and separately applied ladder, brake wheel, and brake lines. Decorating schemes will be National Bohemian, Old Style, Rainier, Schaefer, Schlitz, and Pabst Blue Ribbon Beer.



Atlas' beer program includes O scale 45' Pines trailers decorated for Strohs, Pabst Blue Ribbon, Old Style, Old Milwaukee, Lucky Lager, and Schlitz Beer. For additional information contact a dealer or visit atlasrr.com.



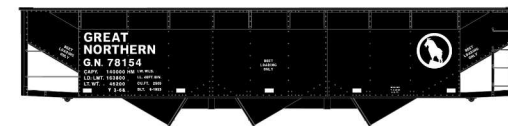
Nick & Nora Designs has introduced new products in their line of O scale Peel & Stick Shingles.

New designs include diamond pattern shingles, scalloped shingles, and half-cove shingles. Each style is available in dark gray, steel gray, brown, burgundy, and black. For more information visit nickandnoradesigns.com.

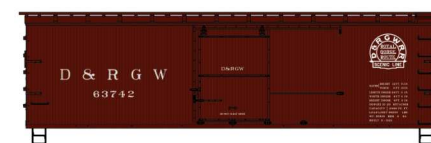
HO SCALE PRODUCT NEWS



New rolling stock kits released by **Accurail** include this 36' Pittsburgh Shawmut & Northern Fowler wood boxcar. The HO scale model is based on a prototype built in 1930.

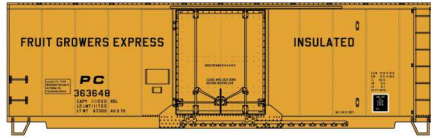


The Great Northern Railway stenciled Beet Loading Only on the side of this 70-ton triple-bay hopper. Accurail's model represents a steel car built in 1953 with offset sides.



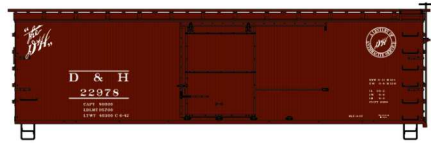
The decorating scheme on this 36' D&RGW double-sheathed wood boxcar includes a Royal Gorge Route herald. According to the data under the herald the car was built new in 1913.

JULY NEWS HO SCALE | 8



This HO scale 40' insulated steel boxcar decorated for Fruit Growers Express/Penn Central is based on a prototype built

with plug-doors in 1957.



The slogan inside the round herald of this 36' Delaware & Hudson double-sheathed wood boxcar proclaims, A Century of Anthracite Service.



Accurail's HO scale kit for this 40' Delaware Lackawanna & Western steel boxcar has a white stripe on the right hand door indicating the car is equipped with special loading racks.



For HO modelers wanting to do their own decorating, Accurail offers this 41' steel gondola painted gray with data only. All

Accurail HO scale kits include Accumate knuckle couplers and appropriate trucks with plastic wheelsets. For additional information contact a dealer or visit accurail.com.

New HO scale **Athearn** models recently shipped to dealers include Union Pacific ICC cabooses, high-cube boxcars with double plug doors, 40' ballast cars, and FMC 4700 covered hoppers. New locomotives include RS3, SDP40F, and GP39-2 diesels, and Union Pacific's 4-8-8-4 Big Boy.



Athearn's May 2021 production schedule includes General

JULY NEWS HO SCALE | 9

Electric's P42DC passenger diesel unit in four Amtrak decorating schemes including Heritage Phase II (above) introduced in 1974. The thin white pinstripes were eliminated in the 1976 Heritage Phase III scheme (below) and the red and blue bands were separated by a reflective white band.



The Heritage IV scheme (left center) with a wide blue band and two thin red stripes was introduced in 1993.



Amtrak launched a new logo and new paint scheme in 2000. The

thin red reflective stripe at the bottom of the body and the wide blue band at the top became known as Phase V. Only Amtrak's Genesis locomotives had the wavy bottom on the blue band.



The 2021 release will include a VIA Rail Canada locomotive. Via

units feature a unique nose-mounted spotlight as well as prototypical standard and emergency horn sets. Amtrak units will have either the as-built or the rebuilt (bolted on) nose, and several different styles of antenna arrays, ranging from the simple as-built version to the complex arrangement of the Illinois service units. All versions of Athearn's P42DC will have LED lighting, operating ditch lights, and red marker lights.

DCC sound equipped versions of Athearn's P42DC will have a Soundtraxx Tsunami2 sound decoder and dual 28mm speakers. The ditch lights will alternate when the horn is activated. The marker lights will be independently-controlled and directional.



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)

MRHMAG.COM

[INDEX](#)

[TABLE OF CONTENTS](#)



A Genesis GP15-1 road switcher is listed on Athearn's May 2021 production schedule. A

spotting feature of the 1,500 horsepower GP15-1 is the large radiator intake section similar in appearance to the system EMD developed for the Southern Pacific and D&RGW SD40/45T-2 tunnel locomotives.



Road names for the GP15-1 will be Union Pacific, SLSF Frisco, Chicago North Western,

BNSF (two schemes), and GMTX Locomotive Group (ex-CR).



Regional connector roads include Ventura County Railroad (ex-CNW), California

Northern (in both green and orange schemes), and San Joaquin Valley Railroad (ex-CR).

Features on the Genesis series GP15-1 include uncoupling levers, flexible rubber MU and trainline hoses, cab interior, walkway tread, Celcon handrails, windshield wipers, lift rings, wire grab irons, sander lines, LED lighting, and a detailed fuel tank with fuel fillers, fuel gauges, and breather pipes. DCC models will have a SoundTraxx Tsunami2 decoder and dual cube speakers. DC models will have a 21-pin NEM connector to facilitate installation of an aftermarket DCC decoder.

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R. Bale

CENTERFLOW COVERED HOPPER

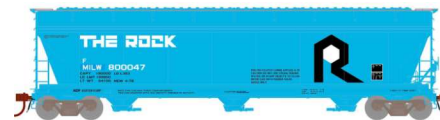
American Car & Foundry introduced the three-bay CenterFlow covered hopper in the mid-1960s. The design was targeted to railroads in need of replacing their aging 40' grain service boxcars with a hopper car that could operate within the tighter Plate B clearances of light branch lines and industrial spurs. AC&F's Centerflow filled the bill with an innovative rounded body that provided structural strength, eliminating the traditional center sill, and making gravity unloading easier. Centerflow hoppers of various capacities were developed with the 4600 cubic foot version being one of the most popular.



New Athearn products scheduled for availability in May, 2021 include a Genesis series ACF 4600 cu. ft. covered hopper. Athearn will offer the 4600 in three body styles: early version with high side ladder and brake wheel and a single side stiffener; mid production with the brake wheel mounted low, short side ladders at both ends, and a single side stiffener; and a late post-1971 version with double side stiffeners.



Road names will be Burlington Northern, The Rock, SSW-Cotton Belt, Chicago & Eastern Illinois, Family Lines System, and Missouri Pacific. Ex-Rock cars will be available patched for Milwaukee Road and FURX. Road name variants include outlet fixtures and round or trough-style hatch covers.



Additional features on this Genesis HO scale model include a photo-etched metal roof walk,

separately applied wire grab irons and stirrup steps, separate brake cylinder, valve and air reservoir with wire brake plumbing; and 100-ton trucks with 36" machined metal wheels and rotating roller-bearing caps.



Athearn's May 2021 delivery schedule includes ICC steel bay

window cabooses decorated for CSX and B&O Chessie System. The feature-laden models will be available with optional DCC, lights, and sound. Three CSX cabooses are in this release with each having unique details. Two road numbers will be available for CSX with Operation Redblock emblazoned on one side and Operation Lifesaver on the other. CSX removed the window screens, generator and markers on these cabooses and used them as shoving platforms. An early 1990s CSX caboose will be decorated in the Spirit of Grafton paint scheme.



ICC cabooses from the 1974-era decorated for B&O Chessie

System will feature a Dayco axle generator with notched underframe, angled window screens, reflectors on end platforms, and an overhanging X-panel roof. Chessie C-3771 caboose with Safety Is Not A Part Time Job slogan will be decorated in gold and silver paint.



Features on all road names on this Genesis ICC caboose include a toilet drain, ash pans, an axle-driven generator, interior seating for crew figures, see-through end platforms and steps, flush window glazing, formed wire grab irons, etched metal coupler

platforms, coupler lift bars, trainline and brake hoses, and full underframe detail including air brake reservoir, control valve, and brake cylinder with plumbing and brake rod details.

Lighting features include LED interior lights, single or dual roof markers or end-mount marker lights as appropriate to the prototype road and era. Sound equipped cabooses will come with a Soundtraxx Tsunami SoundCar decoder. Depending on the practice of the prototype road being modeled the cabooses will have 33" machined metal wheelsets fitted to plain-bearing or roller-bearing trucks with rotating bearing caps.



Athearn has scheduled another release of Bombardier

Commuter Cars for next May. Decorating schemes will include Los Angeles Metrolink in standard paint as well as the distinctive Stay Alert-Stay Alive, and Bikes promotional wraps.



Additional road names include Utah Frontrunner, Altamont

Commuter Express, and Altamont Corridor Express.



Canadian schemes include Montreal's Agence

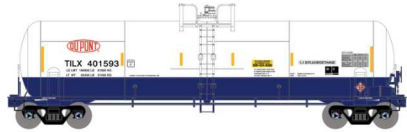
Métropolitaine de Transport and two Toronto GO Transit schemes. Noteworthy details include tinted windows, weathered grilles, diaphragms, and Bombardier trucks with outside brakes. A minimum 22" track radius is recommended.



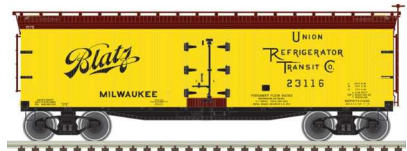
HO scale 20,000 gallon acid tank cars, based on a prototype built by Richmond Tank Car, are included in Athearn's May 2021 production schedule.



Decorating schemes will be Hooker Chemicals\British Columbia Rail, Union Tank (two schemes), TILX/Dupont (two schemes), and Allied Chemical.



Athearn's Ready-to-Roll HO scale tank cars will have 70-ton or 100-ton roller-bearing trucks with 33" or 36" machined metal wheelsets depending on the practice of the prototype being modeled. For additional information contact a dealer or visit athearn.com.



Atlas has announced plans for a Summer Beer program covering beer cars and tractor trailers in multiple scales. Delivery is expected during the first quarter of next year. For HO modelers, a series of 40' wood beer reefers will be available decorated for Old Milwaukee, National Bohemian, Lucky Lager, JAX, Eastside, and Blatz.



Additional wood reefers will be available for Producers Produce Co, and Marshall Kirby Frozen Eggs. Reefers designated for ice service will be available for ART and Milwaukee Road.



The release includes 40' steel refrigerator beer cars with plug doors decorated for National Bohemian, Old Style, Rainier, Schaefer, Schlitz, and Pabst Blue Ribbon.



Steel reefers will also be available for Cotton Belt, Fruit Growers Express, Burlington Northern, Chicago Great Western, Western Maryland, and Jersey Central Lines.

Steel reefers will also be available for Cotton Belt, Fruit Growers Express, Burlington Northern, Chicago Great Western, Western Maryland, and Jersey Central Lines.



In addition to Stroh's Beer, HO scale Ford tractor cabs detailed with rubber tires and square fuel tanks with built-in steps will be available decorated for Schlitz, Pabst, Old Style, Old Milwaukee, and Lucky Lager.



Atlas's beer program includes 45' Pines trailers decorated for Lucky Lager, Old Milwaukee, Old Style, Pabst Blue Ribbon, Schlitz, and Stroh's Beer. For additional

information contact a dealer or visit atlasrr.com.



Berkshire Valley Models has introduced three new models in its line of HO scale wagons. The laser-cut and white metal kits include a buckboard, a stake wagon, and a water/sprinkler wagon. Horses and drivers are available separately. For more information visit www.berkshirevalleymodels.com.

Bowser has announced plans to produce a 70-ton ballast car with side discharge gates. The HO scale model is based on a



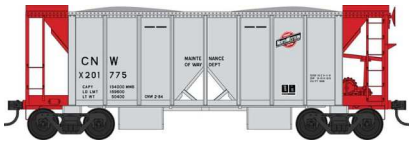
1958-era covered hopper that has been modified with shortened roof sections and the installation of four ballast chutes. Bowser is producing the HO scale model

with closed and open sides.



Ballast cars with closed sides will be available for Milwaukee Road, Alaska Railroad, Conrail, Grand Trunk Western, Penn Central, Burlington Northern, and

Wisconsin & Southern.



Cars with open sides include Chicago North Western, Detroit, Toledo & Ironton; Bessemer & Lake Erie, and CSX. Reservations are due by July 10, 2020 with

delivery scheduled for early next year. For additional information contact a dealer or visit bowser-trains.com.



R. Bale

IDENTIFYING EMD'S F3 AND F7 DIESELS

Spotting features of the F3, built from 1946 to January 1949, are the chicken wire grilles covering the air intakes along the top of the body. The F7, which began production in February 1949 and continued until the end of 1953, can be identified by the four square louvers between the portholes and the steel grille, supplied by the Farr Corporation, that extends across the top of the side. Both the F3 and F7 had two portholes on each side.



Broadway Limited has released HO scale models of EMD's iconic F3 and F7 diesels in several classic decorating schemes. Road names for the F3 include Pennsylvania Railroad, Santa Fe (Warbonnet), Chicago, Burlington & Quincy, Southern Pacific (Black Widow), Union Pacific, and Great Northern.



Road names for Broadway Limited's F7 include Southern Pacific (Bloody Nose), Santa Fe (Warbonnet), Baltimore & Ohio, Denver & Rio Grande Western, New York Central, Northern Pacific (Loewy design), Pennsylvania Railroad (single stripe), and Milwaukee Road.



Buying options include individual A units, A units paired with an unpowered B unit, and individual powered B units. In addition to the road names mentioned, undecorated models are available for both the F3 and F7.



The HO scale model come with Paragon3 sound with Rolling Thunder that functions in both DC and DCC environments. For more information contact a dealer or

visit www.broadway-limited.com.

Con-Cor is selling an HO scale track cleaning system consisting of a Bachmann heavyweight track cleaning chassis with metal wheels, a Con-Cor 40' boxcar body, and a 1 ounce bottle of



Labelle's 105 Track Cleaner. Ten road names are available including Pennsylvania Railroad, Burlington Northern, REA Express, Denver & Rio Grande

Western, Delaware & Hudson, Hormel, Soo Line, Union Pacific, and two Santa Fe schemes. For additional information, including suggestions on how to maximize use of the system, visit www.con-cor.com.



Fos Scale Models has released two new HO scale craftsman-type structure kits. River Bend Chapel includes a church with a distinctive aged copper bell tower, and a small cemetery complete with a coffin and 11 engraved tombstones. The chapel structure features laser-cut walls and windows, and

metal detail parts. The scenery and figures in the illustration are not included in the kit.



The second new HO scale kit from Fos builds into a 28' Work Barge and a small Ferry boat. The work barge features a pilot house and steel hull, along with

numerous details to clutter the deck. The waterline kits feature laser-cut wood hulls, laser-cut parts, and metal and plastic detail parts. Vehicles and figures not included. For additional information visit fosscalemodels.com.



New HO scale models from **InterMountain Railway** include 10'6" modified 1937 AAR 40' boxcars.



Road names include Rock Island, New York Central, Fort Worth & Denver, Missouri Pacific, Erie, Erie Lackawanna, Southern Railway, Union Pacific, Chicago & North

Western, Canadian Pacific (two schemes), Missouri-Illinois, Gulf, Mobile & Ohio; Toledo, Peoria & Western, Duluth, South Shore & Atlantic, and Soo Line.



The ready-to-run model comes with metal knuckle couplers, and 50-ton Bettendorf trucks with 33" machined metal wheels. For additional information contact a

dealer or visit intermountain-railway.com.



New HO scale models available from **Kadee** include this 50' PS-1 boxcar decorated for Grand Trunk Western. The car displays GT's The Good Track Road slogan.



Kadee is selling this unlettered 50-ton AAR twin-bay coal hopper with offset sides. The HO model features Wine latches on the doors of the discharge bays. The ready-to-run model is painted black and comes with a coal load. The same model is available

with Enterprise latches. For additional information contact a dealer or visit www.kadee.com.



Monster Modelworks, closed since early 2018, is back in business on a limited basis. Known for its laser-etched structures and structural details, company founder, Jimmy Simmons, has advised that he will slowly reintroduce new items as

well as many of the popular products previously offered by Monster Modelworks. A 12"x 4" laser-etched sheet of HO scale Old Brick is currently available. For additional information visit www.larkspurlaserart.com.



R. Bale

USRA BOXCAR

As they attempted to deliver goods to congested eastern ports during the early years of World War I, American railroads found themselves desperately in need of additional, serviceable rolling stock. To solve the problem quickly, the federal government nationalized the railroads under the United States Railway Administration, or USRA. One of the first tasks assigned to the USRA was to develop common designs for new freight cars. Among them was a 40' double-sheathed wood boxcar with a deep fishbelly steel underframe. Starting in 1918, nearly 25,000 copies of the double-sheathed boxcar were built and delivered to 24 railroads throughout the country. The USRA boxcar proved to be a sound design with many continuing in regular service into the 1950s. In later years many were updated with their KC brakes being retrofitted with the newer AB-brake system.



Rapido Trains has released an HO scale model that accurately replicates a USRA double-sheathed boxcar. The ready-to-run model features full underbody

detail with separate brake rods and piping, and Andrews trucks with in-line brake shoes and blackened 33" machined metal wheels.



Models decorated for Boston & Maine, Spokane, Portland & Seattle; and Toronto, Hamilton & Buffalo will be equipped with AB brakes.



KC brakes will be on cars decorated for Santa Fe, Chicago, Burlington & Quincy; Rock Island, Lackawanna, Great Northern,

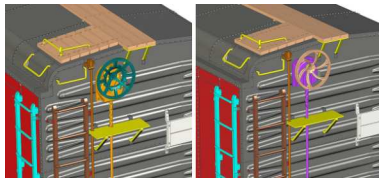
Minneapolis & St. Louis, Missouri Pacific, New York Central, Pere Marquette, Frisco, and Wabash. Since brake equipment on the prototype cars was not updated all at once, Rapido includes the other style of brake gear with each model. The cars are available individually and in 4-packs with different road numbers.



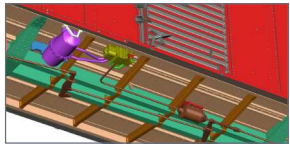
Rapido is booking reservations for a new Pennsylvania Railroad X31A boxcar that promises to be one of the most authentic and highly detailed HO scale freight car models available to date. The new Rapido model is based on one of the most common

boxcars seen in America from its introduction in the mid-1930s until well into the 1960s. Nine PRR decorating schemes will be available: five for single doors and four for E31A boxcars with double doors.

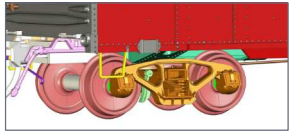




Both early Ajax and Equipco brand brake wheels and brake gear housings will be available on Rapido's X31A boxcar.



Rapido's PRR model is based on an early group of X31A cars that had a transverse-mounted main air reservoir.



For its new X31A boxcar, Rapido is developing a PRR type 2D-F12 freight truck that has both coil and leaf springs. Decorating schemes and ordering information is available at

rapidotrains.com/products/ho-scale/freight-cars/ho-scale-prr-x31a-boxcar.



Rapido is also working on an HO scale version of a Southern Pacific exterior post B-100-40 boxcar as built by Pacific Car & Foundry in 1976. Rapido plans to replicate all of the cars features including full Hydra-Cushion

underframe, 12' doors, Car Pac loaders, and the iconic half-height waffle sides. Road names and ordering information is available at rapidotrains.com/products/ho-scale/freight-cars/ho-scale-b-100-40-boxcar.



Most of the original B-110-40 boxcars are still in service today on SP successor Union Pacific as well as on many regional and short lines. For additional information contact a dealer or visit rapidotrains.com.



Resin Car Works has released a new craftsman-style kit for an HO scale reconditioned Pacific Fruit Express R-30/40-9 wood reefer. PFE continued rebuilding older wood reefers through the 1930s with many retaining their original underframes and KC brake systems. Resin Car Works new kit is based on prototype cars bearing the Western Pacific emblem. WP had over 2,600 R-30-9 class cars operating to 1952. They were rebuilt again with almost 900 continuing in service to 1963.



RCW's kit features a one-piece car body and numerous detail parts. Trucks and couplers are not included. For additional information including ordering instructions visit resincarworks.com.



Showcase Miniatures has a 1:87 scale kit for a contemporary U.S. Postal Truck. This kit features a resin body, cast pewter frame and details, etched stainless steel doors and mirrors, water-slide decals, laser-cut glazing, and detailed instructions. The doors can be positioned opened or closed. For additional information visit www.showcaseminatures.net.



Summit Customcuts has introduced a Modern City Bank Building in HO scale. Including all building parts and signs, the building is laser cut in white and

clear acrylic and self-adhesive micro-plywood. Assembly instructions include photos. The size of the finished kit is 10 9/16" x 6 3/8" x 6 1/2". For more information visit www.summit-customcuts.com.



R. Bale

RADIAL-COURSE TANK CAR

At the conclusion of World War I, production of oil and petroleum products in America had increased significantly thanks to the combination of war-related and consumer demands. In order to move both industrial and consumer products, tank car builders quickly developed innovative new designs. One of the most successful was an 8,000 gallon non-insulated tank car introduced by General American Tank Car. The new design was fabricated with overlapping steel plates resulting in a stair step appearance. The cars are readily identified by the notably different heights between courses and the circumferential rivets that surrounded the tank body. The assembly method was known as radial-course.



Tangent Scale Models has released another production run of its highly-detailed GATC 8,000 gallon general service radial-course tank car. Features of the ready-to-run HO scale model

include cast see-through supports above the bolsters, dimensionally-correct hazardous placards, separately applied tank handrail and tank strap details, Kadee couplers, and ASF spring-plank trucks with separate brake beams and 33" machined wheels.



Decorating schemes include the 1919-era DMSX-Dunbar Molasses & Syrup Company shown at the top, and

the brightly colored GATX-Union Starch & Refining car from the 1950s.



This UTLX tank car represents lease equipment from the mid-1920s. A 1958 black repaint is also available.

Undecorated RTR black cars are available as well as undecorated, unpainted kits. For additional information visit www.tangentscalemodels.com.



R. Bale

TRINITY 39' COVERED HOPPER CARS

Trinity's short 39' twin-bay covered hopper car is designed specifically to transport heavy, high-density materials such as bentonite, cement, and sand. The cars were introduced in the 1990s with seven side panels (two narrow and five large). Their overhanging, arched roof profile, heavy top reinforcement chord, and folded jack pads at the bolsters distinguish them from earlier twin-bay covered hopper designs.



Walthers is scheduled to release a group of Trinity 39' twin-bay covered hopper cars this month. The HO scale ready-to-run models feature

separately applied brake gear, running board, discharge gates, inlet hatches, and end ladder cages. The models come with knuckle couplers and roller-bearing trucks with 36" machined metal wheelsets.



Road names will be NRLX-NorRail Ciment Quebec, BCAX-Circle Cement, CITX-Cit Group, CRDX-Chicago Freight Car Leasing, HWCX-Haliburton, CSX,



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)

MRHMAG.COM

[INDEX](#)

[TABLE OF CONTENTS](#)

Norfolk Southern, and Union Pacific. For additional information contact a dealer or visit walthers.com.



Woodland Scenics has announced several new products to arrive soon. The first is a collection of twelve modern vehicles, including two coupes, two vans, two pickup trucks, four sedans, and two sports cars. Two of the sedans are a taxi and a family vacation sedan with a roof rack and luggage.



Also announced are gum trees, part of the eucalyptus family, that are found in sunny, dry climates around the world. The trees come in packs of three and come with planting pins and optional bases for temporary placement.



The Shaper Sheet Learning Kit will include everything needed to learn how to create and color a customized terrain formation. The kit will include an 18x24" shaper

sheet, 18oz of shaper sheet plaster, three colors (4ml each) of earth colors liquid pigment, Earth undercoat (10ml), a foam brush, and a craft stick.



Lastly, Woodland Scenics is introducing a Utility System consisting of single and double-crossbar Pre-wired Poles and a Transformer Connect Set. Designed to work together, installation involves drilling holes and placing the poles in place. For more

information on any of these products, see your dealer or visit woodlandscenics.com.



Yarmouth Model Works is nearing completion of an HO scale kit for a 40' D&RGW Pressed Steel Car boxcar. Five versions of the prewar car with 4/5 ends are planned.

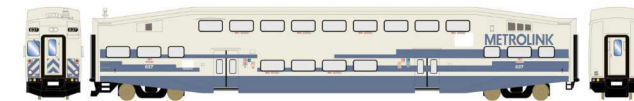


Options will include wood, Apex, Gypsum, or Morton running boards; etched ladders, Duryea underframe parts, and Tahoe trucks. Newly developed details include 3D printed tack boards, route card holders, and 3D printed slack adjuster and brake levers.



There will be two versions of the postwar car with the IDE ends and Apex or Gypsum running boards. Kits for cars with 6' doors will have either Superior or Youngstown doors. A 15' dual door version will also be available. For additional information visit: www.yarmouthmodelworks.com.

N SCALE PRODUCT NEWS



Athearn has announced a May 2021 release date

for the next run of N scale Bombardier commuter cars. Decorating schemes will include Los Angeles Metrolink in standard paint as well as the distinctive Stay Alert-Stay Alive, and Bikes promotional wraps.



Altamont Commuter Express, and Altamont Corridor Express.



Métropolitaine de Transport and two Toronto GO Transit schemes. Noteworthy details on all versions include tinted windows, weathered grilles, diaphragms, and Bombardier trucks with outside brakes. A 15" radius is recommended for the N scale models.

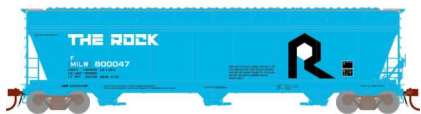


Additional new N scale products Athearn has scheduled for release next May include an ACF 4600 cu. ft. covered hopper.



Road names will be Burlington Northern, The Rock, SSW-Cotton Belt, Chicago & Eastern Illinois, Family Lines System, and

Missouri Pacific. Ex-Rock cars will be available patched for Milwaukee Road and FURX. Road name variants include outlet fixtures and round or trough-style hatch covers.



Additional features on this N scale model include a photo-etched metal roof walk, separately applied wire grab

irons, body mounted couplers, and screw-mounted 100-ton trucks with rotating roller-bearing caps and 36" machined metal wheels. For additional information contact a dealer or visit athearn.com.



dry commodities such as sugar, flour, and certain types of virgin plastic.

The well-executed Atlas N scale model represents a double compartment car introduced in 1962. Slightly modified versions continued in production until 1980. Atlas is offering four road numbers for models decorated for Denver & Rio Grande Western, Chicago & North Western, Northern Pacific, and Santa Fe.



Atlas has announced plans for a Summer Beer program covering beer cars and tractor trailers in multiple scales. For N scale modelers, a series of 40' wood beer reefers will be available for Old Milwaukee, National Bohemian, Lucky Lager, JAX, Eastside, and Blatz Beer.



for ART and Milwaukee Road.



Atlas has released to dealers a new production run of 4180 cu. ft. Airslide hopper cars. The prototype Airslide hoppers were used primarily for high-value

Additional non-beer reefers will be available for Producers Produce Co, and Marshall Kirby Frozen Eggs. Reefers designated for ice service will be available

The beer program includes 40' steel refrigerator cars with plug doors decorated for National Bohemian, Old Style, Rainier, Schaefer, Schlitz, and Pabst Blue Ribbon Beer.



N scale steel reefers will also be available for Cotton Belt, Fruit Growers Express, Burlington Northern, Chicago Great Western, Western Maryland, and Jersey Central Lines.



The Atlas beer program includes a group of N scale beer-can tank cars.



In addition to a generic beer car, decorating schemes on the unique models will be Stroh's, Schlitz, Primo, Pabst Blue Ribbon, Olympia, Lone Star, and JAX Beer.



This N scale Ford tractor truck will be available for Stroh's, Schlitz, Pabst, Old Milwaukee, Lucky Lager, and Old Style Beer.



As a companion to the Ford truck, Atlas plans to release 45' Pines trailers decorated for Lucky Lager, Old Milwaukee, Old Style, Pabst

Blue Ribbon, Schlitz, and Stroh's Beer. For additional information contact a dealer or visit atlasrr.com.



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.



Broadway Limited Imports has released N scale models of both heavy and light USRA 2-8-2 Mikado locomotives. In

addition to the Western Pacific engine shown, the N scale model will be available for Central of New Jersey, Louisville & Nashville, Milwaukee Road, Santa Fe, Missouri Pacific, and Southern Railway.



Light editions of the USRA 2-8-2 Mikado will be available decorated for Nickel Plate Road, Maine Central, New York Central,



REGISTER
(free)

[INDEX](#)

[TABLE OF CONTENTS](#)

MRHMAG.COM

[INDEX](#)

[TABLE OF CONTENTS](#)

Rock Island, Pennsylvania Railroad, Seaboard Airline Railroad, Union Pacific, and Canadian National, which qualified for USRA equipment through its Grand Trunk subsidiary.

Specifications include a diecast body and chassis, traction tires, LED lights, separately applied handrails, and Micro-Trains compatible couplers. Broadway Limited's N scale steam locomotives come with Paragon3 Sound and Operation System with Rolling Thunder that functions in both DC and DCC environments. These N scale locomotives require a minimum track radius of 9.75 inches. For additional information contact a dealer or visit www.broadway-limited.com.



New N scale models from **InterMountain Railway** include 10'6" modified 1937 AAR 40' boxcars.



Liveries include Rock Island, New York Central, Fort Worth & Denver, Missouri Pacific, Erie, Erie Lackawanna, Southern Railway, Union

Pacific, Chicago & North Western, Canadian Pacific (two schemes), Missouri-Illinois, Gulf, Mobile & Ohio; Toledo, Peoria & Western, Duluth, South Shore & Atlantic, and Soo Line.



The ready-to-run models come with 50-ton Bettendorf trucks with 33" machined metal wheels. For additional information contact a dealer or visit intermountain-railway.com.



Ipswich Hobbies has released a new craftsman kit in N scale, the Rockport Freight House. Formerly used by the Boston & Maine, the still standing freight house is

located in the MBTA passenger yard in Rockport, Maine. It is constructed of laser-cut basswood, scribed interior floor, and peel-and-stick shingles, with details for the loading dock. The assembled model measures 2.5" x 6.5". For more information or to purchase, visit www.ipswichhobbies.com.



R. Bale

EMD SDP40F DIESEL LOCOMOTIVE

When it assumed operation of America's passenger trains in 1971, Amtrak relied on a variety of inherited motive power including E8, F7 and some GG1 locomotives. Almost immediately Amtrak began working with GM's ElectroMotive Division to develop a new passenger locomotive. The result was the SDP40F. The 150 SDP40Fs EMD built in 1973–1974 became the backbone of Amtrak's long-distance passenger fleet, heading trains from San Diego to Washington DC and from Seattle to Miami.



KatoUSA has announced plans to make another production run of its N scale SDP40F. Delivery is expected to begin in November for DC units with DCC and sound equipped models following about a month later.



Amtrak locomotives will be available in both Phase I and II paint schemes. The models will represent as-built units that lacked front railings. They were equipped with a steam generator, nose headlight, and forward mounted 4-chime air horns.



Modified freight versions will be available decorated for Santa Fe and in BNSF's Maersk scheme. They will have front railings, a notched nose, additional roof antennas, and rear facing 3-chime horns. Cab air conditioning units and headlight position will be as appropriate to the road being modeled.



For additional information contact a dealer or visit katousa.com.



Micro-Trains Line has released this 78' heavyweight single-window coach decorated in the mid-1950s red and black New Image paint scheme of the New Haven Railroad. The heavyweight steel coach rides on Commonwealth 4-wheel passenger car trucks. The N scale model follows a prototype built in 1929.

This new N scale 50' boxcar from Micro-Trains reflects a prototype built in 1957 with a 10' Youngstown sliding door and equipped with a Hydra-Cushion underframe. Boxcars of



this design saw heavy revenue service into the early 1990s.



Owned and lettered for TTX, this yellow 89' tri-level enclosed autorack is currently in universal use by most railroads hauling new vehicles.



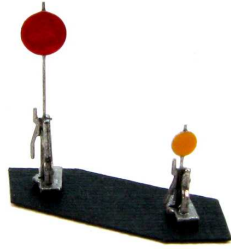
This N scale three-dome tank car is decorated in silver with red lettering for Ambrose Wine Co., a reseller and distributor of inexpensive wines. For additional information on Micro-

Trains models contact a dealer.



Showcase Miniatures has released a new N scale kit named R. Perez & Sons Car & Carriage Works. The structure kit features tab and slot construction with laser-cut parts, peel-and-stick windows, detailed pewter metal castings, and step-by-step assembly instructions. With signage and creative details this interesting building could be adapted to represent a variety of businesses.

Also new from Showcase Miniatures is a kit for N scale switch stands. The design is based on a Southern Pacific Common Standard. Two high and two low stands can be made from the



etched fret. The frets include both round and diamond shaped targets. For additional information visit www.showcaseminatures.net.

NEW DECALS, SIGNS AND FINISHING PRODUCTS



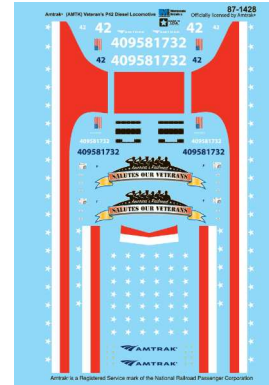
the big hamburger logo.



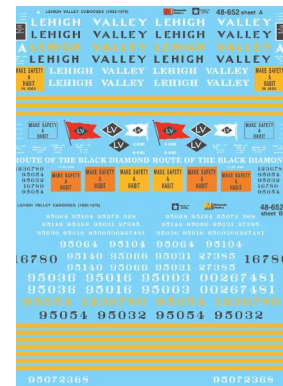
www.maskislanddecals.com.

New water slide decals from **Mask Island** include two sets that convert ART cars to Norfolk & Western food product loading. The set shown is for a blue car and includes

Mask Island's second NW food service decal is for black cars. Each decal has sufficient material to correctly letter two cars. For additional information visit



New water slide decals from **Microscale Industries** include Amtrak Veterans Locomotive No. 42, left, and Union Pacific specially decorated Spirit of the Union Pacific locomotive. The UP decal is available in HO and N scale, the Amtrak decal in HO only.



Also new from Microscale is an O scale decal for all Lehigh Valley cabooses in operation from 1932 to 1976. For additional information contact a dealer or visit microscale.com.



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! BRIEFLY NOTED AT PRESS TIME ...

In anticipation of the release of its N scale 4180 Airslide covered hopper later this year, **Atlas** has released a video that outlines the features and details of the new model. To view the video go to www.youtube.com/watch?v=DZOYa9LGEF4&mc_cid=6e14a9a0e5&mc_eid=6bff0ec9ce

Arrowhead Models is developing what promises to be a highly-accurate HO scale model of an ACF 4600 cu. ft. covered hopper. A firm date has not been announced but the initial release is expected this year. Road names will be Union Pacific, Missouri Pacific, Chicago & North Western, Rock Island, Burlington Northern, and BNSF.

Hartland Locomotive Works, a producer of G scale locomotives and rolling stock, has announced that due to difficulties in its overall business, plus the Covid-19 pandemic, it has ceased all production. The Indiana-based firm will remain open to ship existing inventory, but no new production is planned. Warranty work, parts, and service will be handled by Phil Jensen at (402) 571-2933.

If sufficient interest is indicated, **Sylvan** will produce a limited rerun of a Canadian National 45' wood express refrigerator car with four ice hatches. The HO scale kit will include a one-piece body with additional detail parts, less trucks and couplers. Interested parties should contact mesagkits@gmail.com.

Tangent has released its ICC steel bay-window caboose in eight new era-specific decorating schemes for Baltimore & Ohio, Chessie System (B&O), and CSX. We'll have full details and images next month. ■

★★★★★
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Due to the uncertainty surrounding the COVID-19 pandemic and its associated lockdowns, Selected Events will not be published this month. Please check back next month for future events. ■

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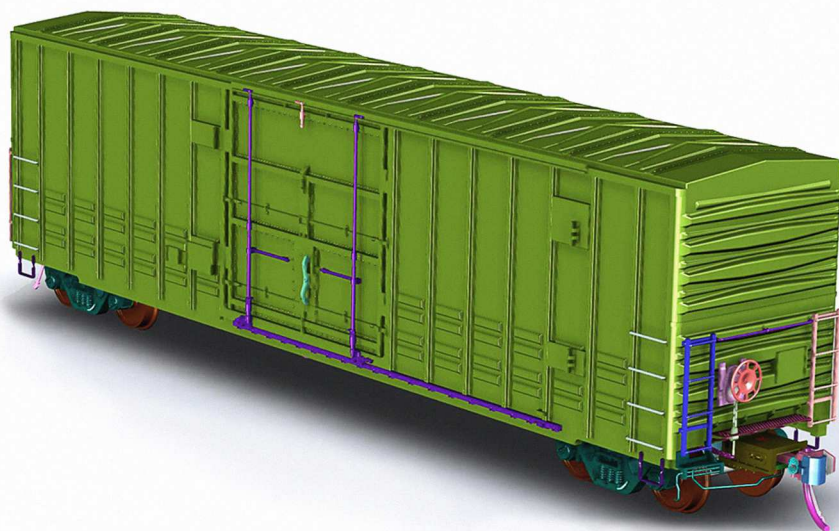
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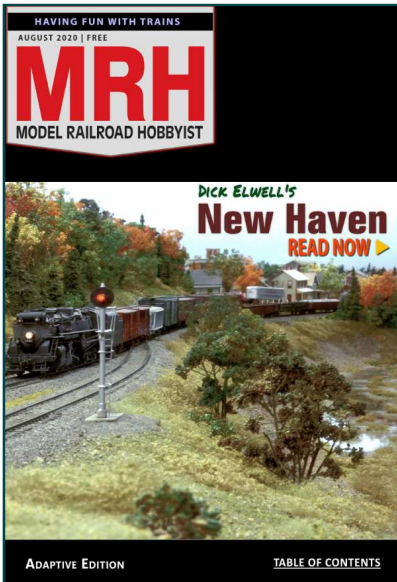
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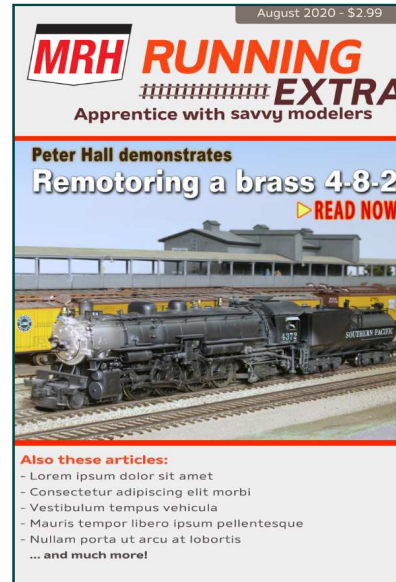
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