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- Early Pennsy hoppers
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LANDSCAPE EDITION

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Compiled by JOE FUGATE



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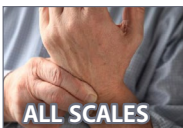
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The MRH STAFF



Making custom car card boxes

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My solution to shaky hands syndrome

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Savvy Modeler online: Hand carving realistic rocks

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March 2020 news and events

RICHARD BALE and JEFF SHULTZ

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PUBLISHER'S WELCOME

introduction



MRH Running Extra | March 2020

JOE FUGATE: BETTER ROLLING TRUCKS ...

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Note: We have rescheduled Charlie Comstock's Virtual Railroading part 2 for the April issue, so watch for it in next month's *Running Extra*. ■

BELIEVE ME, POOR ROLLING TRUCKS ON YOUR rolling stock can cause problems. In fact, we videoed preparing my Siskiyou Line 1 layout for the 2015 NMRA National Convention and illustrated the problems caused by poor rolling trucks.

You can watch this video on our TrainMasters TV site:
trainmasters.tv/programs/siskiyou-line-shakedown

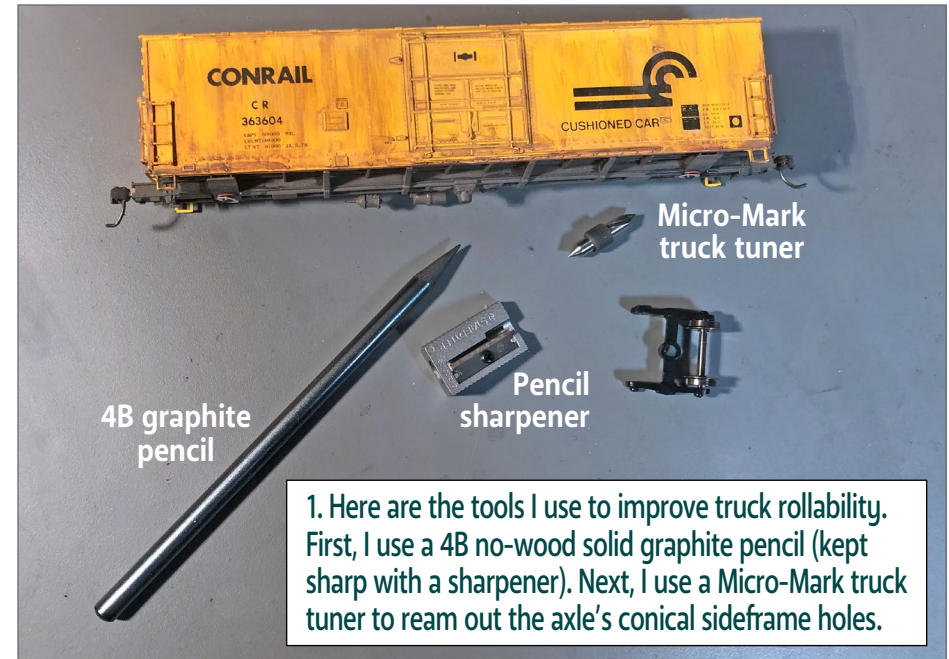
I test the wheels in all my rolling stock trucks now with a spin test: they need to spin for at least 10 seconds. I also test the car on a 2% grade – it needs to roll down the grade without coaxing.

If the car fails either of these tests, I use a couple of tools to improve the rollability: a no-wood graphite pencil and a truck tuner [1].

I previously used powdered graphite [3] in the conical axle tip holes but that's messy and there's no guarantee the graphite will stay put. Instead, I now use a 4B graphite pencil, burnishing the axle tip hole thoroughly with it [2].

You can find an up-to-date shopping list for this article here:
mrhmag.com/magazine/running-extra/2020-03/publishers-welcome

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4B graphite pencil

Pencil sharpener

Micro-Mark truck tuner

1. Here are the tools I use to improve truck rollability. First, I use a 4B no-wood solid graphite pencil (kept sharp with a sharpener). Next, I use a Micro-Mark truck tuner to ream out the axle's conical sideframe holes.

The pencil graphite stays put much better. See the shopping list for where to get one of these pencils. They're available in different hardnesses, but I like the 4B pencil best.

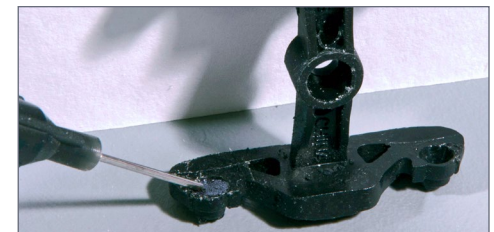
If the graphite pencil fails to do the trick (I test the car again), then it's time for the Micro-Mark truck reamer.

Be careful to not over-ream the sideframes – over-reaming can make the wheels roll sloppily and cause derailments.

I also apply more graphite to the reamed holes and test the car again. That usually does the trick! ☑



2. Burnish the axle tip holes with the 4B pencil.



3. I previously used powdered graphite in the axle tip holes, but a graphite pencil is better.

THE LIMITED MODELER

column

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

JIM SIX REVIEWS EARLY PRR
HOPPER CLASSES ...



MRH Running Extra | March 2020

★★★★★
RATE THIS ARTICLE

EVERYBODY LIKES HOPPER CARS. RIGHT? I KNOW
I do. What about you?

As a kid I watched long trains of B&O hopper cars slowly roll past as they pulled into Lorain, Ohio. My Dad loved them, too. He would stop the car alongside a grade crossing when a train approached. A B&O EM1 mallet would crawl by northbound followed by countless black two-bay hopper cars laden with coal destined for the waiting lake boats in Lorain harbor. I also witnessed hundreds of Pennsy hoppers in coal trains entering and leaving Sandusky, Ohio. Sandusky was heaven for this young railroad enthusiast before 1960 with the B&O, NKP, NYC, and PRR all operating there.

I was fortunate that Dad supported my love for trains. He regularly took me to Lorain, Huron, and Sandusky just to watch trains. We spent hours watching the Hulett ore unloaders scoop iron ore from the holds of 700-foot long lake boats that had arrived from Duluth, Minnesota. Even more hours were spent watching coal being dumped into more lake boats destined for

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1. Ashtabula, Ohio harbor in September 1941 – less than three months before Pearl Harbor was bombed and the U.S. was dragged into World War II. Note the variety of color shades for the Pennsylvania Freight Car Color. Weathering and coal dust have changed the color of the hopper cars and gondolas. Note the I1sa 2-10-0 at the lower left.

Detroit and elsewhere. Lorain had rail/water transfer facilities for both coal and iron ore.

While my hometown of Lorain was served by the B&O and the Nickel Plate, nearby Sandusky was served by the B&O, NKP, NYC, and of course by the PRR in a big way. There was a lot of street running and industrial switching. There were six slips for loading lake boats. Thanks to Dad I was able to watch one car after another being unloaded into waiting lake boats. The Pennsy

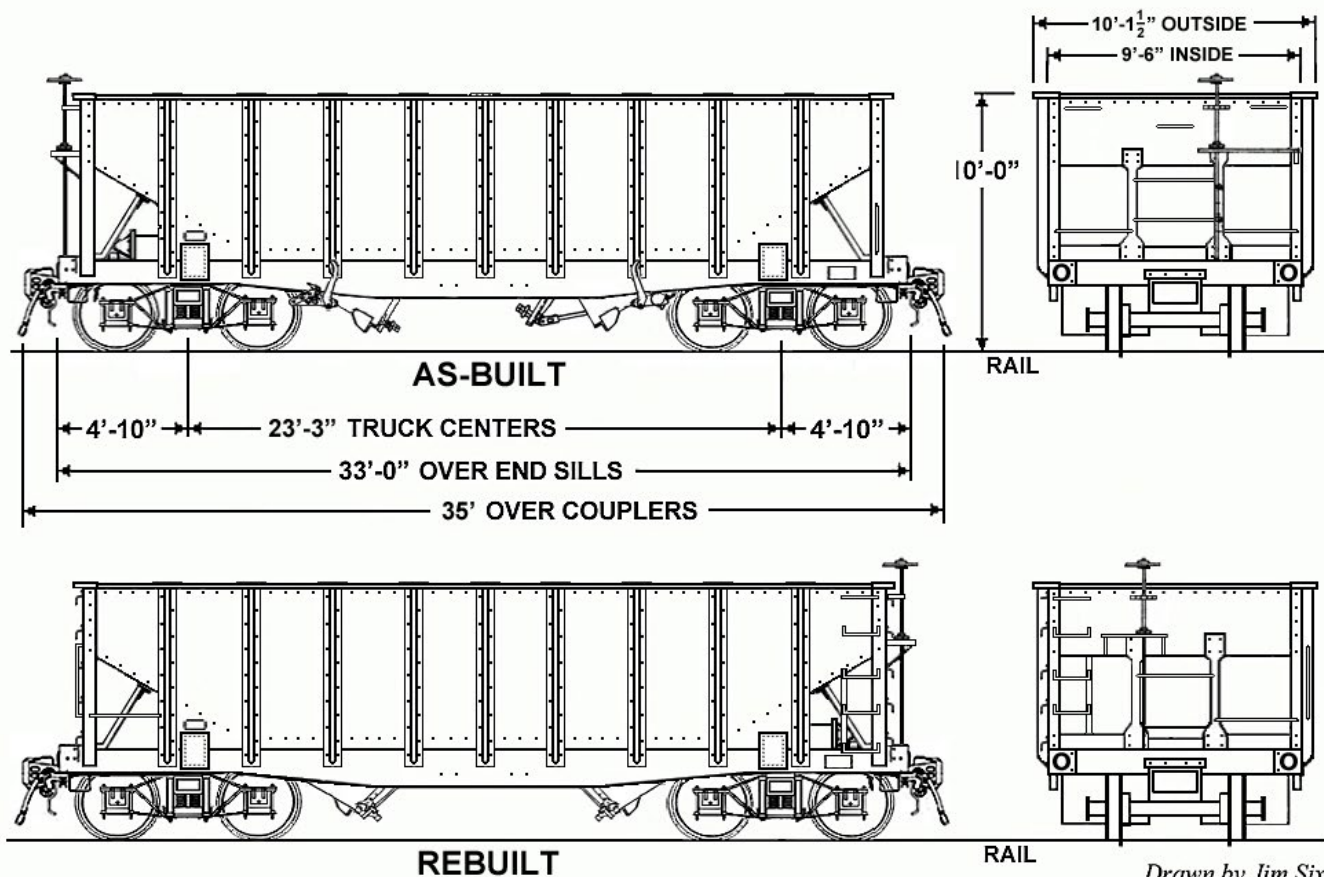
facilities at Sandusky were accessible to the public and we took advantage of it.

GONDOLA CAR CLASS GL

CAPACITY IN CU.FT.	CAPACITY 100,000 LBS
BOX 1672 CU.FT.	WEIGHT 40,000 LBS
HEAP 226 CU.FT.	
TOTAL 1898 CU.FT.	

BUILT 1898 - 1904

STARTING IN EARLY 1920s SOME MODIFIED WITH BRAKE WHEEL STAFF AND PLATFORM MOVED TO LEFT OF CENTER. MOST GL CARS DID NOT RECEIVE THIS MODIFICATION.



2. The GL class cars were the backbone of the early coal fleet.

COAL-HAULING CARS

Thanks to our many Sandusky visits, I came to love the Pennsylvania's coal cars early on. Adding to the appeal were Pennsy J1 2-10-4 locomotives that typical brought trains into Sandusky before returning south with empties. Whenever Dad said we were going to Sandusky, I was ready! Those were the days.

I think it was the Pennsylvania's red-oxide color versus the black of the B&O and the Nickel Plate that captivated me. They seemed different from those of other railroads. To Pennsy folks, the orange-oxide color was known as Freight Car Color. The shade changed over the years from the early Freight Car Color that was much more orange than in later years. At the time, I was too young to know that all those Pennsy gons and hoppers I saw at Sandusky were primarily GS, GLCA, and GLA gondolas and H21a, H22, and H25 hopper cars. Plus, there were foreign-road cars, too.

The Pennsylvania Railroad proclaimed itself as the "Standard Railroad of the World." As I've

studied the line, I've learned the Pennsy was anything but standard. There were so many detail and paint/lettering variations with their equipment. I recognize that during the final 10 years of the company there was a concerted effort to standardize the freight car fleet, but inconsistencies were common.

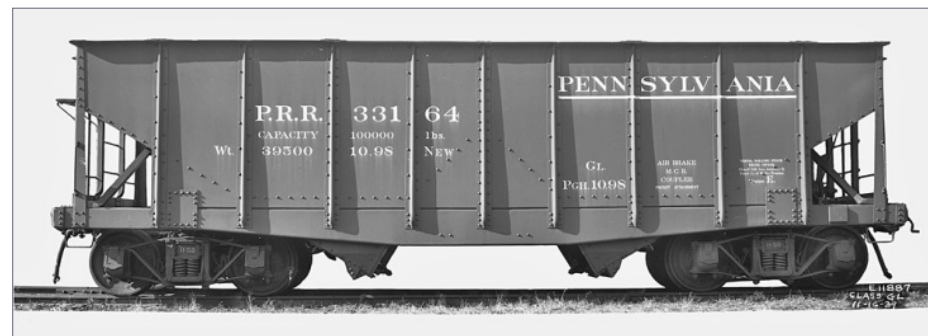
With respect to steam era modeling, the Pennsy is probably the easiest railroad to model with a variety of steam locomotives and cabin cars available. Depending on how accurately you choose to model the Pennsy, getting it right can be a challenge due to the inconsistency of detail and paint applications. I'll try to make things easier for the Pennsylvania Railroad modeler. This month I've prepared several scale drawings as something new this month. This has taken a lot of time to draw and get right. I have researched and studied many company drawings and photos to make these drawings. I hope you will enjoy them and find them useful.

PRR GL CARS

The Pennsylvania GL and GLA cars were designed and built when most coal and coke was hauled in wood gondolas. Some wood gondolas had slope sheets like hopper cars. Freight car design went through a transition from the late 1890s into the early 1910s as steel hopper cars and steel underframes came into greater use. Wood gondola numbers dwindled as more modern cars with steel underframes were put into service. Many older wood-sheathed boxcars received steel center sills before the mid-1920s.

A 1928 interchange ban on cars with wood draft sills spelled the end of the remaining early wood cars.

Between 1898 and 1904, the PRR purchased more than 20,000 GL class cars. Early production was built by the Schoen Pressed



3. PRR 33164 is a GL class gondola. When the GL and GLA cars were built the Pennsylvania referred to them as gondolas, hence the G in the class designations. A distinctive spotting feature is the fish belly side sill and the side stakes that taper outwards from the top of the car. Arch bar trucks were standard on the original cars.

Steel Company. Most of the rest were built by the Pressed Steel Car Company, Schoen's successor. Some may have been built by American Car and Foundry. The cars were built with a heavy steel fish belly side sill, nine side stakes, and side sheets that were folded over onto the top of the side sills where they were riveted.

The GL cars were built with the brake wheel and staff right of center when facing the car end. Some early cars had brake wheels at both ends of the car. Starting in 1923 or 1924 many of the GL class were rebuilt with the brake wheel/staff and platform moved to the left of center. Judging from photographs, I believe the brake staffs on many GL cars were not relocated. Most GL cars retained their K brake systems until retirement, some lasting into the 1950s. The arch bar trucks were replaced as cars were rebuilt in the late 1930s, anticipating the 1943 deadline for arch bar trucks in interchange service. The replacements were Pennsylvania Railroad 2D-F8 cast-steel side frame trucks.

The basic GL design served the Pennsy well but the railroad made changes to the design resulting in new subclass designations. Improvements implemented during the 1920s led to subclass GLC. More changes during the 1940s led to the GLCA subclass. You would think that the first improvements would have created class GLA, followed by GLB and so on, but it didn't happen that way. Class GLA was a new car that I'll cover shortly.

Between 1900 and 1920 the Pennsylvania Railroad corporate structure was confusing as the company slowly reorganized to consolidate lines. This created a variety of paint and lettering schemes. While a challenge to model, these changes can place the rolling stock and layout in a specific era.



4. Another view of PRR 33164 shows end details like the slope sheet support and brake platform. This car had been preserved at the Pennsylvania Railroad Museum [14], in a mostly original configuration. The brake staff is in the original position, to the right of the coupler.



5. PENNA.CO. was an abbreviation for the Pennsylvania Railroad Company on this GL class car. The car is lettered for Pennsylvania Lines, which was the corporate name for lines west of Pittsburgh before a 1924 reorganization. ACF builder photo, Al Westerfield Collection

LETTERING SCHEMES

I've organized the GL, GLA, H21, H21a, H22, H22a, and H25 car lettering schemes. All were painted the orange-oxide Freight Car Color, which was more orange than the typical red-oxide and brownish colors used in later years. There was also what I refer to as standard schemes for the GL and GLA cars. There was overlap of the first three schemes, as listed here.

Scheme 1: 1898 – early 1900s [3, 4, 14]

Scheme 2: 1902 – 1906 [5, 6]

Scheme 3: 1906 – 1914-ish [16, 20]

Scheme 4: 1914 – May 1926 [7-9, 17-19, 21]

Scheme 5: May 1926 – January 1930 [22]

Scheme 6: January 1930 – mid 1954 [10-13, 23, 25, 26]

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One oddball scheme that was common but did not become standard was “PENNA.CO.” See photo [5]. As you might suspect, PENNA.CO. was the Pennsylvania Railroad Company. I view photos [3 and 4] as variations of the same paint scheme.

Throughout the 1910s many cars were lettered for Pennsylvania LINES. Based on photos, the first cars painted with Lines show up around 1902, and it was still being applied as late as 1919 when the USRA car designs were assigned.

Pennsylvania Lines were a separate corporation of the lines west of Pittsburgh. Subsidiary reporting marks were added, such as E&P RR [6]. If a car belonged to the GR&I or the Vandalia, the Pennsylvania Lines lettering was applied, but the car would have reporting marks for the subsidiary. When modeling the 1900s through the 1920s, you need a mix of both to represent the Pennsylvania Railroad.



6. This car belongs to the E&P RR, a subsidiary of the Pennsylvania. The Erie & Pittsburgh Railroad connected the namesake cities and passed through Sharon, Pennsylvania where there was a large steel mill. E&P 1868 is a GL class car still wearing a NEW stencil.

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7. I love this photo. PRR 210697 is at Sugar Creek, Ohio in 1928, still wearing the pre-1926 lettering scheme. Earlier lettering schemes lasted for years, with only the weigh data and presentation changing through the 1920s. This PRR lettering scheme lasted on some cars into the 1930s. This location appears to be a coal dealer's unloading trestle, an ideal customer for a model railroad. *Wheeling and Lake Erie Railroad Collection, Cleveland State University, Michael Schwartz Library, Special Collections*



8. I included this photo because this GL car has a 1922 weigh date. You can see it just above the left hopper door mechanism. Compare this car with earlier photos [5, 6] to see the added grab irons and hand holds dictated by the Safety Appliance Act amendment of 1911. *DL&W company photo, Steamtown NPS Collection*



9. PRR 144325 has been rebuild from its original configuration. Note how the side sheets overlap the top of the fish belly side sill. Compare that detail with earlier photos [5-8]. The lettering looks like the early 1920s style. The car has the original arch bar trucks and Carmer uncoupling levers. For some unknown reason, a piece of lumber is stuck in a grab iron.



10. PRR 209977 has had a few upgrades. A repack date of 1-5-44 helps us date the photo. The repack stencil is on the sill just above the right truck. The brake staff has been relocated, the side sheets overlap the top of the side sill, and the car is riding on cast steel side frame trucks. K brake components lurk under the slope sheet. The circle keystone emblem was first applied in January of 1930 and the car lettering follows post-1930 practices. Many PRR hoppers looked like this between January 1930 and 1954 when the shadow keystone scheme became the new standard.

9. PRR 144325 has been rebuild from its original configuration. Note how the side sheets overlap the top of the fish belly side sill. Compare that detail with earlier photos [5-8]. The lettering looks like the early 1920s style. The car has the original arch bar trucks and Carmer uncoupling levers. For some unknown reason, a piece of lumber is stuck in a grab iron.

10. PRR 209977 has had a few upgrades. A repack date of 1-5-44 helps us date the photo. The repack stencil is on the sill just above



11. PRR 738701 wears lettering that appeared beginning in January 1930. The arch bar trucks have been changed to the PRR 2D-F8 style cast steel side frame trucks. These were a slightly different design than the Bettendorf-type trucks, and common on many PRR freight cars.



12. PRR 250391 wears a 10-42 weigh date stenciled near the center of the car. It's in very good condition for a car built in 1902. The built date stencil is just to the left of the GLCA car class stencil. The COAL GOES TO WAR slogan is a WWII addition to the 1930 lettering scheme. Note the upgrades on the trucks, side sheets, extra grab iron on the left end of the car, and new bottom pin pull uncoupling levers. The 2D-F8 trucks are equipped with a snubber in place of a spring.

Of course, LINES did not disappear overnight with the 1924 corporate reorganization. There are post-1924 prototype photos of PRR freight cars with LINES lettering. There are also instances where only LINES has been painted over and the rest of the lettering is unchanged.

PRR GLA CARS

Due to production backlogs with the GL car at the Pressed Steel Car Co. and flaws in the initial design, the Pennsylvania Railroad designed an alternative all-steel bottom-discharge car in 1904. The



13. PRR 147596 has been upgraded to a GLCA class car. A 5-52 weigh date sets a point in time. The early 1930 lettering style remains in use. There have been several upgrades to this car. Note the power hand brake wheel, new bottom pin pull uncoupling levers, overlapping side sheets, second grab iron on the far end of the car side, and 2D-F8 trucks with a leaf spring. The car is about 50 years old in this image. Compare the details with the earlier GL photos [3-6], or the preserved car [14].

new design moved away from the pressed steel components of the GL class and used more structural steel components. The new cars were designated as the GLA class.



14. PRR 33164 on display at the Pennsylvania Railroad Museum. This car has been restored and preserved in its as-built configuration without the Safety Appliance Act grab irons and hand holds mandated in 1911. Even the lettering follows the as-built style.

COMPARING HOPPER DIMENSIONS

A couple all-steel hopper designs came into use in 1905. About the same time the PRR was designing the GLA cars, the Standard Steel Car Company was working on a similar design. Robert Karig's excellent *Coal Cars: The First Three Hundred Years* offers an extensive review on the evolution of coal-hauling freight car designs. He named the Standard Steel Car design the 1905 Common Design. Thousands of cars were built to this design for the B&O, NYC, C&O, Lehigh Valley, and many other roads. Thousands of GLA cars were built for the Pennsy and several coal companies. Additionally, the dimensions of the USRA 50-ton twin hopper of 1919 were very close to earlier hopper designs.

	GLA	1905 Common Design	USRA twin
Inside Length	30' 5"	30' 0"	30' 6"
Inside Width	9' 6"	9' 5-1/2"	9' 5-1/2"
Outside Height	10' 0"	10' 0"	10' 8"
Capacity	1683 cu. ft.	1660 cu. ft.	1880 cu. ft.

As you can see, the GLA and 1905 Common Design dimensions are very close. The USRA twin hoppers were designed 15 years later and held similar measurements, except for the outside height. This dimension is measured from the rail to the top of the car side and is the most noticeable difference, but the GLA car side sits three inches lower than the USRA cars.

These three coal hopper designs were the most common 50- and 55-ton cars through the 1920s.

Approximately 25,000 GLA cars were added to the Pennsylvania fleet between 1905 and 1911. A total of 30,256 were built for the PRR or acquired from various coal companies whose cars were built to the same design. The GLA became a conventional design for hopper cars and did not use the heavy fish-belly side sill or pressed steel components of the GL design.

John Teichmoeller noted in his *Pennsylvania Railroad Steel Open Hopper Cars* guide that "the whole side of the car became a plate girder." The GLA was built with seven side stakes and two hopper bays. The hopper car term was not part of railroad vocabulary in 1905, so the design was classified as a gondola. As with the GL, GLA cars were modified over the years, but the class designation was not changed.

HARDWARE CHANGES

Starting in the early 1920s, the GLA brake wheel and staff were relocated to the left of center on many car ends. K brake systems were retained until cars were rebuilt in the late 1930s. The AAR mandated that AB brake systems and geared hand brakes were required on all newly rebuilt cars starting January 1, 1937. An additional grab iron on the left end of the car side was also installed.

Arch bar trucks were beginning to be phased out. The AAR initially proposed banning arch bar trucks on freight cars in interchange in 1936. After a few delays, the ban took effect July 1, 1940. The Pennsylvania Railroad installed their 2D-F8 cast steel side frame trucks as replacements.

The April 1956 OER lists 21,840 GLA cars on the roster. Compared to the Reading's 13,015 car hopper fleet, or Western Maryland's 8,006 hopper cars, you begin to understand the size of the PRR GLA fleet.

Readers of this column who model the Pennsylvania Railroad in HO scale had long relied on models of the similar-looking

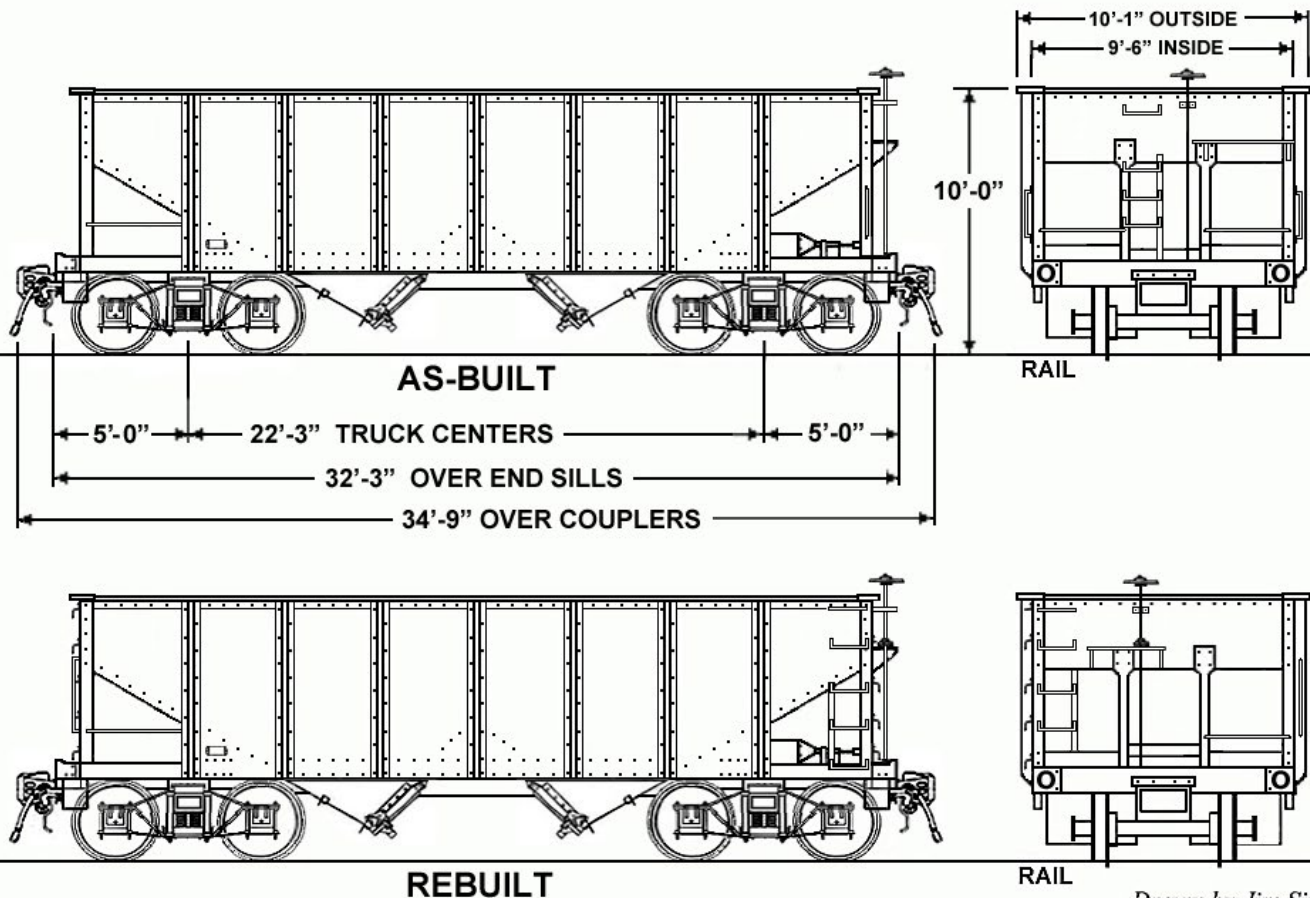
GONDOLA CAR CLASS GLa

CAPACITY IN CU.FT.
BOX 1683 CU.FT.
HEAP 216 CU.FT.
TOTAL 1899 CU.FT.

CAPACITY 100,000 LBS
WEIGHT 39,000 LBS

BUILT 1904 - 1911

STARTING IN EARLY 1920s SOME MODIFIED WITH BRAKE WHEEL STAFF AND PLATFORM MOVED TO LEFT OF CENTER. MANY GLa CARS DID NOT RECEIVE THIS MODIFICATION.



Drawn by Jim Six

15. The GLA class cars were first delivered in 1905 as an alternative to the GL class design.

USRA twin hopper cars as stand-ins for the PRR GLA. While the USRA twin hopper appears similar to the GLA, “it ain’t no GLA.”

When Bowser released its GLA model in HO scale a good many folks were immediately excited – including me. However, the Pennsylvania Railroad had but 300 USRA twin hopper cars compared to 30,256 GLA’s. This means as Pennsy modelers we should have only one USRA hopper car for every 100 GLA models. Think about that for a moment. Those of you with an unrealistic number of USRA twin hoppers, what are you going to do to more realistically balance your fleet of PRR twin hopper cars?



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16. Cleveland, Ohio, circa 1910. Shown here are GLA (left) and GL (right) cars. All the freight cars in this photo appear to be riding on arch bar trucks. Note the GLA is lettered for PENNSYLVANIA LINES and the GL is lettered as PENNSYLVANIA. Also note the coal is not uniform and is randomly sized. I love those wood-roofed boxcars behind the hoppers.



17. This 1921 photo of a string of Pennsy hoppers offers a rare view of the early 1920s lettering schemes and weathering. The first three are GLA cars and the last two are GL class. Check out the PENNSYLVANIA LINES lettering on the first car. The second car has had LINES painted out. *Photograph by William B. Berry, Jr., from the Railfan.net Erie Lackawanna Email List Photo Archive*



18. In a 1916 image, a three-man crew loads Pennsylvania Lines 725774 one bucket at a time. Note the P.L. reporting marks on the car end. *Photo from Railway Age Magazine*

**Please tell
your buddies
about us!**

WE RELY ON WORD-OF-MOUTH TO GROW
AND A BIGGER CIRCULATION MEANS WE'RE
MORE LIKELY TO STICK AROUND FOR A LONG
TIME TO COME!



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19. PRR 164235 wears a 1915 weigh date stencil and was built in June 1907. The lettering here is slightly different than an earlier format [20]. The lettering over the left truck is a hardware inventory that was common through the Teens and into the early 1930s. There were subtle changes to the weight data presentation during those years. The archbar trucks were standard on the GLA well into the 1930s.



20. PRR 715270 shown wearing an early lettering scheme in this June 1906 builder photo. Note the ladder grabs on the car ends, the lack of a ladder on the corners, and the brake staff located to the right of the coupler. Compare with later images of GLA cars [24, 25, 26]. *ACF builder photo*

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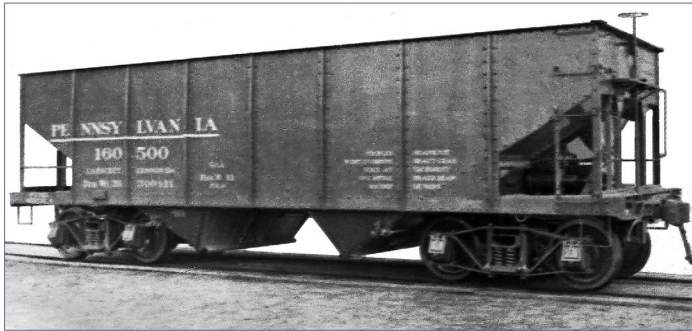
Having reviewed the photos in this presentation you have to believe that the Pennsylvania Railroad, the so-called “Standard Railroad of the World,” was anything but standard! Lettering of these coal cars was anything but standard before 1926. Lettering was high on some cars while low on other cars. The railroad name was to the left on some and to the right on others. Same with the mechanical design of cars of the same class. The brake staff was to the right of the coupler on some cars and to the left of the coupler with other cars. There were 60,000-some GL and GLA cars and little consistency from one group of cars to another. While this presents challenges to the model railroader, at the same time it provides variety and interest.





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21. PRR 160500 at Berwick, Pennsylvania, in January 1911. This car was built with the brake staff to the left of the

coupler, which was different from earlier cars [18, 20]. This car has the grab irons and hand holds required by the 1911 Safety Appliance Act amendment. I suspect the amendment may have moved the brake staff location closer to the end ladders on new cars. *ACF builder photo, Al Westerfield Collection*



22. PRR 157235 is shown with a full load of unscreened run-of-mine coal. The car has a fresh 10-29 weigh date stencil and Pennsy 2D-8F cast steel side frame trucks. This lettering scheme became Pennsy's standard on May 14, 1926. In January 1930, it was modified with the addition of the circle keystone emblem [23]. *Historic Pittsburgh Collection*



23. PRR 166658 wears lettering implemented in January 1930 with the addition of the famous circle keystone emblem. Compare with [22] to see the similarities. This scheme lasted until sometime in 1954 when the shadow keystone scheme was introduced to the PRR fleet.



24. PRR 140062 is beat up. I suspect it is set out for repair. This clear circa-1950 photo illustrates the K brake detail under the slope sheet. An AB brake system will be installed after repairs as K brakes would be banned on interchange cars as of January 1, 1954.





25. PRR 214838 looks fresh from the shops with a 1-52 weigh date stencil. The condition of this car built in April 1907 is remarkable.

Much of the car has been rebuilt. While it retains the vertical brake staff, AB brake components have been installed, and it is riding on 2D-F8 cast steel side frame trucks. Compare this car with those in earlier images [16, 20] to see the effect of the 1911 Safety Appliance Act amendment.



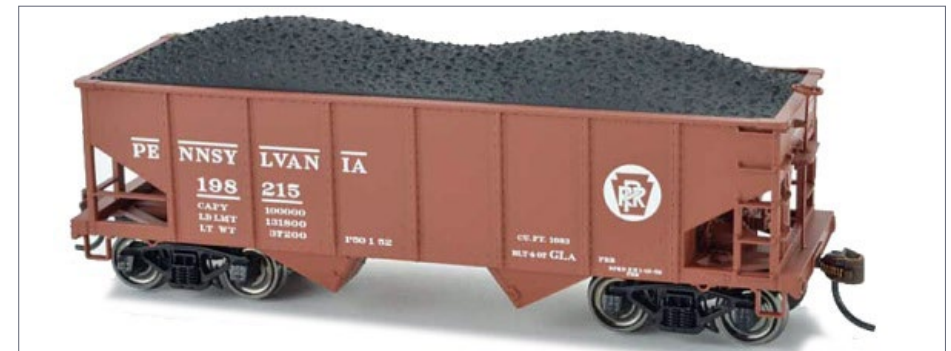
26. Here's a look at the other side of PRR 214838. Notice the small dents on the side sheets? Coal would often freeze in the cars during winter months. Workers often pounded the car sides with sledgehammers to loosen the coal so it would flow out through the hoppers. The dents are another weathering detail to consider.

MODELING PENNSY GLA CARS

Now that we have examined the Pennsylvania Railroad's GL and GLA coal cars, let's consider modeling them. Bowser has been producing HO and N scale plastic, injection-molded GLA models. They have not produced the GL cars. Those are available as HO scale resin kits from Westerfield Models.

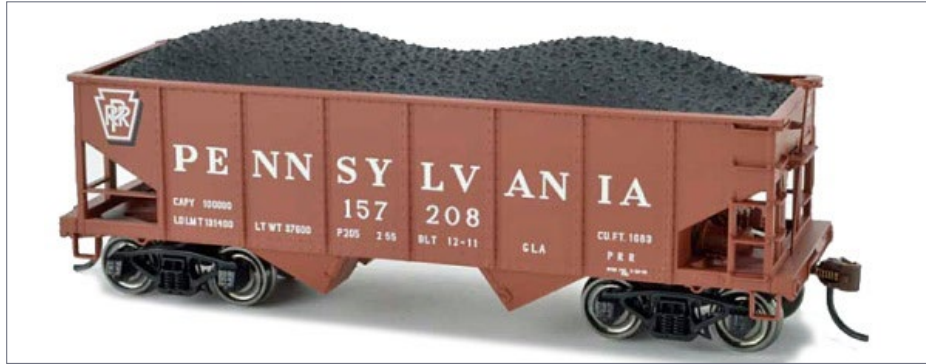


27. Bowser applied this early lettering scheme that dates to 1910. Notice the sparse data information. *Bowser photo*

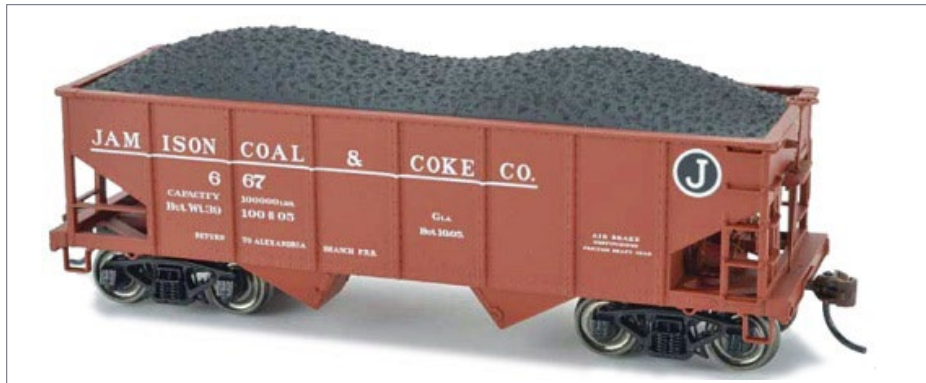


28. Here's the classic Pennsy lettering scheme with the circle keystone emblem. Thousands of GLA cars wore this scheme from the early 1930s into the late 1950s. *Bowser photo*

Bowser has produced GLA hopper models in a variety of PRR lettering schemes [27-29]. They also offered a version painted for Pennsylvania Lines but I could not find a photo to share. I hope Bowser will produce GLA hoppers decorated for Pennsylvania



29. Many GLA hoppers were rebuilt and repainted in the late 1950s with a modernized lettering scheme. Compare the differences. It's not just the large lettering that has changed. *Bowser photo*



30. Jamison Coal & Coke was one of many coal operators that had their own small fleets of cars. Their mining operations were in western Pennsylvania and north central West Virginia coal fields. *Bowser photo*

Lines and early 1920s Pennsylvania lettering, with their very nice arch bar trucks. I'm swapping out the arch bar trucks from the H21 car kits in early lettering for my GLA cars. The PRR 2D-F8 trucks are a better fit for modeling the 1930s and later.

Bowser has offered the GLA in several private coal company lettering schemes that are proper for pre-World War I years [30]. They have also applied paint and lettering for companies that rostered the similar 1905 Common Design cars.

My first Pennsylvania GLA models were shake-the-box kits. I replaced the kit-supplied wheelsets and knuckle couplers with metal wheelsets and my favorite Kadee No.153 short-shank scale couplers. The lettering on these models came with the 1930s circle keystone herald, which came into use three years after my 1927 layout setting. I sanded off the keystones using 1000-grit wet/dry sandpaper, then brush-painted the sanded panels. Then the models were weathered [31, 32]. What do you think?



31. Shake the box GLA kits can be updated easily to reflect late 1920s prototypes.

Next month I'll dive into similar detail on the larger Pennsylvania Railroad hoppers; the H21 and H25 car classes. ☒



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32. PRR 679764 has had the arch bar trucks upgraded with 2D-F8 cast steel side frame trucks. I sanded the circle key-stone from this model and touched up the area with paint. Weathering hides the slight difference in paint shades.





United States Safety Appliance Act

MRH Running Extra | March 2020

JIM SIX reviews changes in rail car appliance rules ...

IN RECENT "LIMITED MODELER" COLUMNS, I HAVE mentioned safety changes in the Pennsylvania Railroad's gondola and hopper cars. Why and when these changes happened. Many of these changes (for American railroads) stem from the 1911 amendment to the United States Safety Appliance Act. Let's review the original Act and the amendments.

Congress enacted the US Safety Appliance Act to promote railroad safety for travelers and employees. Too many passengers

1. This Pullman builder photo of Illinois Central 1041 illustrates a typical freight car of the late 1800s. This 1891 product has link-and-pin couplers and only a hand-powered brake wheel. It does not have air brakes. Stipulations in the US Safety Appliance Act of 1893 would impact all rolling stock on US railroads. *Ray Breyer collection*

★★★★★
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and rail employees were suffering severe injuries and death. The Act and subsequent amendments affected prototype hardware installed on rolling stock and should be understood by modelers focused on US railroads.

ORIGINAL ACT OF MARCH 2ND, 1893

The original act was entitled, "*An Act to Promote the Safety of Employees and Travelers upon Railroads by compelling Common Carriers Engaged in Interstate Commerce to Equip Their Cars with Automatic Couplers and Continuous Brakes and Their Locomotives with Driving-wheel Brakes, and for Other Purposes.*"

Its first section makes it unlawful, among other things, for a railroad company engaged in interstate commerce to run any train without having a sufficient number of the cars equipped with train brakes (such as air brakes) that the engineer on the locomotive can use to control the speed of the train without requiring brakemen to use a hand brake for that purpose.

The Westinghouse air brake patent dates to 1869, with introduction on many new passenger cars starting in 1870. The Safety Appliance Act mandated air brake installation and usage on all rolling stock. Upgrading older freight cars took many years.

U.S. SAFETY APPLIANCE ACT | 3

The second section prohibits such a carrier from hauling or using on its line in moving interstate traffic any car not equipped with couplers which can be coupled and uncoupled automatically “without the necessity of men going between the ends of the cars.” The Janney automatic coupler was patented in 1873 but was not in widespread use.

The fourth section mandated the installation of secure hand holds and grab irons on the ends and sides of each car, while the fifth section authorized the American Railway Association to set a standard height for freight car drawbars. Until this time,



2. These two cars have different couplers. The gondola at the right is equipped with an MCB transition knuckle coupler. It has a slot and hole to accommodate cars with link-and-pin couplers. The boxcar lacks air brakes, too. Cars with air brake hardware were stenciled with that info, as you can see on the gondola. It took many years for railroads to upgrade their freight car fleets to meet the Safety Appliance Act. *Ray Breyer collection*

U.S. SAFETY APPLIANCE ACT | 4

not all freight cars coupled at the same height. The sixth section imposes a \$100 penalty for every violation of the Act.

More detail on each section can be found on the Railroad Safety Appliance Act wiki.

en.wikipedia.org/wiki/Railroad_Safety_Appliance_Act

Amendment of March 2nd, 1903

- Takes effect September 1st, 1903.
- A minimum of 50% of cars in all trains must have and use train brakes.

Amendment of April 14th, 1910

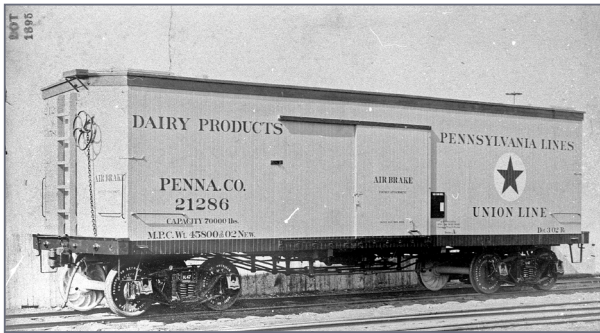
- Applies to all cars, not just interstate, hauled by common carriers after July 1, 1911.
- All cars must be equipped with secure sill steps and efficient hand brakes.
- All cars require secure ladders and secure running boards.
- All cars shall be equipped with such ladders and running boards and all cars having ladders shall also be equipped with secure hand holds or grab irons on their roofs at the tops of such ladders.
- Provided that in the loading and hauling of long commodities requiring more than one car the hand brakes may be omitted on all save one of the cars while they are thus combined for such purpose.
- All cars must comply with the standard equipment listed in the 1893 law by October 1910.
- After September 1st, 1910, a minimum of 85% of cars in all trains must have and use train brakes.
- A provision allows for defective cars to be hauled from the location the defect was detected to a RIP track, except for cars that can be repaired where the defect is detected.

FREIGHT CAR CHANGES

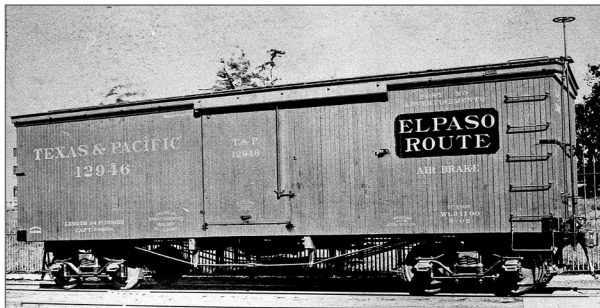
This last amendment affected the appearance of freight cars most of all. Pre-1911 images show many freight cars with a sill step on only one corner of a car side. Ladders were installed on the right of the car side or on the left of the car end, not in both locations. Some cars had a ladder placed in the middle of the car end. Compare the details on several 1902 freight car builder images to see the different sill step, ladder, and grab iron applications [3-6].

The Master Car Builders Association (MCBA) was tasked with

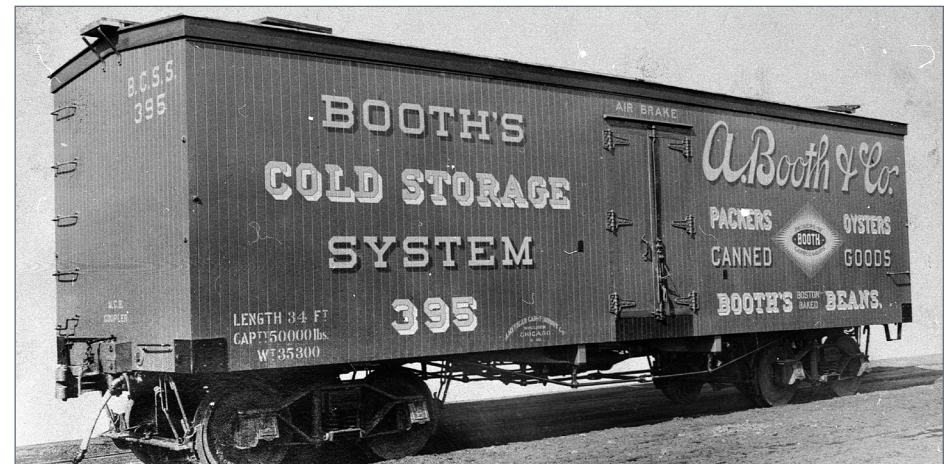
3. This reefer only has ladders installed on the car ends. Sill steps are on each corner with grab irons installed above the area of the steps. The substantial end sills act as a step, so additional hand holds are installed. The car lacks a brake platform. Not all companies installed sill steps on each corner of the car. *ACF builder photo, Westerfield collection*



4. Ladder grabs are installed at the right end of the car side on this T&P boxcar, but the ladder is missing on the car ends. Only one sill step can be seen on this side of the car and a brake platform is missing. *ACF builder photo, Westerfield collection*



5. A Fruit Growers Express reefer has ladder grabs installed on the car ends only. Note the one sill step at the bottom right corner of the car. It's a different size and design compared to the hardware in previous photos [3, 4]. *ACF builder photo, Westerfield collection*



6. Another reefer with only end ladders installed and one sill step at the far end of the car. *ACF builder photo, Westerfield collection*

U.S. SAFETY APPLIANCE ACT | 7

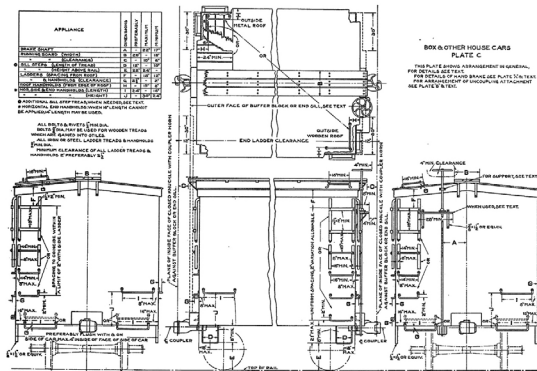
updating grab iron, handhold, sill step, and ladder placement. Their Safety Appliance Committee revised previous guidelines that conformed to the new standards. All US railroads could build and upgrade their rolling stock to meet the amendment to the Safety Appliance Act. The hardware locations are more familiar to many model railroaders [8].

Details of the committee proceedings can be reviewed in *First [and Second] Report of the General Committee of Railroads on Safety Appliance Standards ... November 12th, 1910 [-April 12, 1911]*, which is available online.

books.google.com/books?id=0wkqAAAAYAAJ&ppis=e&lpg=PA146&ots=C7iVghmhF&dq=master%20car%20builders%20association%20safety%20appliance%20committee&pg=PP1#v=onepage-&q=master%20car%20builders%20association%20safety%20appliance%20committee&f=false

Many MCBA annual reports from the 1880-1900 period are available on Google Books. These offer insight to the safety appliance changeover details. The 1918 *Drawings of the standards and recommended practice of the Car Builders' Association* is available to review online:

hdl.handle.net/2027/uiug.30112070081655.



7. A plate from the 1918 *Drawings of the standards and recommended practice of the Car Builders' Association*. Zoom in to see more details, or view a digitized version of the entire guide at the link above.

U.S. SAFETY APPLIANCE ACT | 8



8. B&O 99115 poses after a 1912 rebuilding by the Ralston Steel Car Company in Columbus, Ohio. The car has ladder grabs installed on the end and sides, sill steps in each corner of the sides, and a brake step. Grab irons have also been installed on the end sills along with a hand hold above the left end sill grab. A steel center sill has been installed to replace the original wood components. The truss rods were kept, which was common on many center sill upgrades. *Ralston Steel Car Company photo*

Detailed drawings call out locations and dimensions for safety appliance hardware [7].

I hope this review helps you understand the impact of the US Safety Appliance Act and the visible changes it brought to rolling stock of the earlier eras. ☒



GETTING REAL

column



MRH Running Extra | March 2020

NICK MUFF MODELS A KCS
COMPOUND ARTICULATED ...



MY DECISION TO MODEL THE LESSER KNOWN

Kansas City Southern Railway was prompted by visits to my grandparents' farm in northwest Arkansas during the 1950s and 1960s. This certainly put me in the minority in southern California where everyone modeled the big three, the Santa Fe, Union Pacific and Southern Pacific. It gave me a chance to go where few had gone before!

Modeling Kansas City Southern steam power is an even more poorly represented area. The only Kansas City Southern steam locomotive ever produced in custom brass was their impressive J class 2-10-4 Texas type. This locomotive was produced by PFM in limited numbers and commands a very high price. Later it was produced by Hallmark Models, and more recently in a state-of-the-art version as I collaborated with Division Point Models.

I pull visitors legs by telling them I own four of every Kansas City Southern brass steam locomotive class ever built. I have two Hallmark versions and two Division Point Models. Or so I thought!

My good friend Tom Johnson of the Branson Scenic Railway pointed me to a locomotive for sale at brasstrains.com. It turned

► MODELING REAL RAILROADS AND WHAT THEY DO

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out to be a Pacific Fast Mail - United KCS G class 0-6-6-0 [3, 4]. That's what's printed on the end of the box! As far as anyone can tell it is the only known example of that model.



1. KCS 753, running southbound through Noel, Missouri.



2. KCS G Class 0-6-6-0 No. 711. Harold Vollrath photograph from the collection of Dr. Nicholas Muff

PROTOTYPE BACKGROUND

A dominating feature of the Kansas City Southern was the crossing of two major mountain ranges on the way from Kansas City to the Gulf. The Ozark Mountain grade crosses the Missouri-Arkansas



3. The label on a PFM-United KCS G Class 0-6-6-0 box.



4. My PFM-United HO scale KCS G Class 0-6-6-0 No. 711 in action.

state line with its summit near the town of Decatur, Arkansas. The Ouachita Mountain grade begins south of Fort Smith, Arkansas, peaks at Rich Mountain and then drops down to Mena, Arkansas.

The development of KCS steam locomotives is closely tied to the career of noted civil engineer and railway executive Leonor F. Loree. He was on the mechanical engineering staff of the Baltimore and Ohio Railroad when they created the first articulated locomotive in the United States, "Old Maud," an 0-6-6-0 type in 1904. He was also at one point simultaneously president of the Delaware and Hudson and the KCS.

It should come as no surprise that when the KCS ordered their first articulated locomotive from Alco, Schenectady in 1912 it had an 0-6-6-0 wheel arrangement. Sadly, the KCS discovered what the B&O had already found, lacking a lead truck these locos were prone to derailment and were confined to yard and pusher service.

It is said that Loree was a stickler for efficiency, that he even begrudged the steam used to blow the whistle. This may explain why KCS locomotives of this era were equipped with a very small banshee whistle. He wanted all the weight on the drivers. He did tolerate a lead truck, so that for many years mainline KCS freight power consisted of double-headed 2-8-0s leading up to the husky E4 Class consolidations.

When KCS turned to articulation again in 1918, it would be for the G1 Class 2-8-8-0 type. This was essentially two Consolidation locomotives joined into one locomotive with all the weight on the drivers save for the single-axle lead truck. The locomotive was compound, typical of that era. It was slow but powerful and efficient. In that time speed was not so much an issue. It is said that they would hook everything in the yard in Kansas City that was headed southbound behind the tender and send the G1 south [5-7]. Eventually some days later it would get to the Gulf Coast!



5. KCS G1 Class No. 752 in service. *Harold Vollrath photograph from the collection of Dr. Nicholas Muff*



6. The engineer's side of KCS 753. *Harold Vollrath photograph from the collection of Dr. Nicholas Muff*



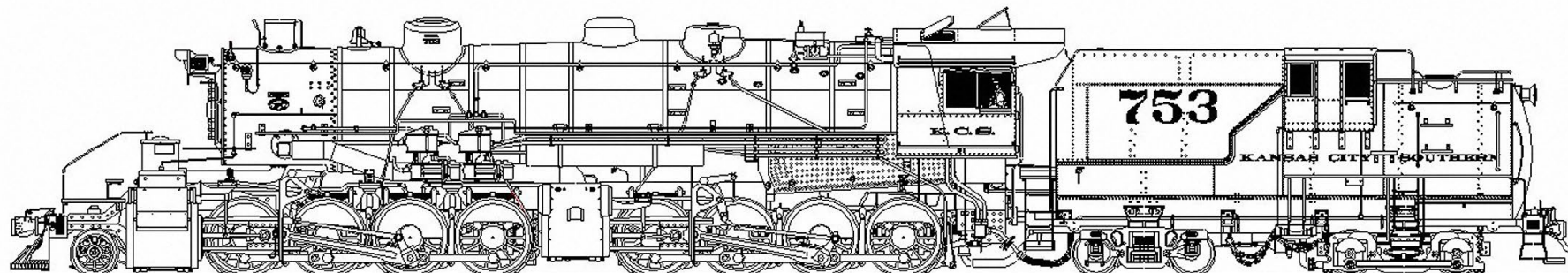
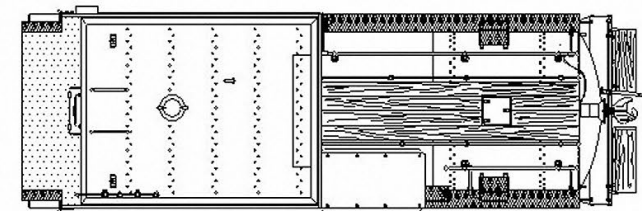
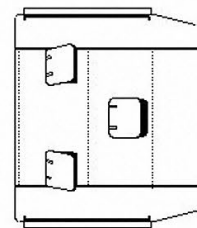
7. The fireman's side of KCS 750. *Harold Vollrath photograph from the collection of Dr. Nicholas Muff*

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KANSAS CITY SOUTHERN G1 CLASS #753 ALCO SCHECTADY 1918

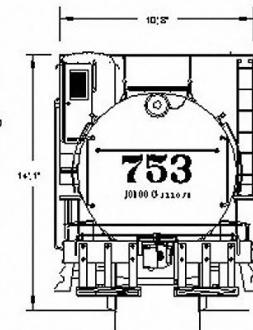
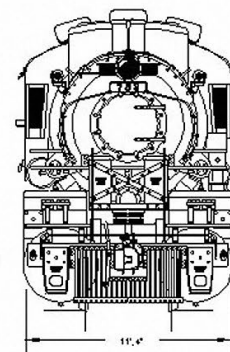
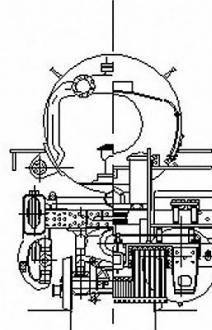
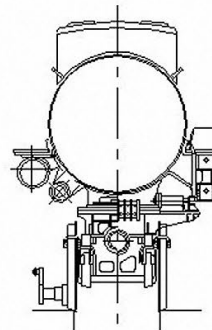
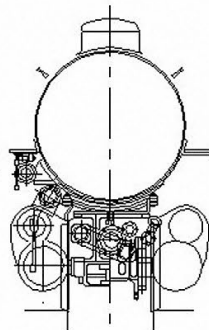
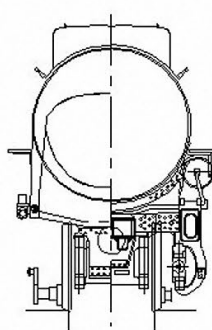
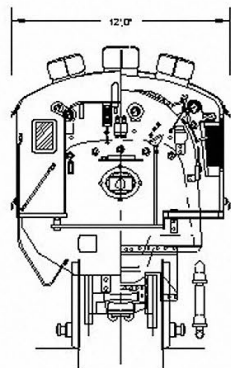
Drawn as it Appeared Circa 1934



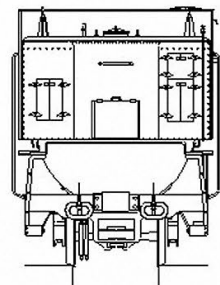
Drawn expressly for
Mainline Modeler by

Nicholas S. Muff M.D.
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noncommercial use only.
Scale 3.5mm = 1"

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Tender Rear Elevation



Tender Front Elevation

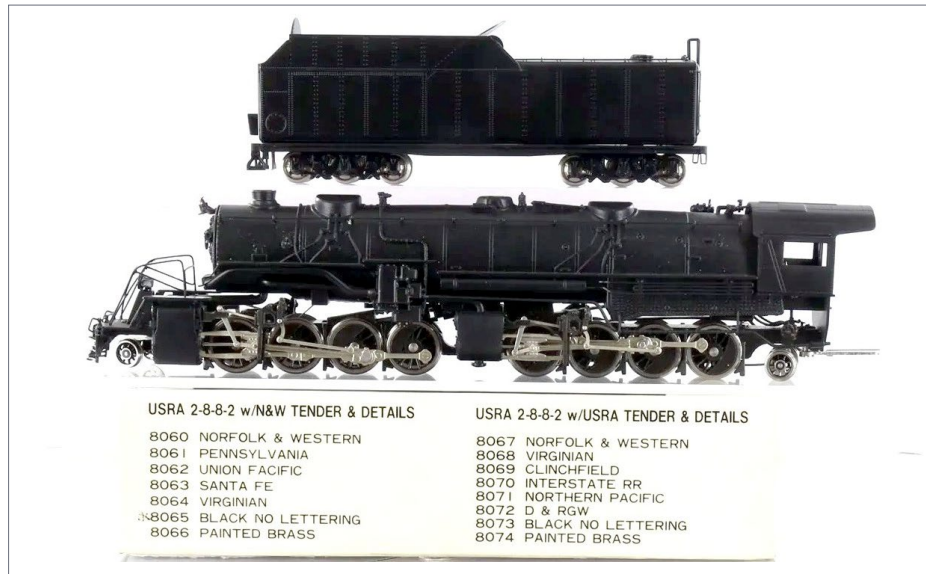
8. Plans of the KCS G1 Class 2-8-8-0 that I drew for Mainline Modeler.



MODELING THE KCS G CLASS

With the drawings [8] and photographs in hand, I approached Brian Marsh of Overland Models to create the G1 class articulated in brass. We developed the different variants, placed the advertisements, and received seven reservations! No custom brass project can ever go forward with such small numbers!

I realized the only way I could have a model of this particular locomotive was to create it myself. I found a starting point in the Oriental Limited run of USRA type articulated 2-8-8-2 locomotives in their Powerhouse series [9]. It was a hybrid with cast metal boiler and frame, a brass cab, tender and lost-wax cast details. The nice thing about the hybrid locomotives is that there is no need to add weight to the boiler!



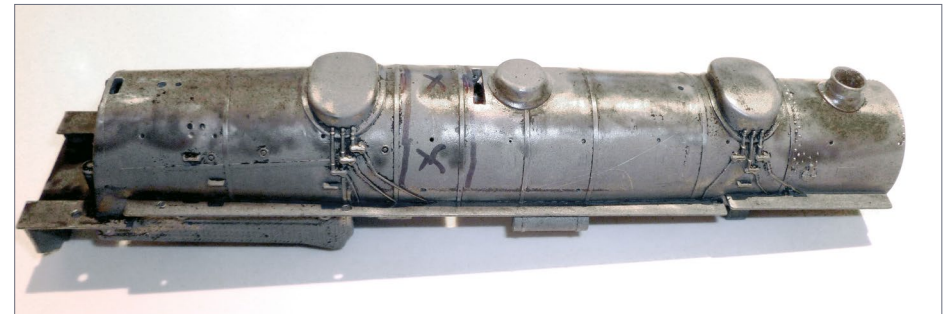
9. The HO scale Oriental Limited USRA 2-8-8-2 from their Powerhouse series.

What follows is not a step-by-step how-to project, but an introduction to the multiple materials and techniques I used to create this model. 3D-printing, and laser cutting and engraving techniques are newly available.

The running gear, pilot wheel, driver size and spacing, compound front and high-pressure rear cylinders of the Powerhouse locomotive were all a close match for the KCS G1 class. The major challenges would be to remove the rear truck to convert it from a 2-8-8-2 to a 2-8-8-0, and creating a new short, fat Vanderbilt tender to replace the long rectangular tender that came with the locomotive.

BOILER MODIFICATION

I failed to foresee how much more was involved than simply removing the rear truck. It meant shortening the boiler by 3/8" and moving the whole cab, firebox and rear of the locomotive forward by the same amount. Exactly how to accomplish this was the major hurdle in getting this project started. I started by disassembling the locomotive the locomotive and removing all the added detail parts [10].

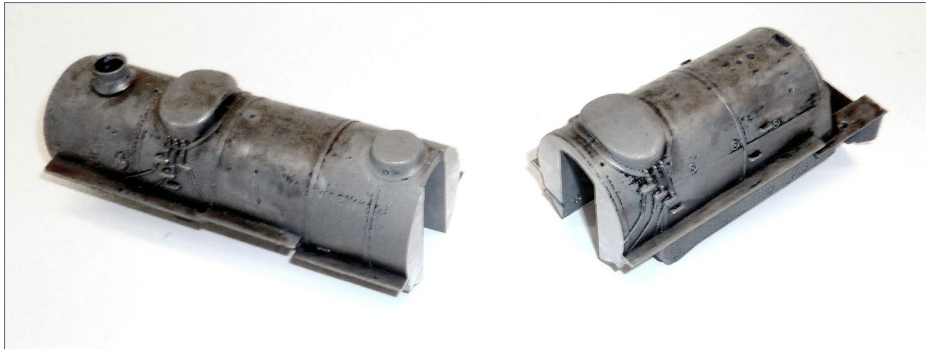


10. The cast boiler will need 3/8" removed from the middle, as marked in this image.

Fortunately, I have a good friend who is a retired machinist from the Skagit Steel Company with a good size lathe and mill. My little Unimat would not be up to this challenge. I asked if he would be willing to mill $3/8$ " out of the boiler. He was concerned the milling process may break the thin cast-on running boards on each side. I told him I would find some way to repair or replace them if they became damaged.

He came up with an elegant solution to this problem. He built a box into which he placed the boiler and then filled the box with low-melting-point metal alloy. He could mill down through the box with the running boards completely supported. With milling complete, he placed the model in boiling water and the alloy melted away, leaving the running boards undamaged.

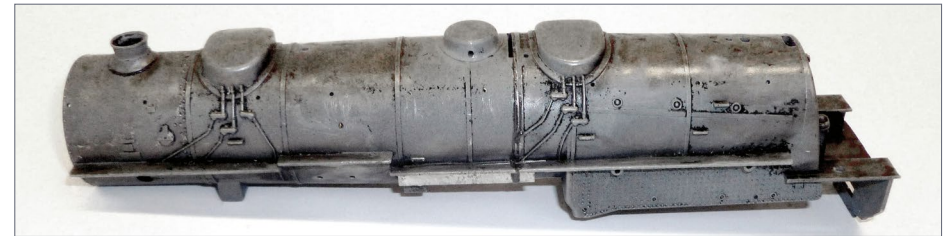
As a result of this process the two cut faces were perfectly smooth, flat and parallel [11]. I created a jig to hold the pieces in alignment and glued them with epoxy cement using a clamp to hold the pieces in close contact [12]. This resulted in moving the two domes on the top of the boiler $3/8$ " closer together which, based on the prototype, is exactly what needed to happen [13].



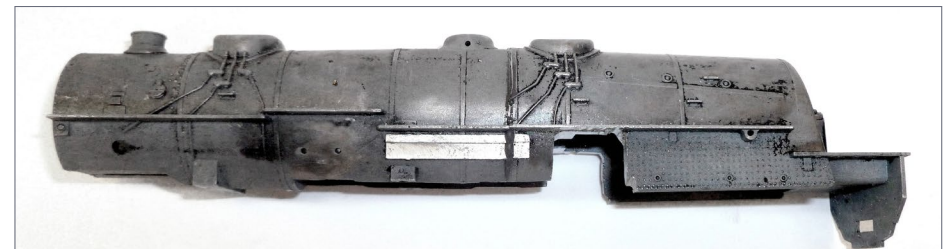
11. The two boiler pieces after milling.



12. I built a jig to glue the two pieces back together. A clamp holds them in place.

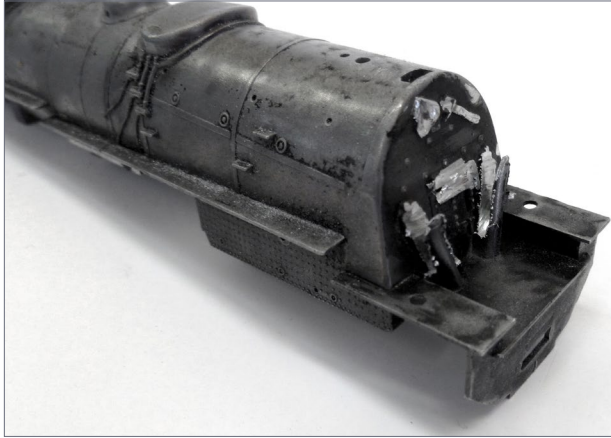


13. The shortened boiler with the closer dome spacing.

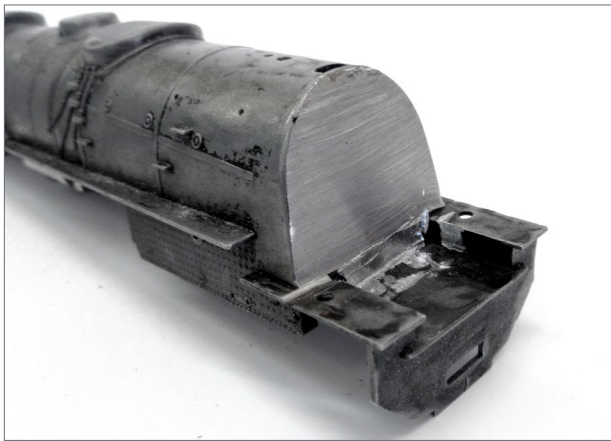


14. The large left side air tank was removed.

The next step was to remove unwanted cast details from the boiler. This included milling off the large air tank on the left side where the new twin cross compound air pumps would sit [14]. I also needed to remove the detail from the backhead of the boiler which represented a duplex coal stoker for a coal-fired locomotive [15, 16]. The KCS version would be an oil-burner.



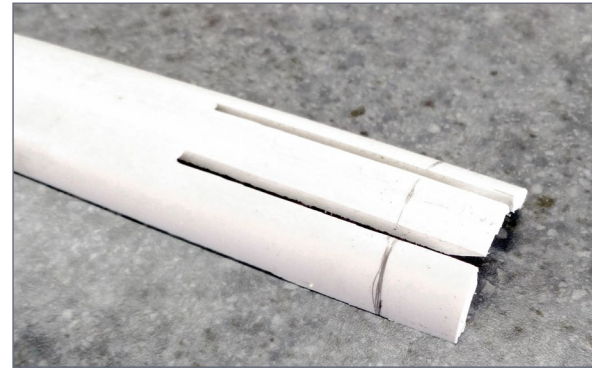
15. I roughly removed the back head detail.



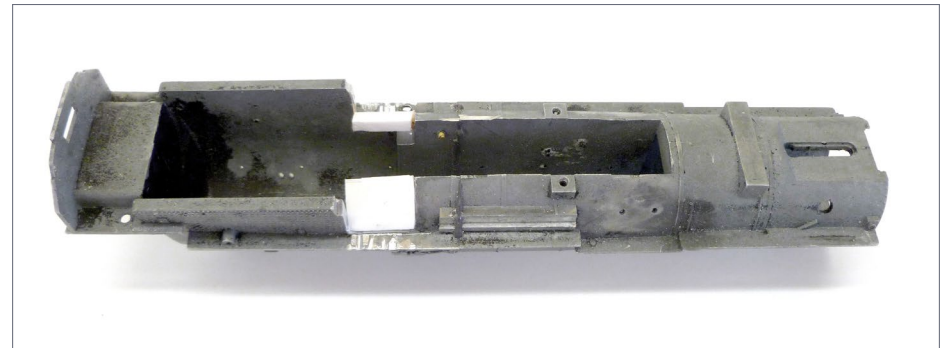
16. With much of the detail removed, I sanded the backhead smooth and flat.

MORE BOILER ADJUSTMENTS

An enjoyable part of this project was learning in reverse why locomotives had a trailing truck to begin with – to allow for a longer firebox! Shortening the boiler moved the firebox forward, and now the firebox fouled the rear valve gear hangers. Shortening the front of the firebox by 3/8" exposed a gaping hole in the bottom of the boiler. I used PVC pipe pieces [17, 18] and styrene sheet glued in place to fill the opening of the boiler and to re-create the front wall of the firebox [19].



17. I cut pieces from PVC pipe of a similar diameter to repair the boiler.



18. The PVC pieces glued in place where the firebox was removed.

The frame also needed an adjustment. I cut off the cast metal frame behind the last driver on the rear frame. This was shortened by 3/8" then glued with epoxy cement and clamped back in place.

DETAIL INSTALLATION

After the major construction, I focused on replacing and adding detail parts to match the KCS prototype. I took the plans I created and highlighted items in yellow to modify [22]. I ordered the parts from Precision Scale and applied them to the locomotive.

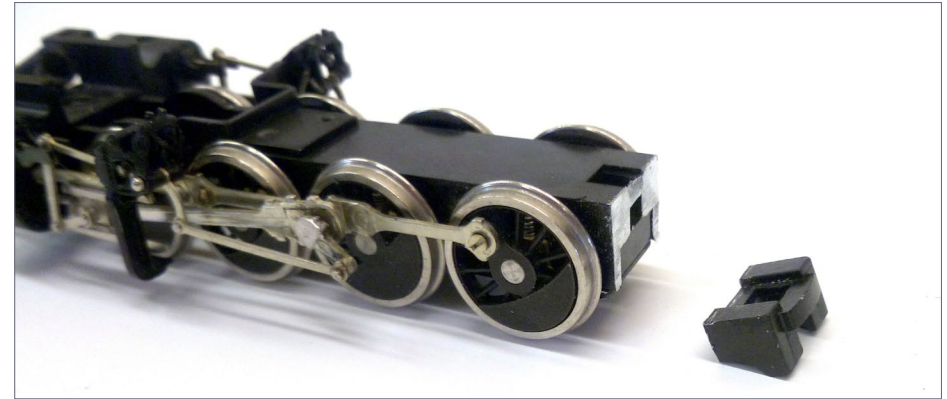
Major modifications included replacement of the boiler front [23]. The original boiler front featured a small high-mounted smoke



19. I installed styrene sheet to recreate the front of firebox. The center section will be cut away to clear the drive train.

box door, necessary because of the feedwater pump located on the pilot deck. The KCS had no such complicated machinery and featured a smoke box front with larger center door. Also, the pilot was substantially different and had to be replaced.

I replaced the handrail post and handrails, added an auxiliary turret with safety valves, covers to the sand domes with lift grabs,



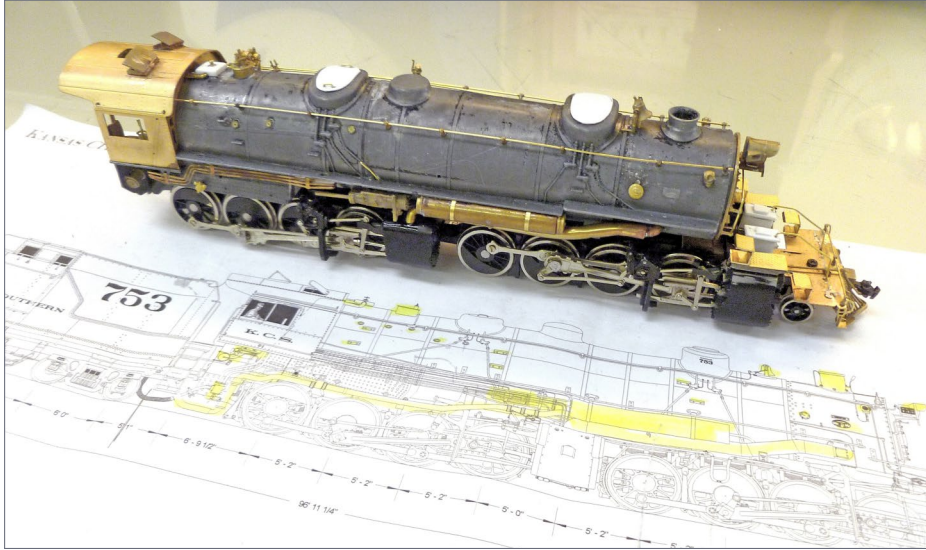
20. Here's where I cut the rear frame for shortening. The small piece has had 3/8" removed.



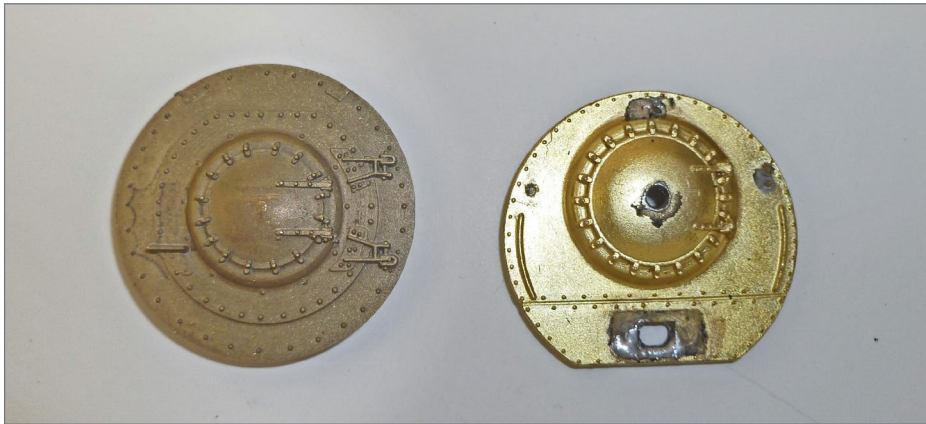
21. Epoxy and a bar clamp hold the pieces in place on rear frame.

GETTING REAL | 17

boiler washout plugs, cross-compound air pumps and piping, a new headlight, open cab hatches, and completely rebuilt the pilot deck [24, 25].



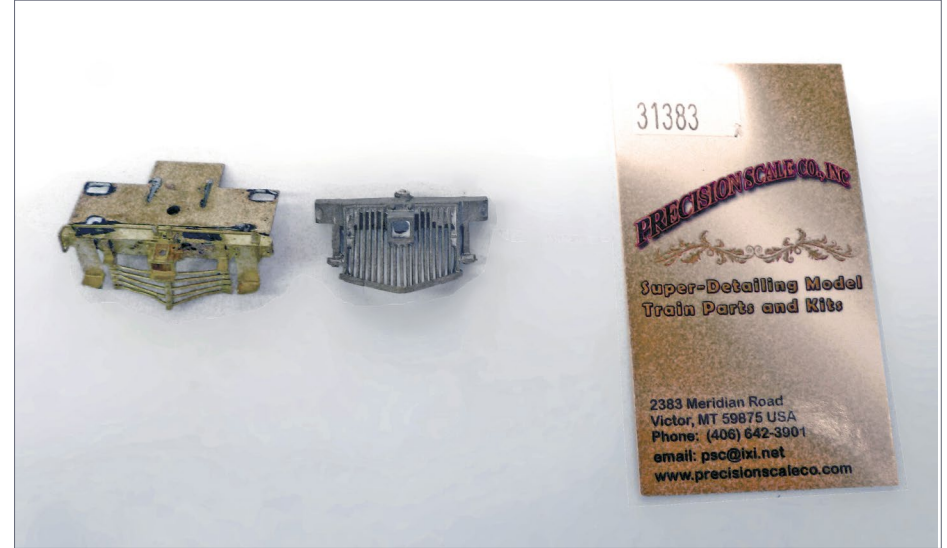
22. Plan with needed changes marked in yellow.



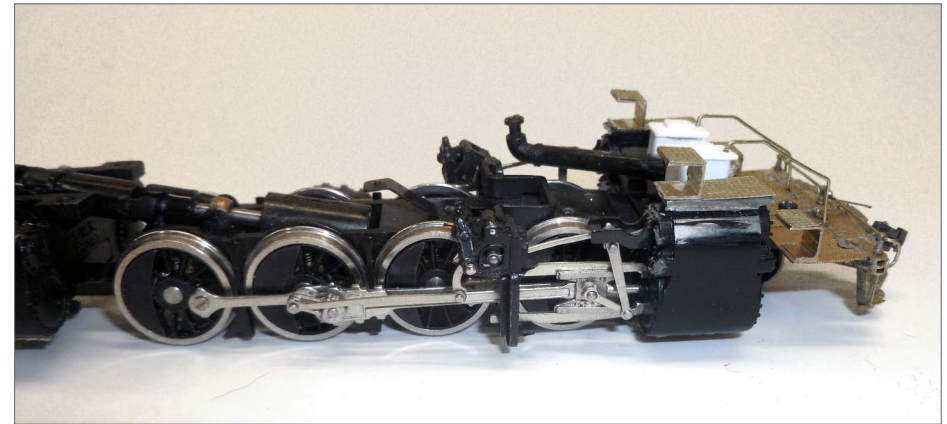
23. New smokebox front on the left with centered door.

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I regret I neglected to take photographs of the backhead under construction. I came up with a simplified method, and am very pleased with the results. I cut a piece of 0.040" styrene sheet to the



24. New pilot on the right.



25. Rebuilt pilot deck.

shape of the backhead. I attached all the backhead details for an oil-fired articulated to the styrene piece. When the backhead was complete, I simply attached it to the smooth, flat back of the boiler with Walthers Goo [26].



26. Backhead installed and painted.



27. The KCS short fat Vanderbilt tender for the G1 class articulated. *Harold Vollrath photograph from the collection of Dr. Nicholas Muff*

A PROTOTYPE ADVENTURE

Part of the great fun of model railroading involves a wide variety of skills and adventure. My good friend Kurt Stroer discovered an online site which featured photographs of unusual railway equipment found on abandoned, weedgrown sidings.

In Galt, Illinois was such a siding with three Canadian National 0-8-0s and a single Vanderbilt tender. Amazingly, the tender was from Kansas City Southern G1 class No. 759 [28]. It is one of only two examples of surviving KCS steam equipment. The other is KCS 0-8-0 No. 1023 which for many years rested in a park in Pittsburg, Kansas. It is now in a Kansas museum where it has been nicely restored.

How did the tender get here? A scrap company that owned this equipment was still using steam to switch the mill yard. They saw these CN 0-8-0s were in good condition and put them to service in the mill yard. However, they were set up to burn coal,



28. The G1 Class Tender in Galt, Illinois.

A PROTOTYPE ADVENTURE *CONTINUED ...*

and had coal tenders. They converted the locomotives to burn oil, but they needed a tender with an oil bunker. The oil tender from KCS No. 759 was handy and so they used it, thus sparing it from the scrapper's torch. The Illinois Railway Museum purchased the locomotives and tender from the scrap dealer and stored them on the siding.

Imagine my thrill of being able to visit a prototype example of the very tender I was modeling! When I was in the St. Louis area, I arranged to meet Kurt and drive to Galt, Illinois. I examined and photographed the tender. I was surprised to find the truck suspension mechanism for the right and left journals is asymmetric.

Now here's where it gets crazy! I suggested to Kurt that next time we visit Galt, we clean and repaint the back and one side of the tender in KCS livery. We loaded up a rental station wagon with paint, brushes, ladder, brush cutters, saw, and prepared artwork stencils for our next trip to Galt.

Once there, we cut down the brush around the tender to make it visible for photographs. We brushed dirt and loose paint from one side and the rear of the tender. Then we painted it latex black with a roller and paintbrush and trimmed the steps, running board edge, and handrails in white.

A prepared stencil was used to add the Kansas City Southern lettering and locomotive number. We also took some "what if" photographs of the locomotive with a Flying Crow herald on the side of the fuel bunker [30, 31] as it might have looked on the KCS Pacific tenders. Other than the fun of taking the photographs, we

hoped to call attention to this unique artifact and have it repatriated into the Illinois Railway Museum. Our efforts have paid off! The Canadian National 0-8-0s have also found homes.



29. The distinctive Economy tender truck has an asymmetrical journal arrangement.



30. The refreshed tender with the KCS Flying Crow emblem as a "what if" lettering scheme.

A PROTOTYPE ADVENTURE *CONTINUED ...*

31. Some elbow grease and paint transformed the No. 759 tender to the KCS appearance.

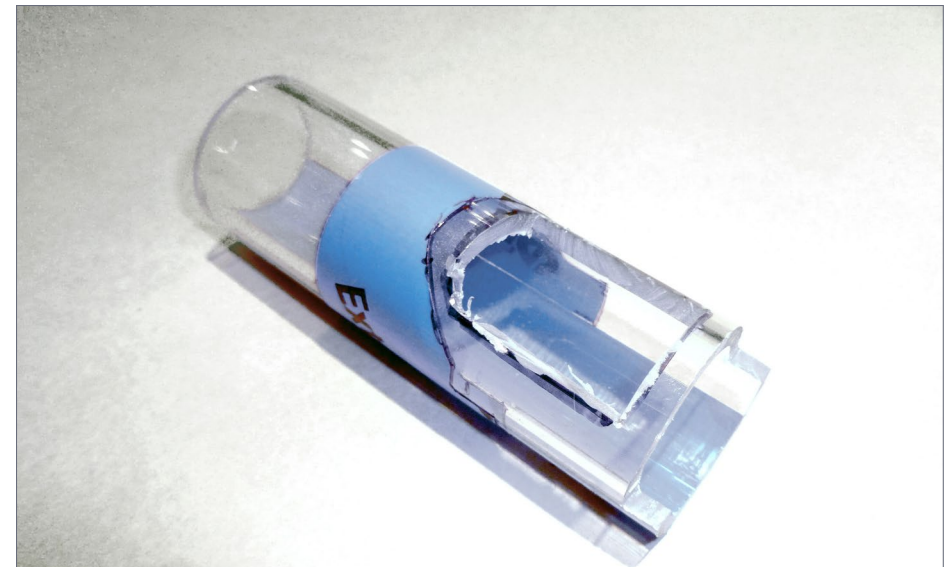
**Please tell
your buddies
about us!**

WE RELY ON WORD-OF-MOUTH TO GROW
AND A BIGGER CIRCULATION MEANS WE'RE
MORE LIKELY TO STICK AROUND FOR A LONG
TIME TO COME!

**MODELING THE VANDERBILT TENDER**

To this point, my work involved modifying an existing model to fit the prototype. By contrast, the tender is scratchbuilt because no suitable model was available. Among Vanderbilt tenders, the G1 class tender is distinctive because it is short and fat to allow the locomotive to fit on existing turntables [27]. In addition, the rear truck is placed forward of the normally expected position to shorten the overall wheelbase for the same purpose.

The first step in modeling the tender was to find tubing with the suitable diameter to model the water tank portion. A piece of PVC tubing was close, but alas, I found clear acrylic tubing that was just perfect. I say alas because it's tougher working with clear material. I could have painted it to begin with, but that would have interfered with the need to glue details onto it.



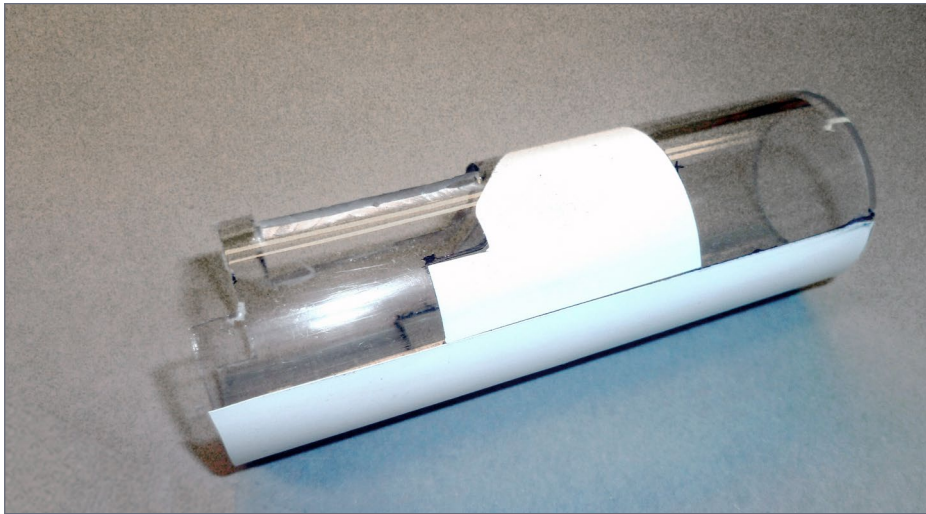
32. I used blue painters tape was to create templates to cut thin styrene sheet to shape.

I glued 0.010" styrene sheet to the mid-section and bottom of the tank to simulate overlapped metal plates. I used blue tape attached to the tank to create templates for the added pieces. Liquid styrene cement can result in unpleasant and undesirable things happening later as it evaporates and cures, so I used cyanoacrylate (CA) cement to attach these thin pieces.

3D-PRINT DETAILS

The next step was my big challenge! To recreate the tender, I would need to make the fuel bunker, the elliptical rear end for the tank, the distinctive side-mounted KCS doghouse for the head-end brakeman, the complex underframe with tank supports, and the unique Economy tender trucks.

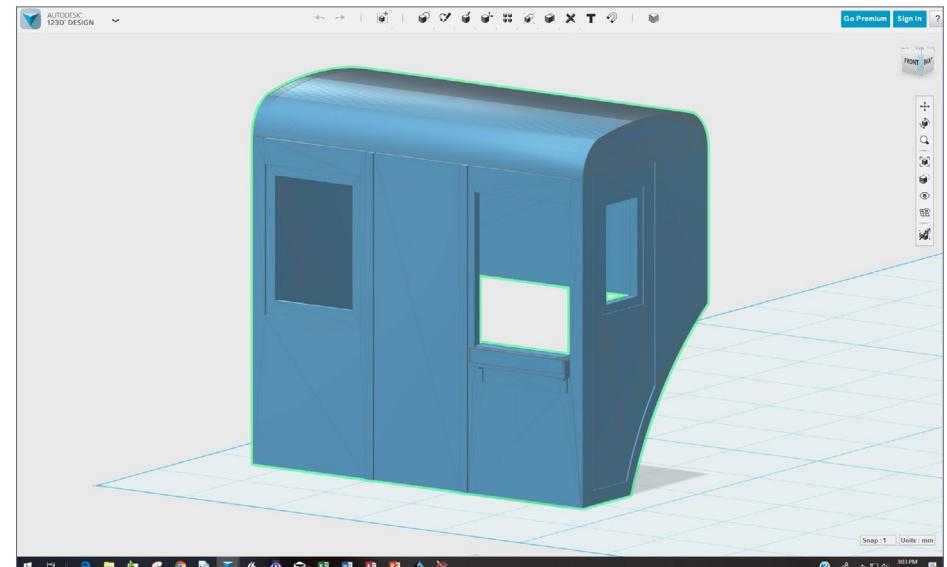
I got up the courage to learn 3D drafting using 123D Design by Autodesk. I found the learning curve less steep than I had expected. Online tutorials were a big help. As a son of a machinist,



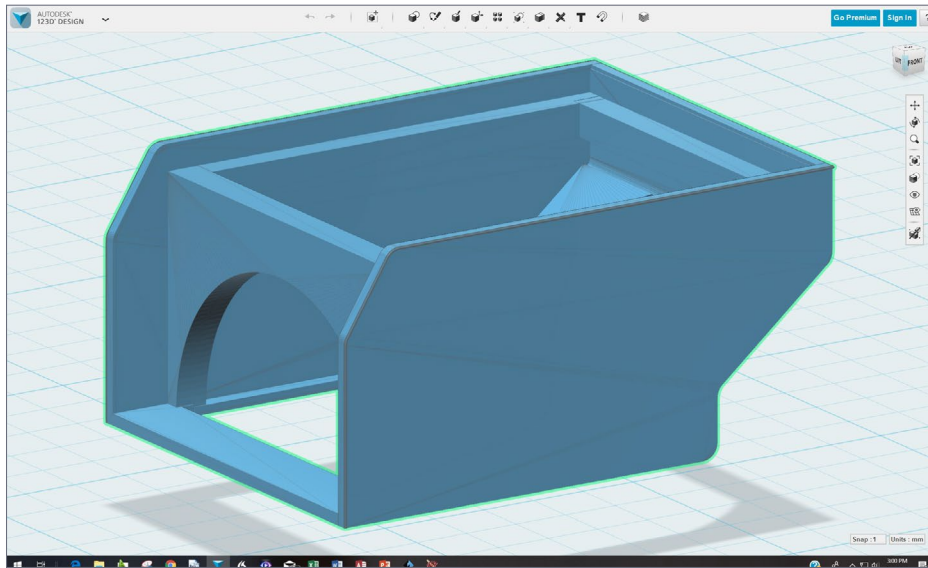
33. The painters tape templates made it easy to cut 0.010" styrene sheet to simulate metal plate on the tender.

I enjoyed the whole process of creating the drawings. Once past the initial learning phase, I created 3D drawings for all these pieces [34-37] then had them printed in high-detail acrylic [38]. For the fuel bunker, doghouse, and rear end of the tank, this would be the final version. For the tender trucks and underframe, this was a cost-effective trial version to make sure everything fit before having them 3D-printed in brass.

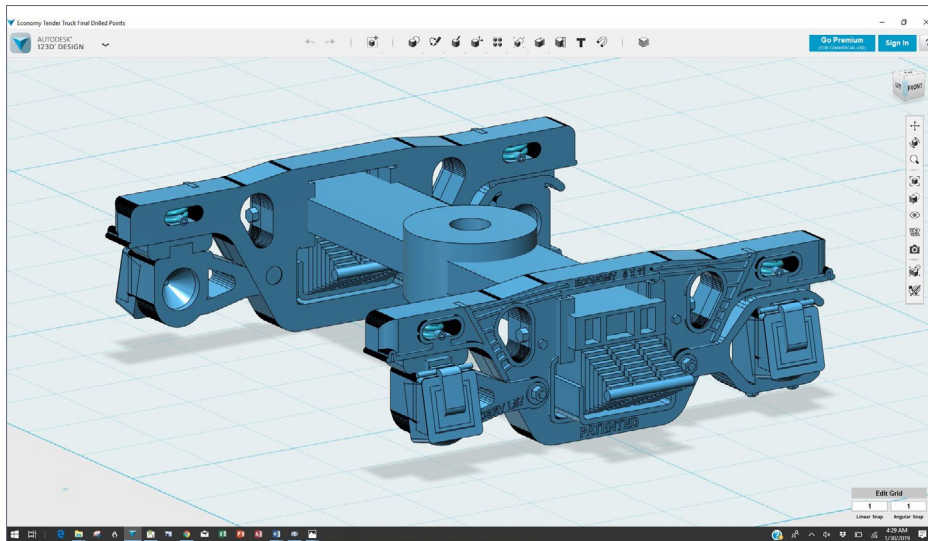
**Please
mention
us when
speaking
with hobby
vendors.**



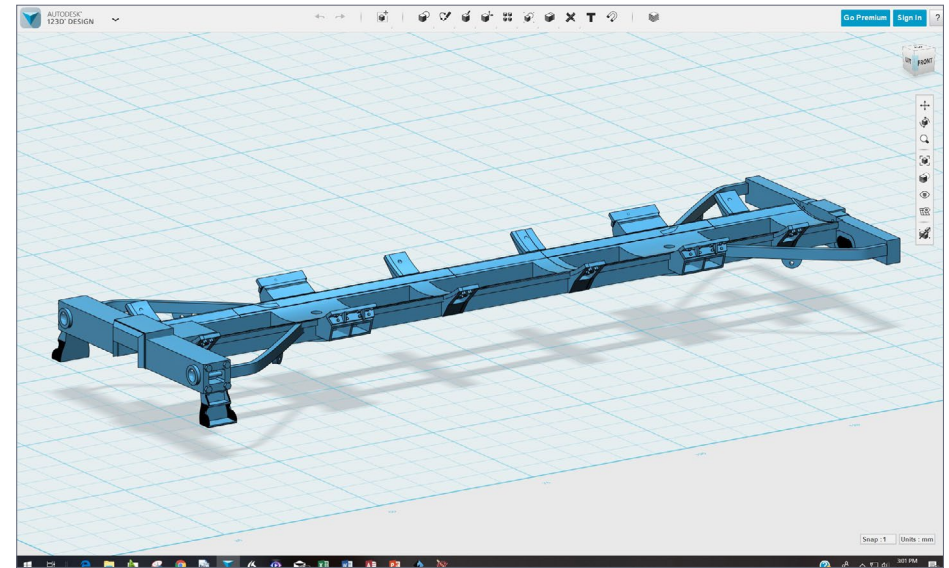
34. The distinctive KCS doghouse.



35. The tender fuel bunker.



36. The Economy tender truck.

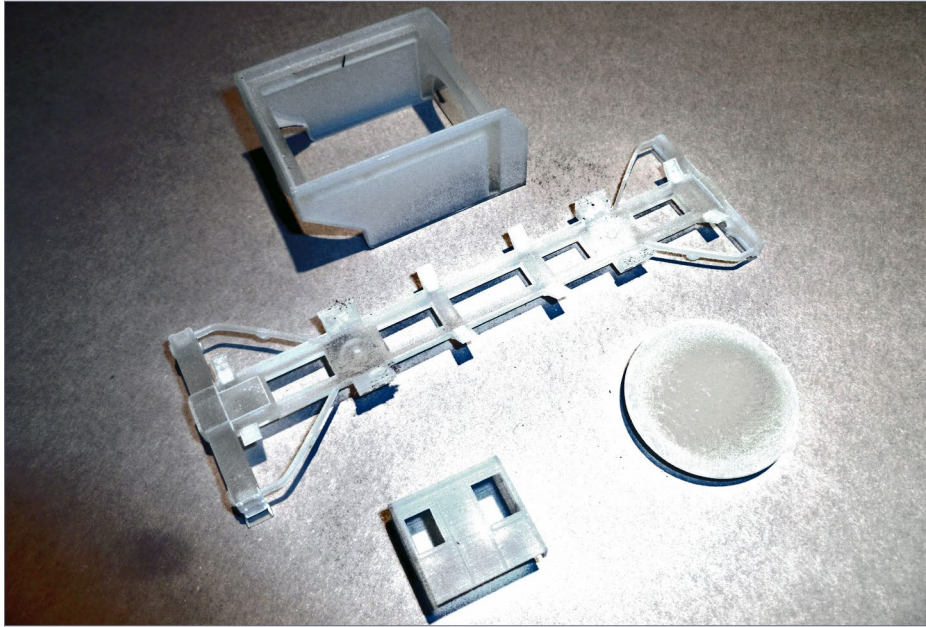


37. The tender underframe.

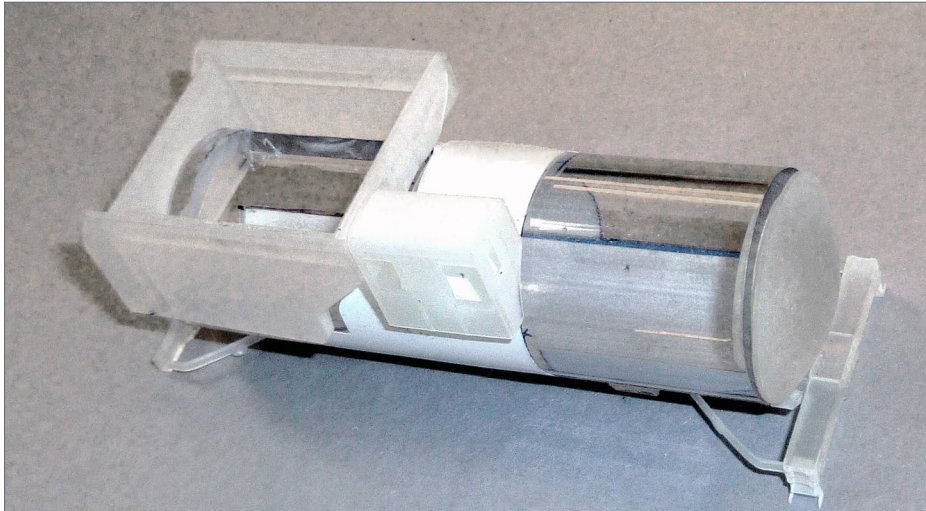
Yes, I said brass. The process should be familiar to modelers. The parts are first 3D-printed in wax, then the brass version is produced by the lost-wax process. The metal trucks and underframe give the tender appropriate weight and a low center of gravity. The mounting screws for the drawbar pin, trucks and coupler could be drilled and tapped in the usual way.

There is a size limitation to the 3D brass printing process. The underframe had to be printed in two pieces which I soldered together [41, 42]. At the front portion of the frame I also created an opening to allow a sugar cube speaker to be placed above it.

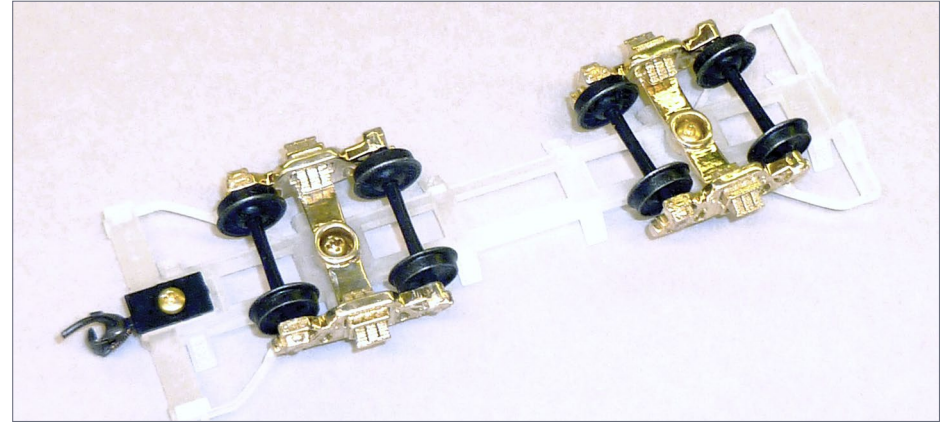




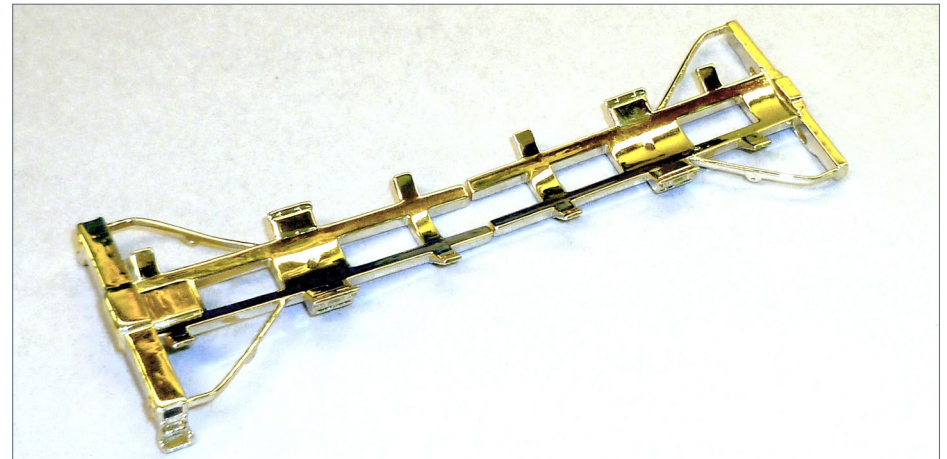
38. The tender parts 3D-printed in high detail acrylic.



39. The acrylic 3D parts are test-fit to the water tank.

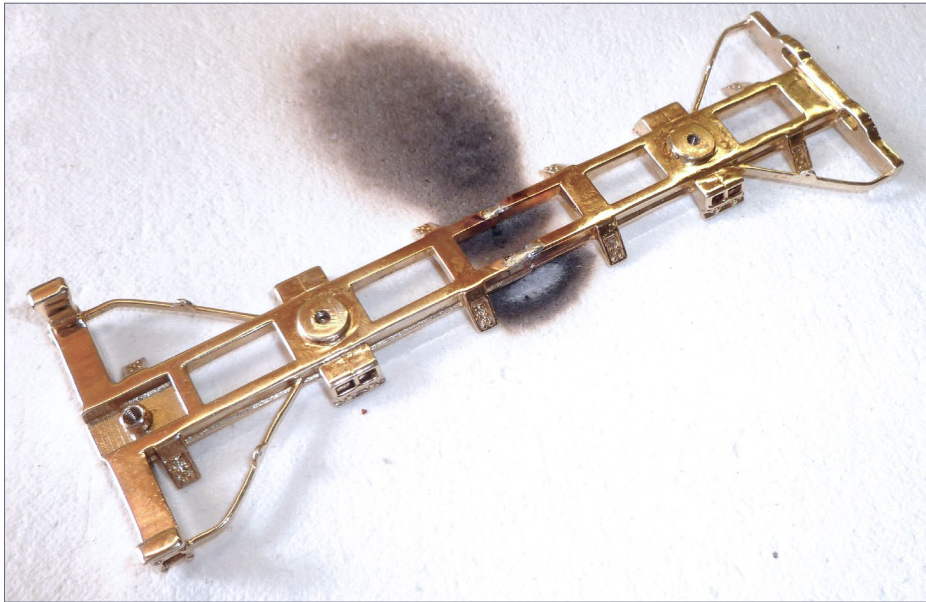


40. Coupler and trucks are test-fit to the acrylic underframe.

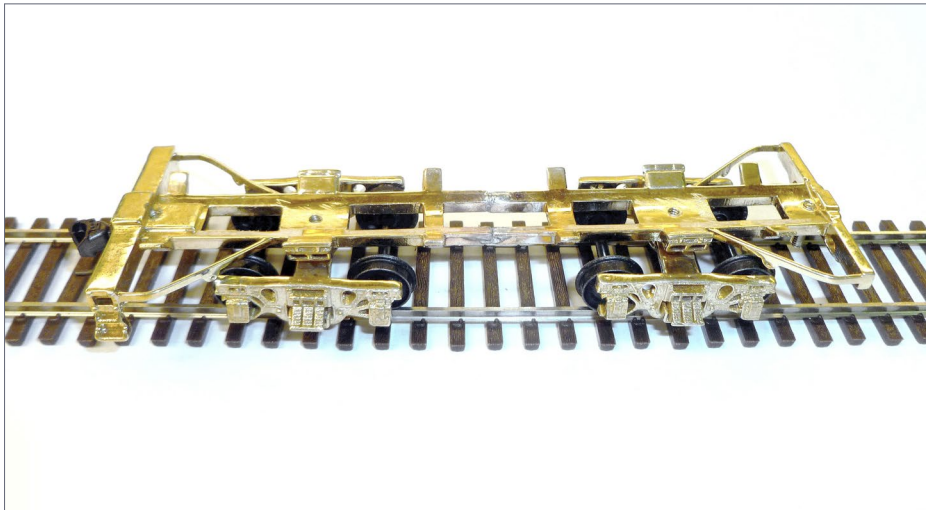


41. The underframe printed in two pieces in brass.





42. I torch-soldered the underframe pieces together.

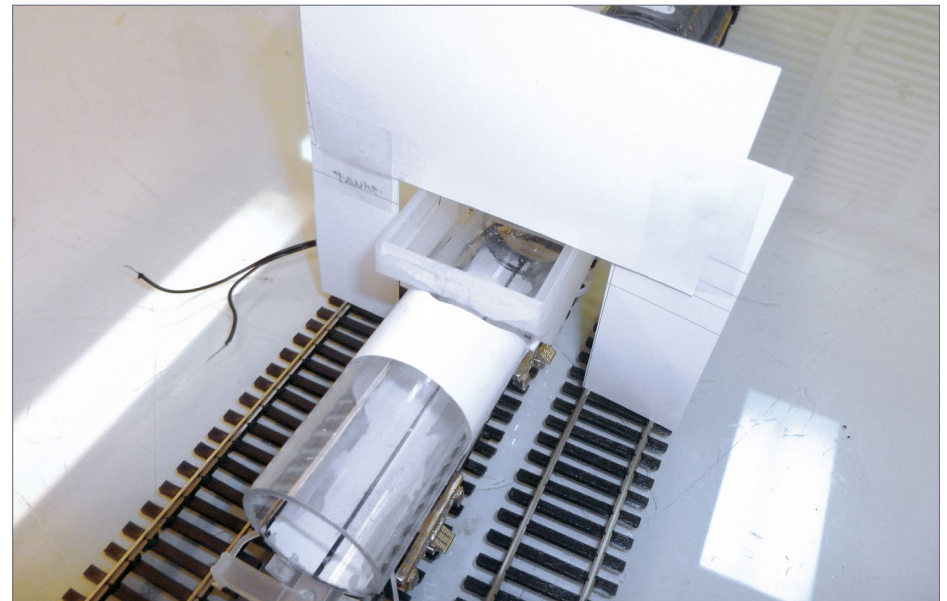


43. The underframe with coupler and trucks attached.

I assembled the tender and frame so I could check and verify coupler height and overall tender height [44, 45]. I was pleased at this point that the locomotive would run close-coupled with the cab apron resting prototypically on the front deck of the tender.



44. I checked the coupler height and cab clearance at this point in the model construction in case adjustments are necessary.



45. I made a gauge made of scrap styrene to check overall tender height.

Precision Scale brass parts were installed to the front and top of the fuel bunker. I made the top of the fuel bunker removable to allow access for installing the speaker and decoder. The tender ladders, re-rail frogs, and handrails are brass. Rivet detail was added using MicroMark rivet decals. I was most impressed with their final appearance. They show well through the final painting.

Before applying the rivet decals, I sprayed the tender with a light coat of Scalecoat MofW gray to make the clear portions of the tank more visible. The wood deck for the rear of the tender was laser-cut from 1/64" plywood [46].

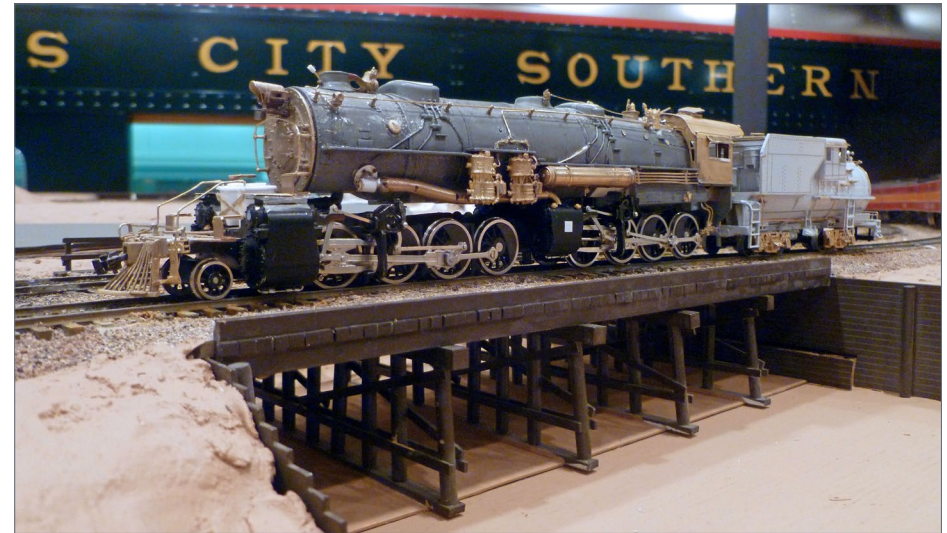
TO THE PAINT SHOP

Now the detailing was completed and the locomotive basically was ready for painting. With my level of painting skills, I was not up to attempting my first steam locomotive paint job on an articulated 2-8-8-0! Fortunately, I have a good friend who has those skills.

However, there was one large problem I had not addressed. The locomotive wouldn't run! Shortening the locomotive meant the drive train had to be shortened, too. All my attempts to solve this problem were unsuccessful. The motor and drive train would run when I held it in my hand and it wasn't attached to the locomotive. As soon as I attached it to the frame it would bind and would not run at all.



46. The rear tender deck.



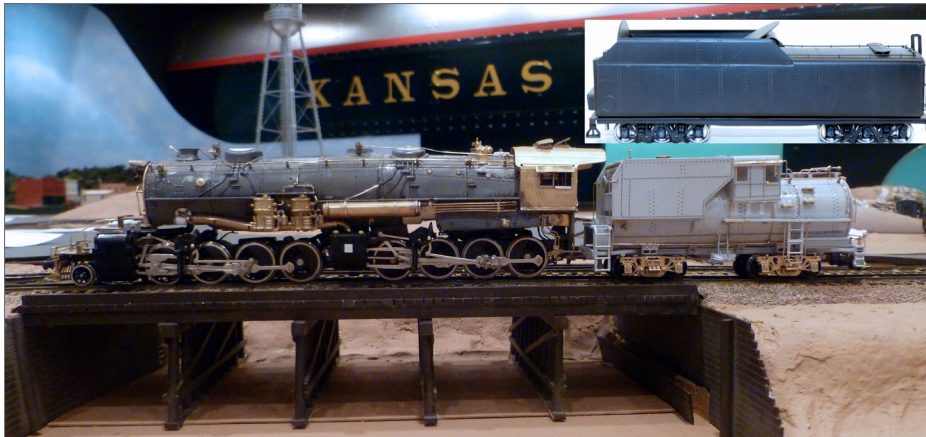
47. A look at the fireman's side showing the cross-compound air pumps and additional piping for steam and air lines.



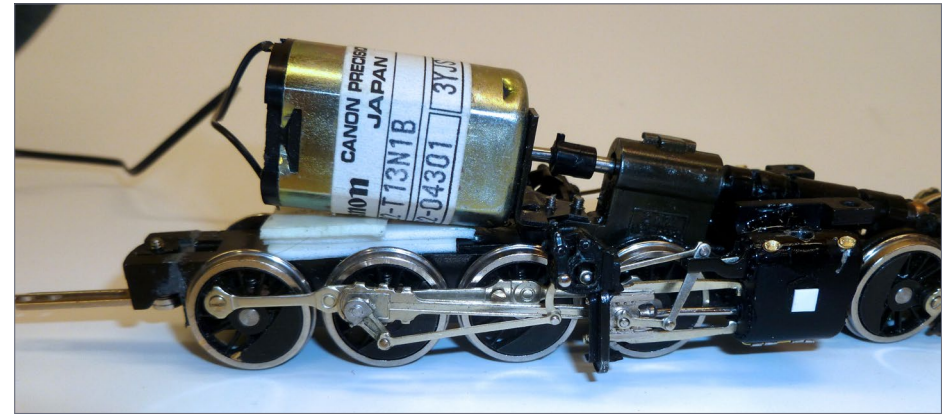
48. The tender details and rivets show clearly in an engineer's side view.

Thankfully the good folks at NorthWest Short Line were able to solve this problem. They discovered a bind in the valve gear when tuning up the front engine. After fixing the bind, the back engine was tuned and both ran smoothly. They provided a different motor and drive mechanism to fit the space. The results are beyond my wildest hopes. This complicated articulated is the best-running steam locomotive in my entire roster. It runs so slowly and smoothly my granddaughter had to point out to me one evening that it was actually moving when I thought it was stopped!

I sent the locomotive to my good friend Bob Gordon, of Canada, for painting. I shuddered to think of the challenges in painting a locomotive that was partly made of brass, cast metal, acrylic, styrene, wood, and 3D-printed plastic parts. But I heard no complaint from him! His work as usual was superb. The sugar cube speaker sounds great, the TCS WOW Sound decoder has that great quilled whistle feature on F4, he added firebox flicker as well. I was able to get rid of the coal-shoveling sound on this oil-burning locomotive and substituted the appropriate twin cross-compound air pumps for the single air pump sound.



49. The original tender image is inserted in this photo to illustrate the dramatic tender changes. It's difficult to tell this started as a USRA locomotive.



50. My humble attempt to design a replacement drive train was not successful.

After all that effort, I have a unique KCS steam locomotive that looks gorgeous, sounds amazing, runs like silk, and is likely the only one of its kind in the world. Please contact me if you know of another! All this is just to show you the project challenges I faced and how I solved them. I encourage you to consider creating one for yourself, if nobody made the model you're looking for.

Come to think of it, no one has ever modeled the husky KCS E4 class 2-8-0 with its Boxpok driver and oddly shaped Vandy tender. Hmmmm ... ☒

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contacting MRH**
(in case your spam filters
eat our email response)





51. KCS 753 shows off the fireman's side on my HO scale layout.



Small Coaling Station

MRH Running Extra | March 2020

DAVID MICHAEL REES-THOMAS builds a common steam-era facility ...

SMALL COALING STATION | 2

1. My steam locomotive fleet needed a small coaling facility. I found a Canadian Pacific prototype that fit the needs of my HO scale layout.

★★★★★
RATE THIS ARTICLE

THE TOWN OF SULLIVAN ON MY FREELANCE track Canadian Pacific Purcell Sub includes a modest engine terminal [1]. My engines are all coal-burners and I needed a fuel facility that would not be out of proportion to the rest of the yard. The structure would have to fit between engine service tracks eng1 and eng2 on the layout diagram [2] and follow a CPR prototype.

Paul Larsen's "Branchline Bucket Coaling Station" in the June 1955 Model Railroader described a facility that sounded interesting but it wasn't CPR and wouldn't fit my space. I posted a request on a forum and received a couple wonderful replies. Apparently, CPR did have suitable small coaling stations. I even had my choice of three quite different designs, one each in Chipman, New Brunswick; Waltham, Quebec; and Teeswater, Ontario [3].

PROTOTYPE

What's a bucket coaling station? All the examples I found, including the one described in MR, used a bucket made from a steel cylinder roughly three feet in diameter and three to four feet high. A flat plate covered the bottom and was hinged at one side. A simple latch opposite the hinge secured the bottom plate for loading. The other essential part was a crane to lift the bucket up and over the tender.

The local section crew likely was responsible for keeping the buckets filled using a shovel. A full bucket would be hoisted up and swung over the tender. The fireman standing on the

SMALL COALING STATION | 3

tender knocked out the latch with a hammer or metal bar, the bottom plate dropped, and a couple yards of coal poured out.

The coaling station at Teeswater [3] comprised an elevated platform about 40' long and 10-12' wide, buckets, and a crane. I estimated the floor of the platform to be five or six feet off the ground with sides about four feet tall. My platform was selectively compressed and turned out to be 10' wide and 36' long.

A closer look revealed the Teeswater coaling station used a crane like that in the Scale Structures Ltd. "V&T Jib Crane" kit [4]. I had one lurking unbuilt in one of my drawers.

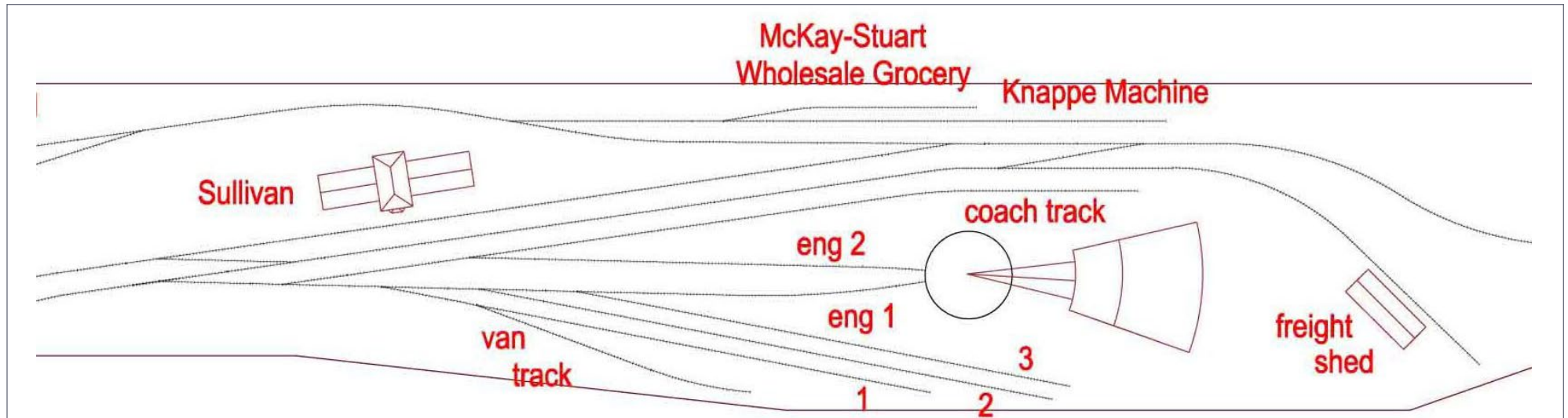
BUILDING THE PLATFORM

I used guesswork and imagination to design and build the model platform [5]. Lumber sizes depended on what I had on hand. I pre-stained the lumber and white glue holds it all together.

SMALL COALING STATION | 4

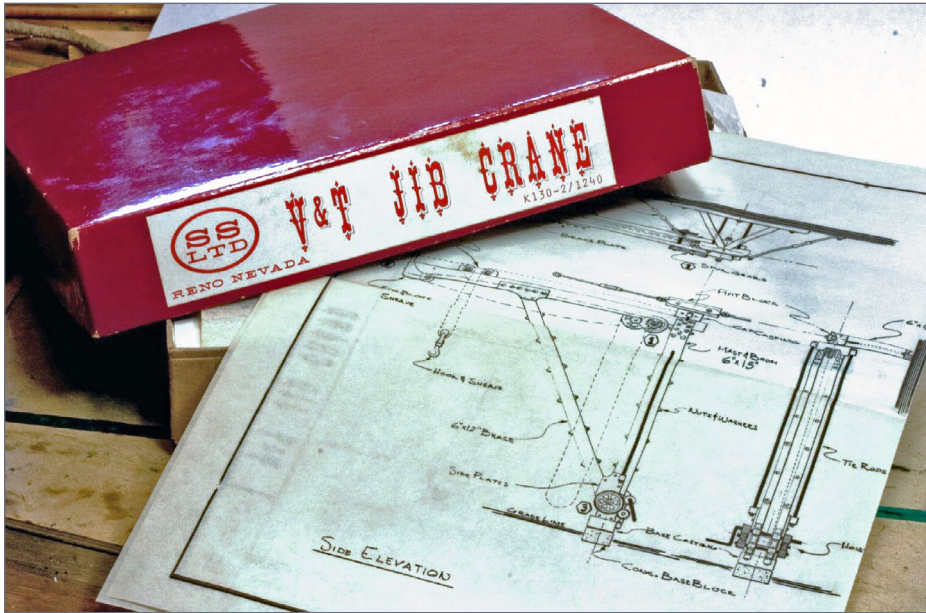


3. CPR coaling facility at Teeswater, Ontario. Image used by permission of the Old Time Trains website www.trainweb.org/oldtimetrains/CPR_Bruce/BRANCHES_2.htm



2. The Sullivan yard track plan has several small terminal features and serves a few local industries. The coal facility needs to fit between the eng 1 and eng 2 tracks.

SMALL COALING STATION | 5

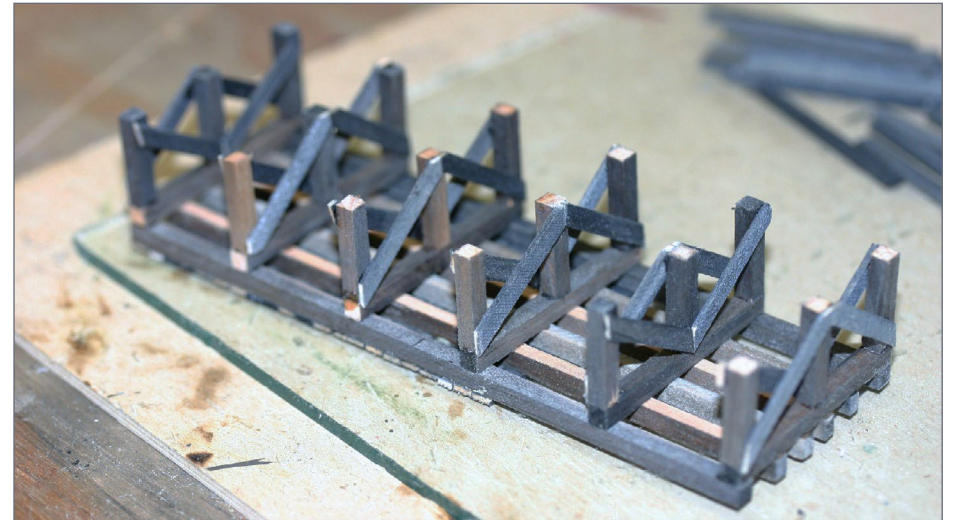


4. Scale Structures Ltd. "V&T Jib Crane" kit from my stash. The original price tag of \$9.25 was still on the box. The kit is currently available but the price has increased quite a bit.



5. The coaling station platform is a box on legs.

SMALL COALING STATION | 6



6. I used 1/8" square stripwood for the outer stringers, crossmembers, and legs.



7. I used 1/8 x 3/32" stripwood for the inner four stringers. Diagonal braces, sides, and decking were 1/32" or 3/64" stock of various widths or the equivalent in HO dimensional stock

CRANE

The SS Ltd. crane is about 24' high with a 20' boom. I built it according to the kit instructions [8]. The castings are typical of SS Ltd.: beautifully detailed but somewhat fragile. I painted the crane with Floquil Graphite and picked out winch details with red or gunmetal colors. The chain for the hoist came from a 40 link-per-inch sample in the scrap drawer. You may use another crane or simply choose to scratchbuild one. Tichy Train Group has a model (8007) that might be suitable and sells for less than six dollars.



8. The SS Ltd "V&T Jib Crane" and supporting braces are mounted on the platform floor.

I fashioned braces to support the crane using pre-weathered code 40 rail. The top pivot of the SS Ltd. crane is a T-shaped casting [9]. I removed the web and head from the last ¼-inch of both ends of each brace, drilled #70 holes near the ends, and bent the ends horizontal. I drilled matching holes in each leg of the top pivot. Using an NBW (nut-bolt-washer) casting to locate each brace, I applied gap-filling CA to secure the top. Similarly, CA was used to fasten the lower end of each brace to the platform deck.

BUCKETS

I chose to build the coal buckets out of brass strip and parts [10]. The first thing I did was to turn a three-foot diameter form out of half-inch dowel chucked in the drill press.



9. The top pivot block and support block where the code 40 rail supports are attached.

SWEAT SOLDERING

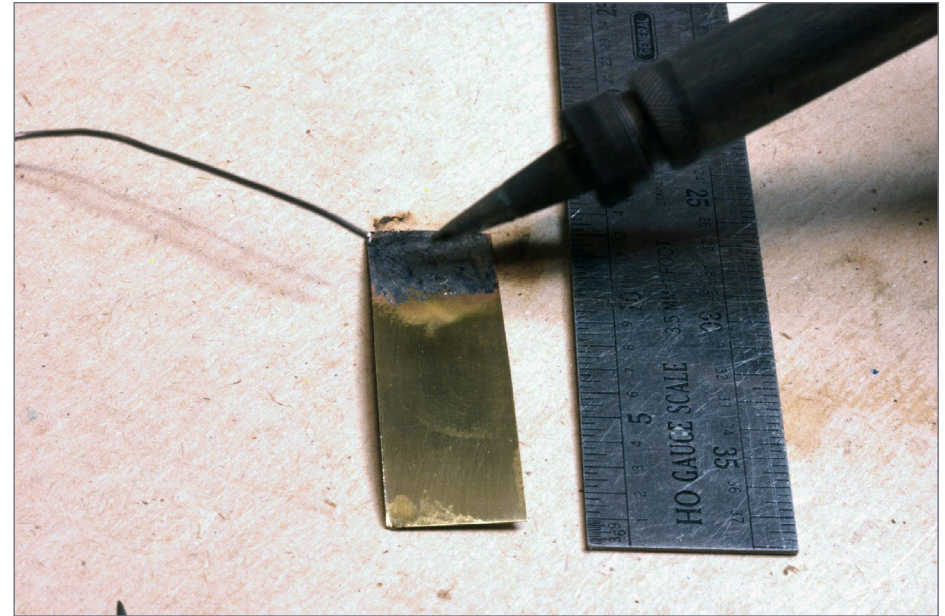
I relied on an old technique called sweat soldering to make the buckets. Sweat soldering ensures a strong joint with a minimum of solder. Sweating involves applying a minimum of solder to one or both surfaces of the joint, placing them together, and heating from the back. Work on a scrap piece of tile or hardwood so you don't damage your workbench.

I use an old Ungar Controlled Soldering Station for modeling and electronics soldering. I use a fine pointed tip or a 1/8" chisel tip, depending on the job, and a fine rosin-core solder, about 1/32" wide, for small work. I'm a firm believer in applying minimal soldering paste - NOT acid flux. I wouldn't want to do any job without my curly-brass sponge for cleaning the soldering iron tip.

Keeping everything as clean as possible is one of the keys to successful soldering.



10. Here's my completed brass coal bucket with latch bar and latch at the bottom.



11. I cut a scale 3 x 12' piece of 0.005" shim brass and tinned each end on opposite sides.

I used a strip of brass shim to form the body of a coal bucket [11]. The long length makes the ends overlap when it's wrapped on the wood form. I cleaned three scale feet on one end of the strip and apply the tiniest trace of flux. Then I cleaned the tip of my iron on a curly-brass sponge, touch the iron to the solder, and apply it to the brass shim. I smeared the solder over the area that will become the lapped joint, leaving a very thin layer of clean solder. I turned the strip over and repeated the process at the other end of the strip, keeping everything as clean as possible.

After wrapping the brass strip on the wood bucket form, stainless steel wire is wrapped around the work to hold it in place [12]. With the two tinned surfaces in contact, I applied the hot iron to sweat solder the form together. The joint is made in just a few moments. I used the same technique to install the bucket rims [13].



12. I wrapped the shim around the wooden form to make the bucket sides. I secured the shim stock with a piece of stainless steel wire and applied the iron to solder the tinned ends.



13. The top and bottom rims of the bucket were trimmed with 0.010x0.040" brass strip and sweat soldered in place.



14. Additional pieces of 0.040" strip formed the bucket hangers. These were drilled with a #68 bit to accept a bail shaped from 22AWG copper wire.

The latch bar, another piece of 0.040" strip, extends from the hinge to the latch on the inside of the lid. It fits into a couple of slots filed on opposite sides of the bottom edge of the bucket and protrudes a scale 6" at either side. Additional strips represent the latch and hinge. I cut the bucket bottom from 0.010" shim brass, trimmed it approximately to size, soldered it in place, and finished it with a file [15].

After about the fourth bucket I realized I could follow the same procedure in styrene with less effort and fewer burned fingers. The whole project could be built in styrene if that's your preferred material.

CONCLUSIONS

This has been a very satisfying project for me on several levels. I now have a Canadian Pacific prototype engine coaling facility that is small enough to look right on my layout [17]. Second, I discovered my older scratchbuilding skills aren't completely

gone. And finally, I've managed to build one more of the lovely SS Ltd. kits that have been sitting in a drawer for the last 40 years.



15. A completed coal bucket showing bottom, latch, and (barely visible) end of latch bar.



16. I built one bucket with the latch open and the lid hanging down to represent a load of coal that was just delivered.

DAVID REES-THOMAS



David was born in Vancouver, British Columbia, in 1945 and became hooked on wind-up trains by age four. He graduated to American Flyer, and then HO scale.

He attended Queen's and University of Waterloo in Ontario in the sixties, and met and married his wife.

In 1974 he moved to northeastern Ontario where he walked into a job as a spare operator with the Ontario Northland. He spent four years with the ONR, mostly staying on the spare board for the variety of jobs. In that period he completed a small history, "Timber Down the Capilano," for the BC Railway Historical Association.

In 2005 he retired to Saturna Island (pop. 325), not far from Victoria, BC, with his Coast 34 sailboat. He claims that his island home was designed around the 14x20' basement train room.

Conceptually the layout is identical to its predecessor in West Van: strictly point to point, with a branch line ending in a wye. Two layout modules made the journey to Saturna. Scenery is 90% roughed in, but only 20% complete, as scenery terrifies him. It's been completely operational for several years, although operators on Saturna are few and far between.

Apart from model railroading and sailing, David operates a small water taxi, and serves as an attendant with his local volunteer ambulance service. ■





17. Canadian Pacific 436, a member of the D4g class of 4-6-0s, finishes coaling at Sullivan on my HO scale layout. ☑

Modeling an SD20 using 3D-printed components

MRH Running Extra | March 2020

★★★★★
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EVAN NEUBEE *UPGRADES AN
ATLAS SD35 ...*

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WHEN MY FAVORITE ONLINE RETAILER HAD A closeout sale on Atlas N scale sound-equipped SD35s, I took notice. While I already had an SD35 on my I&M Rail Link layout and was not looking to add another, it seemed like an opportunity to upgrade the chassis to an ESU LokSound-equipped DCC unit. The unit on the layout was an early-2000s DC version with gearing removed so it could be run as a dummy.

It was a good decision. Atlas did a great job on their power unit upgrades. After my purchase, I swapped the power chassis into my existing unit, and I've been very pleased with the results. This is probably the most reliable locomotive currently in my fleet. The wheels stay very clean, which is critical with DCC.

The sound is great, with my favorite feature being LokSound's dynamic brake feature. They did a great job on this, but it is a long sound cycle, so you must plan when you want to use it, especially on small layouts.

MODIFYING THE SHELL

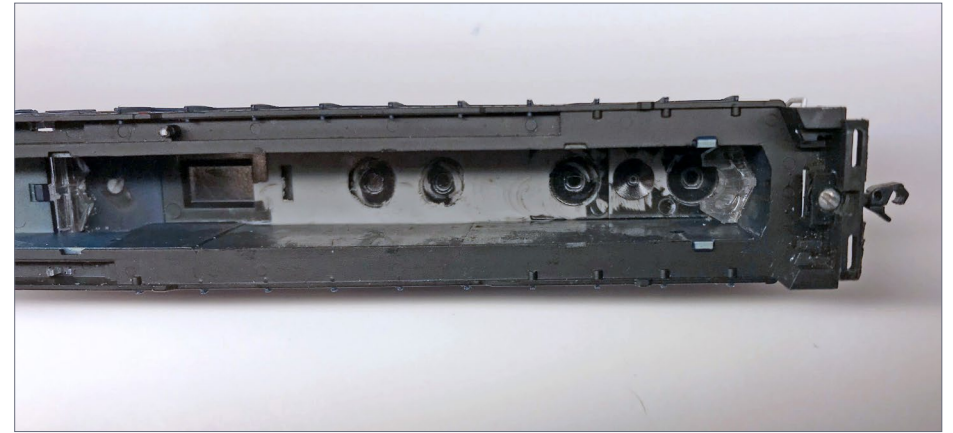
The shell did not fit as it should because of interference with the sound decoder. I milled a small portion of the inside of the shell with a Dremel motor tool [1]. I worked carefully, as I didn't want to poke the tool's bit through the top of the diesel shell!

I was able to correct the rest of the issue by adding spacers to the top of the couplers to correct the height [2]. The body is still a touch high, but not too noticeable.

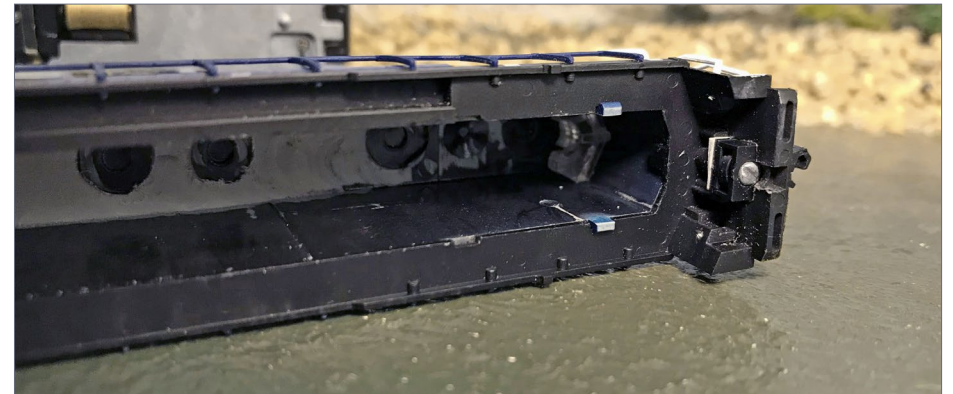
When I purchased the model, I decided to make a replica of an NREX SD20. IMRL was leasing a number of these units during my modeling era, so it was a good fit.

Please note this model depicts the less-common variation of the SD20 that was based on the SD35 chassis. More common was the SD9/SD24 style. Refer to the sidebar for details.

The locomotive is beastly looking, with the Paducah first-generation style short hood and stealth black paint [3]. Based on other colorful nicknames for these units such as Skunk and Rent-a-wreck, their reliability may have been less than stellar. Nevertheless, it would be a good model.



1. The inside roof of the stock SD35 shell was milled to remove material and reduce interference with the sound decoder.



2. Styrene shims were added to the couplers to lower them to the correct height.



3. It is summer 1999 at Sabula, Iowa on my layout, where we see NREX SD20 2038 as trailing power on a multiple unit consist. Not much to love here, just brute horsepower.

3D PARTS

Since I have access to 3D modeling software, and somewhat limited modeling time, I decided to design a kit for this conversion that I could have 3D-printed. In reviewing the prototype photos, I would need a new short hood, as well as a non-dynamic hatch with a GP38 style filter box and four-stack liberated exhaust.

I started by measuring the width of the Atlas shell, so that my components would fit correctly. The non-dynamic hatch fits down to the top of the hood doors, so I used that as a sight line to hide the seam of the new component. I estimated the size of the filter box and added the side bell.

Using an old Atlas SD9 as a reference guide, I 3D-modeled the four exhaust stacks, and referenced the front nose shape with the front center flat edge.

The parts were uploaded to Shapeways.com and printed in their smooth fine-detail plastic [6]. Here's the link for the conversion kit.

ABOUT THE SD20

In 1967, the Illinois Central embarked on a major rebuilding program at their Paducah, Kentucky facility. Over the course of 16 years, the IC rebuilt 708 locomotives, mainly from GP7s and GP9s. Also included in the program was the production of IC-designed SD20s, rebuilt from SD24s [4] SD9s, SD24Bs, and four SD35s [5]. The SDs were completely rebuilt with new Paducah-built cabs and short hoods, a rebuilt engine, and upgraded electrical systems. Other work included the removal of the turbo systems and dynamic brakes.

Interestingly, several other railroads de-turboed SD35s, in all cases for use as hump unit power.

- SP rebuilt and de-turboed 10 units, derating the engines from 2500HP to 2000HP, while maintaining the dynamic brakes.
- B&O removed the turbos, dynamic brakes, and center radiator fans on five units, reclassifying them as SD20-2s.



4. NREX 2032 at Princeton, Iowa, on the IMRL, 5/22/1999. This unit is rebuilt from an SD24. Compare the radiator section and underframe with the unit in [5].

ABOUT THE SD20 *CONTINUED* ...

- SCL removed the dynamic brakes from eight units. They also replaced the engines with smaller 1500HP engines, classifying their units as Model H15s.
- L&N de-turboed two units, similar in appearance to the SP conversions.

Sources:

- “Diesel Rebuilding at Paducah” by Clifford J. Downey, Sept/Oct 1999 issue of *Diesel Era*
- *The Contemporary Diesel Spotter's Guide* by Louis A. Marre



5. NREX 2038 at Princeton, Iowa, on the IMRL, May 22, 1999. This is one of four units rebuilt from SD35s, and the basis for my N scale model.

www.shapeways.com/product/CMAZ63NKH/sd20-conversion-kit-for-atlas-n-scale-sd35?optionId=103190713&li=marketplace

CUTTING THE SHELL

The next step was to modify the Atlas shell. I used a Dremel motor tool with a Dremel milling frame to remove the dynamic brake blister. By setting the height under the mill to the exact height of the top of the doors, I got a nice cut needing little cleanup.

If you don't have a motor tool, use a razor or jeweler's saw to carefully cut the ends of the blister down to the top of the doors. Then use a drill and a small bit (1/8" or so) to drill a series of holes along each side. Use a hobby knife to cut between the holes to remove the large piece. Then clean up with a hobby knife and file.

To remove the front short hood, I used a razor saw and cut vertically just ahead of the recessed slot that the cab fits into [7].

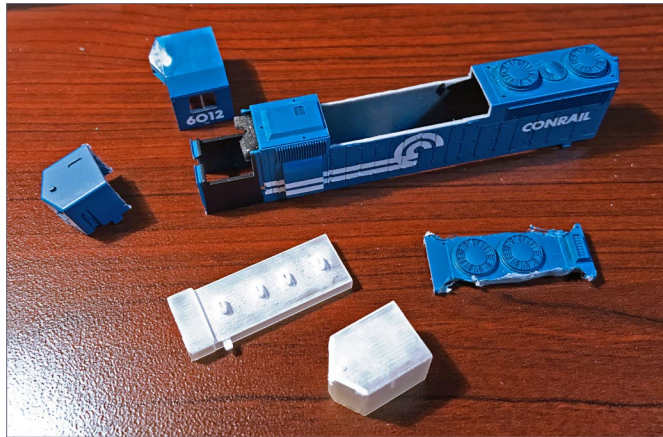


6. Raw 3D-printed components, printed and purchased through Shapeways.com.

PARTS FIT IN PLACE

After cutting and cleaning up the shell, I test-fit the 3D-printed components to confirm everything sits true and square [8].

This project was a learning experience with Shapeways detail plastic. The parts come with a waxy residue on them. This must be removed thoroughly or paint will not dry properly. Various degreasers can be used, such as automotive degreaser available at parts stores, white spirit paint thinner, or Goo Gone.



7. Body shell modifications after milling and cutting are complete.



8. A test-fit prior to gluing confirms that everything fits in place as intended.



9. Front pilot reclaimed from an Atlas SD60M shell solved the railing, anti-climber, and plow part of the puzzle all at once.

I have limited experience here on what works best, so test a small interior surface to ensure chemical compatibility. I used Goo Gone, but I still had some issues with painting. Next time, I'll clean more thoroughly. After the parts are cleaned and dry, they can be glued in place.

Next, I worked on the front pilot area. When these units were rebuilt, an anti-climber was installed on the front. This is necessary on the model, because the short hood is nearly flush with the front railings.

I had an Atlas SD60M shell I got from eBay for \$10, so I used that. This was a good solution for me because it solved the issues of new railings and a front plow all at the same time. I removed the frame section from the SD60M shell, cut off the front pilot face, and sanded the back smooth. On the SD35 frame, the front face was sanded smooth [9].

I test-fit the pilot, then glued it in place with CA. Use care that you get it aligned straight and centered.

In comparing the plow with prototype photos, I could see the SD60M plow was too big. Since it is plastic, I nipped the top flanges off to shorten it. I also used a file to notch the lower outside corners, comparing with the photo as I went.

That completes the main work on the shell. Other details can be added. I filled the horn holes in the cab roof and relocated the horn near the center stacks. Additionally, the upper headlight holes were filled-in and sanded smooth. Check your prototype photos for other details you may want to add at this time [10].



10. The final parts assembly, less front side railings and a few other details.

CHECKING THE PROTOTYPE

I found a couple of other things that are not 100% accurate but not worth the effort to upgrade. The front battery boxes are a little different, as well as the front side railings. Also, since the battery boxes are part of the frame and not the hood molding, it would have been more work to make everything come together cleanly. I did not want to attempt custom railings, so I left it all alone.

Another thing I decided to leave off was the rear brake ratchet. This could be salvaged from the short hood that was removed from the original shell, which is conveniently a separate piece, but then the frame would need to be milled to clear the protrusion into the shell.

My fundamental modeling philosophy has changed over the years. I used to spend much more time counting rivets. Now my goal is to capture the look and feel of the prototype. It doesn't have to be perfect. Layout lighting is not always great. When operating, I just don't notice those fine details. It's all a matter of personal preference.

With the shell complete, I test-fit it to the old power chassis left over from the original SD35. Everything fit OK, except for a small nubbin inside the short hood area that locked the chassis in place on the old shell. I smoothed the nubbin down flush with a file [11].

TRUCK DETAILS

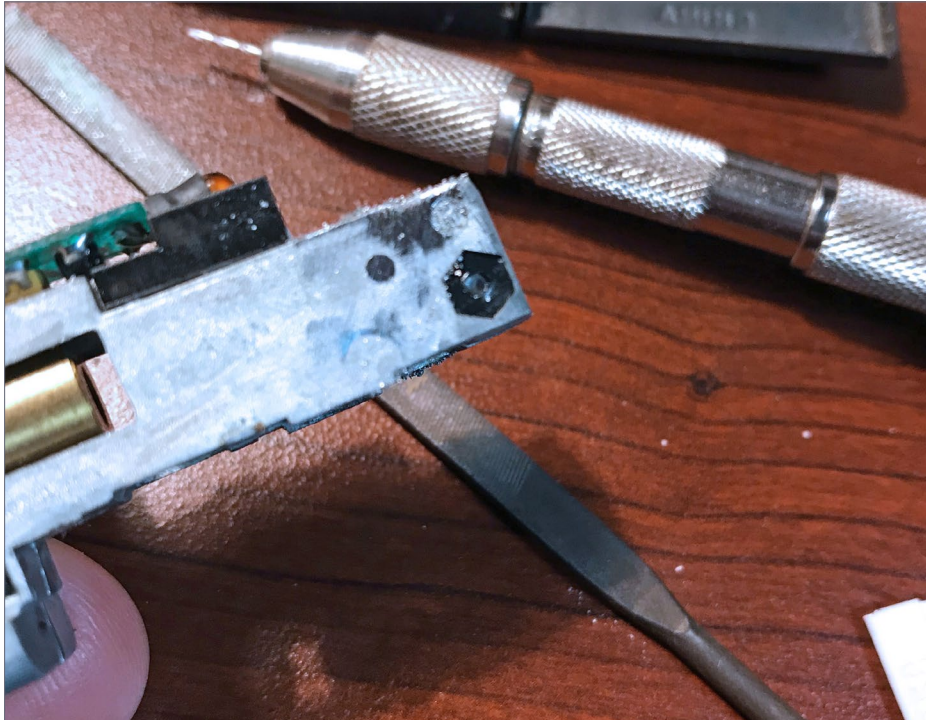
I compared the model trucks with the prototype photo and could see some differences in the lower brake shoe bracket area. I am not a truck expert, so I used nippers to remove some extra bracing until it looked right [12].

PAINT, DECALS, WEATHERING

The model was now ready for paint. I have an airbrush, but the cleanup is always a chore. Since the loco color was straight black, I painted the model with a spray can.

Decaling is one of my favorite areas of the hobby. I again referred to my prototype photo, and utilized several different sheets of decals:

- Microscale 60-528 Illinois Central Hood Diesels (1988-1999)
- Microscale 70102 Lettering (for NREX cab lettering)
- Microscale 60-1180 CSX Diesels (2002+) (for long hood warn- ing labels)



11. Minor filing was required on the short hood end of the frame to clear the new 3D-printed nose.



12. Side-by-side truck comparison. Factory SD35 truck is on the right, and the modified SD20 truck on the left (minus the middle brake cylinder and brake shoes).

I sealed the model with Testors Dullcote after decaling, then used artists oils for the weathering. To simulate the fuel spills on the fuel tank, I brushed Testor's lacquer Glosscote onto the sides of the fuel tank.

At this time, I do not have a decoder or lighting installed in this unit. These units were typically run as trailing power, and I didn't want to invest in a decoder. I removed the worm gears and pickup leads from the unit to make it a dummy.

Because this is a unique unit, a sound decoder would be a great addition, but that will have to wait for another time.





13. Conductor-side view of the finished unit, showing the unique placement of the bell, the Paducah short hood, and the liberated exhaust.



14. A nose-to-nose comparison of the SD20 at left and stock Atlas SD35 on the right. ☒

EVAN NEUBEE

Evan derives his pen name from his hometown railfan headquarters, the Avenue B Crossing on the CNW mainline. Originally an HO scale C&NW modeler, 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 is permitted in HO scale.” says Evan.

Factory-painted items in IMRL paint are few and far between, which is fine with Evan. “I enjoy painting, patching, and weathering rolling stock. It’s a fun challenge to find acceptable pre-painted models that are appropriate for patched-out IMRL units.”

The I&M Rail Link (IMRL) was a short-lived regional in the Midwest, operating from 1997 to 2002. It was owned by the Washington Corporation and shared the same paint scheme as sister road Montana Rail Link. ■





Extreme weathering

MRH Running Extra | March 2020

NICK CAMPBELL shares his techniques on a covered hopper ...

THIS ARTICLE IS ALL ABOUT EXTREME WEATHERING.

I chose a photo of a covered hopper from The Rustbucket forum as inspiration. A big shout-out to Matt Guarrant for the awesome flicks on that site! I just had to model it after seeing those photos. There is fading, bleed-through, ghosting, patches, heavy grime/dirt, rusting, and spillage. What more could you ask for? *[Editor's note: Use the zoom functions on your Adobe Reader to get a better look at these images.]*

I only had an image of one side of the prototype hopper [2] but used an image of the other side from a different but similar hopper [3].

EXTREME WEATHERING | 2

1. Yes, it's a model. Follow along to learn weathering techniques.

★★★★★
RATE THIS ARTICLE

The techniques I use are a continuation, replication, or modification of techniques I've seen from other artists, many of whom are found on The Weathering Shop website (www.theweathering-shop.com). One modeler is Gary Christensen. Without learning his "color transition fade," I would have been at a loss on how to approach weathering this hopper. The HO scale model is produced by Tangent and looks great fresh out-of-the-box [4].

MODEL PREP

I washed the model with mild dish soap and a soft brush. When dry, a spray of Testor's Dullcote gave surface tooth to the model.



2. Weathering is more than just grime, and this covered hopper has several features to convey on a model. Note the paint-outs, new lettering, reflective stripes, and more.

EXTREME WEATHERING | 3



3. I didn't have photos of both sides of the prototype, so I used this image of another car to inspire my work.

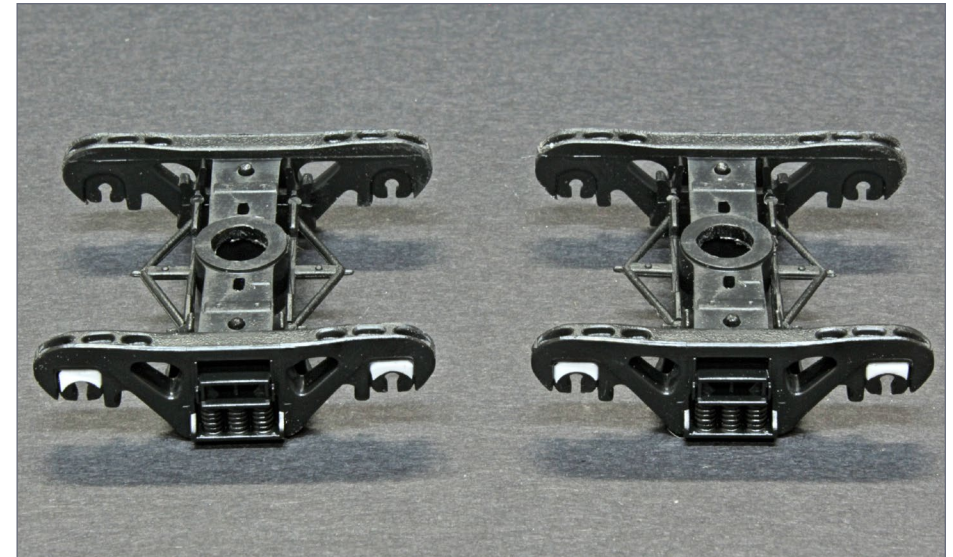


4. A new Tangent hopper in factory paint is my blank canvas.

EXTREME WEATHERING | 4

Also, after the washing and drying, I never touch the model again with bare hands. I wear latex gloves until after it's completed and a final sealing coat is applied. Skin oil and dirt on fingers will affect the results. I learned this the hard way. After the Dullcoat dries, I start on the wheels and trucks first.

Oddly, although Tangent has wonderful detailing all over this model, they install wheels that have no proper back profile. The wheels are highly visible through the end cages, so I did not use the stock trucks or wheels. I opted for a pair of Athearn Genesis trucks with the semi-scale code 88 tread width. The downside to these trucks is where the bearing shows. On top of the round end axle cap on a proto truck is a deep void that looks bad on the model trucks. I suspect they did this to avoid contact between the rotating endcap and the "bearing" detail. I decided to upgrade the detail [5].



5. These are my modified Genesis truck bearings.

EXTREME WEATHERING | 5

After washing the wheels, I use 800-grit sandpaper to rough-up the very slick surfaces. I do this so paint has a bit more grip on those metal wheels in case they slip off the rails. Few things are worse than chips of paint coming off the wheel to reveal a shiny spot constantly looping around.

After sanding, I mask the treads and needle bearings to prep for paint. I use Microscale's Micro Mask for this step. You must repeatedly turn the wheels so the liquid mask doesn't flow and puddle on the lower side.

PAINING TRUCKS AND WHEELSETS

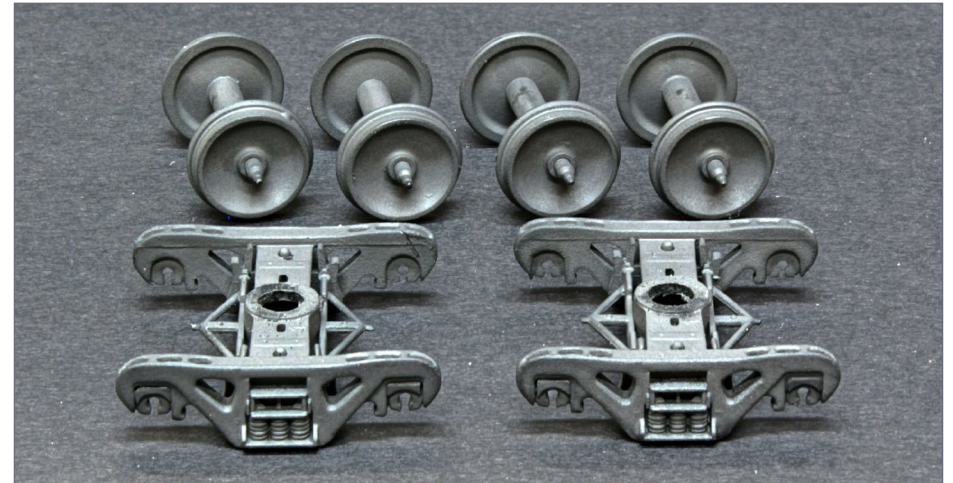
I spray the wheelsets with Rustoleum dark gray auto primer in a rattle can. I prefer the primer over Testor's Dullcote because it gives a uniform, dark color to the metallic wheels, and the black plastic trucks. This is a base coat to give the parts surface tooth for the weathering [7].



6. Compare the sanded wheels on the right to those that haven't been treated.

EXTREME WEATHERING | 6

Once primed, the weathering washes can begin. I make washes using colors to follow the prototype photos. For these parts, I used inexpensive craft acrylic paints available at WalMart and Hobby Lobby, thinned with tap water. I used burnt umber for the first [8] through fifth [9] washes. The sixth and seventh [10] application were burnt sienna. I finish with a wash of gray.



7. Trucks and wheelsets are primed and ready for weathering.



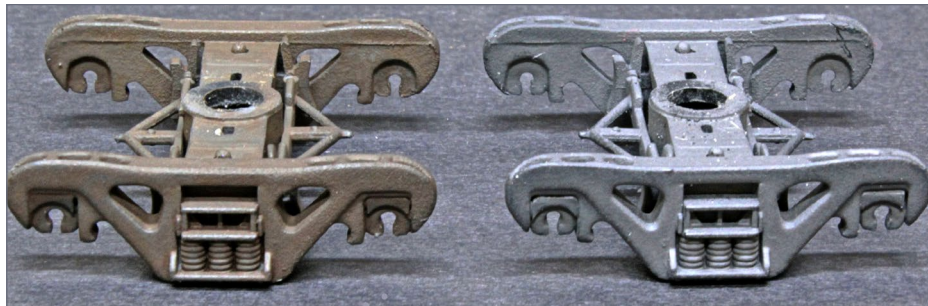
8. The first wash with burnt umber brings some grimy color



9. The wheelsets show more color after the fifth wash with burnt umber.



10. Burnt sienna was applied for the last two washes. I did not apply the washes to the wheel backs and axles, so you can see the color difference.

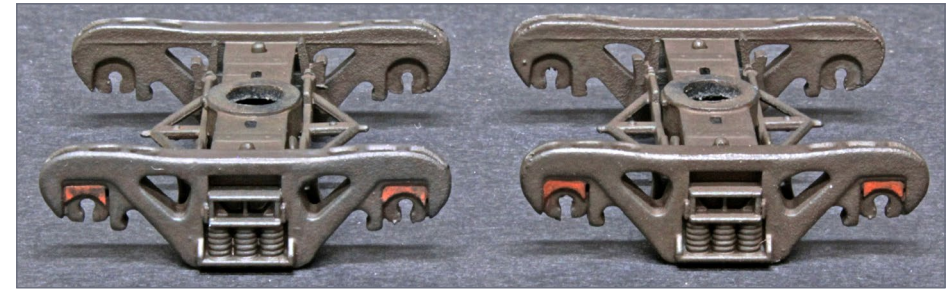


11. The trucks got the same treatment as the wheels. The truck on the left has a first burnt umber wash.

THE CAR SIDES

At this point I started on the car sides by removing the black fill around the yellow herald lettering. I used a fresh X-Acto blade and gently scraped off the black ink [13].

Once the herald work was complete, the fade could begin. This fade has several main hues of blues, greens, and light-purpleish colors. I started with very thin, light blue washes of craft acrylic paint. You can see the difference between the first and the second wash as it is being applied [14]. After several washes were applied, much of the lettering is covered [15], including the herald.



12. After a few burnt umber and burnt sienna washes, the bearings are painted.



13. I created a bit of unevenness as I scraped the black ink from the herald, but it will hardly be noticeable once the model is complete.

EXTREME WEATHERING | 9



14. I'm halfway through applying a second wash in this image.



15. The entire car side becomes light blue after several wash applications.

EXTREME WEATHERING | 10



16. I cleaned the herald with a damp toothpick after every few layers of wash.



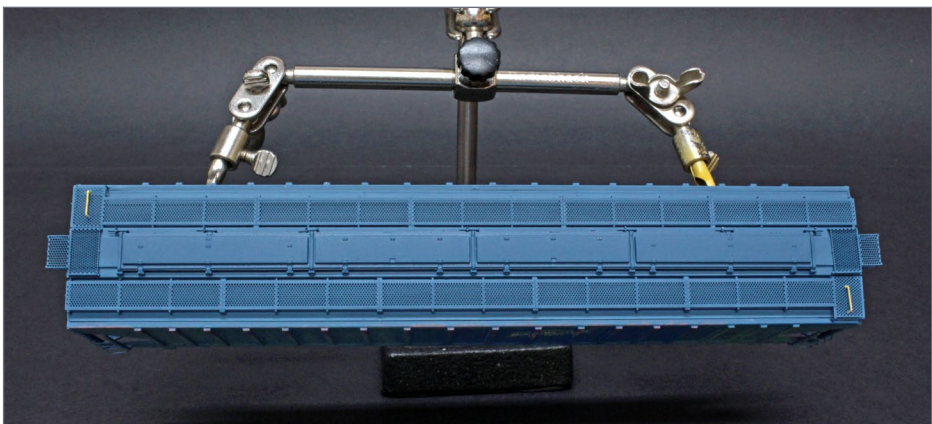
17. I applied more color washes, starting with dark blue.



18. A green wash changes the color tone.



19. An orchid color wash brings out some surface detail.

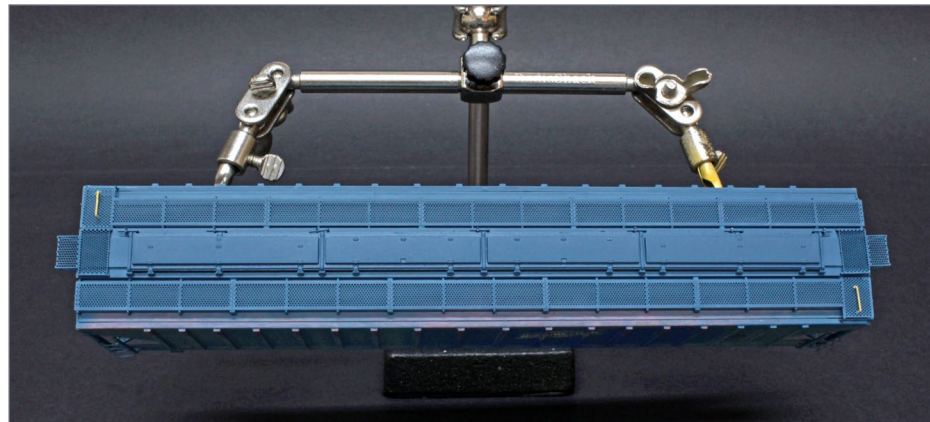


20. The roof after the first orchid wash.

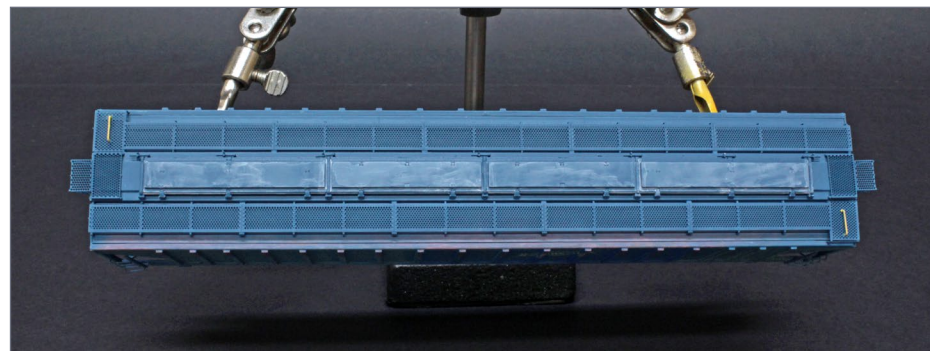
Roof

I started on the roof by applying several washes of orchid color as a base [20, 21].

Next up, the roof hatches were transitioned from blue to white using thin washes of inexpensive craft acrylic paint [22, 23].



21. Subtle color changes are apparent after the fourth orchid wash.



22. These washes are very thin. Here's a look after the first wash of white on the hatches. It doesn't seem like much, but after several applications the changes are noticeable.

EXTREME WEATHERING | 13



23. After the fifth wash the white color transition is completed.



24. Now, on to the other side. My first green color wash is subtle.



25. After four washes the green areas are opaque enough.

EXTREME WEATHERING | 14

I did a better job documenting my work on the other side of the car, and I applied a couple of different colors. I started with several light blue washes applied in layers, like the other side. A few washes of green were applied next [24-31].



26. The third color added was the orchid color used earlier to again represent the prototype's primer showing through the faded paint.



27. Next, I applied washes of orange and red over the orchid color to bring it closer to the prototype's color.



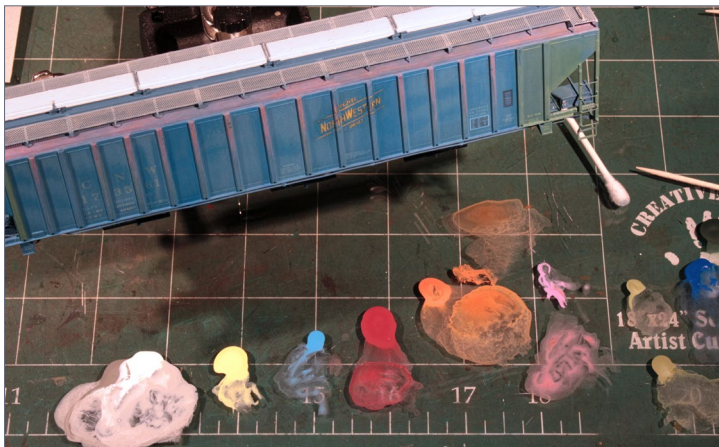
28. Dark green washes were applied over the lighter green areas to bring the color closer to prototype.



29. I used a sharp X-Acto blade to chip the paint on the ribs. The primer color wash was run down the sides of a few.



30. I added darker blue areas using several washes. These very thin applications were almost dry-brushed onto the car side.



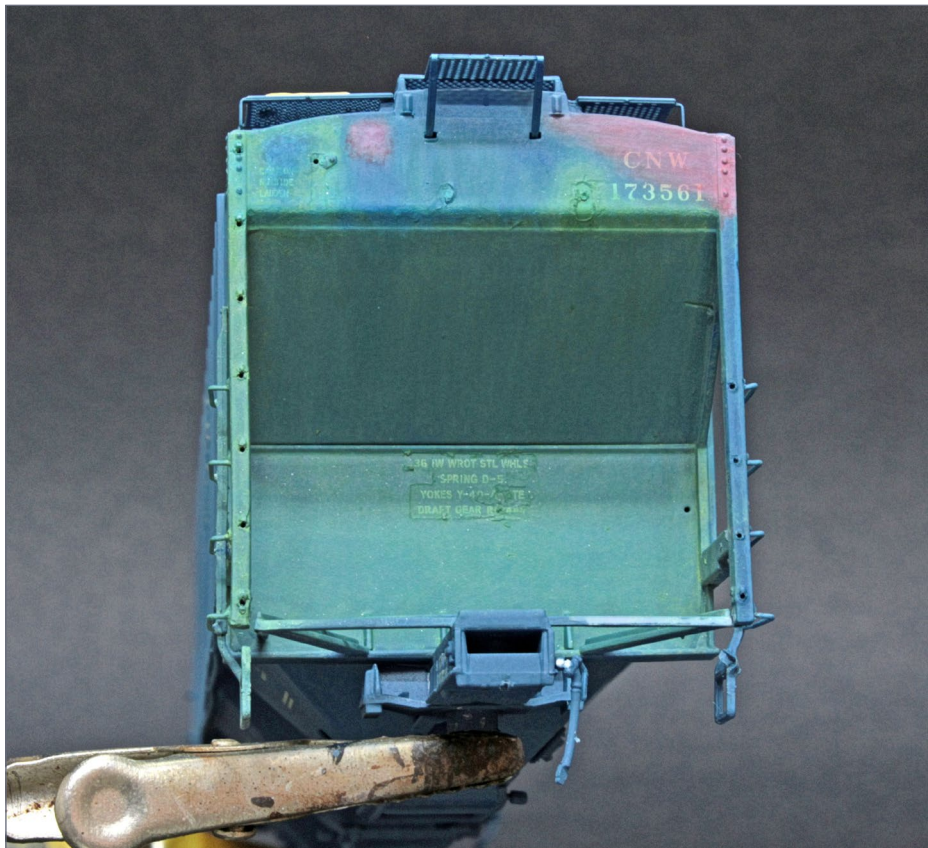
31. This is how my workbench looks while creating and applying the washes.

CAR ENDS

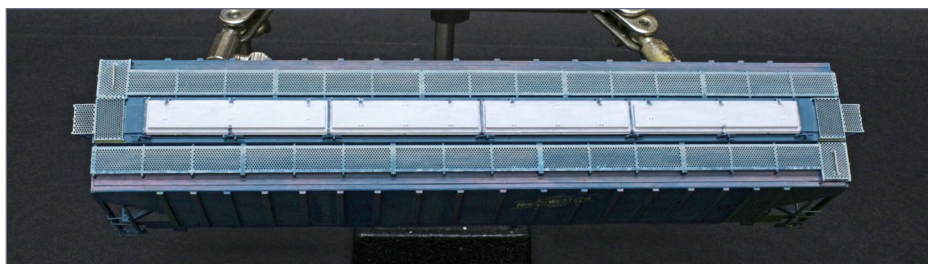
At this point I moved on to the car ends. I used the same processes on the ends that I used on the sides. Here are a few photos showing the ends coming together [32, 33].



32. A few blue washes have been applied to this end. The support posts and ladder were removed to ease access.



33. A couple of green washes and an orchid wash have been added.

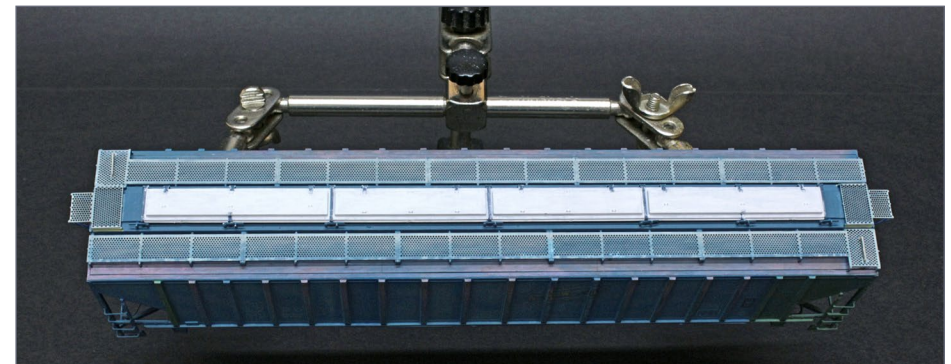


34. A couple of gray washes lighten the roof walk appearance.

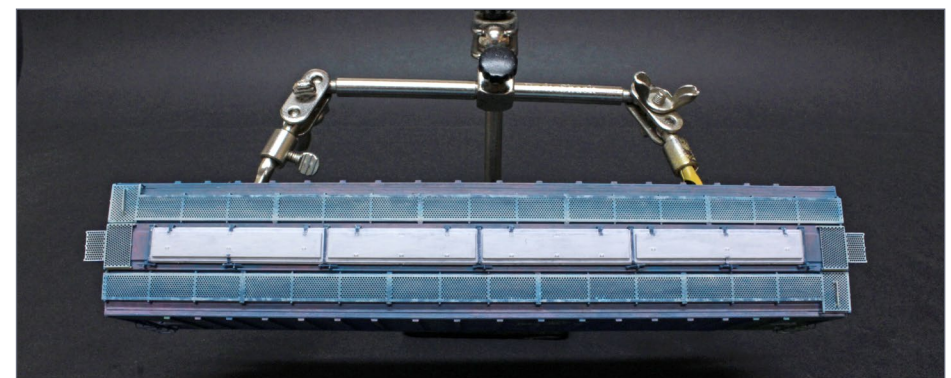
ROOF DETAILS

The roof walk was next on the to-do list. A few gray washes were applied [34], followed by gently scraping off the wash with a sharp X-Acto blade for a chipping effect [35].

At this point, I felt the model was ready for the dirty business. I snapped couple of photos in a pre-rust stage [37, 38].



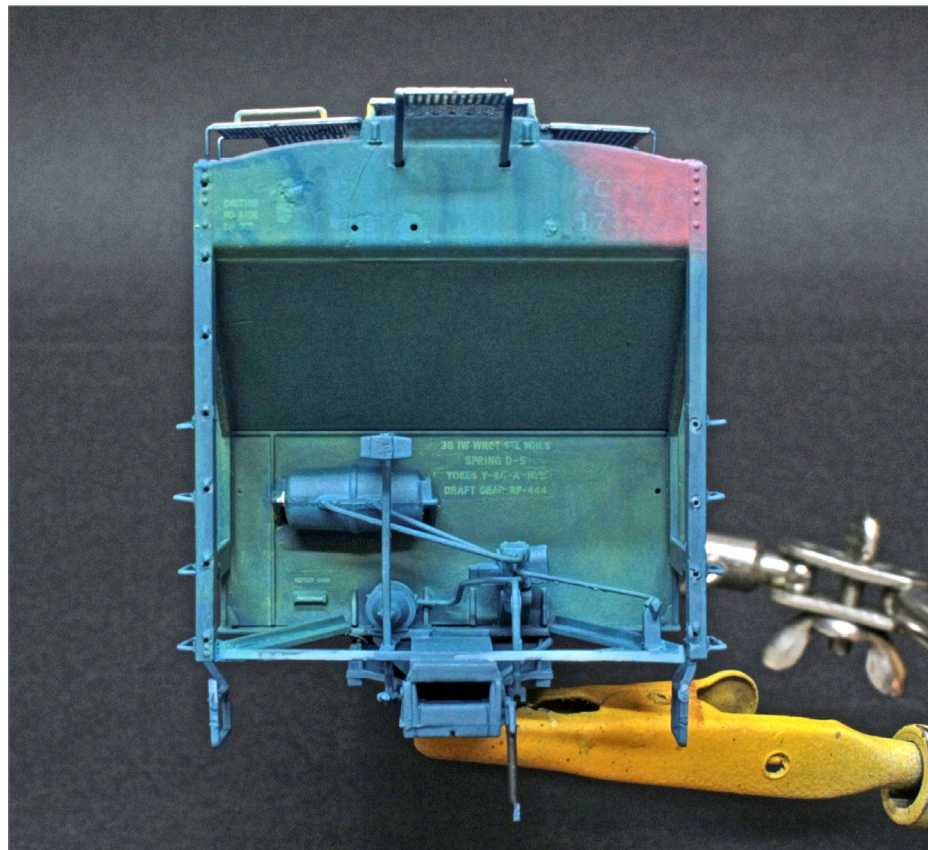
35. I scraped an X-Acto blade across the roof walk to convey a chipped paint effect.



36. A few more layers of washes over the entire roof even out the overall tone.



37. The car sides are finished with the fade steps.



38. The ends are faded and ready for rust and grime.

DIRT AND GRIME

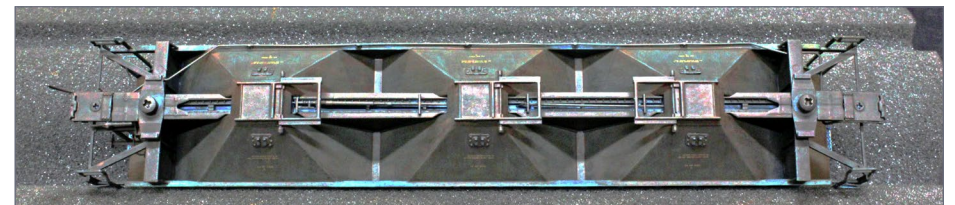
I started applying the dirt on the bottom. The first layer of grime on the prototype appears to be very dark brown, almost black. I used highly thinned acrylic paint washes of a burnt umber and black mixture. The first photo [39] is before any washes were applied. Each following photo is another single wash applied, and the last photo is the finished grime layer [41].



39. The car bottom has been untouched to this point. The original appearance will soon change.



40. At this point, I had applied three washes of the grime mix.



41. A total of six grime washes were applied to the car bottom. It's time to move on.

EXTREME WEATHERING | 21

The next layer of filth on the proto appeared to be the dirt and dust that was a tan color. I used Territorial Beige from my cheap craft paint arsenal, and thinned it for a wash [42, 43].

Once the desired color was achieved, I applied more beige washes to the lower parts of the bins to give them a heavy-to-light fade[44].

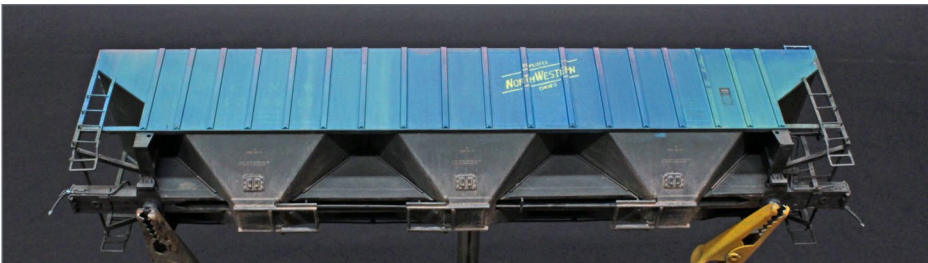
After the underbody work, I decided to skip to the ends. I applied the same paint washes on the car ends using the same methods [45-47].



42. Details begin to pop after the second beige wash.

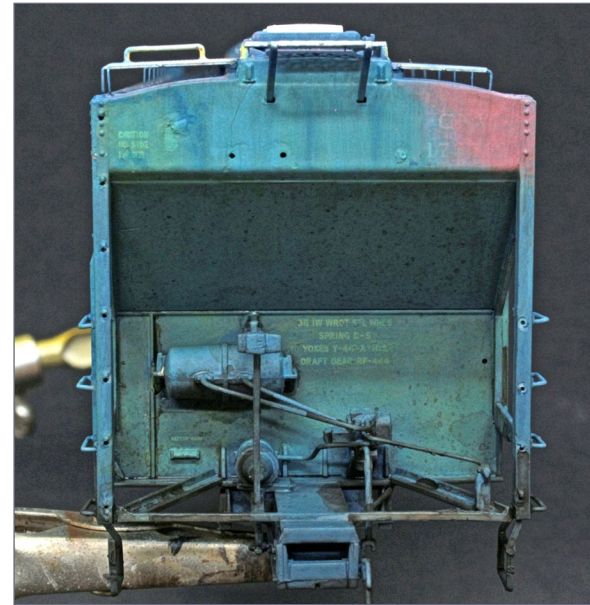


43. The fifth beige wash lightens up the grime.

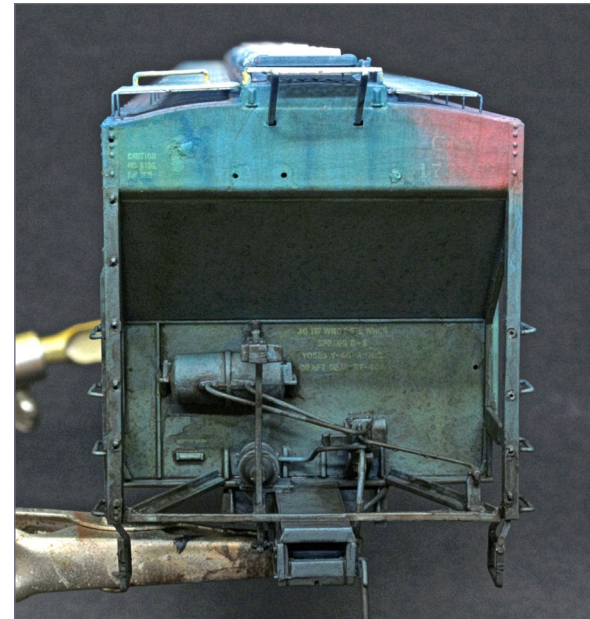


44. Additional beige washes lighten the underbody details.

EXTREME WEATHERING | 22



45. First grime wash applied on the end.



46. I've applied two washes of the grime solution at this point.





47. After the fourth wash of grime, I decided to work on the other end of the car.



48. Three layers of gouache were applied for wheel splatter.



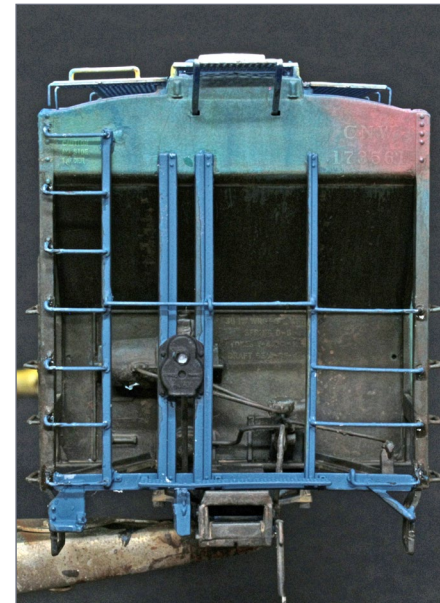
WHEEL SPLATTER

Now it is time for the wheel splatter that gets thrown-up on the ends. I used gouache for this as I like its ability to be extensively manipulated. I applied the material with a sharpened toothpick [48].

After the wheel splatter was applied to each car end, it was time to reinstall the end cages. I added the dark grime and dust/dirt layers on the back (or inside) of the end cages using the same processes [49, 50].

ROOF HATCHES

Although the end cages still need the dirt/dust washes, I bounced to the roof hatches. I used a mix of white and black gouache for the gray-colored grime on the hatches. I cleaned up the hinges and



49. The end cages reinstalled on the model.

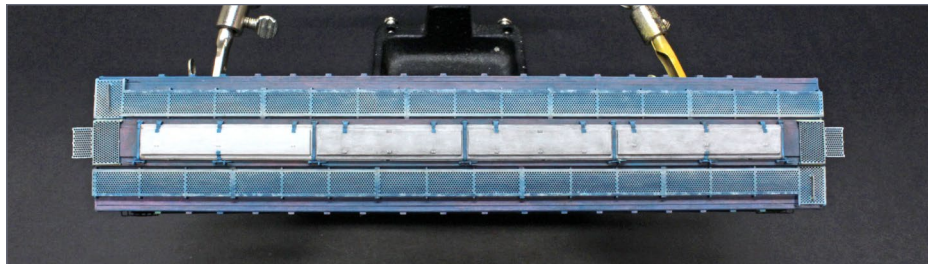


50. A few washes of good ole black-ish grime, and the original appearance disappears.

hatches then added paint before applying the gouache. My first gouache mix application was OK, but I didn't stop working until I achieved what I wanted [51].

GHOSTING

Next, I started to paint in the CNW of the reporting marks for the ghosting effect they need. This is diluted black craft acrylic paint applied with a very fine liner brush [52]. I also used a sharpened, damp toothpick to use as an eraser when I erred.



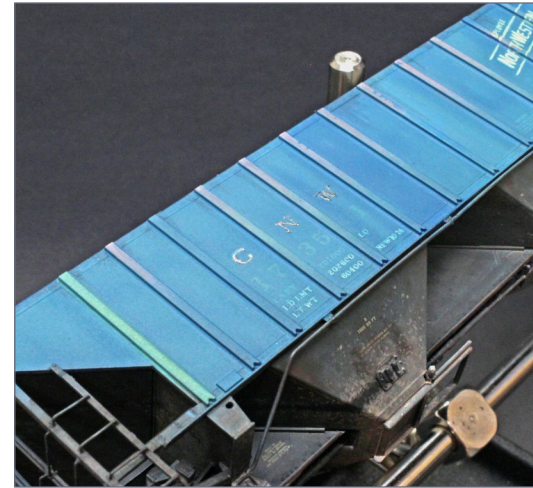
51. A gray-colored grime gouache was worked into the hatch surfaces.



52. A steady hand is required to trace over the reporting marks with black paint.

After finishing the black CNW, I applied Future acrylic floor finish (now called Pledge Floor Care Finish) directly over it with a fine brush to give the reporting mark a smooth surface [53]. This was handy later when I removed the patch paint easily from the lettering. The patch paint step is next.

PAINT PATCHES



It is now time to start the paint patches. These were applied using very thinned craft acrylic paints. A sharpened, damp toothpick was used to remove buildup on the CNW lettering [54-56].

53. A slight shine reflects off the Future acrylic gloss on the CNW marks.



54. Multiple layers of thinned acrylic paint were applied for the patches.





55. Many cars have several patches. Apply your choice of thinned acrylic paint to follow the prototype details.



56. Paint patches can be a few different colors as they have been applied at different times and in different shops. Applying washes over the patches blends in the different elements.

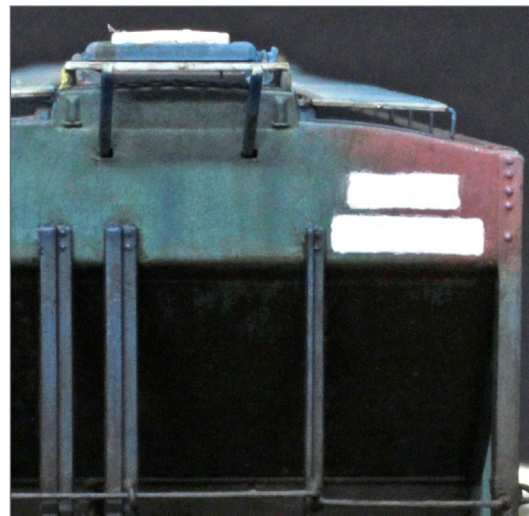
Now to the end patches! There will be a bit of sloppiness painting on the patches so I touch-up the patch borders with a sharpened damp toothpick [57].

MORE WHEEL SPLATTER, RUST, AND GRIME

I added wheel splatter to the underside bays using gouache. The material has a long working time, so I can keep modifying the

work until satisfied. I used several applications of black and raw umber [58].

I applied the heavy and darkest rust and grime to the car sides using heavily thinned burnt umber and black acrylics. The ribs and sill were the main focus of this wash [59].



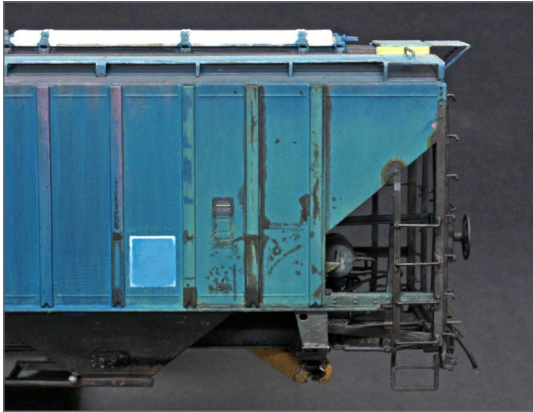
57. This end patch has been cleaned up after several color washes. Decals will be applied here for the new car owner.



58. After the fourth gouache application, the wheel splatter effect is looking great.

EXTREME WEATHERING | 29

After the reporting mark decals were set in place, several additional rust and grime layers were added using burnt umber and black. Per usual, these washes were heavily thinned [60, 61].



59. The dark washes collect along edges and panel joints.



60. One end of the car after several rust and grime washes.



EXTREME WEATHERING | 30

Now I refined the appearance by adding a little color here and there to match up the details. I applied tan and brown color washes over the darker grime on the lower parts of the sides [62]. The sides are mostly completed and ready for safety stripes (which will be decals painted over to darken them) and graffiti.



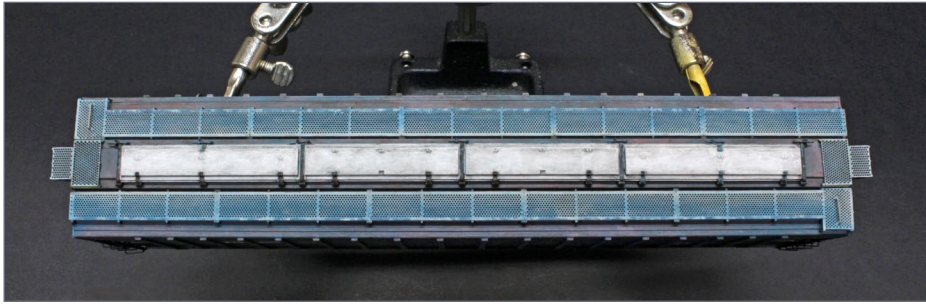
61. The car side appears quite grimy after several specifically applied, small area detail washes.



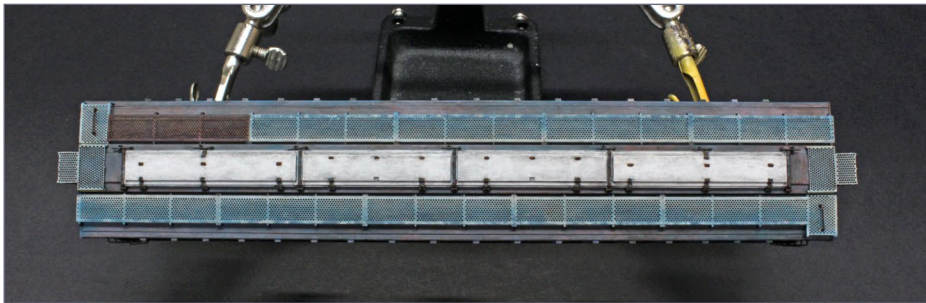
62. One side of the car is almost in a final appearance.

Roof

I don't have roof photos of the specific prototype, but I do have several roof photos of the same type of hopper in the same paint scheme. At first, I was going to leave the roof walk looking new, and leave one of the hatches very clean, as if recently replaced. However, as I studied my main prototype photo, I could see a section of roof walk was totally rusted, and the slim hatch profiles all looked dirty. I decided to rust the appropriate walkway section and dirty all the hatches [63, 64].



63. We last saw the roof walk after a few washes. Now it's time to add rust using several washes of the usual very thin acrylic color.



64. Several washes of a rust color were applied to this section of roofwalk per the main prototype photo I was using.

Once the roof rusting was completed, I looked the model over carefully and decided to apply a gray wash to tie it all in [65]. I really thinned out the color for a subtle effect to represent a dust layer and not subdue the overall colors.



65. The very light gray wash tones down a few colors and gives the model a slightly dusty appearance.



66. I applied the graffiti with a fine liner brush using craft acrylics and cleaned up the errant paint with a sharpened, damp toothpick.



67. Different colors were used as I noted on the prototype.

EXTREME WEATHERING | 33

I also used oil paint to create parts of the graffiti. There is an overspray on the proto graffiti in certain areas. I replicated the effect by dabbing a small amount of white oil paint onto a piece of cardboard. The carrier oil leaches out and leaves behind the pigment that I dry-brush onto the model [70].



68. The graffiti tags were a little different from one another.



69. Graffiti wasn't limited to the car sides.



70. Dry-brushing just the white oil-based pigment produces the overspray effect seen on many graffiti tags.

EXTREME WEATHERING | 34

The model is now complete. After using countless oil and acrylic paint colors, multiple brushes, and countless toothpicks [71], the weathering is done.

All I need to do is install the couplers, trucks, brake wheel chain, and cut levers. The cut levers will be painted to match the grime on the car ends following the processes described earlier [72, 73].



71. These are all the paints and brushes I used. A tube of raw umber gouache is missing, and I used a ton more toothpicks plus a boatload of cotton swabs!



72. Prototype photos inspired my weathering processes to transform this model.



73. I spent about 81 hours to complete this model. It looks great in the sunshine on an outdoor diorama. ☑

NICK CAMPBELL



As a young boy, there were many times Nick accompanied his grandfather on errands. On occasion, they would see a train coming and Grandpa would pull his truck to the side of the road. When the train roared by, shaking the truck, it always left an impression on Nick, as did the Southern Railway tuxedo paint scheme.

Other seeds were planted when his father gave him train sets as Christmas gifts. From age five until eleven, these were the gift of all gifts! After an absence from the hobby during his early adult life, Nick randomly stopped in a hobby shop, and the train bug bit again. He was hooked and a trickle of new rolling stock and engine models began to find their way home and he started a layout.

During the layout building phase and regular internet searches on model railroading questions, Nick stumbled upon The Weathering Shop website. He was working as visual artist using oil paints, and seeing these models transformed into miniature replicas of reality was fascinating. The Weathering Shop has a forum called The Rustbucket where Nick learned more. Just about every technique he has employed was found on The Rustbucket. The tutorials and answers to questions about how to accomplish weathering goals have been invaluable.

What started as an art project has turned into prototype modeling. Nick wants to continue learning new techniques and produce many more accurate models. ■

★★★★★
RATE THIS ARTICLE

THE AH-HAH MOMENT

column



MRH Running Extra | March 2020

JOE FUGATE LOOKS AT COOL WAYS
TO USE MAGNETS ...

★★★★★
RATE THIS ARTICLE

IN A RECENT ISSUE OF MRH MAGAZINE, THE MRH Staff discussed magnetic reed switches as a useful hands-off way to switch lights on and off.

There's still more you can do with magnets – they're a great way to hold things in place – thanks to rare earth magnets. They can have tremendous holding strength when needed, yet you can still pull things apart without damage.

For example, use magnets to hold loads in place on a flat car, yet still leave them removable. If the car uses a steel weight, the magnets may pull strong enough to do the job as is. Or if not, superglue some tiny ferrous metal from a soup can lid on the car to hold the load in place.

You can also use magnets to hold structures solidly in place yet have them be removable as well. You can screw some steel screws into the scenery, and then attach the magnets to the buildings.

You can also attach magnets to the end of your turnout throwbars, [1] then put some tiny steel finishing nails into the scenery, and voila - the turnout throwbar holds solidly in place, yet you can still move the points.

Finally, Scott Thornton has recently been using magnets on his train switching crew [2] to hold them in place on his rolling stock and around the layout. Scott puts a small piece of ferrous metal on his figures and puts magnets on his car ladders and around the layout.

In this article's comments, let's post more clever ways to use magnets! ☑

THE AH-HAH MOMENT | 2



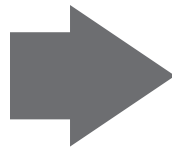
1. Bob Morningstar is using magnets and small nails to hold his turnout points in place. An ah-hah moment to be sure!



2. Scott Thornton is using magnets on his layout and on his rolling stock to hold his railroad crew in place during switching. By adding small ferrous metal bits to his figures, this allows Scott to move his crew around during switching and simulate crew locations. Needing to drop off or pick up crew members adds a fascinating new level of interest to model railroad switching. The magnets make moving the figures around from ground to rolling stock and back easy to do.

Bonus section!

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



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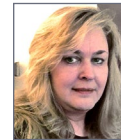
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ISSN 2152-7423

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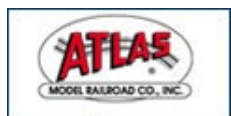
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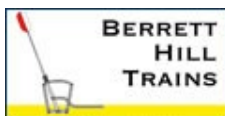
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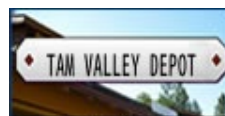
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MUSINGS FROM THE EDITOR-AT-LARGE



Model Railroad Hobbyist | March 2020

ERIC HANSMANN: WHERE DO
WE START?

★★★★★
RATE THIS ARTICLE

MANY MODEL RAILROADERS ASK ME THIS question. I also hear it from people entering the hobby. I've moved to four different cities in the last 10 years and have posed the question to myself after each major move. We end up with an empty space in a new place and get an itch to build something.



1. A mid-1920s image of Potomac Yard features a variety of freight cars from different railroads. I can find only one steel-sheathed boxcar in this image. All other boxcars are wood sheathed. A number of automobile, stock, and ventilated cars are featured. Several different gondola designs lurk in the far tracks. Keefer, Potomac Yards, Alexandria, Va. Retrieved from the Library of Congress, [www.loc.gov/item/2016826186/].

Inspiration

I fall back on basic inspiration to help me move forward. In many cases, a prototype photo nudges me along [1]. The Library of Congress has thousands of images to review in its digital collections. Many large cities and universities have digital history sites with more images to review. As a mid-1920s modeler, I'm thankful these treasures can be downloaded for closer inspection on my home computer.

Prototype maps of all types can get the creative process rolling, too. Sanborn Fire Insurance Maps, ICC railroad valuation maps, and city plat maps are amazing resources. Our towns and cities grew with the railroads. Many maps document the infrastructure and the industrial evolution that we want to model.

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EDITOR-AT-LARGE | 3

Prototype sources aren't my only inspiration. Sometimes a new kit, new tools, or a train show visit puts an idea into my head that might solve a problem that has been blocking my hobby progress.

Meeting local modelers at NMRA meetings leads to networking and discussions.

Everywhere I have moved, I've met modelers because of my NMRA membership. I often lend a hand on local layouts. Home workbench and layout projects are frequently discussed.

Sometimes I gain a different perspective that can lead me through a challenging task. I've frequently overthought a process and missed a simple path toward completion.

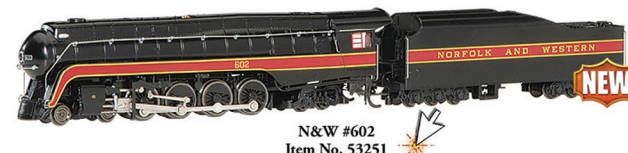


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Convert to action

Once we find inspiration, it's important to dive in and begin. Any layout project can become overwhelming after we start. I often work on small projects that will become part of the layout. Maybe I'll tune some freight cars to run better or install a decoder in a locomotive so I can operate completed parts of the layout.

Everything gets weathered to some degree, but I can't do everything at once. I'll focus on a couple of cars at a time, as a break from larger layout projects. I keep a stock of painted wheelsets ready to replace any shiny new wheels.

I sometimes create task lists to keep progress rolling. It's very easy to fall into a rut and watch YouTube videos for a few hours. A list can pull me to the workbench to fill 15 to 30 minute gaps of time in a busy day. Many steps we use to build models are not lengthy.

Decaling the ends of a freight car in a short time moves the model forward. I can apply decals on the car side to the right of the door in another half hour and finish off the left side the next day. The other side if the car is decaled in a couple more 30 minute blocks. Then it's ready for a gloss coat to seal the work.

Using these small windows of time adds up to real progress. It's a joy to see a finished car side decaled. That inspires me to sit down the next day to complete the car.

Layout development

I've been struggling with my home layout project for over a year. It seems our home improvement projects will not be moving forward, so I won't have a converted garage for my hobby space. Our dreams need to be adaptable to the needs of our households. I've wanted to get an HO scale layout rolling in my home for a couple of years. Now I need to adapt in order to move forward.

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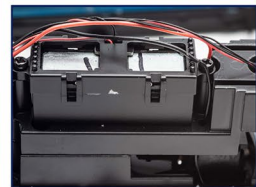
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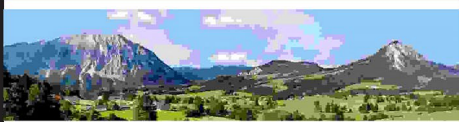
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EDITOR-AT-LARGE | 5

The garage is a nice 21x25' space, but I won't be able to use as much as I had hoped. I've reduced the project to an L-shaped shelf layout.

I plan to use the yard sections from my former layout and build a new layout on hollow core doors. There are a few scenes from the prototype that will be great to operate and model [2].

This project is like Joe Fugate's TOMA method mixed with some Free-mo ideas.

We must constantly be ready to adapt and change our plans. I've been lucky to have built layouts in a couple of homes over the last decade. While I was hoping to start a larger project, I am happy to have space for any size layout. Building a small switching or chainsaw layout keeps me moving forward.

My last 10x16' layout was fun to build and operate with friends. The sectional components of that layout make it easy to reuse a 12' yard for the new layout.

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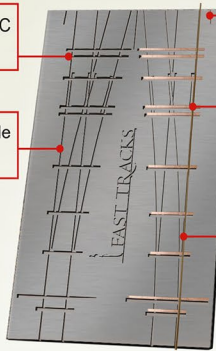


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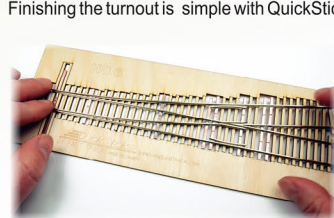


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EDITOR-AT-LARGE | 6

2. River Avenue in Pittsburgh, Pennsylvania, circa 1911. A team track with crane is on the left while another track leads into a warehouse dock. The Allegheny Yard branch of the B&O served this scene and is running just off the image to the left, along



the banks of the Allegheny River. Pittsburgh City Photographer Collection retrieved from the Historic Pittsburgh website: historicpittsburgh.org/islandora/object/pitt%3A715.112254.CP

This is how I start. I have a path forward with an intriguing prototype. I've been in metro Nashville long enough to meet many modelers, network to share ideas, and assist with other layouts. A few of them are ready to help me.

Lastly, I've improved my time management skills and pushed several smaller projects to completion. I'm looking forward to warmer weather so I can start prepping the new layout components.

I hope you are inspired to start a layout. Sometimes we have almost everything in front of us but we don't realize it. Take advantage of a small space in your home to build something. It may not be a long term layout, but the skills you learn building a small layout will be yours for a lifetime and help you build the next layout.

Share your story on how you start, with a comment to this editorial on the MRH forum. ☒





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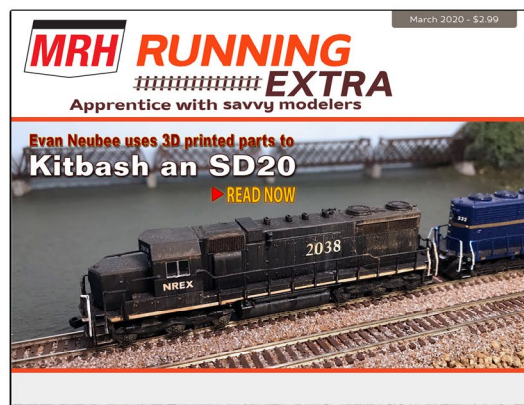
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LAST ISSUE'S RATINGS

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

- 4.7 A small layout with a big feeling
- 4.7 Savvy Modeler online: Easy tall grass tufts
- 4.5 Pete Smith's Loon Lake & Navigation Railway

Issue overall: **3.6**

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

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THIS MONTH

Model Railroad Hobbyist | March 2020

compiled by **JOE FUGATE**

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Starting the SoCal Desert Rail Division #2

Al Mayo shares his exciting new layout project on the MRH forum:

“The day after my birthday(Feb.17th), I started building my layout. It is exciting too. Here I go, I am on fire.”

View the video on the MRH website by clicking the button below.



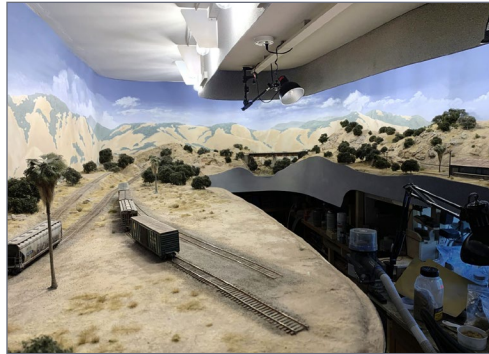
View the full thread on the MRH website

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

What's the right fascia color?

MRH forum member **mayor_79** asked for a recommended fascia color and elicited a lot of great responses, such as this answer from **Rick Sutton**:

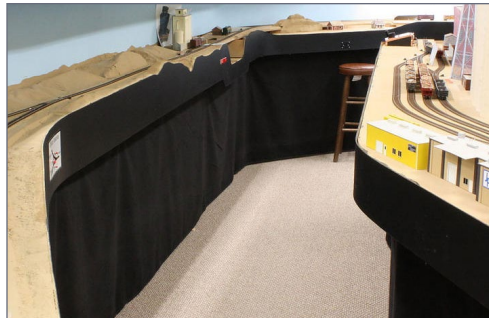
“Repaint the ceiling between the valences to a light gray [and make the] area between valence and sky backdrop straight white to reflect illumination. Paint is cheap. Paint your fascia with a warm gray between the floor and ceiling in value. Pick all colors off of the same color card. A possible starting point is Sherwin Williams SW7658 Clouds gray range.”



1. Forum member **Rick Sutton** shared a photo of his layout to show one fascia color example.

Then MRH forum member **George Booth** posted a nice photo of his layout space illustrating his color choice:

“I’ve always preferred black fascia with a black skirt inset from the fascia a few inches. Here is a photo [2] from a long time ago (my first post, actually).”



2. **Sugar Beet Guy (George Booth)** posted a photo showing his preferred fascia and skirting color.

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

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Wiring of the Shippensburg yard lead



Forum member **JLandT Railroad** (*Jason Miller*) posted recently on his blog:

“Continuing on today with more wiring of the Shippensburg Yard entrance. This is also the interchange from off layout staging into the Shippensburg Classification Yard, and also the yard lead entrance from Harrisburg.

“To ensure reliability into the future I have wired all of the PECO - Code 83 switches with power to the stock rails so that they do not rely on the points for power routing.

“The entrance to the classification yard will be one whole block controlled by either the yard master and/or dispatcher for inbound and trains. Next step is to wire in the power feeders & connect the Tortoise wiring.

3. Jason Miller posted photos of his latest layout wiring project on his MRH blog.

“Then the next task is to wire is the switch stock rail power feeds & wire up the Tortoise Motors to the SE8C's and push button on the fascia panels.”

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

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

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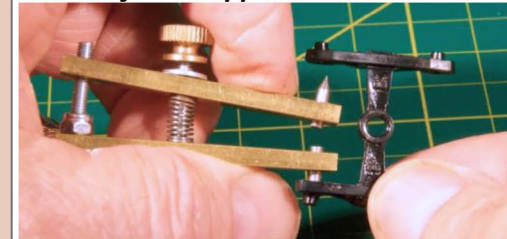
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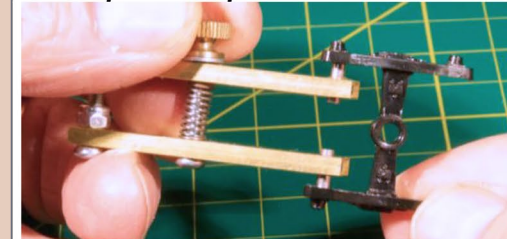
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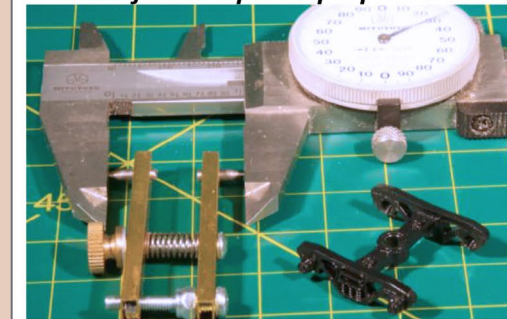
Adjust to approximate width.



Squeeze to put in truck frame.



Adjust Caliper to proper fit.



Measure for proper axle length.

Proper axle length is critical for reliable operation. Sloppy short axles allow wheels to lift off rail and derail cars.

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Repositioning ladders on steel box cars

Inspired by another MRH forum thread, member **Deemior-gos** (*Peter Soulikias*) decided to upgrade the ladders on some of his rolling stock.

“A thread by **mesimpson** has inspired me to move the ladders to the edge of my three TLT CN steel boxcars.

“I filled the holes then sanded them. With some guidance from **Yannis**, I was able to airbrush the filled holes.

“The new holes are for the placement of the ladders. Some of the ladders mounts got broken when I removed them hence no car has all its holes. The cars are ready to have the ladders mounted and for further weathering.”

It's great to see this kind of cross-pollination and assistance between the MRH forum members. That's why we host this site and publish our magazines, books and videos. Visit the MRH website and read the full thread.



4. The cars Peter Soulikias decided to upgrade with new ladders after being inspired by what another MRH forum member was posting about his rolling stock efforts.

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

Weekly photo fun thread

Here's a fun post from a recent MRH weekly photo fun thread: an HOn30 locomotive. Compared to a penny, that's one tiny loco, but it runs!

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

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



5. **ChrisFrissell** posted several photos of this diminutive Toma Model Works HOn30 kit, with some detail modifications. That's some fine modeling and great photography. Check it out!



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WHAT'S NEAT

column



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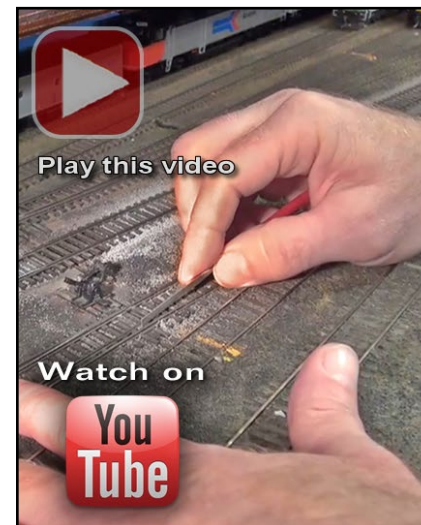
KEN PATTERSON VISITS TWO LAYOUTS

— ONE JUST BEING STARTED AND THE
OTHER IN FULL OPERATION. HE SHARES
MAINTENANCE TIPS AND SHOWS ATHEARN'S NEW N SCALE DISPLAY ...



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THIS MONTH WE LOOK AT THE PELLEGRINO'S
father-and-son operating double deck HO scale layout that
will be on tours at this summer's NMRA National Convention



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WHAT'S NEAT!

MODEL RAILROADING Maintenance Tips



March 2020 show

► PHOTOS AND VIDEO OF SUPERB MODELING

in St. Louis, MO. We visit Campbell Rice and his new basement to see the layout he commenced setting up just after moving into his new home.

As it is winter in Missouri as of this writing, I share with you tips for some of the maintenance I have been performing on my home layout. We also look at a new N scale layout display that I built for Athearn Trains; something simple that is light enough and tough enough to survive the trade show circle of weekly travel from show to show.



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Athearn N scale layout



1. Ken built a demo layout for shows that is strong, professional, and portable. This layout was to be 4x3' with a simple loop of Kato N scale track. It needed to be strong and lightweight and catch the eye at trade shows. Ken started the project by stacking two pieces of pink insulating foam on top of each other, gluing them together with Foam Pro adhesive. He then laminated the top of the layout with 1/8" plywood to give a light and strong surface for the track.

★★★★★
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2. The “layer cake” construction has a groove filled with wood blocks to securely fasten the plywood fascia. Once it set up, he laminated the sides of the layout with 1/8” plywood stained black, and using a router and a 3/4” bit to cut a channel, centered in the sides of the layout. This created a groove into which he glued 3/4” blocks of wood all the way around the 4-inch-thick foam base. The wood blocks were glued with Gorilla Glue which is activated with a spray of water. Because this glue expands as it sets up I needed to push each piece of wood back into place as the foam glue cured over a period of 30 minutes. I used a screwdriver to push back the blocks of wood as the expanding glue pushed them out. These blocks of wood will produce a strong surface to staple the laminated sides to the layout structure. I wet the plywood with a garden hose indoors before bending it around the base, to prevent the wood from cracking as it is bent. It is fastened with 1/2” inch staples and an electric stapler gun.



3. The stapler has an adjustment setting that controls how deep the staples will be driven into the plywood, preventing them from being driven past the plywood surface. It took about three test staples to set up the gun for successful attachment of the wood without shooting completely through the plywood. It took a 14-foot strip of wood to wrap all the way around the diorama. The base got three coats of black polyurethane stain. The plywood top is painted with a coat of brown latex house paint for a nice finish.

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WHAT'S NEAT | 6

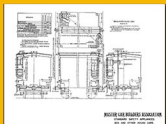


4. The Kato track was spiked in to place by drilling very small holes for track pins, using a cordless Dremel tool, through the railroad ties. The track was spiked with very small nails all the way around the loop of track. The power feed wires to the track were run through a brass tube feeding the wires through the plywood top and the four inches of foam to the bottom of the layout.

WHAT'S NEAT | 7



5. Here's the finished trade show layout with a train running around it and plenty of space to display models. The track can easily be expanded with turnouts and is ready for foam landforms to add scenery. A layout like this is perfect for running and testing N scale models and can easily be stored under a bed or in a closet when you are finished running trains.



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WHAT'S NEAT | 8

Layout upkeep this past winter



6. I have been spending a few days each week in between podcast shows to perform general maintenance and upkeep for my 60x30' modular home layout. I recorded a few of the items for this month's video. The control panel that powers the blocks in my switching/staging yard is simply a piece of Plexiglas painted with the track pattern of the yard. Velcro strips hold this flat panel in place on the layout's sides.



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7. This week I needed to replace a broken toggle switch. The design of the panel made it very easy to get into the wires and replace the switch.



8. All the way around the layout's main line there are more than 45 turnouts. One very important maintenance procedure is to clean the switch points to ensure good electrical conductivity. I do this by running a very fine diamond file in the switch points. Cleaning the points' contact point and the outside rail ensures smooth operation.



9. The Woodland Scenics Just Plug lighting system – I shared the installation of the lights in my wharf scene in the July 2017 What's Neat video – needed repair because some of the lights were broken off by hands reaching in to the scene. Because my layout is made of foam modules on top of simple tables, it is easy to pull out the wharf scene to replace these amazing lights.



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EVAN NEUBEE models an SD20 using 3D printed components.

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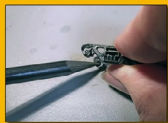
NICK CAMPBELL does extreme weathering on a modern covered hopper model.

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Joe and Tony Pellegrino's operating layout



10. This month we look at Joe Pellegrino and his son Tony's HO scale layout. This is their fifth layout over the years and this one was designed for operation, modeling the Illinois Central from Chicago to Venice, Illinois. The layout's primary operation location is Alton, Illinois, modeling all the industries running along Broadway, the steel mills, glass factory, box industries and smelters along the industrial line.



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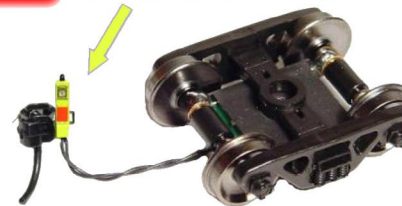


11. The night we filmed the interview for this month's video there were eight or more individuals operating trains on the layout. Measuring 18x30', the layout has three levels. The bottom level is staging yards. The main level is at 32" inches from the floor and the third level is at 56" from the floor.

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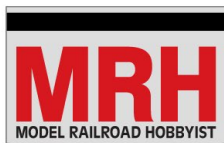
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12. The layout is run by a full-time dispatcher and trainmaster, making sure every operator has train orders and assignments. All communication is done with radios and every train movement requires paperwork and train orders to proceed. It is very organized and well thought out. There is a helix to get the trains from level to level measuring 6x10' with five levels and a 2 percent grade. All the track is Atlas code 83 track.

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13. A gate allows operators access into the layout. This gate is amazing in its design, with three main lines on two levels. They use door hinges to help conduct the power to the gate with no wires. This layout will be available to view at the NMRA St. Louis National Convention in 2020 and Joe and Tony will host four operating sessions as well as layout tours the week of the convention. Check out the NMRA website for more information on how you can run and view this amazing layout. www.gateway2020.org.



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Campbell Rice: Two weeks' work on a new home layout



14. Campbell Rice, part of the What's Neat This Week podcast crew, invited us to his newly built basement and custom-built room for his layout just two weeks after he moved into his new home south of St. Louis. He has already set up benchwork measuring 24" wide and 6 to 8' long to accept modules he built for his home layout when he lived in Arkansas.

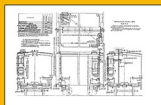


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15. The lighting will be strip LEDs with the option to change colors from day to night. Campbell's scenery is carved foam with plaster cloth and rock castings overall. He looks forward to working more with DCC and static grass and all the new techniques developed by current day modelers. He seems to already be a master at creating realistic-looking scenery colors and photographic backdrops that match each scene. Campbell says layout design is his favorite part of the hobby now but he looks forward to learning more about operation and incorporating this into his modeling pleasure.

[See the video on the first page ...](#)



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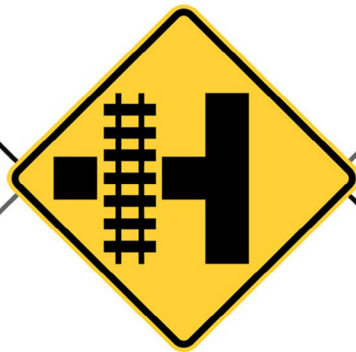


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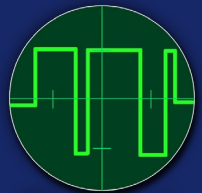
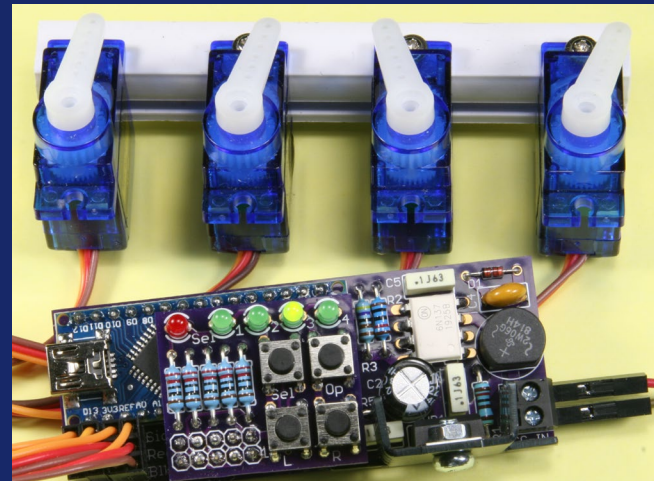
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Quad servo DCC decoder

Part 2



Electrical
Impulses

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1. In Part 1 last issue, I covered how to build and install the software on this decoder allowing more accurate control of four servos. Here in Part 2, I show how to adjust the positioning of each servo with great precision. Note I have the keypad plugged directly into the decoder here.

TERRY CHAMBERLAIN'S frustrations with commercial decoders led to building his own highly configurable quad servo DCC decoder ... Part 2 ...

AS DISCUSSED IN PART 1, I BASED MY QUAD SERVO DCC Decoder (QSDD) around a standard Arduino Nano module to give me a DCC decoder that accurately controls the position of up to four servos – all for less than \$20.

If you followed my construction directions in Part 1, you have now built your own QSDD and loaded its software using an Arduino sketch.

QUAD SERVO DCC DECODER PART 2 | 2



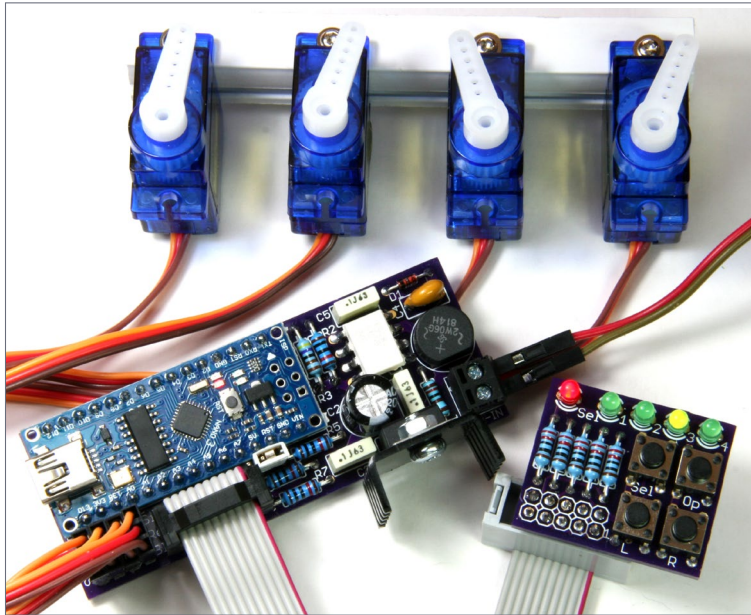
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In Part 2 I show how to precisely set the throw and transit rate of each servo. I also explain how to assign DCC addresses to the servos so you can control them with your DCC system.

Finally, I delve a little deeper into the technical details of the QSDD in a sidebar for those who are interested.

Picking up where we left off

Let's assume you have connected the QSDD and the keypad directly [1] or via a ribbon cable [2] – and that you have the four servos plugged into the appropriate header sockets.



2. Connect the keypad using the ribbon cable (up to 40" long). Use this approach when you have installed the decoder and servos under the layout.

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QUAD SERVO DCC DECODER PART 2 | 3

The longer cable makes it easy to set up turnouts when the decoder and servos are out of sight under the layout. Once you have the servo action set to your liking, you can operate the servos via DCC commands, with no need for the keypad.

The keypad also allows operating the servos by hand using the pushbuttons instead of DCC commands.

Power the QSDD from your DCC system by a connection to the track, or directly to the command station. Commands can be sent using either handheld controllers or suitable software on a PC, such as JMRI PanelPro or my own A-Track application.

JMRI PanelPro:

jmri.org/help/en/html/apps/PanelPro/index.shtml

A-Track app:

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

Servo Setup – Step-by-step

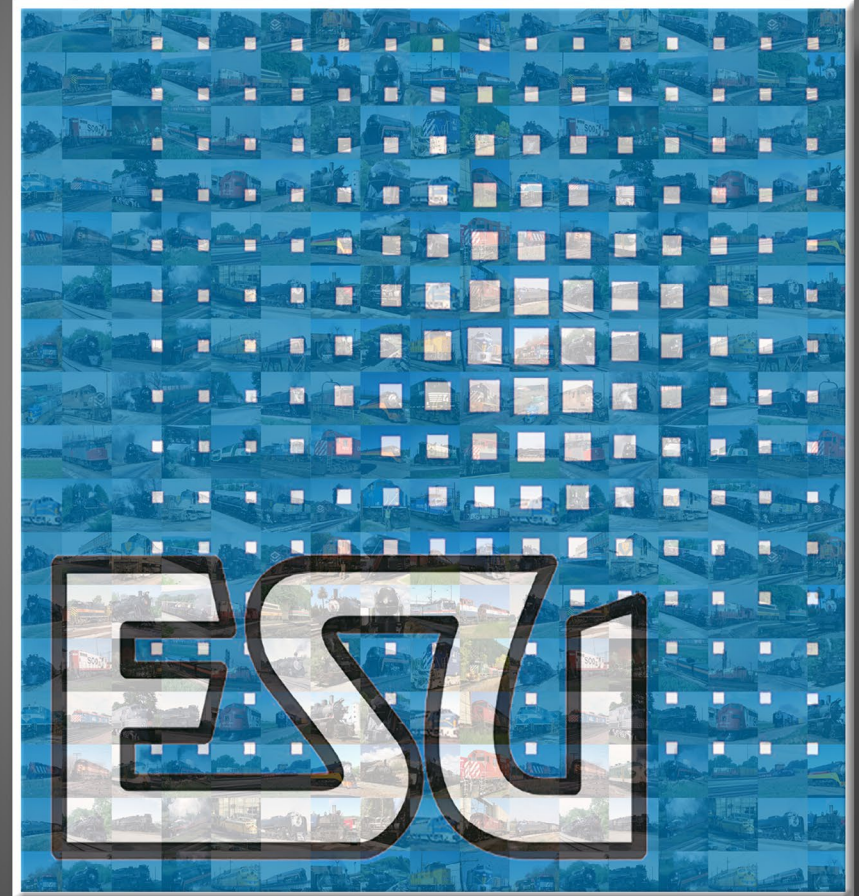
You do not need a USB connection for this setup. However, if you do connect the USB cable from the Arduino Nano to your computer and run the Arduino IDE (whether the QSDD sketch has been loaded or not), then you will get messages to confirm changes made during setup as you make them.

This can be helpful, especially when performing setup for the first time. To display the messages, enable the Serial Monitor in the Arduino IDE by clicking the icon (🔍) at the right-hand end of the toolbar. Set the rate at 115200 baud, and make sure debug messages are enabled (as in the supplied sketch).

When you plug the USB cable into the Arduino Nano you will see the red Sel LED and one or more of the green LEDs flash on and off

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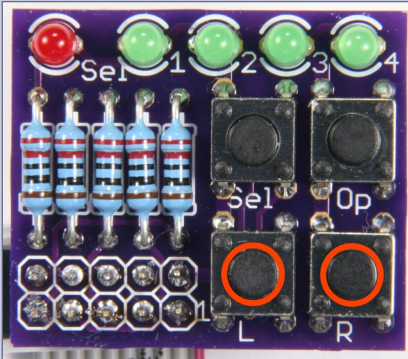
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QUAD SERVO DCC DECODER PART 2 | 4

a few times. Once the USB link gets fully initialized, the decoder board resets automatically, lighting then extinguishing all of the LEDs, and moving the servos to their last defined position.

STEP 1: FIND THE CENTER POINT



3. Use the L and R buttons to center the servos.

First we must find the center point of each servo's movement.

Standard micro servos such as the SG90 have a nominal range of 180 degrees. This goes from full right at 0° to full left at 180° although, because of mass production tolerances, the range can vary by up to 15° either way.

Press the **L** and **R** buttons on the keypad together [3], then release them. All servos should move to their center positions (90°). You may want to adjust the fitting of the servo actuating arms so they align with whatever position you want as the center of each servo's range.

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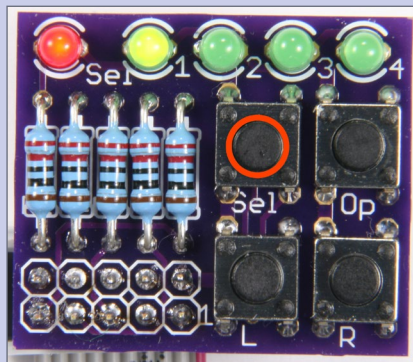
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STEP 2: ADJUST THE LEFT LIMIT POSITION



4. Press the Sel button to select servo 1.

Press and release the Select (**Sel**) button. The red **Sel** LED will light, together with green LED 1, and servo 1 will move to its current left limit position.

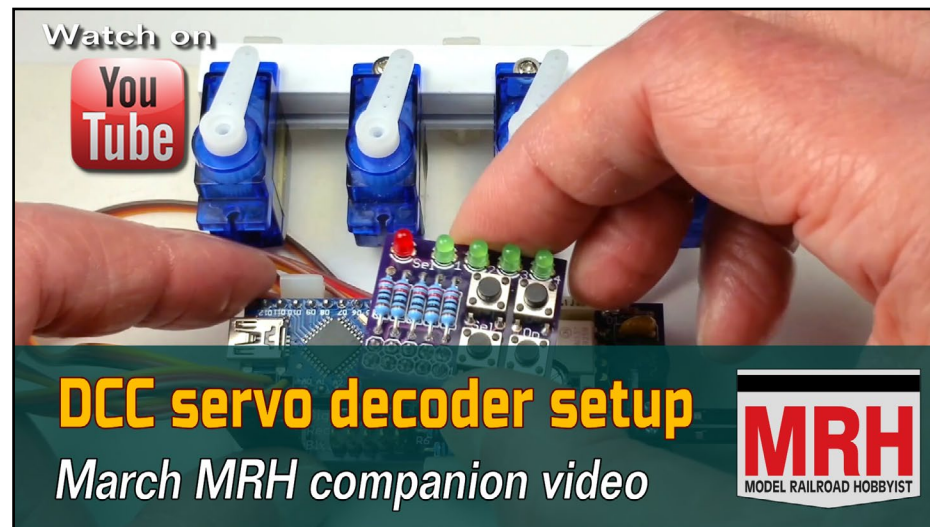
You can now adjust the left limit position leftwards, one degree at a time, by pressing the Left (**L**) button, or rightwards by pressing the Right (**R**) button.

Alternatively, just hold down either the **L** or **R** button until you reach the limit position you need to do this faster than one degree at a time.

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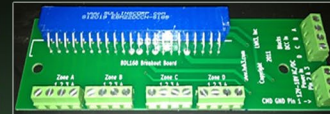
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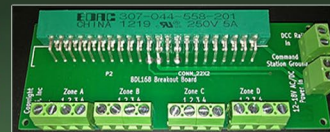
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STEP 3: ADJUST THE RIGHT LIMIT POSITION

Press and release the **Sel** button again. The red **Sel** and green LED 1 remain lit, but servo 1 will now move to its current right limit position which can be adjusted, as in Step 2 above, by pressing either **L** or **R** buttons.

STEP 4: ADJUST THE SERVO TRANSIT RATE

Press and release the **Sel** button. The red **Sel** and green LED 1 remain lit, and servo 1 will now move at its set rate to its left limit position, then return at the same rate to its right limit position.

If the transit rate is either too fast or too slow for your needs, then press the **L** button to make the rate slower (Leisurely), or the **R** button to speed the rate up (Rapid).

After each button press, the servo will move from right to left and back again at the new rate.

The decoder will not respond to button presses while a servo is moving. You can, however, keep either button depressed continuously and watch the transit rate for servo 1 either speed up or slow down until it reaches the rate you want.

When either the slowest or fastest rate has been reached, the movement of the servo will stop. The decoder will no longer respond to further presses of whichever button caused it to reach its lower or upper rate limit.

STEP 5: SAVE THE ADJUSTMENTS

Press and release the **Sel** button. This time the red **Sel** LED will blink at a steady rate, with the green LED 1 lit.

You now have the option of saving all the position and rate adjustments you have made as configuration variable (CV) values, replacing the default settings. These saved CV values will be stored permanently in the Arduino Nano memory even when power is switched off.

To save the new CV values, press the **R** button (Retain the changes, Replacing the current CV values). Alternatively, press the **L** button instead (Losing changes and Leaving the current CV values as they are).

After you have either saved or discarded the changes, the green LED 1 will go out, although the red **Sel** LED will continue to blink.

At Step 5 if you press and release the **Sel** button instead of either the **L** or **R** buttons, this immediately takes you to Step 6 and discards any changes.



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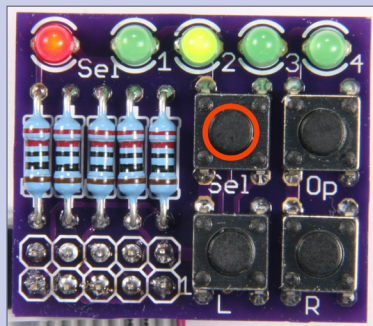
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STEP 6: MOVE TO THE NEXT SERVO



5. Press **Sel** to complete the setup for servo 1 and move to servo 2.

Press and release the **Sel** button once again to complete the setup process for servo 1 (unless you skipped here directly from Step 5).

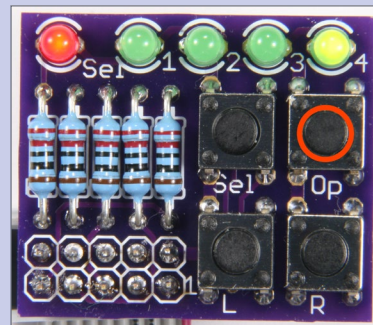
The red **Sel** LED will stop blinking, while green LED 1 will go out and green LED 2 will light. You can now repeat the actions of steps 2 through 6 to carry out the setup of servos 2, 3, and 4.

After you have completed the setup of servo 4, pressing and releasing the **Sel** button will terminate the setup process, and all LEDs will be extinguished.

If you wish to setup a specific servo, rather than having to cycle through all four of them one at a time, at either Step 2 or Step 6, press and release the **Op** button. This will skip (and not save) the setup of the currently selected servo, lighting the green LED for the next servo.

Pressing the **Op** button when servo 4 has been selected ends the setup process.

6. To jump directly to a given servo number during setup, use the **Op** button to cycle through the servos.



STEP 7: MOUNT THE SERVOS IN PLACE

Once you have the movement range of each servo set to what you need, you can fit the servos into whatever mounts and linkages you are using to connect to the layout turnouts.

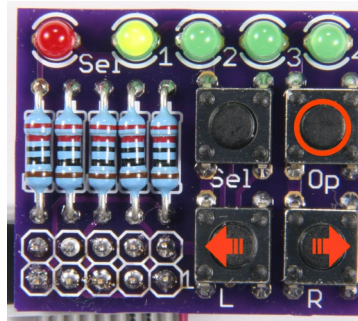
After everything is secured, you can repeat the servo setup process to fine-tune the position limits and transit rates.

After driving a servo to the required limit position, it is “detached,” which means only the friction in the servo gear train is holding the linkage in place. You may want to move the limit positions out by a degree or two to ensure that the turnout points stay in position.

The problem does not arise with Peco turnouts because they have an over-center spring to maintain the switched position.

Manual servo operation

You can check the operation of the servos by pressing the **Op** button on the keypad. This lights the green 1 LED to show that servo 1 is selected.



Press the **L** button to move servo 1 to its left limit position at the set rate, or the **R** button to move servo 1 to its right limit position. No movement

7. Use the **Op** button and the **L** or **R** buttons to manually operate a servo.

QUAD SERVO DCC DECODER PART 2 | 10

will result, of course, if the servo is already positioned at the selected limit.

Further presses of the **Op** button will light green LEDs 2, 3, and 4, in turn, selecting the corresponding servos 2, 3, and 4, and detaching the previously selected servo.

When the relevant green LED is illuminated, the currently selected servo can then be operated by using the **L** and **R** buttons, as described.

A final press of the **Op** button will switch all LEDs off, with all servos detached.

Connecting the keypad to the decoder board using the ribbon cable allows the keypad to be mounted on a fascia and used for direct control of your turnouts, if that is how you wish to operate. A cable up to 40 inches (1 meter) long can be used.

Servo operation – DCC commands

With the decoder connected to your layout track, you can operate any of the servos and the connected turnouts by issuing the appropriate command from your DCC system to the addressed servo.

Default addresses 1, 2, 3, and 4 are assigned as part of the pre-loaded software, but you can assign whatever addresses you wish to the four servos, as explained in the next section on setting decoder output addresses.

For the key sequences to operate the servos and their attached turnouts, using some common DCC systems, see [8].

When using DCC commands to operate the servos, the decoder board on its own provides all the functions of a standard accessory decoder. You do not need the keypad or a USB connection to a computer.

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QUAD SERVO DCC DECODER PART 2 | 11

NCE	Press SELECT ACCY Type in one of the set addresses followed by ENTER Press 1 or 2 to throw the turnout, depending on its current position If the turnout does not move, press SELECT ACCY twice to throw it in the opposite direction
Digitrax	Press 'SWCH' Type in one of the set addresses Press OPTN / t or CLOC / c to throw the turnout, depending on its current position
Lenz	Press F then 5 (LH100) or Points/Signals (LH101) Type in one of the set addresses followed by ENTER or 'Points/Signals' Press + or - (LH100) or M (LH101) to throw the turnout, depending on its current position
MRC	Press ACCY Type in one of the set addresses followed by ENTER Press 1 or 2 to throw the turnout, depending on its current position

8. Table of key sequences to operate the servos for several common DCC systems.



After operating each servo, the current position is stored in the relevant configuration variable (CV 59, 64, 69, or 74) for that servo. Powering-off the decoder does not affect the stored position; when switched on again the servos are repositioned to where they were the last time they were powered up.

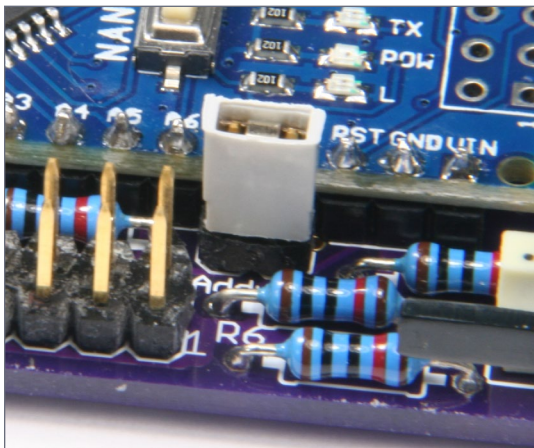
Setting servo (aka turnout) addresses

While the four default addresses (1, 2, 3, and 4) may be adequate if your layout only has four turnouts, you generally need to assign specific addresses to the decoder for each servo.

To start assigning addresses, fit a shorting plug [9] across the two pins of the Addr programming header on the decoder for which you wish to program addresses. This puts the decoder in “set address” mode rather than “operate servo” mode.

We assume the keypad been removed and not connected.

From your DCC system, prepare to send an accessory command to the decoder, as described in the preceding section, by selecting the Accessory function for your type of DCC system.



9. The shorting plug in place on the decoder board's Addr programming header.

Type in the address you wish to assign to servo 1, followed by the key sequence to throw the turnout. You can select either direction of throw, since the command direction is ignored. Because you have the **Addr** plug in place, the address you enter is recorded for servo 1 in the decoder.

To be accepted, addresses must lie in the range of 1 to 2043. Address values outside of this range will be ignored and will not replace whatever value is currently stored for the relevant servo (turnout) address.

Now select the Accessory function again on your handheld controller, enter the address to be assigned to servo 2, and proceed to throw the turnout. Repeat this sequence twice more to program the addresses for servos 3 and 4.

All four entered addresses will now be stored in configuration variables 41 through 48, with each address held in two consecutive CV locations, e.g., servo 1 address in CV41 and CV42, servo 2 address in CV43 and CV44, and so on.

If you have a USB connection to the Arduino Nano from your PC, and the Arduino IDE Serial Monitor is enabled, confirmation (debug) messages for each servo address programming step will be displayed in the IDE Serial Monitor window.

Remove the shorting link from the programming header to terminate the setting of servo addresses on the decoder. This action resets the decoder and allows it to operate normally. The shorting link can be stored on one of the programming header pins until the next time it is needed.

Monitoring and manual control of setting servo addresses

Connecting the keypad to the decoder board with the shorting plug on the **Addr** header offers you more flexibility. You can set

addresses and also get visual feedback through the keypad LEDs during the programming process.

With the shorting link in place, the red **Sel** LED and green LED 1 will be lit [10]. Setting the address for servo 1, using your hand-held controller as described previously, will cause the red **Sel** LED to blink as an acknowledgment that the address has been received, the green LED 1 will go out, and green LED 2 will light.

Subsequently, entering addresses for servos 2, 3, and 4 will repeat the sequence with green LEDs 2, 3, and 4.

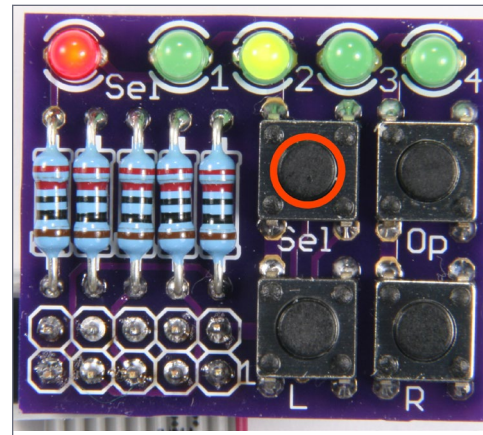
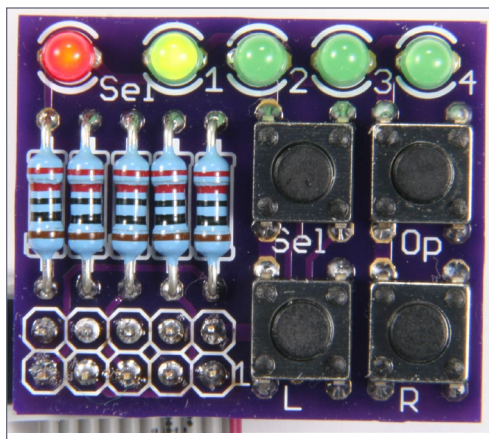
After all four addresses have been received, they are stored in CVs 41 through 48, all of the green LEDs go dark, and the red **Sel** LED blinks continuously.

In this state, the decoder will not respond to any button presses or to any DCC commands. Remove the shorting link to terminate programming, which will turn off the **Sel** LED. This resets the decoder and returns it to normal operation.

However, with the keypad connected and the **Addr** shorting link in place, you have the option of choosing *which* servo addresses to program.

Starting with the red Sel and green 1 LEDs lit, pressing the

10. You can connect the keypad during address programming to get more flexibility.



11. Press Sel during address programming to skip to the next servo.

Select (Sel) button turns green LED 1 off and green LED 2 on, and skips entry of a new address for servo 1 [11].

You can now enter a new address for servo 2 or skip this also by pressing the **Sel** button again, which turns green LED 3 on and lets you program a new address for servo 3.

When you reach the option of programming an address for servo 4, entering a new address (or pressing **Sel** to skip programming) turns off all green LEDs, stores any entered addresses in the relevant CVs, and leaves the red Sel LED blinking continuously.

As stated before, in this state the decoder will not respond to any button presses or to any DCC commands. Remove the shorting link to terminate programming, turning off the red **Sel** LED, resetting the decoder and returning it to normal operation.

Store the shorting link on one of the programming header pins until the next time it is needed.

As mentioned before, if you have a USB connection to the Arduino Nano from your PC, confirmation (debug) messages for each step will be displayed in the IDE Serial Monitor window.

Reversing servo direction

After mounting the servos to your turnouts, you may find you need one or more of them to operate in the reverse direction, so that issuing a Route Command from your DCC system correctly throws the turnout in the diverging direction instead of the straight direction.

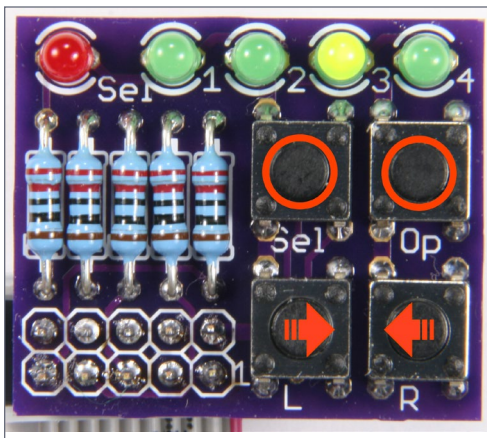
To change a servo operating direction, connect the keypad to the decoder and press the **Op** button one or more times to light the green LED corresponding to the servo to be reversed.

Now press and release the **Sel** button once. The red **Sel** LED will light briefly to acknowledge that the reversing change has been saved to the relevant configuration variable (CV 56, 61, 66, or 71).

After this, pressing the **L** button will move the selected servo to the right, and the **R** button moves it left [12].

The servo will react similarly to received DCC commands from your system.

Complete the process by pressing the **Op** button as many more times as required to extinguish all of the green LEDs.



12. Using the **Op** and then **Sel** button reverses the operating direction of the servo. After this, using the **L** or **R** button throws the servo in the opposite of the labelled direction.

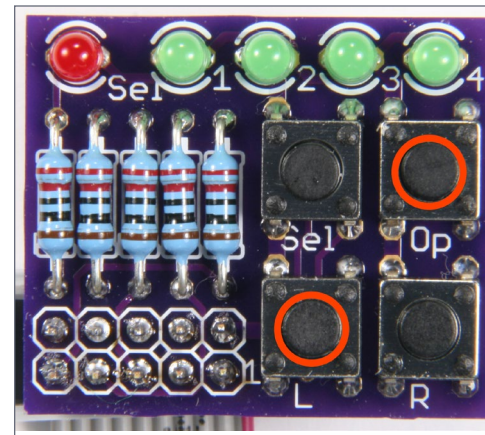
Exactly the same sequence of actions will return the servo to normal operation.

Resetting the decoder

Normally to reset the decoder and restart the uploaded software, you would press the reset button on the Arduino Nano.

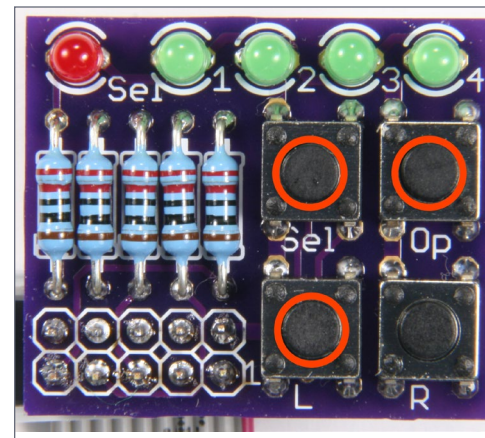
However, with the keypad plugged in to the decoder board, the reset button is covered. So as an alternative, press and hold down the **L** button on the keypad. Now press the **Op** button, then release both buttons together to reset the Arduino Nano.

All LEDs should light and then go out, and all of the connected servos should move to (or remain at) their last commanded position.



13. As an alternative to reset the decoder, press and release the **L** and **Op** buttons simultaneously.

14. To restore all the default values to the decoder, press and hold the **L** button, then press and hold the **Op** button, then press and hold the **Sel** button. Now release the **Sel** button, then release the **Op** and **L** buttons.



You can also restore all of the decoder parameters to their default values. See the instructions in the [14] caption.

After this, as with the normal reset, all the LEDs should light and then go out.

However this time, the red **Sel** LED will light briefly again as the CV default values are loaded, followed by all of the connected servos moving clockwise to their default rightmost position (20 degrees right of center).

Take care. If you have the servos linked to a layout turnout, make sure this movement can be accommodated and will not cause damage to the linkage or to the servo. Bear in mind that the plastic gear train in most servos can easily be damaged if you drive the servo against an inflexible stop.

Configuration variables and DCC operations

Like all NMRA-compliant decoders, the QSDD holds its working data in a set of configuration variables (CVs), as seen in [15].

Select the CV number to be programmed, enter the new value, and press ENTER (or whatever key is required by your system to complete the command). Since it is not possible to read back the values of CVs in Operations mode, you will have to judge, by the subsequent behavior of the decoder, whether the change of CV value was a success.

Reset is accomplished by pressing the Reset button on the Arduino Nano or, by holding down both the **L** and **Op** buttons on the keypad and then releasing them.

If connected to a programming track, the QSDD, unlike most commercial accessory decoders, allows you to read the current values of all CVs and then write (program) new values if required.

CV Nbr	Default Value	Description
1	1	Board Address LSB – internal use – ignore any value loaded here
7	89	NmraDCC Version
8	13	Manufacturer (Do-It-Yourself)
9	0	Board Address MSB – internal use – ignore any value loaded here
29	226	Decoder Configuration – Extended Accessory + Output Addressing
41	1	Output 1 Address LSB
42	0	Output 1 Address MSB
43	2	Output 2 Address LSB
44	0	Output 2 Address MSB
45	3	Output 3 Address LSB
46	0	Output 3 Address MSB
47	4	Output 4 Address LSB
48	0	Output 4 Address MSB
50	0	Load Default CV Values if Not = 173 (0xAD), Auto set = 173 after load
55	6	Servo 1: Slow Rate (1 to 16)
56	1	Servo 1: Direction - 1 = Normal Op, 0 = Reverse Op
57	70	Servo 1: Right Limit
58	110	Servo 1: Left Limit
59	70	Servo 1: Current Position
60	6	Servo 2: Slow Rate (1 to 16)
61	1	Servo 2: Direction - 1 = Normal Op, 0 = Reverse O
62	70	Servo 2: Right Limit
63	110	Servo 2: Left Limit
64	70	Servo 2: Current Position
65	6	Servo 3: Slow Rate (1 to 16)
66	1	Servo 3: Direction - 1 = Normal Op, 0 = Reverse Op
67	70	Servo 3: Right Limit
68	110	Servo 3: Left Limit
69	70	Servo 3: Current Position
70	6	Servo 4: Slow Rate (1 to 16)
71	1	Servo 4: Direction - 1 = Normal Op, 0 = Reverse Op
72	70	Servo 4: Right Limit
73	110	Servo 4: Left Limit
74	70	Servo 4: Current Position

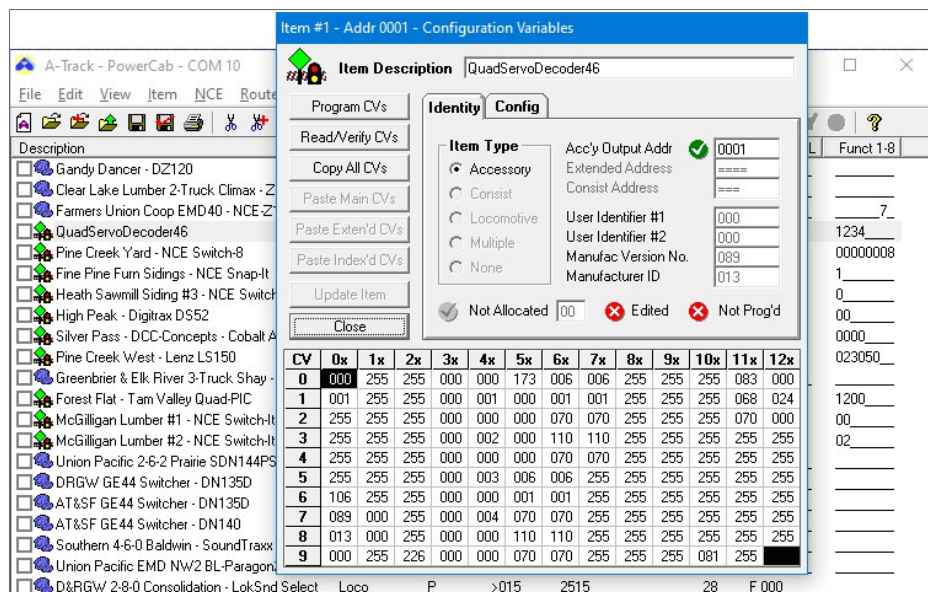
15. QSDD decoder configuration variables (CVs).

When you do this, ensure that the keypad is attached to the decoder, since the necessary acknowledgment back to the DCC

Command Station (a pulse of current) is generated by briefly switching on all five of the keypad LEDs together.

Reading and writing of CVs values via a programming track (Service mode) can be done as normal using your DCC system. However JMRI Decoder Pro appears to decide that the decoder is not a locomotive and refuses to proceed further with any programming track operation (can someone tell me differently?).

If you have any type of NCE DCC system plus a Windows computer, my own application, A-Track (www.a-train-systems.co.uk/atrack), will happily read and program the QSDD CVs and allow you to save a record of them to a file.



16. This screenshot of my A-Track application shows the Configuration Variables window for the decoder, with all relevant CVs set at their default values.

Note: While an NCE PowerCab system will program the QSDD in any mode, the older NCE PowerPro system has much less-tolerant programming hardware.

If you wish to use an NCE PowerPro to read or write QSDD CVs, then you need to connect to the QSDD via a programming booster such as the SoundTraxx PTB100, or have the Arduino Nano module powered from a computer USB port while programming is taking place.

If using Direct programming mode from the NCE PowerPro results in too many errors (misread CV values), then I recommend Paged mode instead.

The principal advantage of being able to save a complete set of CVs to a file can be valuable when you have a layout with a lot of turnouts and multiple QSDDs to drive them.

After setting up one decoder and its four associated turnouts to your satisfaction, you can then take a copy of the amended CVs and transfer them in a single operation to all other QSDDs.

Setting up these other QSDDs then consists of only of small adjustments to the servo throws to compensate for differences between individual servos (and perhaps between turnouts and linkages).

Adjustments to any of the CV values can be made simply by typing in a new value (or set of values), and then using the A-Track application's program function to transfer them to the connected decoder.

I hope you find the QSDD to be as useful as I have for more accurately driving servos on a layout! ☒

★★★★★
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DR TERRY CHAMBERLAIN



Terry Chamberlain got into model railroading almost by accident in the 1990s when he responded to a request from some modelers in California to build a DCC system based on an Atari personal computer – and he had to build a simple layout to prove that it all worked. Eventually the project evolved into A-Track, a Windows application to provide full computer support for the complete range of NCE DCC systems, with facilities similar to JMRI's Decoder Pro and Panel Pro.

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



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TECHNICAL DETAILS OF THE QSDD DECODER

For anyone who is interested, I provide the circuit schematics of the decoder [17] and keypad board [18] here.

The DCC input circuitry is adapted from the design by Wolfgang Kuffer (mrrwa.org/dcc-decoder-interface) and is used by Geoff Bunza as the basis for several of his projects.

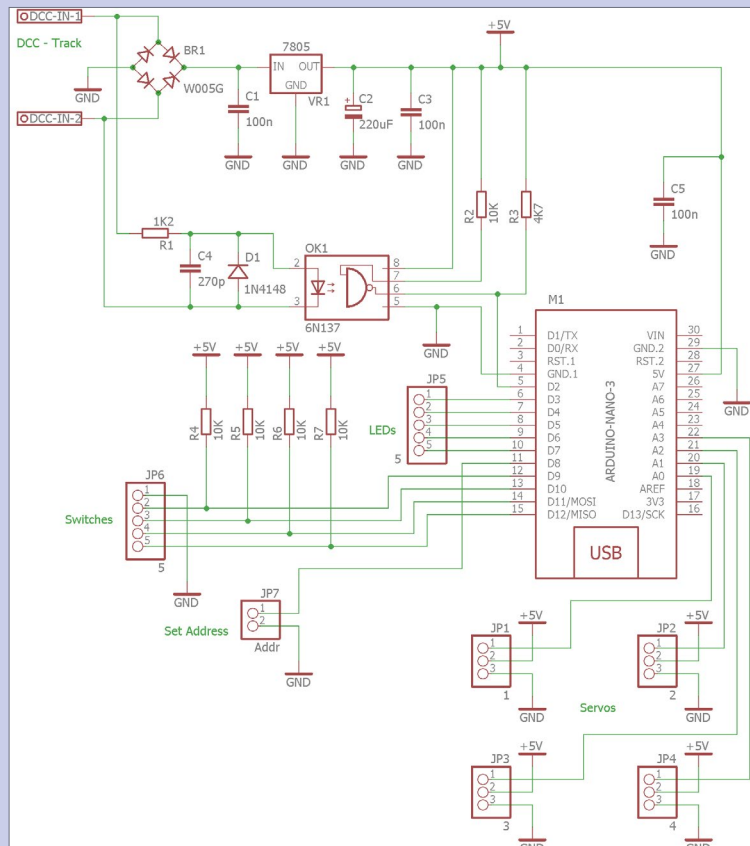
The DCC signal from the layout track (normally 14 - 16 volts AC) is rectified by diode bridge BR1 to supply around 14 volts DC to the voltage regulator VR1 which, in turn, supplies +5 volts to the Arduino Nano, its associated circuitry, and the attached servos.

Although the normal current through the regulator, with servos inactive, of about 45 mA keeps its power dissipation below 0.5 watts, this could rise briefly to as much as 10 watts if all four servos are commanded to drive simultaneously. Hence the need for the heatsink attached to the regulator.

The input DCC signal is also connected to the input of optoisolator OK1 via resistor R1. Capacitor C4 filters out any high-voltage spikes from the track, and diode D1 prevents the optoisolator input diode from being fatally reverse-biased by the negative-going part of the DCC signal.

The output from optoisolator OK1 is a replica of the DCC waveform, but at a safe +5 volt level, so that DCC command packets can be input to digital input D2 of the Arduino Nano module. Here they are decoded by the NmraDcc library functions, and relevant accessory commands then passed to the QSDD sketch code.

TECHNICAL DETAILS OF THE QSDD DECODER *CONTINUED ...*



17. QSDD decoder circuit diagram.

The remainder of the circuitry covers the various inputs to, and outputs from, the Arduino Nano.

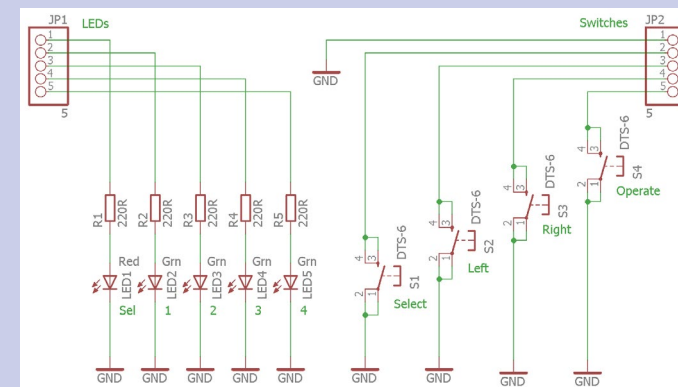
The LEDs mounted on the keypad are driven from outputs D3 – D7 via connector JP5 on the decoder and connector JP1 on the

keypad with resistors R1 – R5 setting the current through each LED to approximately 13 mA.

Pins D9 – D12 are set as inputs which are connected to the four buttons mounted on the keypad via connector JP6 on the decoder and connector JP2 on the keypad. The inputs are normally pulled up to a HIGH level by resistors R4 – R7 on the decoder but are taken to a LOW level (GND or 0 volts) whenever the appropriate button is pressed.

Pin D8 is similarly taken to a LOW level whenever the programming shorting link is fitted to header JP7. This pin uses an internal pull-up, rather than an additional external resistor, to maintain its level HIGH when the link is not fitted.

Finally, Pins A0 – A3 are each set as outputs to drive one of the four attached servos, connected via the three-pin headers, JP1 – JP4 on the decoder board. ■



18. QSDD keypad circuit diagram.



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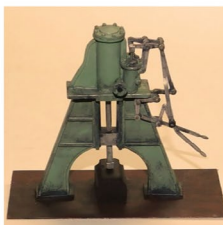
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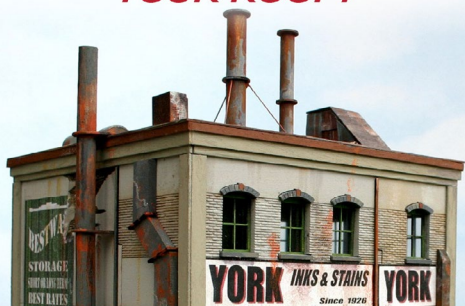
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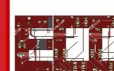
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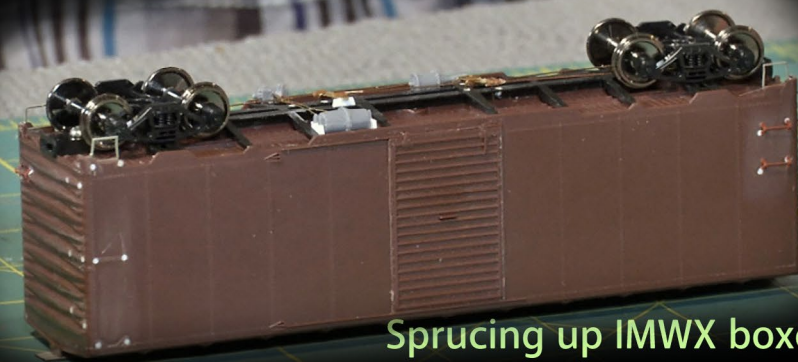


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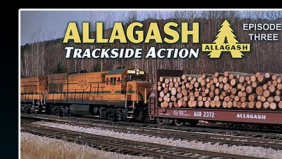
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John Peluso's **FRISCO** Eastern Division

THE MRH STAFF visits this Frisco layout that fits a lot of railroading into a 16x30' space...



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MRH STAFF: JOHN, HOW DID IT ALL BEGIN WITH you and trains?

JOHN PELUSO: It all started when as a young lad my parents gave me a train set for Christmas. It was a Marx train set and as I got older, I realized there was HO scale in the market. I said, I've got to have one of these!

The realism of HO scale track compared to the three-rail track really influenced me in going farther than what I did with just a starter train set. It just kept snowballing.



1. John Peluso models the Frisco Eastern Division between St. Louis and Springfield, Missouri. Here a fast freight crosses the Meramec River.



2. John models the late 1950s to early 1960s. At that time, the Frisco still ran a number of name passenger trains such as *The Meteor* shown here.

MRH: You ultimately decided to model the Frisco, why is that?

John: Well, the Frisco railroad was close to the house where we lived, and we rode our bikes down to the railroad tracks. The trains were right there. I didn't have to go anywhere else to see other railroads. The Missouri Pacific ran parallel with the Frisco down on Macklind Avenue and Manchester Road. It was a sight to see a pair of double mainline track close to one another.

I was fascinated by the black and gold coloring of the Frisco freight locomotives and the red E8s for the passenger locomotives. I chose to model the Frisco because I really like the paint scheme.

MRH: What era are you modeling?

John: I model the late '50s and early '60s. I wanted to have shorter cars and shorter wheelbase locomotives. I have four-axle locomotives and they look proportionate to the tighter radius model curves – as well as the rolling stock, the 40' boxcars and 50' boxcars. You wouldn't have that overhang look like you do with longer cars and locos on a sharp radius.

MRH: You picked an era just late enough that Frisco steam is no more, correct?

John: Yes, the steam-to-diesel transition period was done by then. My main reason for not modeling steam was I don't remember steam as a young child. Steam was gone by then. The only thing I remember were the F units, FA units and the GP7s. Then a bit later, the GP35s and Alco-GE U25s.

Plus, steam engines take a lot of room as far as storage facilities.

MRH: Walking into your layout room, what do we see?



3. A coal train rolls through St. James on its way to Springfield, Missouri and beyond.



4. John's layout has a mix of rural and industrial areas along its 400' mainline run from St. Louis to Springfield. You can also see the newest Frisco "white & mandarin orange-red" paint scheme starting to show up on the line.

John: As a visitor enters the room, they're going to see two levels instead of one. And they're only going to see part of it because it is linear – it's not a tabletop. As visitors come into the room and I walk them down the aisles, they are amazed at how much track there is. They're pretty amazed at what is done in a very small space.

MRH: So how much space do you have?

John: The layout space is approximately 16 feet wide by 30 feet long. The reason for the double levels is I wanted a lot of mainline running. I wasn't too satisfied with a single level of track. So, a double-decked main line was my ultimate goal.

MRH: How did you develop that track plan for this space? Did it take a lot of tries or did you get it on the first try?

ABOUT THE FRISCO



The St. Louis-San Francisco Railway was in operation from 1876 to 1980. Affectionately known as the “Frisco,” the line never made it west of Texas, terminating 1,000 miles away from San Francisco.

Finally accepting its land-locked midwestern role despite its ambitious name, the Frisco matured into a rather successful regional railroad.

Throughout its colorful history, the Frisco has not been your typical central US “granger route.” Instead, the Frisco developed its own memorable culture, right down to the early American callback of its coonskin logo. ■

John: The track plan that I designed was not really easy as far as coming up with a configuration. I did follow the prototype trackage as it was back in the '50ties and '60ties, from my remembrance.

The area that I model the Frisco called the Eastern Division. The Eastern Division ranged from St. Louis, Missouri to Springfield, Missouri with Springfield being the major hub of the Frisco railroad.

The line that I model runs from St. Louis to Springfield. In order to achieve that, I needed to do a double deck layout to fit as much main line as I could into the area that I had.

When designing the layout, I came up with a basic linear track plan and then I proceeded to jot out from there as far as locating the industries and mainline tracks. I wanted to incorporate many scenes into the layout from what I remembered. I just started designing the layout in segments, like where different industries were located along a certain part of the layout or the mainline.

But the mainline tracks that you see I derived from the actual Frisco track book that I acquired when Frisco had a museum located in Springfield. The actual Frisco track plans really helped my design and track configuration of the layout.

MRH: Nice, using the actual Frisco prototype track plans! Take us around your layout briefly from one end to the other.

John: My layout models the Eastern division of the Frisco railroad. The layout starts in Chouteau Yard, which is downtown St. Louis. From there it heads east with the next stop from Chouteau being Lindenwood Yard, which is the main yard.

There trains get broken down and cars are switched. If you're doing a through train, the train departs Lindenwood Yard and

enters Webster Groves, then on to Valley Park and to Eureka where it enters the helix and comes up to the upper level.

Then it enters the town of St. James. Next after St. James is Dillon. From Dillon it goes to Rolla. From Rolla it goes to Dixon. Dixon sits on the outskirts of Springfield. Then it enters the Springfield Yard staging area. And that's the terminus in the room.

MRH: What about designing the aisles to get it all to fit into this space?



John: The largest aisle space on the layout is 36" and the smallest is 24. I find 24" is good enough for one person to negotiate, but kind of hard with two people coming down the same aisle.

I usually tell the operators to try not to pass each other in the middle of the aisle, wait until the end of an aisle, and then you can proceed down the next aisle to your train.

Since using DCC wireless throttles, you really can stand at one end of the layout and run your train without walking beside it. But I can see why people want to walk it because it's more realistic.

MRH: When then, did you start construction?

John: I started construction on the layout approximately in the year 2005, but I wasn't really in it full fledge. I just kind of pieced it a little at a time. Then when I retired in 2008, then I hit it pretty hard to get it going.

And I had help. There were people who helped me with benchwork, wiring, scenery, and kit building. It was a unique experience to have everybody skilled in different aspects of the hobby able to input – and I could learn from them also on different things.

MRH: Did building the layout go as you expected?

5. A mixed freight pulls out of Lindenwood Yard, crossing the long deck girder bridge. The train crosses McCausland Avenue as it heads west toward Webster Groves.

John: The speed of the construction went pretty fast because I had read books on benchwork. I've also seen other people who built a layout and how they'd done benchwork. I pretty much copied from other people who are in the hobby.

MRH: What's the ruling grade on the layout?

John: The ruling grade on the layout is the helix and the grade is at 1.7%. And then there's what they call Dixon Hill, which is another grade on the visible layout and that is only 1.5%.

MRH: On your helix, what's the radius and how many levels does it have?

John: The helix consists of a 32" single mainline radius and there's four levels to reach the second level.

MRH: What kind of track are you using?

John: I use Atlas code 83 track with #6 switches, mostly on the yards and in the industries. And #8s on crossovers. I used Atlas



6. A mixed freight powered by a couple of GP7s sits on track five in Lindenwood Yard, awaiting clearance to depart for points west.



7. Lindenwood Yard's engine house displays Frisco diesel power in both the old black and yellow scheme and the new white and mandarin orange-red scheme.

primarily because of the cost and it looked satisfactory to me as far as prototype-looking track.

MRH: How many feet of main line do you have?

John: I have approximately 350 to 400' of mainline track on the layout.

MRH: Any idea how many turnouts you have on this layout?

John: I'd say there's 62 or more.

MRH: What's the minimum radius on the main line?

John: The minimum radius on the main line is 30".

MRH: What have been your greatest challenges in doing this layout?

John: The greatest challenge about the layout is what height did I make the lower level and what height that I make the upper level. I did cross sections – I used stick people – I wanted to make sure that I had the right separation between the lower and upper level.

I didn't want it too high where some people would have to step on stools. But there was no two ways getting around it – some people do need to step on stools to do some switching, but it's just a compromise that I had a live with. All in all, it works out pretty well.

The lower level is 43" and the upper level is 62", with a 19-inch separation.



MRH: Tell us about your unique way of getting into the layout room.

John: When I designed the layout, I knew there was going to be a problem with getting into it and I didn't want to crawl underneath it.

So, I designed a swing gate. Even though the layout is two levels, I designed one swing gate for both levels. I open it up simultaneously without needing two different swing gates.

I designed the swing gate so it would be scenicked and not just raw plywood or just a bridge you swing open. I wanted a swing gate on both levels and have it scenicked.

MRH: How well has the double-decked swing gate worked?

John: They're working out just fine. I think they are successful in achieving what they were supposed to do.

With the double-decked swing gate there is lighting to be considered on the lower deck. I use a disconnecting system that's just an extension cord plug. When you have to open

8. This three-span truss Meramec River crossing stands as one of the most dramatic bridge scenes on John's layout.

the gate, you just disconnect the light through the cord plug and then open the gate.

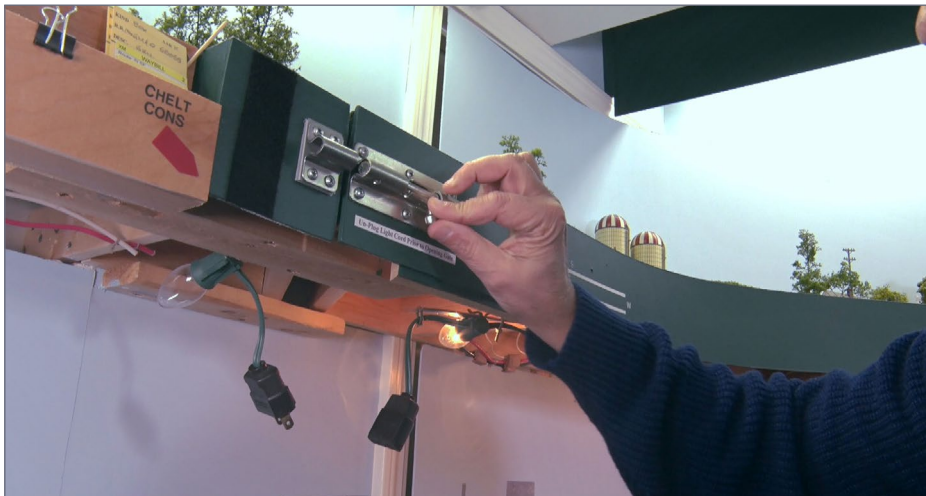
MRH: Any nasty surprises when doing the layout?

John: There were no big surprises on the layout because I took the time to design it right. If there was a surprise or a problem, I was able to correct the problem right away and finish the design and construction the way it is now.

MRH: What do you like the most about your layout?

John: What I like most is the scenery aspect. There are other things I enjoy doing too, but scenery is my main thing. I'm able to achieve realism through photographs and I hope that when people see it, it looks real to them.

MRH: What do you like the least about this layout?



9. John uses a clever double-deck swing gate to enter the layout room. Here John has unplugged the lighting and unbolts the latch as he prepares to open the swing gate.



10. Here John has completely opened the double-deck swing gate and moved it all the way up against the layout. Now you can freely enter or exit the layout through the room door.



11. The swing gate has legs that go all the way to the concrete floor with rollers, making it very stable when opening and closing.

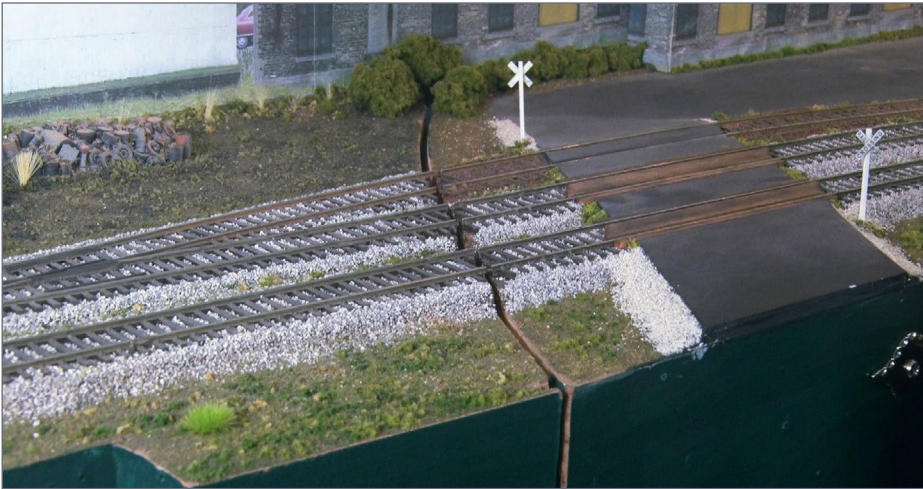
John: I wish I had more house space, I wanted to achieve as much main line as I could. There are certain things you know you must settle for. That's basically it.

MRH: If you had to do it over again, what would you do differently, if anything?

John: I would try to incorporate more industries for switching. I do like mainline trains but switching is the thing most people like to do during the op sessions. So that's what I would do different.

MRH: What type of control system are you using and why?

John: I am using CVP EasyDCC. Everybody around here uses Digitrax and I wanted something different, and I'm glad that I did. I really like the EasyDCC system. It's really easy to operate and when I have ops sessions, there's no disruption at all with it.



12. Here you can see a swing gate joint on the lower level when the gate is closed. John reports no problems with the gate or the track – it works “exactly as designed,” says John.



13. An EMD switcher works Lindenwood Yard, the main yard on John's Frisco layout.

MRH: What kind of decoders are you using and why?

John: When I first started out using decoders, sound was not really in, so I was using NCE. With sound, I started using all kinds of decoders, like Soundtraxx. Now I'm using LokSound and I like the LokSound best of all.

MRH: How do you program the decoders? Do you just program on the main, or do you use JMRI?

John: When I first started programming the decoders, I used a programming track and then moved to programming on the main. Later on, I learned to use JMRI, which is a lot simpler.

MRH: As a fan of LokSound decoders, do you use the Lok Programmer at all?

John: No, I use the Sprog to connect JMRI to the layout.

MRH: What's your least favorite part of doing a layout and how do you motivate yourself to do it anyway?

John: My least favorite part of a doing a layout is scratchbuilding structures. I've done a few and it is time consuming. I like

kitbashing better than scratchbuilding. Kitbashing is easier and it allows me to easily come up with different ideas for structures.

MRH: Tell us about the locomotive fleet that you have.

John: When I first started building the layout, I needed locomotives and Frisco locomotives weren't available as ready-to-run. So, I had to paint my own and decal them. Whatever locomotives I acquired, I stripped them down and repainted them to Frisco.

There was one company that made Frisco decals, but they're no longer in business. Fortunately, I made sure that I bought enough to last me into the future. Now there are more people developing Frisco decals, so I'm kind of glad – painting a Frisco unit has a good future!



14. EMD F3 units pull this coal train through St. James (and exits the helix from the lower level). John's motive power includes not only F and GP units from EMD, but also Alco FAs and GE U25Bs.



15. An Alco RS-1 switches this industrial area on the outskirts of Springfield.

MRH: What kind of diesels are we talking about? Mostly EMDs, Alcos, a little bit of everything?

John: The Frisco had F units – EMD – and they had Alco FAs, and they also had GE locomotives. I try to incorporate all of them because Frisco used a variety of different of locomotives for specific traffic purposes.

MRH: Do you have favorite brand of model locomotives you prefer?

John: I really don't have a favorite brand. I think Athearn is a good brand, so are Stewart and Bowser. I don't have any InterMountain engines, but I would like to see how they work.

MRH: Tell us a bit about your rolling stock fleet.

John: My rolling stock consists of different varieties. A majority of it is Athearn blue box, but I did like the Proto 2000s when they came out with kits. Also, Accurail and other ones that I

can't remember off the top of my head. I do like the Athearn blue box because they're easy to put together. The real intricate kits with a lot of detail really look nice, but as the train goes by, you really don't notice the details that much. That's why I stick to the Athearn blue boxes.

MRH: What sort of couplers are you using?

John: I use mainly Kadees. The majority of the Kadee couplers are the old number fives, but I'm starting to use the whisker types now. But mostly, I'm using Kadee number fives.

MRH: What are your thoughts on doing layout scenery and backdrops?

John: For backdrops on my layout I use pre-printed backdrops from Scenic King, a company which is no longer in business. But there are other pre-printed backdrops out there now that are just as good or better than Scenic King.



16. John managed to get a lot of layout into his 16x30' space by using two very narrow decks.



17. Here you can see how narrow John has made the shelves on much of his layout. Railroads are inherently linear in nature, so running a single mainline through two decks of narrow shelves gets more railroad into the space.

As for the scenery methods I use, I go with cardboard strips glued together and I use either masking tape or a plaster gauze to cover that up. Then I add a final coat of a drywall mud.

When that's dry, I give it a paint of earth color. Then I use Woodland Scenics foam, a coarse turf or a fine turf, it just depends. I try to blend the colors to keep the greens to a lighter green, rather than a dark green or a burnt grass type of color.

MRH: What's your favorite weathering method?

John: My favorite weathering method for rolling stock or structures is chalk. I'll use a spray brush only if I have to, but mostly it's chalk.

MRH: Speaking of structures, what kind of structures do you have on the layout?

John: Most of the structures I have on the layout are from Cornerstone. And some of them use the Cornerstone modular

wall system. I like being able to fabricate buildings using the modular wall system.

MRH: What about your bridges?

John: I have a three-span truss bridge crossing the Meramec River and those are Walther's kit truss bridges. I have another bridge made from Atlas girders and I used the Atlas deck truss bridge for one of the bridges. I just placed them together and made new gussets to join them so I can't really tell where the joint is.

MRH: What about the tunnels on the layout?

John: I didn't model tunnels because the Frisco didn't have many along the Eastern Division that I model. Matter of fact, I don't think there were any tunnels. There may have been one that



18. John expanded the apparent depth of his narrow shelves by using a nice photo backdrop around most of the layout, a quite effective technique.

was no longer in use during the '50s and '60s that I model. So, no tunnels on the layout.

MRH: We notice when you do need to use hidden track-age such as the helix and staging, the tracks tend to disappear into the trees because there aren't any tunnels.

John: Yes, I use hidden staging and when the trains come into the layout from staging, they appear on the layout out from under a bridge or through some kind of trees hiding the track.

MRH: Do you host regular operating sessions?

John: I do host regular operating sessions. We have a round robin crew where we all participate in each other's layout op sessions.

We try to have two operating sessions every month with the round robin crew, which usually ends up being about two to three operating sessions in a year.

Right now, I'm also having my own operating session once a month during the weekdays for us retired folks. The round robin on the other hand has both retired people and people who are still employed.

MRH: How long does an operating session last?

John: Usually around three hours or three and a half hours. We try not to do it any longer because it does get tiresome being on your feet.

MRH: Are you using timetable and train order? Are you using a dispatcher using radios? What are you doing?

John: I'm using a schedule with a dispatcher. The communication is done by two-way radio between the road crew and dispatcher. The dispatcher will verbally give orders to the road crew to proceed to a given point and hold until further instructions. So, it's a "mother, may I?" type of operating system.

MRH: What are you using to route the cars?

John: For car routing I use car cards with four stages to each waybill. At the end of each session, I restage the trains in the staging yard and turn the waybills around for the next session.

MRH: How are your operating sessions working out?

John: When I first got into operating, I was kind of a greenhorn at it. I asked for assistance from the round robin ops crew to help me develop an operating scheme. It's been trial and error, really.

We realized there were too many trains running, so we came up with a two-sequence type of operation with an A-sequence and a B-sequence.

Each sequence fits within the three hours and it's working out very well.



19. The other end of John's layout terminates at the staging yard in Springfield. While the staging yard ladder remains visible, the rest of the staging yard loop disappears under a bridge overpass into the hidden area also housing the helix and lower staging.

MRH: Do you use a fast clock at all?

John: I'm not a fan of fast clocks, but I've operated on them. I can take it or leave it, but I didn't want a fast clock on my layout. I just want people to have fun and for it to be a more relaxed atmosphere.

MRH: Do *you* run trains at an op session, or do you just watch?

John: During a op session, I am the overseer of the operating sequence. I'm in the layout room and I distribute the work orders to the crew.

When they're done, they give me their paperwork and I issue more work orders for the next road crew taking a train out of the yards or out of staging.

MRH: You sound like a crew caller.

John: It's exactly what it is. I am a crew caller.

MRH: How well do you like HO scale? Would you consider doing a different scale or gauge?

John: I like HO scale because it lets me achieve the layout that I want in my given space, but I have operated on other layouts of different scales, mainly O scale.

I like the look of O scale and like the realism of O scale. But some O scale layouts I have operated on are *very large*. Since I like a lot of mainline running, that can't fit that type of layout in my basement.

But I have given thought to having an O scale switching layout. That might be something in the future.

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MRH: What are your thoughts on layout size and this layout? Can a layout be too large?

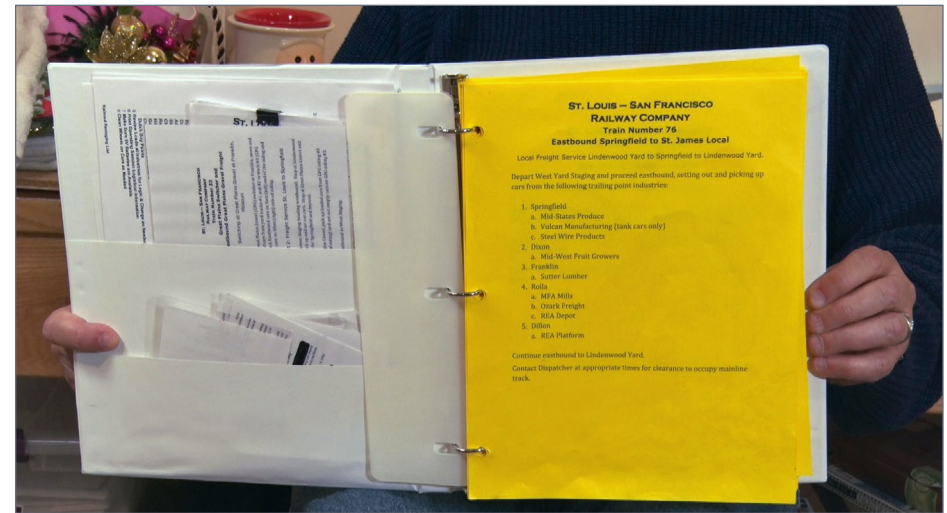
John: Realistically, the size of a layout depends on the individual. A layout can be too big with very high maintenance and very time consuming.

But when I built my layout, I made sure I built everything to not need that much maintenance. And if it does need maintenance, I have easy access to it so I don't have to reach far to do any hard maintenance on it. So yes, a large layout can be a problem.

MRH: Your layout is going to be open for the convention this summer. What do you hope convention goers get out of coming to see this layout?



22. John hosts regular operating sessions on his layout. The wireless EasyDCC throttles work nicely to minimize crew confusion when trying to pass each other in the layout's often narrow 24" aisles.



23. John has developed a two different train sequences he calls A and B, and then has created a train procedure guide for each train to assist the operators.

John: I hope those that come to operate on here have an enjoyable time operating the layout. I'm pretty sure they will because I've had other open house layout op sessions, one of which was Arch Rails.

I've gotten tremendous feedback from the people who participated. They were amazed at the scenery. They also liked how well the layout runs, how smooth it is. There were no derailments, no shorts, and they seemed fascinated by how it was put together and they really enjoyed themselves.

MRH: What sage advice would you give to someone who's brand new in the hobby?

John: For someone who is just starting out in the hobby, take your time deciding on what you want to achieve. What do you want to do with the model railroad that you have?

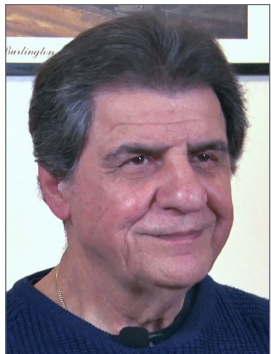
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Don't overdo it and don't overspend, you know, don't bite off more than you can chew. Choose a scale you think you can be comfortable with. Choose the type of railroad that you can be comfortable with.

There's all sorts of things you can do. There's all kinds of opportunities for a person to start out in this hobby and see what you can achieve. ✓



JOHN PELUSO



John got interested in model trains when his parents gave him a three-rail Marx train set for Christmas. Later John became enamored with the more realistic two-rail HO trains and moved to that scale.

John grew up in the St. Louis area and fell in love with the St. Louis – San Francisco, aka, the Frisco, a local prototype. He started his current double-decked HO layout in 2005 and

has been an ardent Frisco modeler since discovering that prototype as a kid. ■

John Peluso's FRISCO



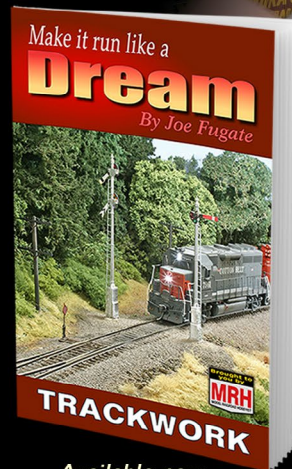
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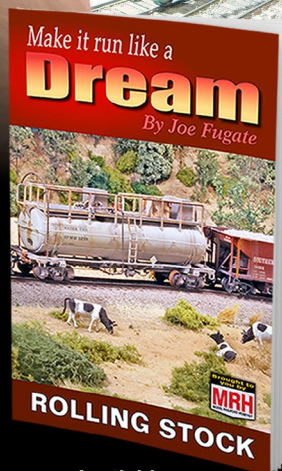


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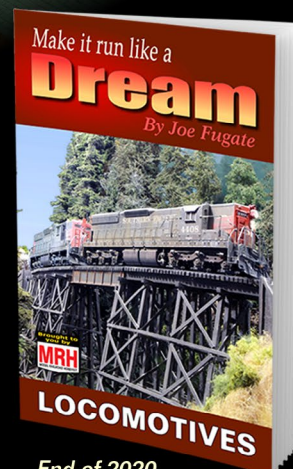
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Custom car card boxes



Model Railroad Hobbyist | March 2020

1. The finished car card boxes in use on Michael's layout.

MICHAEL ANTEAU adds homemade car card boxes along the layout fascia ...

AFTER EXPERIMENTING WITH SEVERAL METHODS of routing cars, I recently settled on car cards and waybills for my HO scale Nicholas & Ashley Creek Ry. I am using car cards created with Easy Model Railroad Inventory by Bob Langer. This is a great program available for free at pdc.ca/rr/freebies courtesy of Bob and Bill Brillinger.

My car routing method requires a card box for each industry on the layout. I wanted the boxes to be consistent and to be an integral part of the layout benchwork. I also wanted them to feel "railroady" and be fun to use.

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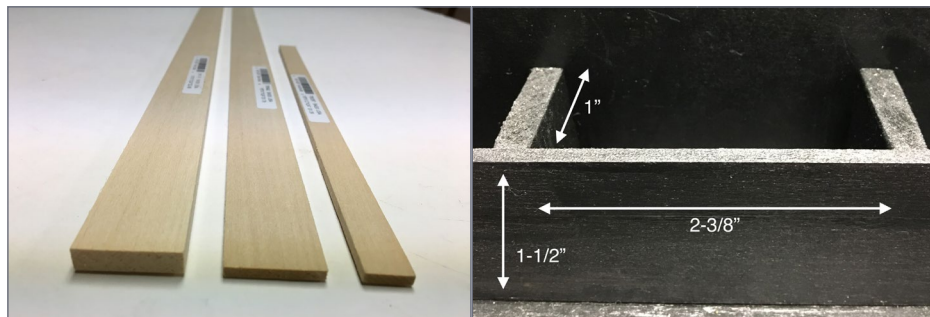


After some experimentation, I settled on 1x¼" basswood for the box dividers and ¼" basswood for the front. I use a box spacing of 2¾" inches to match my cards, and a divider height of 1-½". Each box is 1" deep. You can adjust the dimensions to match your car cards.

To build the boxes, I first install the base shelf, usually the same pine 1x4" board I use for benchwork. I screw this to the bottom lip of the benchwork, or anchor it to the fascia from behind with glue and screws.

I make the base shelf 3" deep to allow for card sorting in front of the boxes. I cut a 1" wide strip of Masonite hardboard and attach it to the front of the shelf with wood glue and a nailer. This forms a ½" lip that holds car cards at a convenient viewing angle when sorting.

Next, I build the card boxes themselves. I made a simple spacer to help me install the boxes consistently. I cut and sanded a small block of wood 2¾" long and drove a drywall screw into it



2a,b. Mike used basswood lumber to construct his car card boxes, made to the dimensions shown.



3a,b. Mike marks the end of his boxes with a taller piece. The shelf itself is attached to the fascia with glue and screws.



4a,b. A 3" deep base adds a convenient card sorting shelf along the front.

for a handle. I stuck the UPC stickers from the basswood I'm using to it as a reminder when I need to buy more lumber.

To build the boxes, I cut my 1x¼" basswood into 1½" high pieces, with two 2" pieces for the ends. I use wood glue to attach the left end piece of the card box to the base and the fascia. Then I place the spacer next to the edge and glue in the dividers, one by one. Finally, I glue on the right end piece.

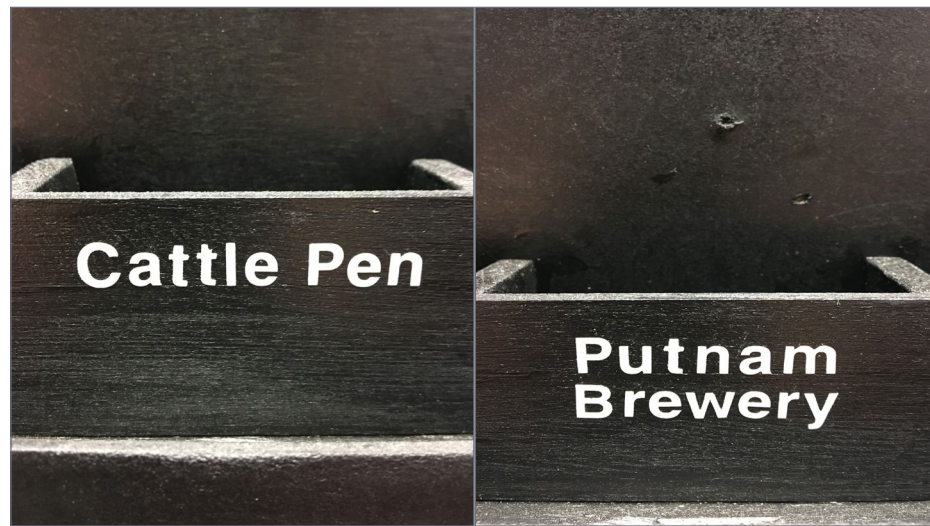
After the glue has set for fifteen minutes or so, I glue on the ⅛" front pieces. I use a 1" wide strip on the bottom, and a ½" wide strip on top, to match the height of the dividers. When the wood glue dries, the resulting structure is very strong.



5. To standardize the car card box spacing, Mike made a simple spacing jig from a piece of wood and a drywall screw.



6. After painting, the dividing line disappears between the two pieces of wood Mike used for the card box face.



7a, b. After painting the car cards box assembly black, Mike applies ¼" white self-adhesive letters to label each box.

After painting, the slight dividing line between the two pieces disappears, but that subtle line aids in making the box labels straight and level.

I paint my car card boxes black to match my fascia. Then I use ¼" white self-adhesive letters to label each box. These stick well but are easily removed if I want to make changes.

I use a hobby knife to peel off each letter and position it on the box. For long labels, I start at the middle and work outward in both directions, so the final label is automatically centered.

Last, I add "L" hooks to the edge of the shelf for hanging throttles and clipboards. I use Digitrax wireless throttles, and I learned a trick from a friend.



8a,b. Mike adds L hooks to the car card box lip for hanging throttles and clipboards used to carry ops paperwork.

We put a gentle loop in the LocoNet plug wire and secure it with a zip tie. This makes a handy loop to hang the throttle. We've used these for over a decade with no problems. I can also hang the small clipboards I use to carry car cards and other railroad paperwork.

That's it – I find these car card boxes easy to make and they work great for holding and working with car cards on the layout. ✓

MICHAEL ANTEAU



Michael Anteau comes from a railroad-ing family. His grandfather was an engineer for the C&O and his father was an engineer for CSX.

Michael was bitten by the model railroad bug watching his dad's Lionel trains, and he built his first 4x8 layout at the age of 10 on a sheet of plywood on the dining room floor! Michael is now working on his "dream" layout, a prototype freelanced coal hauling railroad set in transition-era West Virginia. His lovely wife Angie leased him the largest room in the basement and she actively encourages his hobby.

Michael lives in Northwest Ohio and works in Information Technology. He has two grown children. When he is not working on the Nicholas & Ashley Creek RY, Michael also enjoys playing piano, biking, hiking, traveling and winemaking ■



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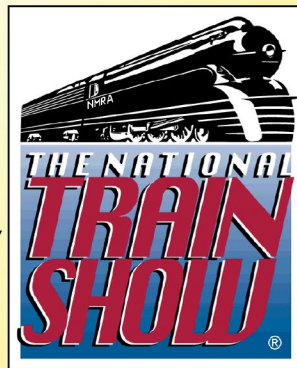
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My solution to Shaky Hands Syndrome



Model Railroad Hobbyist | March 2020

1. As we age, we can develop issues such as shaky hands that hinder our modeling. The author relates his journey in dealing with this issue.

An N-scale kit sent **JACK HENINGER** on a quest to ease his shaky hand issues ...

DISCLAIMER:

Let me emphasize that this article simply relates my experience and, what has worked for me. At no point did I consult a medical doctor, nor is this intended as medical advice. Please consult a physician if you need medical assistance – do not just rely on this article.



RATE THIS ARTICLE

ABOUT TWO YEARS AGO I FOUND AN N SCALE

InterMountain reefer kit at our local train show. I wanted to see if I could build it.

I didn't realize just how bad my hands now shake while trying to add very small parts. Take grab irons for example. There are two holes, get the part in the tweezers, aim it at the holes – now who keeps moving my hands around?

“Alright there's the hole, so time it just right and it should go in. OK, watch the hole, it's all a matter of timing and stab downward – OK *now!* Yes, finally success!”

Grab irons can be particularly difficult because they have two holes and two pins. With a bit of moving the grab around, I could finally get the second pin located too. Don't complicate things by talking about adding glue, too!

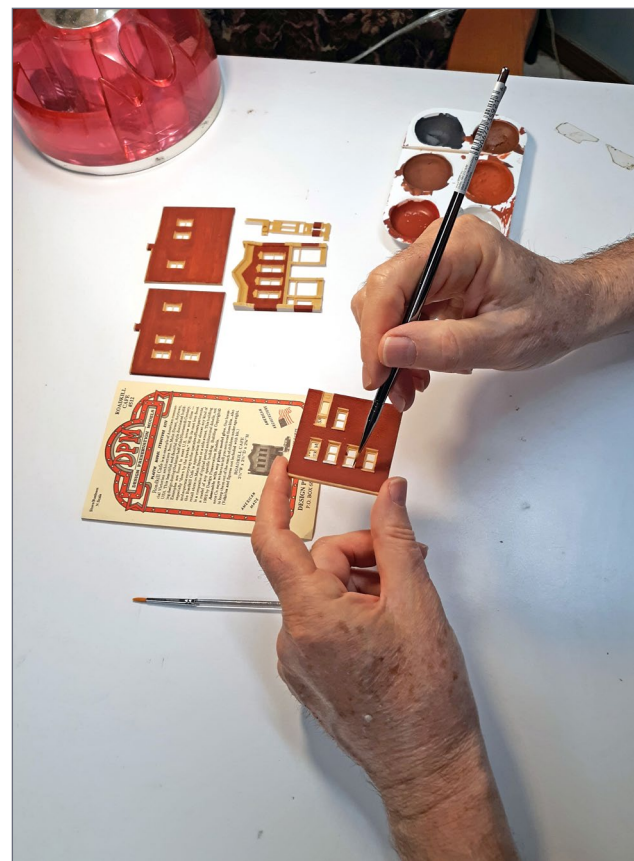
With a bit of practice, I found it got easier to get little parts into their holes in the car body.

I suspect some of you can relate either through your own experience or through someone you know.

I was 66 years old (now 68), and was not at all ready to give up on this hobby – and I sure didn't want to change scales – although I did give it some thought!

My path to improvement

I have been a big fan of natural healing since the late '70s. When you look into all the body needs to function properly or to heal



2. Ever try painting window frame trim with shaky hands? It can be extremely difficult!

itself to some degree, there can be a lot to it. I wanted something over-the-counter that I could afford and might help, so I tried some natural supplements.

I first tried PQQ, (Pyrroloquinoline Quinone Disodium Salt). The one I found that's put out by Natural Factors also contains CoQ10 and Vitamin E.

I tried this by itself for about six months, but it is pricey. The PQQ helped, but I still had issues.



J. Fugate

THE *MRH* DISTINCTIVE

When I titled this magazine *Model Railroad Hobbyist* back in 2009, I did so deliberately.

I like to remember first and foremost, the hobby is about those of us who do the hobby. Rather than focus on the models exclusively, I want to remember the human element of doing the hobby as well in *MRH*.

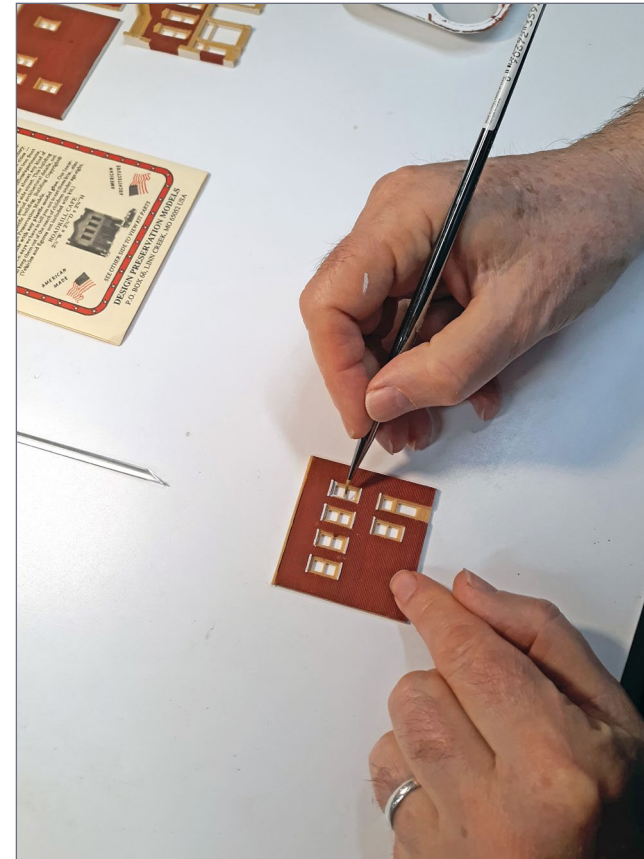
Other hobby magazines tend to focus on just “the stuff” – it’s all about the models, and they treat the people as a side note much of the time. While the models certainly matter a lot for a model railroading magazine, I never want to sideline the human element.

By themselves, models are static – they just *sit* there. Add in the people element and now the models move, they evolve, they come alive – modelers have clever solutions to the hobby’s challenges that yield a satisfying result. And it’s the fact the trains move and do interesting things that makes this hobby so engaging!

As the *MRH* founder and publisher, I like to go beyond the models to also do articles about making our life in the hobby better. This article serves as the latest example of this *MRH* distinctive.

Then I discovered N-A-C, (N-Acetyl-L-Cysteine). It’s put out by Jarrow, and according to the label, it’s a precursor to Glutathione, which is a major component of our brains. When I started taking both the PQQ and the N-A-C together, the shaking in my hands all but disappeared.

Last summer I went to a Metaphysical Fair, and it turned out my wife knew one of the vendors there selling health-related lotions and creams. One of them, Magnesium Lotion, supposedly targets muscle issues.



3. After experimenting with some over-the-counter natural supplements, my shaky hands have completely gone away. Now I can paint that window trim with ease!

My wife suggested I try it on my wrists. I did and when I got home, I worked on a kit. The shaking was gone!

I went back the next day and got a bottle. It is produced by Jordan Essentials, a multi-level marketing firm – I’m not affiliated with them, I just wanted to try this one product.

I also checked our local health food store, and they have several magnesium lotions and oils. I have not tried them yet, but I will once the bottle runs out.

I also tried an experiment when my bottle of PQQ ran out. I just took the N-A-C and used the Magnesium Lotion together. It also works well.

I have since found that taking N-A-C three times a day at first means it builds up in the body. Now I am down to taking N-A-C once a day, and I put the lotion on when I get up and then again before I go to bed.

Since I started this combination of supplements, I have built two RS Laser structure kits and six or more craftsman car kits in On30, HO, and HO_{N3} – with no issues at all.

I am very pleased. ☒

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

mrhmag.com/magazine/mrh2020-03/shaky-hands



4. Here are the supplements I tried that helped with my shaky hands problem. Your mileage may vary, so no guarantees – but these helped me. See the text for details.

JACK HENINGER



Jack started out with a Lionel train set at the age of 6. He discovered HO scale while in junior high and then encountered N scale in high school.

Having very little money to spend on trains, Jack experimented with scratch-building structures. Jack built his first real layout as a 5'x9' island in his bedroom. Graduation, a stint in the US Air

Force, along with marriage and school put trains on hold until the mid-1980s.

A new marriage, moving to Minnesota, and buying a basement with a house on it got Jack model railroading again. In 2005, they moved to Missouri to warm up.

Jack is now retired, is active in his church, and likes exploring alternative health methods.

Jack currently lives in Springfield, Missouri and models primarily in HO. ■



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Model Railroad Hobbyist | March 2020



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Hand carving realistic rocks

YouTube modeler **BNSFUPRailroader** demonstrates step-by-step how he hand carves some very realistic rock formations in plaster. Generally speaking, you just let the plaster form natural breaks as it hardens and you break it away with various tools. Watch the video carefully and then experiment yourself, with some practice the results can be pretty amazing. ■



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MARCH NEWS

column



Model Railroad Hobbyist | March 2020

RICHARD BALE and
JEFF SHULTZ report the
latest hobby industry news

★★★★★
RATE THIS ARTICLE

INDUSTRY NEWS

Amherst Presents Another Successful Show

The Amherst Railway Society 2020 Railroad Hobby Show, held in West Springfield, Massachusetts the weekend of January 25-26, reported attendance at 21,534. With more than 500,000 square feet in four buildings, the show continues to be one of the largest and most important model railroad events in North America.

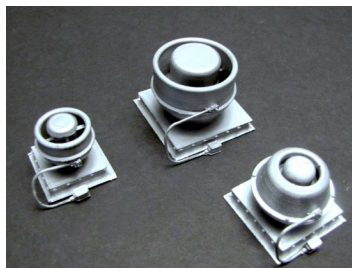
New Address for InterMountain

InterMountain Railway Co. has completed a move to a new facility at 30 East 9th Ave., Longmont, Colorado. The move includes tooling and molding operations, shipping and receiving, and corporate offices.

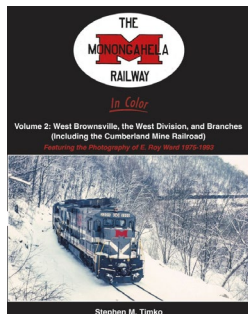
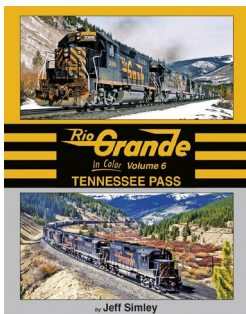
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▶ THE LATEST MODEL RAILROAD PRODUCTS, NEWS & EVENTS

NEW PRODUCTS FOR MULTIPLE SCALES



Dimensional Modeling Concepts offers a range of 3D printed detail items including Kitchen/Cooker Exhaust Fans in both HO and O scales. The fans are available in 3, 4, and 5-foot diameter. For additional information visit dmcrrproducts.com.



Morning Sun Books has released Volume 2 of *The Monongahela Railway in Color*, by Stephen Timko. This volume covers the former MGA West Division, including the modern (1967) Waynesburg Southern and (1984) Manor Branch. The

book features 300 full-color photos by noted rail photographer E. Roy Ward.

Morning Sun has scheduled an April release date for volume 6 of *Rio Grande in Color: Tennessee Pass*, by Jeff Simley. This volume features 1990s action on Tennessee Pass as the last Rio Grande-powered trains moved traffic over the Continental Divide. The book covers every facet of operation needed to keep trains going on the three percent grade of Tennessee Pass. It is the last hurrah for the Rio Grande before it succumbed to industry mergers. For additional information contact a dealer or visit morningsunbooks.com.

Motrak Models has created a paint rack kit suitable for holding up to 21 of the 2 oz. craft paint bottles commonly found at

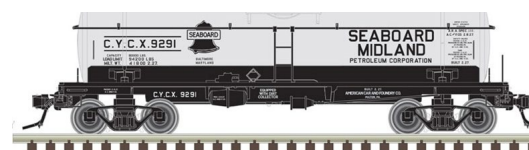


Michaels, Hobby Lobby, or Walmart. Made of 1/8" hardboard, assembly is with wood glue and should only take about 15 minutes. The rack is designed to sit on a workbench or mounted to a vertical surface. Screws are included. For more information visit motrakmodelsusa.com.

O SCALE PRODUCT NEWS



a Type 27 tank car built by American Car & Foundry.



Atlas O has scheduled another run of 8,000 gallon tank cars for release during the third quarter of 2020. The O scale model is based on

Celanese Chemicals, Champion Oils/Sterling Fuels, Canfield Tank Lines, and Philadelphia Quartz of California. Features include a diecast underframe, and metal handrails and grab irons. Separate models will be available for 2-rail or 3-rail operation.

Also scheduled for release late this summer is a steel caboose with a centered cupola. The Atlas O Trainman series model is



based on a prototype built by Magor Car Corporation in the late 1930s.

Features include separately applied window awnings,

window glazing, smoke stack, brake wheels, roof grab irons, and see-through running boards. The models come with interior lighting with an on/off control switch on the chassis. Plain-bearing caboose trucks with 33-inch wheelsets will be available for both 2-rail and 3-rail operation.



Road names will be Chessie System-Safety Caboose, Union Pacific, Long Island Railroad, Jersey Central, Chesapeake & Ohio, Alaska, and New York, Ontario & Western.

Atlas O has included 40- and 45-foot corrugated containers in its 2020 third-quarter release. Carrier names include MYK Logistics, Evergreen EMCU, K-Line, Ocean Network Express, Cosco, Maersk, CAI, and Hapag-Lloyd. For additional information contact a dealer or visit atlaso.com.



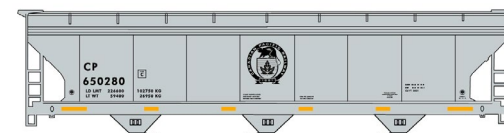
S SCALE PRODUCT NEWS

National Scale Car has entered the S scale field with the introduction of Superior double doors. The cast resin doors are designed to fit Pacific Rail Shops' S scale model auto car.



The doors replicate the six-panel prototype doors installed on Canadian National's 40-foot steel auto cars built in 1952 by Canadian Car and Foundry. For additional information visit nationalscalecar.com.

HO SCALE PRODUCT NEWS



New HO scale kits recently released by **Accurail** include this ACF Centerflow triple-bay

covered hopper car. The model is decorated for Canadian Pacific with a Beaver herald. The model is available individually and in a three-pack with different road numbers.



Accurail's new HO scale kit for this Milwaukee Road 40-foot rib side steel boxcar follows a prototype built in 1940 that received a

new paint job in the late 1960s.



Accurail is selling a three-pack of Gulf Mobile & Ohio 41-foot steel gondolas. The trio includes one kit decorated with initials only

(top) and two kits with the road named spelled out. The HO scale

models represent prototype gondolas delivered to GM&O in 1950 and rebuilt in 1966.



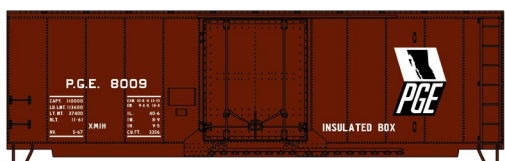
This 40-foot Louisville & Nashville PS-1 steel boxcar is based on a car built by Pullman Standard in December 1953. The model, like the prototype, has 10-foot Youngstown sliding doors.



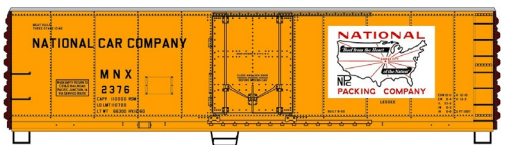
The model represents a triple-bay car built in March 1959.



New HO scale kits coming from Accurail during the next few weeks include this CN 70-ton hopper with offset sides. The model represents a triple-bay car built in March 1959. Also coming soon from Accurail is a kit for this class MX7 New Haven 36-foot Fowler boxcar. The prototype of this single-sheathed wood car was built in the late 1920s.



Accurail's new kit for this Pacific Great Eastern 40-foot insulated steel boxcar replicates a prototype built with a plug door in November 1961.



The 40-foot steel car was built in 1955 and is equipped with meat rails. Special instructions

posted to the left of the MNX reporting marks states 'When empty return to CB&Q Railroad, Pacific Junction, IA.'



sliding doors, follows a class XME car delivered to GTW in October 1953.



Accurail's HO scale kit for this Grand Trunk Western 50-foot riveted steel boxcar with six-panel Superior sliding doors, follows a class XME car delivered to GTW in October 1953. Completing Accurail's list of new HO scale kits is this 40-foot ice refrigerator car decorated for NRC Banana Distributing Company.

The wood-sheathed prototype was built by Pullman-Standard in 1930. All Accurail car kits include appropriate trucks and Accumate knuckle couplers. For additional information contact a dealer or visit accurail.com.



R. Bale

EMD SD80MAC

The SD80MAC is a 5,000hp C-C locomotive EMD built for Conrail in 1995-96. The 80-foot prototype uses EMD's 20-cylinder 710G3B prime mover, a huge diesel engine with an oil capacity of 510 gallons and a water cooling capacity of 342 gallons. A key spotting feature of the SD80MAC is the wide radiator housing similar to GE locomotives. Additional details include rear number boards, the placement of the front number boards above the cab windows, and recessed red marker lights in the nose.

MARCH NEWS HO SCALE | 8



Athearn is creating an all-new Genesis 2.0 SD80MAC locomotive. The HO scale diesel is based on a group of 30 prototypes EMD delivered to Conrail in the mid-1990s. Decorating schemes include Conrail (four road numbers with detail variations), CSX (patched Conrail with replacement antenna and repainted roof, below), Norfolk Southern (with marker lights plated over), and Electro-Motive demonstrator.



Features on the Genesis 2.0 model include etched, see-through walkway steps, and SoundTraxx Tsunami2 sound with dual cube speakers. Lighting features include headlight, number boards, front and rear red marker lights, ground lights, and alternately flashing ditch lights. Availability of the HO scale Genesis 2.0 SD80MAC is scheduled for October 2020.



Athearn's January 2021 production schedule includes a rerun of its Genesis EMD FP7 diesel, which is essentially an F3 unit stretched 4-feet to accommodate a steam generator and additional water supply for passenger heating service. The key spotting feature of an FP7 is the gap between the front truck and the battery box/fuel tank assembly. Athearn will offer the HO scale model decorated for a variety of railroads with numerous road-specific details.



Details on the Southern FP7, which is an ex-CNO&TP

MARCH NEWS HO SCALE | 9

unit, include mushroom style exhaust spark arrestors, dual sealed beam headlight, nose MU door, and a firecracker antenna.



Frisco installed unique spark arrestors on its FP7s, which Athearn will offer in two lettering schemes.



Southern Pacific FP7s will be available in both Black Widow and Bloody Nose paint schemes. SP details include a snowplow pilot and an auxiliary battery box in the gap behind the front truck.



Four versions of Rock Island's partially skirted FP7s will be available in various combinations of silver or grey bodies, single or dual sealed beam headlights, and blanked out or painted portholes.



Athearn plans to offer St. Louis Southwestern-Cotton Belt FP7s in SP Daylight paint with two different lettering schemes.



Two versions of Chicago & North Western FP7s will feature different

horns, exhaust spark arrestors, headlight treatment, and nose heralds. All of Athearn's HO scale Genesis FP7 diesels will come with constant directional lighting, cab interior, uncoupling levers, MU and trainline hoses, windshield wipers, wire grab irons, sander lines, and Blomberg-B trucks.



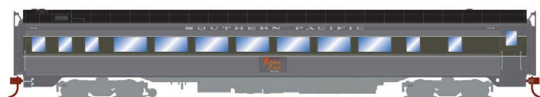
R. Bale

LIGHTWEIGHT SP CHAIR CARS

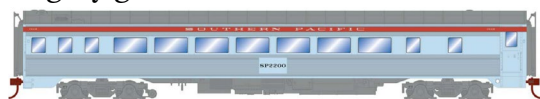
Southern Pacific class 77-C-1 and 77-C-3 lightweight chair cars were constructed in 1937 by Pullman Standard. The cars were originally painted red, orange, and black and assigned to the Coast Daylight. Later, the cars were repainted and used in different trains, including the Lark and Golden State. Some cars received Southern Pacific's general service scheme of silver or gray with a red letterboard. The cars were assigned to general passenger service until the advent of Amtrak.



Athearn has included a group of Southern Pacific 77-foot lightweight chair cars in its January 2021 production schedule. The HO scale Genesis models are based on SP class 77-C-1 and 77-C-3 chair cars.



In addition to the original Daylight paint scheme, the models will be available decorated for the Lark (above), and four variations of silver or gray general service with a red letterboard.



Features include constant lighting, underbody

detail, operating diaphragms, skirted or de-skirted to match prototype car number, and appropriate trucks with metal wheelsets. A minimum radius of 24 inches is recommended.



New HO scale Ready-to-Roll models coming from Athearn next January include this 50-foot Evans boxcar with double 8-foot plug doors.



The models will have a separately applied brake wheel and end ladders, and 70-ton roller-bearing trucks with machined metal wheelsets.



In addition to Canadian Forest Products ("Red Cedar shingles and shakes" slogan), road names will be British Columbia Railway,

Illinois Terminal, Louisville & Nashville, Georgia Pacific, Quinault Pacific, and Wisconsin Central.



Athearn has included a selection of 20-foot corrugated containers in its January 2021 production schedule. Carrier names will be APL, Magellan, MSC, NYK, Raffles, Touax, and Yang Ming.



The containers will be available in three-packs with different fleet numbers.



Roundhouse brand models coming from Athearn in January 2021 include an ACF 5250 cu. ft. Centerflow covered hopper with

four discharge bays. The HO scale model is based on a prototype introduced by American Car & Foundry in the 1960s.



Road names will be Penn Central, Rock Island, Canadian Pacific, ACFX-American Car & Foundry,

MWCX-Midwest Railcar Corp, FURX-First Union Rail/POOL, and RNDX-Glasshopper I and II. The model will have round or trough hatches depending on the road being modeled. For additional information on Athearn and Roundhouse products contact a dealer or visit athearn.com.



R. Bale

GE U28C DIESEL

The U28C road locomotive, introduced by General Electric in 1966, delivered 2800hp, an increase of 300hp over its predecessor, the U25C.

Built on a 7-foot-longer frame than the U25C, the U28C also incorporated other improvements such as floating bolster trucks. A passenger-hauling variant, identified as the U28CG, was produced for the Atchison, Topeka and Santa Fe Railway. These units were given Warbonnet paint schemes and put into service on the Texas Chief, replacing aging F units. Upon retirement from passenger service the U28CGs were repainted into the standard Santa Fe freight colors of blue and yellow. Early U30Cs were based on the U28C design and were visually identical to the Phase II U28C, which this new model from Atlas represents.



Atlas has scheduled the introduction of a new HO scale U28C/U28CG diesel locomotive during the third quarter of this year. Road names will include Santa Fe in the road's familiar red and silver Warbonnet scheme as well as the blue and yellow freight version.



Additional road names include Union Pacific, Pennsylvania Railroad, and Southern Pacific (Bloody Nose scheme) with a headlight on the nose and cab-mounted Gyrallight.



Louisville & Nashville, Conrail, and an undecorated model will also be in the initial release.



Atlas Master series Gold models come with a factory installed ESU LokSound decoder. Atlas Silver series models are for standard DC operation. They come with a speaker and 21-pin plug for conversion to sound with the installation of an after-market decoder.



Also coming from Atlas during the third quarter of 2020 is a NJ Transit ALP-45DP locomotive. Features include directional LED headlight/ditch-lights and red marker lights, positionable non-functioning pantograph, factory-applied railings, air horn, and antenna details. Decorating schemes include NJ Transit, and NJT Erie-Lackawanna heritage scheme.



A package of grab irons and a drilling template is included for installation by the customer. DCC versions of the ALP-45DP locomotive come with an ESU LokSound decoder.



Concurrent with its acquisition of ALP-45DP locomotives, NJ Transit also purchased 62 multi-level commuter cars from Bombardier Transportation. The mix included cab cars to facilitate push-pull operation.



Atlas will offer three NJ Transit cars including a cab car, a basic coach



trailer, and trailer with a toilet window. NJ Transit cars decorated in Heritage schemes will be available for Pennsylvania Railroad (cab car), Pennsylvania Reading Shore Lines, Erie-Lackawanna, and Conrail (trailers) and CNJ (toilet trailer).

Atlas' HO scale multi-level commuter cars feature interior seat details, LED illumination, separately applied lift lugs, end barriers, and rubber diaphragms. In addition to these features, the cab cars will have directional LED headlight/ditchlights and red marker lights, separately applied air horn, and an antenna. The models will be available individually as well as in specially priced three-packs.

Heavyweight single- and paired-window coaches are also scheduled for release during the third quarter of 2020.



The Atlas models will have full interior details, scale operating diaphragms, window glazing, numerous separately-applied underbody details including brake piping, steam traps, and brake rigging; and Accumate knuckle couplers, and six-wheel trucks with metal wheelsets. A 24-inch minimum radius is recommended.



Road names for single-window coaches will be New York Central, Nacionales de Mexico, Louisville & Nashville, and Gulf, Mobile & Ohio.



Cars with paired windows will be available for Florida East Coast (MOW), Chesapeake & Ohio, Canadian National, and Baltimore & Ohio.



Freight equipment due from Atlas during the third quarter includes a Trainman series 40-foot plug door boxcar. Road names for the HO scale models will be SSW-Cotton Belt, RBNX-Fruit Growers Express, RBWX-Burlington Northern, Chicago Great Western, Western Maryland, and Jersey Central.



A new production run of the Atlas HO scale 1993 Ford Explorer is planned for release late this summer. The model will be equipped with side view

mirrors, headlight and taillight glazing, interior details, and simulated rubber tires. Some will have a non-functioning rotary beacon.



Atlas' Explorer will be decorated for railroad support services including Santa Fe, Burlington Northern, Canadian National, Chicago North Western, Conrail, Guilford Rail System, RJ Corman, and Sperry Rail Service. Unlettered versions will be available in orange, white, and yellow. For additional information contact a dealer or visit atlasrr.com.

Bowser has announced English's Sound Upgrade Kits. One kit upgrades the Atlas HO scale Multi-level commuter cars and includes a 16 x 32 speaker and ESU LokSound decoder. A second kit is designed for the Athearn SD90MAC-H locomotives and includes two sugar-cube speakers, a special speaker housing and an ESU LokSound decoder. For more information visit bowser-trains.com.



Broadway Limited has released HO scale models of GE ES44AC diesel locomotives. The ES44AC is part of GE's Evolution Series 4400hp diesel units built to meet the EPA's 2005 Tier 2 emissions standards.



This well-detailed HO scale model of the contemporary diesel comes equipped with

Paragon3 Sound and control system that includes a variable load-based smoke output.



Road names include Florida East Coast, Kansas City Southern, BNSF (Swoosh scheme), CSX (Boxcar scheme), CREX (gray, blue and yellow),

Norfolk Southern, Norfolk Southern-Monongahela Heritage, Union Pacific, and GE Demonstrator. For additional information contact a dealer or visit broadway-limited.com.

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City Classics has released a set of Rooftop Details in injection molded styrene. Including details commonly found on small and medium-sized buildings, each set consists of two stairways, two skylights, four chimneys, eight access

hatches, and 20 vent pipes. The stairways have a choice of different style doors and both vertical and horizontal siding.



Also new from City Classics is a second set of Retail Signs. Capturing the look of hanging signs from the 1930s through the present, each set includes 12 different molded plastic signs with almost 30 different full color paper overlays. The set includes names for retail stores, restaurants, printers, banks, doctor's offices, and other services. A separate offering includes full-color paper wall signs with names that match many of the businesses in both the first and second storefront sign kits. To purchase or for more information, visit cityclassics.biz.



East Coast Circuits is offering for pre-order River Point Station F-450XLT DRW Super Cab Fleet Service vehicles modified with 11 LEDs, including constant-on headlights, four grille strobes, rear yellow strobes, hazard pattern taillights, and an 18" operating light bar. Trucks will be available decorated for United Transit Co., Fleet Master, City Line Tire, and Great Eastern Fabricating. Also available will be white, yellow, orange and red trucks without lettering. LEDs require 9-12V DC power. For more information visit eastcoastcircuits.com.



Digital Fox has an HO scale kit for a 70-ton Canada Southern triple-bay coal hopper car with offset sides. The kit was produced for Digital Fox by Accurail and comes with a removable coal load, Accumate knuckle couplers, and appropriate trucks with Delrin wheelsets. The kit is available in three CS road numbers. To order go to digitalfox.com.



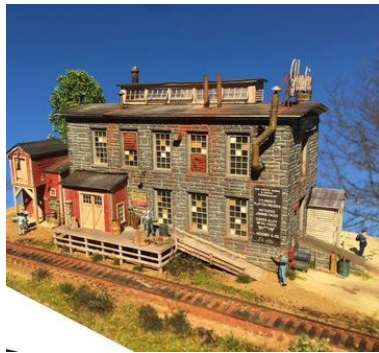
Dimensional Modeling Concepts has an HO scale kit for an FCL-14000 HO 6 x 45-foot Shell & Tube Heat Exchanger. The kit, which makes an impressive flat car load, is composed of 48 3D printed parts. DMC owner Mike Brusky reports that a fully assembled

version of the model is also available. For additional information visit dmcproducts.com.



ExactRail has scheduled a summer release for a Coilshield and Protector for Thrall

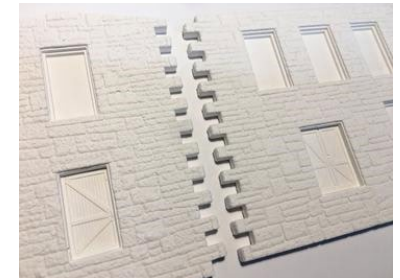
54-foot coil cars. The Platinum series HO scale model will be available decorated for Conrail (G52U), Conrail (re-painted hood), Conrail (patched hood), CSXT/NYC (patched), CSXT/NYC (blue repaint), Norfolk Southern (1992 as delivered), and Norfolk Southern (post-2010). The model will be equipped with ASF 100-ton Ride-Control trucks with 36-inch machined metal wheelsets. For additional information visit exactrail.com.



Fos Scale Models has released an HO scale kit inspired by a stone factory that manufactured metal type for the pre-digital printing industry. Identified as Hendrix Type Foundry, the HO scale kit is composed of a hybrid of materials including cast Hydrocal stone walls and laser-cut wood walls. The stone walls are finger jointed which results

in seamless corner joints. The adjunct wood structures can be arranged in a variety of ways.

In addition to the cast plaster walls and loading ramp, the kit includes laser-cut clapboard walls, scale lumber, plastic windows, numerous cast metal and laser-cut details, color signs, and extensive assembly instructions. The footprint of the assembled



building is approximately 5 x 13". Figures and scenery in the illustration are not included. For additional information visit foscalemodels.com.



Funaro & Camerlengo has HO scale kits for heavy-duty four-truck flat cars. The model replicates

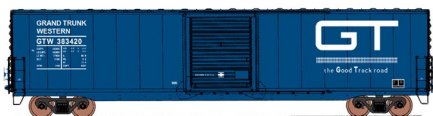
Pennsylvania Railroad class F34, Southern Pacific class F-200-1, and Chicago & North Western 200-ton flat cars. These are challenging craftsman-style kits not recommended for beginners.



Components include a one-piece cast resin body, numerous detail parts, decals, and appropriate truck frames.

Wheelsets and couplers are not included. For additional information visit fandckits.com.

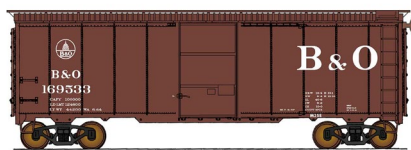
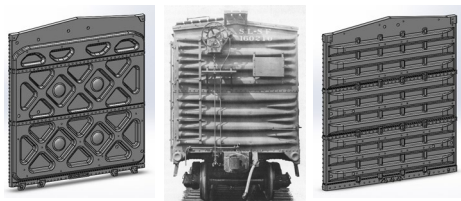
New HO scale models coming soon from **InterMountain Railway** include a 60-foot PS-1 boxcar. In addition to two different Grand Trunk Western schemes, road names will include Union



Pacific, Rock Island, Illinois Central, and a red Santa Fe car displaying a Super Shock Control slogan.



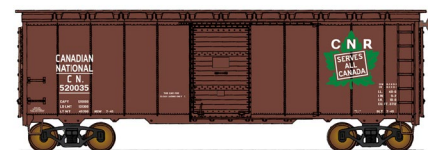
InterMountain is also preparing to release a group of 1937 AAR boxcars with three different types of steel ends. They include (from the left) Deco waffle end, Dreadnaught end, and Canadian NSC-2 end.



Road names for boxcars with Deco ends will be Baltimore & Ohio and two Chesapeake & Ohio schemes.



Cars with Dreadnaught ends will be decorated for New York Central, Louisiana & North West, Atlantic & East Carolina, Copper Range, and Delaware, Lackawanna, & Western.



Road names for cars with NSC-2 ends include Canadian National and Ontario Northland. For additional information contact a

dealer or visit intermountain-railway.com.

Kadee has announced a March release date for two new HO ready-to-run models. First up is a Tidewater Southern 50-foot PS-1 boxcar



built by Pullman Standard with 8-foot, six-panel, Superior sliding doors. Kadee's HO scale model is based on a prototype built in 1955 and painted in factory-new boxcar red.



The second new model coming from Kadee is an HO scale version of a Union Pacific 40-foot PS-1 boxcar. Like the prototype, Kadee's ready-to-run model has 6-foot, seven-panel, Superior doors.



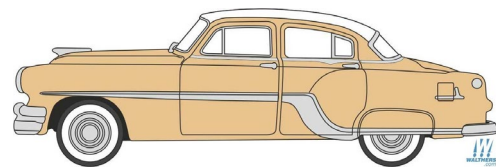
One side of the UP car displays a "Serves All The West" slogan while the opposite side shows "Road of The Streamliners." The Kadee model represents a prototype car built in 1948. All Kadee

ready-to-run models come with Kadee metal knuckle couplers and self-centering trucks. For additional information contact a dealer or visit kadee.com.



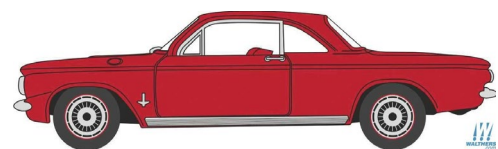
Motrak Models has released the Paterson Fire Hose Company kit in HO scale. Designed as a background structure, it is 2" deep, 6.5" long, and 5" tall. The kit contains Tichy windows and doors, a laser cut freight door, resin detail parts, signage, and laser cut

basswood walls and tarpaper. For more information or to purchase, visit motrakmodelsusa.com.



Oxford Diecast has scheduled the release of three new 1:87 scale vehicles this month. They include this 1954 Pontiac Chieftain

4-door sedan decorated in white over what Pontiac sales literature called Maize Yellow. The 1950s-era automobile features wide white wall tires and plenty of chrome.



Also new this month is a bright red 1963 Chevrolet Corvair coupe. Promoted as an economy model, the basic Corvair came with

black wall tires and a limited amount of bright trim.



Oxford is selling a 1950 Chevrolet panel truck decorated as a police van with wide white wall tires, bright fender trim, and a non-working emergency light on the roof. For additional

information contact a dealer or visit walthers.com.



ScaleTrains.com has scheduled a late September release for an all-new HO scale PS-Trinity articulated five-unit well-car set. Nicknamed Backpacker, each of the five wells can handle a 40' container

with a 40, 45, 48, or 53' container in the top position. The Rivet Counter model will be available decorated for Trailer Train, and Trailer Train/K-Line. The prototype Backpacker is distinguished from other intermodal cars by its low-profile design. Introduced in 1986, many Backpackers continue in service today.



The Backpacker well-cars will be joined in September by a new 40' container with

square corrugations. The HO scale Operator series model replicates a prototype introduced in the late 1970s that featured vertical transitions between the highs and lows of the corrugations and two logo panels near the ends on each side. The distinctive design is noticeably different from today's international containers.



Carrier names on ScaleTrains.com's square corrugation containers will be KHLU-Kien

Hung, ITEL, ICSU-TransAmerica, CLOU-Container Leasing, NYK, and NJCU-Hanjin.



R. Bale

TUNNEL MOTORS

The SD40T-2 is a six-axle 3,000hp diesel locomotive built by EMD between 1974 and 1980. The SD40T-2 is popularly called a Tunnel Motor, because they were designed for better engine cooling in mountainous areas. The spotting differences between an SD40-2 and an SD40T-2 are the radiator intakes and radiator fan grilles located at the rear of the locomotive. The original owners of the SD40T-2 Tunnel Motors were Southern Pacific (229 units), SSW-Cotton Belt (10 units with an extended nose), and Denver & Rio Grande Western (73).



ScaleTrains.com plans to release another production run of EMD SD40T-2 Tunnel Motor diesel locomotives.



Road names on this late 2020 release will be Southern Pacific (Kodachrome scheme with

operating SP light package), SSW-Cotton Belt (with extended nose and SP light package), and Denver & Rio Grande Western. Undecorated SSW and DRGW versions will be available.



ScaleTrains.com is planning to release another production run of PS-2CD 4785 cu. ft. triple-bay covered hop-

per cars this fall.



Road names for the HO scale Operator series model will be Penn Central, ADM, Burlington Northern (Ex-PC

repaint), Central Soya, Conrail, Cotton Belt (with three-section trough hatches), M-K-T, and RFMX (Patched ex-Penn Central). For additional information visit scaletrains.com.



rants other than Taco Bell.

Summit-USA has released an HO scale kit for a Taco Bell Restaurant. The design represents structures the fast-food chain constructed during the 1970s and '80s. Many of the buildings still exist but most are now being used by restau-

The kit includes milled styrene and laser-cut acrylic structure components, clear acrylic window glazing, Plastruct clay tile roofing, and illustrated instructions. Signage includes self-adhesive logos and a 3D printed bell. The assembled structure has a footprint of 7.5 x 5.75-inches. For additional information contact a dealer or visit summit-customcuts.com.

Tangent Scale Models is now offering their first caboose model, the International Car Company B&O I-18 steel bay window caboose. The fleet of 46 I-18s was B&O's first set of non-railroad produced cabooses. Delivered in 1965 and 1966, most survived to become part of CSX. Continually modified through the years, the cabooses wore many paint schemes, beginning with B&O blue at delivery, and including the standard yellow Chessie System repaint and multiple color Safety Schemes starting in 1973. Additionally, across the years various details such as marker lights, window screens, toilet dump pipes and retention tanks, air vents, and end lights were changed, added, or removed. Six paint and detail schemes, plus two undecorated detail versions are available.



The first version is in the as-delivered B&O blue, after the B&O had made safety changes between delivery and 1968. The updates included

changes to the end steps and platform locations, changed railings and protective side screens on the bay windows. This version is available in four numbers.

The 1973+ repaint scheme is the yellow Chessie system scheme including blue graphics, orange (vermillion) striping and silver roof. This version includes the as-delivered Pyle lanterns and



standard toilet dump pipe. Four road numbers are available in this version.



The Green Chessie Safety 1973+ scheme is available with the correct road number C-3000, and features a large safety emblem and the “BE ALERT, DON’T GET HURT” slogan. The bay windows on this version have the prototype’s added four extra air vents.



The white Chessie Safety 1975+ scheme is another safety scheme, with LONG CHANCES SHORTEN LIVES across the length of the caboose. Modern details include

the added blue toilet retention tank and white chlorinator overflow pipe. This caboose is available in its prototype number of C-3003.



The Raceland Repaint 1980+ cabooses feature Chessie “box” style markers replacing the Pyle lanterns, and an FRA-approved Star Model 845-F Incandescent

Flashing end light. This caboose is available in number C-3019.



The Chessie System 1982+ scheme includes a slightly faded paint scheme and bright yellow bay window patches where the caboose has been renumbered.

Both cabooses in this scheme, 903014 and 903045, feature the

updated toilet retention tanks, Chessie “box” style markers, COTS and Inspection interval lettering, and FRA red end lights of the I-18 class cabooses that survived until 1982.



Unlit (no electronics included) undecorated kits are available in both the 1968+ detail package and the 1979+ era details. The kits include Tangent 70T Gould Roller Bearing trucks with power pickup and 33” 110 tread wheels. No couplers are included with the undecorated kits.

All of the models are equipped with DC/DCC compatible interior and marker light lighting powered through pickups on the caboose trucks that include 33” CNC machined wheels. For more information or to purchase, visit tangentscalemodels.com.

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Walthers has released a new production run of EMD SD50 diesel locomotives. The HO scale Mainline series model features an

all-new drive mechanism including newly tooled power trucks and HT-C side frames.



The body shell has been updated with revised dynamic brake intake grilles, anti-slip detail on the walkways and open gratings

on the steps. The body shell has molded drill starter points for grab irons (sold separately in EMD SD50-60 Diesel Detail Kit #910-256).



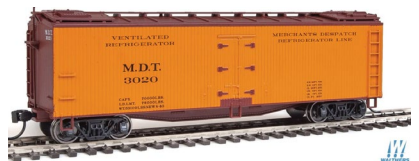
Road names in this release are Chessie System (B&O), CSX, Denver & Rio Grande Western, Kansas City Southern, Southern Pacific, and Union Pacific.



The Walthers Mainline series SD50 is available for standard DC operation as well as equipped with an ESU sound and DCC decoder. An undecorated unit in this release is already sold out at Walthers. Check with a dealer for availability.



Walthers has released a group of 40' ice refrigerator cars that feature wood sheathed sides and ends, 4' swing doors, a deep fish-belly underframe, and Andrews plain-bearing trucks with machined metal wheelsets.



Road names include American Refrigerator Transit with Missouri Pacific and Wabash heralds, Merchants Despatch, and North Western Refrigerator Line with a Chicago North Western herald.



Completing this release is an SFRD reefer with a Santa Fe system map on one side and Grand Canyon Line on the opposite side. For additional information contact a dealer or visit walthers.com.

N SCALE PRODUCT NEWS

Athearn has included a selection of N scale 20' corrugated containers in its January 2021 production schedule.



Carrier names will be APL, Magellan, MSC, NYK, Raffles, Touax, and Yang Ming.



The containers will be available in three-packs with different fleet numbers. For

additional information contact a dealer or visit athearn.com.

New **Atlas** N scale items available now from dealers include SD50/60 and SD60E locomotives, 41-foot ballast cars, 50-foot SIECO pulpwood flat cars, 45' logging flat cars and Russell snowplows..



Atlas' production schedule for the third quarter of 2020 includes an N scale GP40-2W diesel locomotive.



Road names will be Guilford Rail System, Huron Central, Pan Am Railways, and Canadian National in the URL scheme, and zebra scheme.



Also coming from Atlas during the third quarter of 2020 is a NJ Transit ALP-45DP locomotive.

Features include directional LED headlight/ditchlights and red marker lights, positionable non-functioning pantograph, factory-applied railings, air horn, and antenna details. Individual grab irons, including a drilling template, are supplied for customer installation. Decorating schemes include NJ Transit, and NJT Erie-Lackawanna heritage scheme.



DCC versions of the ALP-45DP locomotive come with an ESU LokSound decoder.



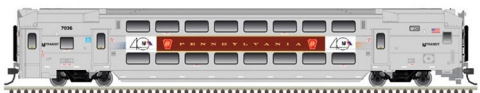
Concurrent with its purchase of ALP-45DP locomotives, NJ Transit also purchased 62

multi-level commuter cars from Bombardier Transportation including a cab-car to facilitate push-pull operation.



Atlas will offer three NJ Transit cars including a cab-car, a basic coach trailer,

and trailer with a toilet window.



NJ Transit cars decorated in Heritage schemes will be available for Pennsylvania

Railroad (cab car), Pennsylvania Reading Shore Lines, Erie-Lackawanna, and Conrail (trailers) and CNJ (toilet trailer).

Atlas' N scale multi-level cars feature interior seat details, LED illumination, separately applied lift lugs, end barriers, and rubber diaphragms. In addition to these features, the cab-cars will have directional LED headlight/ditchlights and red marker lights, separately applied air horn, antenna. The N scale models will be available individually as well as in specially priced three-packs.



New N scale freight equipment coming from Atlas during the third quarter of this year includes an upgraded PS-4427 cu. ft. triple-bay covered hopper. The model is based on a low-side car Pullman introduced in the mid-1960s.



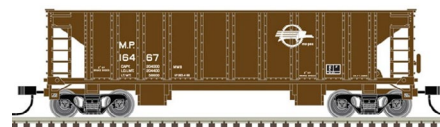
Features on the N scale model include new gate tracks on the discharge chute, and an upgraded brake wheel. Road

names will be ADM, SOO Line, Rock Island, Northern Pacific, Delaware & Hudson, and Conrail.



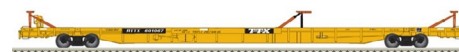
Also scheduled for release during the third quarter of 2020 is a 41' ballast hopper car. Road names for the Master series model will

be Norfolk Southern, Mass DOT, Missouri Pacific, CSX, Canadian National, and Amtrak.



Atlas' third quarter release of new N scale models includes another production run of

class F89J 89' flat cars. The Master series model features positionable trailer hitches,



a heavy diecast metal frame, and 70-ton BLMA trucks with metal wheelsets.



Road names will be TTX, RTTX-TTX, PTTX (with conspicuity strips), and Trailer Train.



Atlas' list of new products due in the third quarter of 2020 concludes with a group of N scale 1993 Ford Explorers. In addition to the

Burlington Northern scheme shown here, the SUV will be available decorated for Sperry Rail Service, RJ Corman, Guilford Rail System, Conrail, Chicago & North Western, Canadian National, and Santa Fe. Unlettered Explorers will be available painted yellow, white, and orange. For additional information contact a dealer or visit atlasrr.com.

Bowser has announced two new N scale items in its English Model Railroad line. The first is a sound upgrade kit for Atlas' N scale Multi-level commuter cars consisting of a sugar cube speaker, special speaker housing and an ESU LokSound decoder.



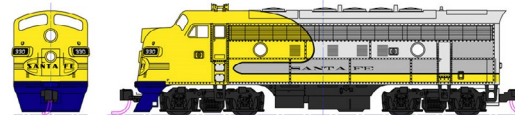
The second item is a Union Pacific and Rock Island style F unit snowplow. For more information or to purchase these items, visit bowser-trains.com.



Ipswich Hobbies has released an N scale craftsman style kit named Union Freight House. The design of the model is based on the old Boston & Maine freight house in Union, NH. The structure has

been preserved as part of the Heritage Park Railroad Museum in Wakefield, NH. The N scale kit features laser-cut basswood, scribed interior floor, peel and stick shingles, and loading dock

details. The assembled model has a footprint of 2.25 x 6". To purchase visit www.IpswichHobbies.com.



Kato USA has expanded its July production schedule to include N scale F7A and F7B diesels decorated

in Santa Fe's Yellow Bonnet freight scheme. Both A and B units will be available for DC, and DCC operation. Units with ESU LokSound will be available on special order through an authorized Kato dealer.



Kato has released a new run of its PRR Broadway Limited equipment including new names and numbers on 11 Tuscan red cars. The N scale cars are avail-

able in 10-car sets consisting of a heavyweight Bm70M baggage/mail car (above), a 12-Duplex 4-double bed sleeper, a 5-double bed/bar lounge car, a diner, a kitchen dormitory car, four 10-6 sleepers (below), and a blunt-end observation car with a train-phone antenna mounted on the roof.



A four-car set consisting of two Budd-built 21-roomette cars and two 4-4-2 sleepers is also available.



For modelers wanting a complete Broadway Limited consist, a Santa Fe 4-4-2 transcontinental sleeper is available. All PRR cars, except the heavy-weight baggage/mail, follow a lightweight prototype with smooth

sides and skirts. The stainless steel Santa Fe sleeper has fluted sides and no skirts. Both lighted and non-lighted versions of the passenger cars are available.

Motive power available for Kato's N scale Broadway Limited includes GG1 electric locomotives in Tuscan red and Brunswick green, and black Penn Central and Amtrak schemes.



An EMD E8A decorated for Broadway Limited service in Tuscan red with five gold stripes will be released this month. Options for the locomotives include basic DC

operation, DCC, and ESU LokSound DCC. For additional information contact a dealer or visit katousa.com.



Micro-Trains Line has released an N scale 78' single-window heavy-weight coach decorated

for two popular roads including New York Central. The ready-to-run models represent heavyweight steel equipment built in the 1920s that continued in service through the 1940s. The NYC model is painted Pullman green and rides on four-wheel trucks.



The Pennsylvania Railroad version of the coach is painted Tuscan red with a black roof and is equipped

with six -wheel trucks.

New N scale freight equipment from Micro-Trains includes this 89' tri-level closed autorack car. The car carrier is owned by TTX



and is lettered for Norfolk Southern service.



This 39' tank car represents a single-dome car built in the 1920s by American Car & Foundry. The N scale model is based on a car owned by General American Tank Car Company and leased to Gibson Wine Company, a vintner located in Sanger, California.



Micro-Trains has released this 40' Union Pacific class A-50-19 boxcar in two road numbers. The N scale model represents a prototype built by Pullman-Standard in March 1947

with double sliding Youngstown doors. UP assigned the car to service appliance manufacturers.



This 70-ton ATSF 50-foot composite gondola with drop ends and fish belly side frames, follows a prototype built by Pullman-Standard in

1943 and rebuilt in 1973. Contact a dealer for additional information about Micro-Trains models.



The N Scale Architect has released the 14th kit in their Tracksides Series, the N scale Flag Stop Station. The kit includes a laser cut platform, canopy and privy, a

re-purposed Overton coach body, roof details and corrugated roofing. The finished model measures 4.75" long, 2" wide, and 1.5" high. For more information visit thenarch.com.



ScaleTrains.com is quoting a September release date for another production run of N scale carbon black covered hopper cars. The

run includes two Sid Richardson cars with faded paint and distressed lettering. Both the somewhat boxy Thrall 5750 cu. ft. version and the more traditional Thrall 4727 cu. ft. will be available. Details include round roof hatches, butterfly outlet gates, and sampling spigots. For additional information visit scaletrains.com.

NEW DECALS, SIGNS AND FINISHING PRODUCTS



Deluxe Materials is preparing to introduce Roket brand UV cured adhesive to the North American market. The adhesive reportedly sets up most materials in one to three seconds. Each application kit will include the adhesive and an activating UV light powered by two lithium batteries. Deluxe

Materials is a UK-based supplier of specialty adhesives distributed in North American by Walthers and Horizon Hobby. Roket UV is expected to be available through dealers by late April.



include Chicago and North Western war emergency boxcar, and Missouri Pacific 50' single-sheathed 89000-series auto car.



Speedwitch Media sells a selected assortment of carefully researched, high-quality HO scale water slide decals. Recent additions

Also new from Speedwitch Media are decals for Virginian single-sheathed boxcars as built in 1916, and Minneapolis & St. Louis ARA single-sheathed boxcar.

For additional information visit speedwitchmedia.com.



Steel Valley Models has HO scale decals for Chesapeake & Ohio class H40, H43, H46, and H47 hopper cars. To purchase visit www.facebook.com/SVMHopperTopper/photos/pcb.2910132352342210/291016659011446/?type=3&theater.

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NICK MUFF models a 2-8-8-0 Kansas City Southern compound articulated.

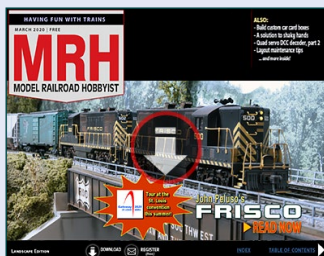
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BRIEFLY NOTED AT PRESS TIME ...

Chooch Enterprise founder Mike O'Connell has announced his retirement. O'Connell pioneered the development of vinyl and cast resin detail products. The future of the business, established in 1974, is pending.

The East Broad Top Railroad has been acquired by a newly-formed nonprofit. Operating out of Rockhill Furnace, Pennsylvania, the 33-mile coal hauler built in the 1870s is the only original surviving narrow gauge railroad east of the Rocky Mountains. Among the backers of the nonprofit are Wick Moorman, former chairman and CEO of Norfolk Southern and former CEO of Amtrak; Henry Posner III, a former Conrail manager who is chairman of the Iowa Interstate Railroad and the Railroad Development Corporation, of Pittsburgh; and Bennett Levin, a retired mechanical and electrical engineer who owns the Juniata Terminal Company, which operates two Pennsylvania Railroad E8 diesel locomotives and three private cars...

Sylvan Scale Models is taking reservations for a limited rerun of its highly-regarded HO scale Canadian National 40-foot single-sheathed boxcar. Additional information about the craftsman-style resin kit is available on request at mlwm420@gmail.com ...



SELECTED EVENTS



Model Railroad Hobbyist | March 2020

MARCH 2020

(Many events charge a fee. Check individual info website for details.)

CANADA, ONTARIO, MISSISSAUGA, March 29, Train Market, sponsored by Lakeshore Model Railroaders Association, at John Paul II Polish Cultural Centre, 4300 Cawthra Road.

CANADA, ONTARIO, TORONTO, March 21, Railway Prototype Modellers Meet, at Humber College, 205 Humber College Blvd, North Campus, Building B, Rooms B201 and B202. Info at torontoprototypemodellers.wordpress.com.

CALIFORNIA, LOS ANGELES, March 28-29, Open House at Pasadena Model Railroad Club, 5458 Alhambra Avenue. Info at pmrrm.org.

CALIFORNIA, REDLANDS, March 28-April 5, Train Days 2020, sponsored by N-Land Pacific, at San Bernardino County Museum, 2024 Orange Tree Lane. Request info from Chuck Coker at chuck@ix23.com.

FLORIDA, SARASOTA, March 21-22, 43rd Annual Real Rail Train Show at Bradenton Convention Center, 1 Haben Blvd, Palmetto. Request info from David Fontaine at davidf34205@yahoo.com.

SELECTED EVENTS | 2

INDIANA, INDIANAPOLIS, March 7, Train Show sponsored by Naptown & White River Model Railroad Club at Emmerich Manual High School, 2405 South Madison Avenue. Info at naptownrr.org.

INDIANA, NAPPANEE (Metro Elkhart), March 21, 15th Annual Train Show sponsored by Elkhart Model Railroad Club, at Claywood Event Center, 13924 North 1100 West (County Line Road). Info at www.emrrc.com.

KENTUCKY, LOUISVILLE, March 21, NMRA Division 8 Mid-Central Region Train Show and Sale, at Holy Family Parish Saffin Center, 3938 Poplar Level Road.

NEW MEXICO, LAS CRUCES, March 21-22, Train Show & Open House hosted by Southern New Mexico N-Scalers, at Southern New Mexico State Fairgrounds. Request info from Mike at mififer@hotmail.com.

NEW YORK ALBANY, March 14, Train Show, at Polish Community Center, 225 Washington Avenue Extension. Info at albanytrainshow.com.

NEW YORK, BATAVIA, March 29, Great Batavia Train Show, sponsored by Genesee Society of Model Engineers at Genesee Community College, Richard Call Arena. Info at www.gsme.org.

NEW YORK, ROCHESTER, March 7-8, Open House sponsored by Rochester Model Railroad Club at 120 South Clinton Avenue. Info at RocMRRC.com.

OHIO, GREENVILLE, March 1, Swap Meet sponsored by Darke County Model Railroad Club at Darke County Fairgrounds Youth Building, 800 Sweltzer Street. Info at model-railroad-hobbyist.com/sites/model-railroad-hobbyist.com/files/webform/news/2020dcmrr_swap_meet.jpeg.

SELECTED EVENTS | 3

OREGON, PORTLAND, March 14, Swap Meet sponsored by Willamette Model Railroad Club at W.D. Jackson Armory, 6255 NE Cornfoot Road. Request info from Brigg Franklin at wmrc-swapmeet@gmail.com.

PENNSYLVANIA, MALVERN (Valley Forge), March 27-29 2020, Railroad Prototype Modelers Meet, at Desmond Hotel. Info at rpmvalleyforge.com.

VERMONT, ST. ALBANS, March 14, Vermont Rails Model Railroad Show at Collins Perley Sports & Fitness Center, sponsored by the Northwestern Vermont Model Railroad Association. Info at www.nwvrailroad.org.

WISCONSIN, CEDARBURG, March 8, 25th Annual Model Train Show & Swap Meet, at Circle B Recreation 6261 Highway 60. Info at www.metrorrclub.org.

April by location

CANADA, ONTARIO, FENWICK, April 19 and 26, Open House sponsored by Greater Niagara Model Railroad Engineers, at 1141 Maple Street. Info at www.gnmre.ca.

NEW ZEALAND, CHRISTCHURCH, April 10-13, National Model Railroad Convention. Info at www.modelrailcon.co.nz.

CALIFORNIA, CONCORD, April 30-May 2, Clear to the Coast convention co-hosted by NMRA Pacific Coast Region and Western Railway Museum, at Crowne Plaza Concord/Walnut Creek, 45 John Glen Drive. Info at pcrnmra.org/conv2020/#convcar.

CALIFORNIA, OCEANSIDE, April 11, Train Show & Swap Meet sponsored by North County Model Railroad Society at Heritage Park. Info at swapinfo@ncmrs.org.

SELECTED EVENTS | 4

COLORADO, COLORADO SPRINGS, April 17-18, TECO-Train Expo Colorado, at Chapel Hills Mall. Info at www.tecoshow.org/tecswap.htm.

COLORADO, COLORADO SPRINGS, April 17, Track to Success Train Show, held in conjunction with the TECO Train Expo. Request info from Al Hovey at alhovey@comcast.net.

INDIANA, FRANKLIN, (Metro Indianapolis), April 4, Franklin Spring Train Show, sponsored by NMRA Central Indiana Division at Johnson County Fairgrounds, 250 Fairground Street. Info at www.cidnmra.org.

IOWA, DAVENPORT, April 18, Model Railroad Show at Mississippi Valley Fairgrounds, 2815 W. Locust Street. Request info from Roger Kujawa at AGWRailway@gmail.com.

MONTANA, HELENA, April 26, 40th Annual Helena Railroad Fair, at Helena Civic Center, 340 Neill Avenue. Info at rrfair@mt.net.

NEW MEXICO, ALBUQUERQUE, April 2-4, Sn3 Symposium. Info at sn32020abq.org.

OREGON, ELSIE, April 4, 16th Annual Pacific Model Loggers' Congress, hosted by Lon Wall and Jeff Johnston at Camp 18 Restaurant and Logging Museum, 42362 Highway 26. Info at www.pacificmodelloggerscongress.com.

OREGON, EUGENE, April 21-24, Make Tracks to Eugene 2020 Convention, hosted by NMRA Pacific Northwest Region, at Valley River Inn, 1000 Valley River Drive. Info at www.MakeTracksToEugene.com.

Future 2020, by location

AUSTRALIA, SYDNEY, ROSEHILL NSW, June 5-9, 34th National Model Rail Convention.

CANADA, BRITISH COLUMBIA, BURNABY, May 22-24, 2020, 5th Annual Railway Modellers Meet of BC, sponsored by Burnaby Railway Modellers at Simon Fraser University's Burnaby campus. Info at www.railwaymodellersmeetofbc.ca.

NEW ZEALAND, DUNEDIN, MOSGIEL, May 9-10, Model Train Show at Taieri Bowling Club, 12 Wickliffe Street. Request info from Trevor Buchanan at dunedinmodeltrainshow@gmail.com.

ARKANSAS, JACKSONVILLE, August 22-23, 10th Annual Jacksonville Train Show, sponsored by Tuscarora Lumber Company at Jacksonville Community Center, 5 Municipal Drive. Request info from Daryl Conner at 501-982-6835.

FLORIDA, TALLAHASSEE, June 27, 26th Annual Model Railroad Show & Sale at Forth Florida Fairgrounds. Info at www.facebook.com/events/564525630749478.

ILLINOIS, EAST PEORIA, May 14-17, NMRA Midwest Region Convention, at Holiday Inn, 101 Holiday Street. Info at www.peo-riarocket2020.org.

KANSAS, HERINGTON, May 2-3, Herington Railroad Days and NMRA Meet, sponsored by NMRA Central Division, at Herington Community Building, 800 South Broadway.

KANSAS, HUTCHINSON, June 6-7, Center of the Nation Model Railroad Expo, at Kansas State Fairgrounds, Pride of Kansas Building, 2000 N Poplar. Info from kansascentralmodelrailroad-ers.org.

MICHIGAN, EAST LANSING, November 22, Train Show & Sale hosted by Lansing Model Railroad Club at Michigan State University Pavilion, 4301 Farm Lane. Info at lmrc.org.

MISSOURI, ST. CHARLES (Metro St. Louis), September 2-5, 40th National Narrow Gauge Convention, St. Charles Convention Center/Embassy Suites Hotel. Info at www.40nngc.com.

MISSOURI, ST. LOUIS, July 17-19, National T-TRAK Layout Exhibit and N Scale Banquet at 2020 National Train Show. Info at nationalt-traklayout.com.

MISSOURI, ST. LOUIS, July 12-18, 2020, NMRA National Convention and National Train Show. HQ at Hilton St. Louis at the Ballpark. Info at gateway2020.org.

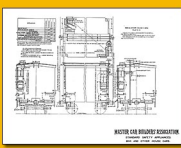
TENNESSEE, NASHVILLE, May 31-June 6, National Garden Railway Convention, at Gaylord Opryland Resort. Info at ngrc2020.com.

VIRGINIA, FISHERSVILLE, May 17, 34th Annual Shenandoah Valley Model Train & Railroading Show, sponsored by Augusta County Model Railroad Club at Augusta Expo, 277 Expo Road. Info at www.acmrrc.org.

Beyond 2020 by date

CALIFORNIA, SANTA CLARA, 2021, NMRA National Convention and National Train Show.

ENGLAND, BIRMINGHAM, 2022, NMRA National Convention and National Train Show. www.nmra2022uk.org. ■



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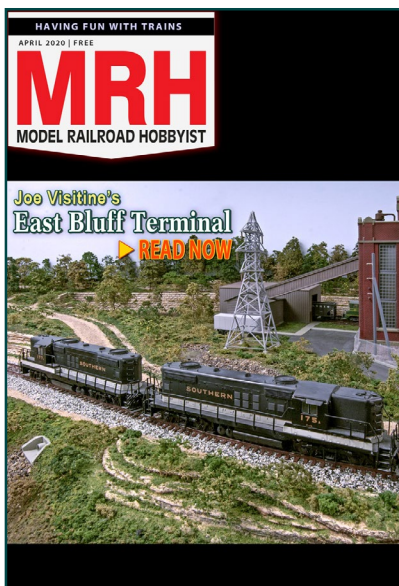
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