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FP7 tested** p.56

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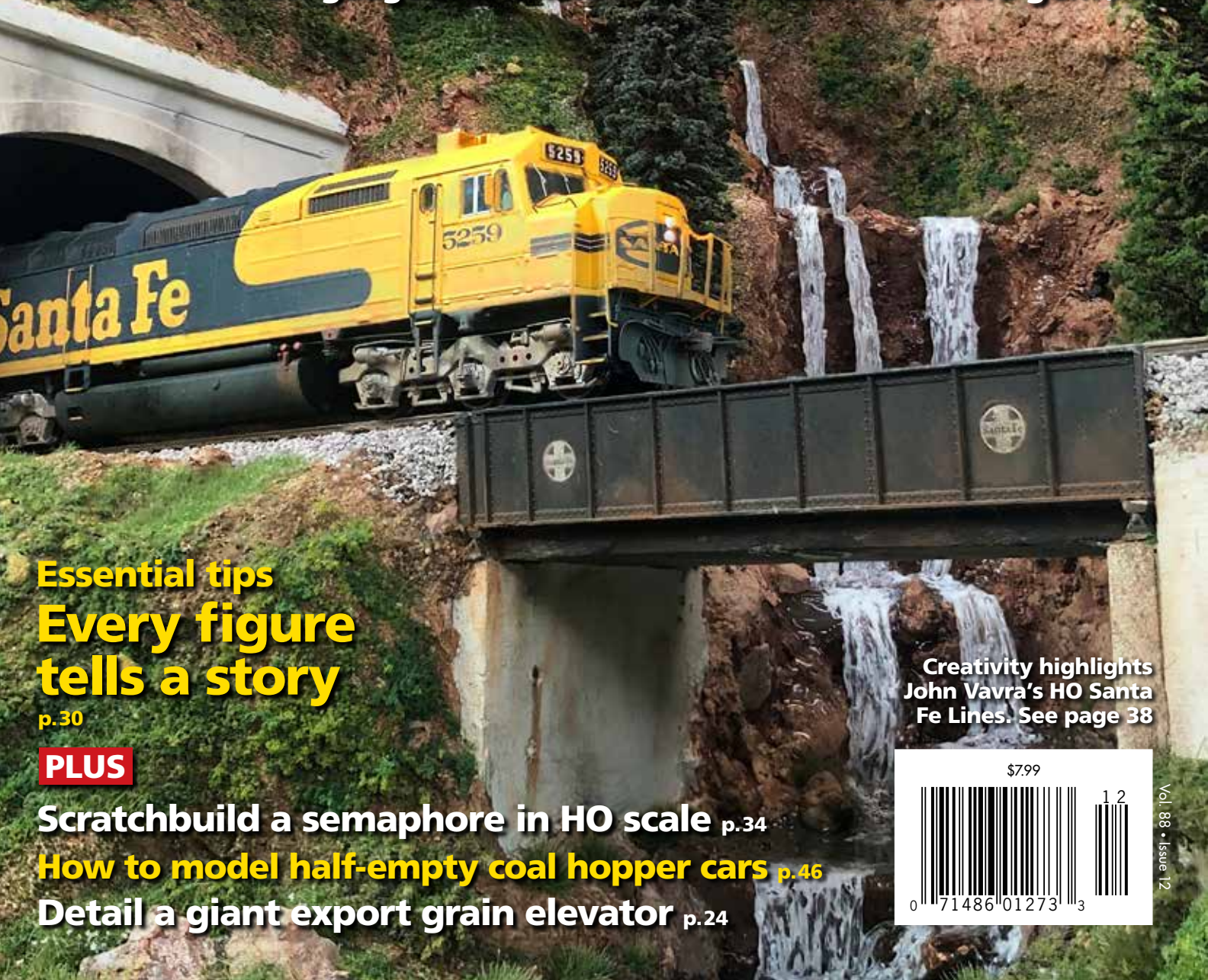


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**Scratchbuild a semaphore in HO scale** p.34

**How to model half-empty coal hopper cars** p.46

**Detail a giant export grain elevator** p.24

**Creativity highlights  
John Vavra's HO Santa  
Fe Lines. See page 38**

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The magic of trains



**On the cover:** A Santa Fe freight emerges from a tunnel to cross Crazy Woman Creek on John Vavra's HO scale layout. John Vavra photo



## Next issue

**In January,** meet the MR&T State Line Route, an N scale extension to our HO scale railroad. Also, brush up on wiring, visit an HO New England layout, and more!

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## Cody's Office

After more than 13 years, we're sad to announce the final installment of *Model Railroader's* longest running video series, *Cody's Office*. Join Group Technical Editor Cody Grivno as he wraps up his show on episode 275 with an Atlas locomotive, a *Trains* special issue, and a message to his longtime viewers. Become a Trains.com member for unlimited access to all the episodes of *Cody's Office* and other *Model Railroader* video series.



## Meet the MR&T State Line Route

Hurry on over to [Trains.com](https://www.trains.com) to watch our exclusive video series, *State Line Route in N scale*. Hosted by David Popp, the *Model Railroader* and Trains.com staff are teaming up to build an N scale project railroad from scratch, drawing inspiration from the legendary HO scale Milwaukee, Racine & Troy. Stay tuned to see how the team works through planning and construction.



**trains.com**

## Union Pacific Railroad (UP) class 4000

The Union Pacific Railroad rolled out the biggest restoration of 2019, the complete overhaul of the largest steam locomotive in the world – the **Big Boy**, road number 4014.

**TRIX**



To commemorate this event, Trix has reissued an accurately redesigned model in HO scale (Item No. 22163). This model was made specifically for the HO US market.

- RP 25 Wheels
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This metal model has a total of 14 design changes to accurately represent the prototype, including changing to an oil firing tender, "Big Boy" written on the smoke box door, applying the UP 4014 logo onto cab floor and more!

Also available in a Märklin H0 version (37997) and standard Trix HO version (22014).

Trix products are available from authorized Trix and Märklin dealers. See our complete line of products at [marklin.com](https://marklin.com) and [trix.de/en](https://trix.de/en). Contact [customerservice@marklin.com](mailto:customerservice@marklin.com) for more information or to request a free New Items catalog.

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### Tech 6 DC-DCC Hybrid does an awful lot, but how difficult is it to operate?



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(0001203)

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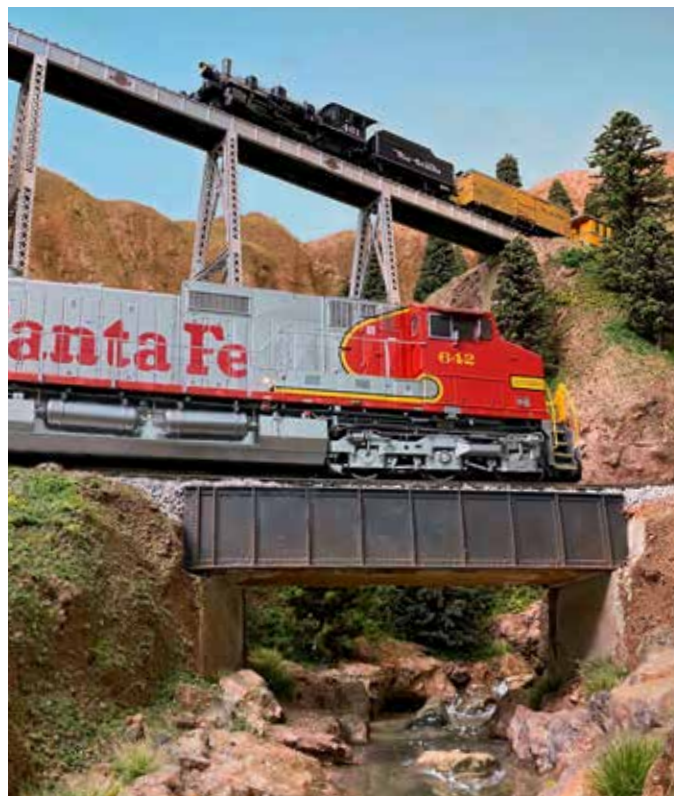
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# Know-how plus imagination equals success



By relocating the Santa Fe mainline, John Vavra is able to run both modern diesels and narrow gauge steam. John Vavra photo

## Magical things happen

when you combine modeling know-how with a touch of artistic license.

John Vavra, whose HO scale 20 x 22-foot layout is pictured at left and on this month's cover, needed a way to combine two very different prototype interests – Colorado narrow gauge tourist steam operation *and* modern-day Santa Fe railroading.

Enter artistic license. John not only moved the Santa Fe mainline 130 miles north, he used actual place names without exactly replicating those locations. He's content if he can capture something of the feel of those places even if it isn't a perfect copy.

This imaginative approach meets John's goals. His layout plausibly includes the railroads he most enjoys in the settings he prefers. The main lines for narrow gauge steam and heavy-duty modern diesels



weave over and under each other on a railfan's dream of a layout. Purists might quibble, but John has an answer for them as well.

"I would just refer them to rule no. 1 of the Model Railroad Creed, which is, 'My railroad, my rules,'" John said.

Check out John's article starting on page 38.

*Carl Swanson*

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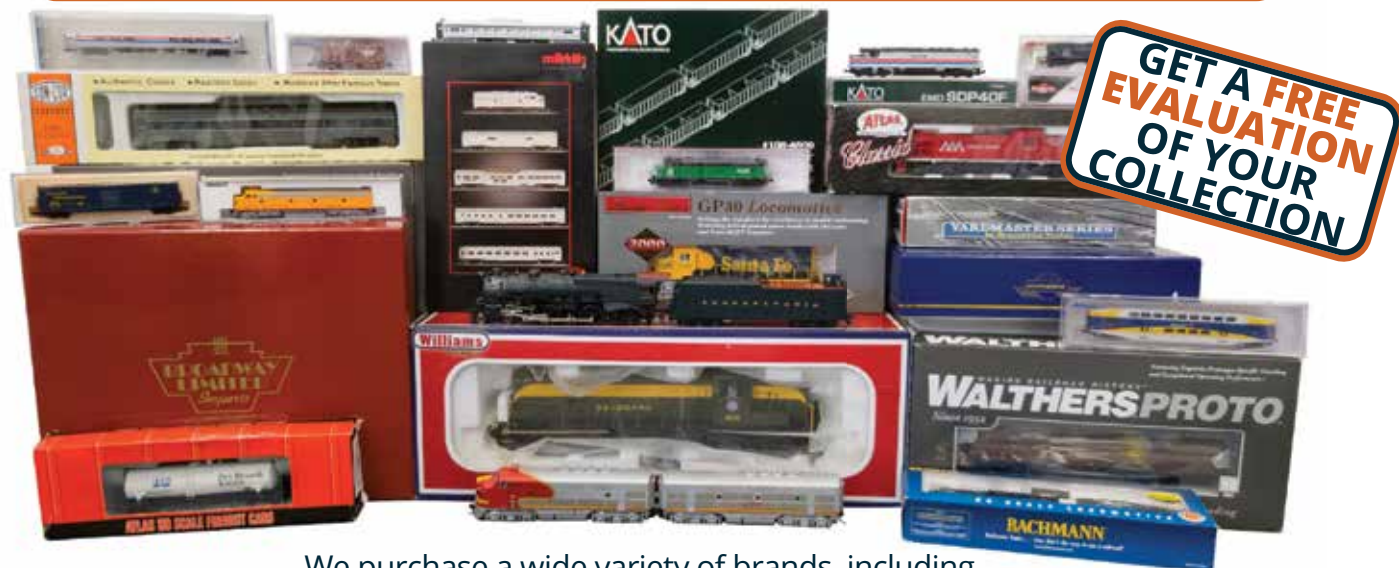
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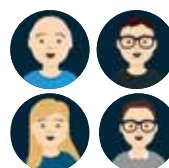
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## HO scale



**Electro-Motive Division GP60 diesel locomotive.** Athearn Trains offers this Roundhouse line model decorated for BNSF Ry. (Heritage III in two numbers, Vermont Ry. patchout in one number), CSX (dark blue and yellow), Denver & Rio Grande Western (black and orange with "Flying Grande" lettering), Norfolk Southern (black and white with "Operation Lifesaver" lettering, two numbers), Southern Pacific (scarlet and gray with speed lettering),

and Vermont Ry. (red and white, one number) in three numbers per scheme unless noted. The HO scale locomotive has factory-installed and painted wire grab irons, Celcon handrails, and light-emitting-diode headlights. Direct-current models with a 21-pin NEM plug for Digital Command Control decoder sell for **\$149.98**. Versions with an NCE non-sound Digital Command Control mobile decoder are priced at **\$184.98**. Athearn Trains, 800-338-4639, [athearn.com](http://athearn.com)

## HO scale locomotives

- **Electro-Motive Division SD50 diesel locomotive.** Chessie System (Chesapeake & Ohio reporting marks); Chicago & North Western (yellow and green); Conrail (blue and white); CSX (yellow, blue, and gray); Denver & Rio Grande Western (black and orange); Kansas City Southern (gray and yellow); Norfolk Southern (black and white); and Reading, Blue Mountain &

Northern (green, gray, and yellow). Four road numbers per scheme (two each in direct current and Digital Command Control). Upgraded power trucks with HT-C sideframes, see-through steps, detailed dynamic brake air intake, and anti-slip detail on walkways. Direct-current model, \$149.98; with dual-mode ESU sound and Digital Command Control, \$209.98. Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, [walther.com](http://walther.com)

## HO scale freight cars



- **Assorted freight car kits.** Northern Pacific American Car & Foundry two-bay Center Flow covered hopper, \$20.98. American Colloid Co. 40-foot steel boxcars (orange with two herald versions and blue with "Thank you for your order..." slogan. Single car, \$19.98; three-pack, \$58.98). Buffalo, Rochester & Pittsburgh 36-foot double-sheathed boxcar, \$19.98. New York Central & Hudson River 41-foot gondola (single car, \$19.98; three-pack, \$58.98). Injection-molded plastic kits with plastic wheelsets, trucks, and Accumate couplers. Accurail, 630-365-1173, [accurail.com](http://accurail.com)

- **40-foot single-sheathed boxcar.** Atchison, Topeka & Santa Fe; Boston & Maine; Canadian National; Colorado & Southern; Northern Pacific; Pacific Electric (two road numbers); Soo Line; and Southern Pacific maintenance of way (one number). Three numbers per

## Grivno receives award

**Group technical editor** Cody Grivno and Jerry Holmes of Chattanooga, Tenn., were named co-winners of the National Association of S Gaugers (NASG) 2021 Perles Publication Award. The two received the award for Grivno's article on Holmes' S scale Chesapeake & Ohio layout featured in *Great Model Railroads 2021*.

"The award provides recognition for the efforts of a person or persons who best present the S-scale story to outsiders through an article published in a non-S publication, which promotes and publicizes S-scale," according to information on the NASG website. The award is named in honor of the late Tony Perles, an author, railfan, and S scale modeler who passed away in 1986.



## In Memoriam

**Charles A. Kalmbach, 1942-2021**

**Charles A. "Charlie" Kalmbach**, son of *Model Railroader* founder Albert C. Kalmbach, died on August 25. He was 79 years old.

Charlie was employed by Northwestern Mutual Life and later also worked in real estate. He stayed connected with his father's company for nearly half a century.

"Charlie had a deep devotion to Kalmbach Media, inspired by his father, who welcomed him to the Board of Directors in 1972," said Dan Hickey, Kalmbach Media CEO. "He was very proud to have served on the board for almost 50 years and took great interest in the well-being of Kalmbach employees."

**John Claudino, 1938-2021**

**John Claudino**, owner of Aztec Manufacturing, died on March 10 in Reno, Nev. He was 82 years old.

Claudino was a frequent vendor at train shows throughout the country. He produced track cleaners in multiple scales, provided a locomotive chassis milling service, and offered a line of custom-decorated N scale boxcars.

scheme unless noted. Injection-molded plastic model with machined RP-25 contour metal wheels and body-mounted McHenry scale couplers. \$28.98. Round-house line. Athearn Trains, 800-338-4639, [athearn.com](http://athearn.com)



• **70-ton Hart ballast hopper.** New paint schemes: Southern Ry. (orange and black) and Conway Scenic (black and yellow, one road number). New road numbers: Atchison, Topeka & Santa Fe (brown with reporting marks only); British Columbia (green with dogwood herald); Canadian National (brown with "wet noodle" herald); Denver & Rio Grande Western (brown with Royal Gorge/Moffat Tunnel herald and "Scenic

**HO scale**



**Conrail class G52X coal gondola.** These Rivet Counter line models are available now from ScaleTrains.com. The HO scale Conrail class G52X coal gondolas are offered in the railroad's gray (one road number) and Oxide Red paint schemes (24 numbers). The gondolas, priced at **\$32.99** each, have a separate, factory-applied brake cylinder and arm, air reservoir, control valve, brake wheel, brake wheel housing, and wire form brake wheel housing rod guide; see-through photo-etched metal crossover platforms; a die-cast metal center sill and end frame floors with integral coupler box; and body-mounted Type E knuckle couplers. Coal loads (offset and symmetrical) are available separately. ScaleTrains.com Inc., 423-299-3689, [scaletrains.com](http://scaletrains.com)

Line of the World" slogan), and Erie (black). Five numbers per scheme unless noted (two single cars and one three-pack per scheme). Separate, factory-applied grab irons, uncoupling levers, train line hoses, and air brake piping detail; die-cast metal underframe; metal wheels on plastic axles; and Accumate couplers. Single car, \$41.95 (undecorated, \$31.95); three-pack, \$125.85. Second quarter 2022. Master Line. Atlas Model Railroad Co., 908-687-0880, [shop.atlasrr.com](http://shop.atlasrr.com)



• **Despatch Shops Inc. and St. Louis Car Co. bay-window cabooses.** Despatch Shops Inc.: Penn Central (1975+ class N7 green repaint, four road numbers), Boston & Albany (1949+ brown with white logo, two numbers), Conrail (1976+ class N7 blue repaint and

## Trains magazine hiring

**Trains magazine**, the world's largest railroad media brand with print, web, video, and events aspects, is searching for a new associate editor.

"We're looking for someone with a passion for all aspects of railroading, past, present and future; a journalism education or related experience; and the ability to multi-task in a fast-paced environment," says editor Jim Wrinn.

Part of Kalmbach Media, *Trains* has been published monthly since 1940. Its website, [Trains.com](http://Trains.com), is new and is growing. The catalog of video and other railroad products keeps growing. *Trains* also offers, in conjunction with Special Interest Tours, a variety of domestic and international tours for railroad enthusiasts as well its own line of exclusive locomotive photo charters.

For more information, visit [Kalmbach.com](http://Kalmbach.com) and search Job Listings under the Careers tab.

**Trains** MAGAZINE



## HO scale



### General American Transportation Corp. 37-foot meat refrigerator cars.

Rapido Trains has released a new run of this transition-era freight car. The HO scale General American reefer is lettered for Swift (War Bonds [single car and two-pack only], red, and red block schemes), Cudahy (as-delivered scheme), Morris Rifkin, American Stores, Armour, Dubuque (large logo), General American Transportation Corp. (GARX reporting marks), Hormel, Kingan (large logo), Oscar Mayer (larger logo), Union Refrigerator Transit (URTX marks), and Wilson. The car has Barber S-1 trucks and Macdonald-Cartier couplers. Prices are **\$49.95** (single car), **\$99.90** (Swift War Bonds two-pack), and **\$199.80** (four-pack). Rapido Trains, 905-474-3314, rapidotrains.com

1979+ N7 blue repaint, two numbers each), and New York Central (1964+ Lot 782 Century Green repaint with large NYC herald, four numbers). St. Louis Car Co.: Alton & Southern (1981+ red repaint scheme, one number), Illinois Terminal (1953+ Target Red [two numbers], 1960+ Green Oval scheme repaint [one number], and 1979+ green repaint with "The Road of Personalized Services" slogan [one number]). Also available as undecorated kit (1963+ NYC, PC, and early CR; 1975+ ITC and Norfolk & Western; and 1979+ CR). Prototype-specific details, 70-ton Gould solid-bearing or 70-ton Gould roller-bearing trucks with separate brake beam parts, and Kadee scale couplers. \$114.95. Tangent Scale Models, 828-279-6106, tangentscalemodels.com

## HO scale structures



• **Double-track bridge with lights.** Factory-assembled and painted structure. Features four blinking red light-emitting diode warning lights, three-ply wood construction with posts and railings, and metal base. Interior is  $4\frac{5}{16}$ " wide. Clearance through bridge is  $3\frac{3}{8}$ ". Lighting requires 4.5V power source (sold separately). \$49.99. Menards, menards.com/trains

## HO scale details and accessories



• **Custom-lighted Walther's Scene Master pumper truck.** Features 28 light-emitting diodes in six flashing patterns. Includes alternating headlights; six Cool White scene lights; red front light bar, rear beacons, and bumper perimeter lighting; four each red rear perimeter and cab perimeter warning lights; two amber side clearance marker lights; and amber operating hazard lights. 9 to 12V DC only. \$85. East Coast Circuits, 201-506-1448, eastcoastcircuits.com

## N scale locomotives

• **Pennsylvania RR P5a electric locomotive.** Passenger type: 1930s painted Dark Green Locomotive Enamel (DGLE) with brown roof and gold leaf Roman lettering in three road numbers. Freight type: Dark Green Locomotive Enamel with brown roof and buff yellow Roman lettering, DGLE with buff yellow Futura lettering, DGLE with coved buff yellow Roman lettering, and DGLE with round buff yellow Roman lettering in

## Club offerings



• **J.R. Short Milling Co. Pullman-Standard 4,750 three-bay covered hopper.** Accurail HO scale kit custom-decorated for the Kankakee Model Railroad Club. Kit, \$30; assembled with Kadee couplers, \$35. Shipping \$6 per car. Check or money order to KMRC, Kankakee Model Railroad Club, 197 S. East Ave., Kankakee, IL 60901

four numbers. Two numbers per scheme unless noted; also available painted DGLE but unlettered (passenger and freight types). Separate, factory-applied handrails, grab irons, smokestacks, class lights, horn, and bell; die-cast metal body and chassis; and dual-mode Paragon4 sound decoder with Rolling Thunder. \$369.99. Broadway Limited Imports, 386-673-8900, broadway-limited.com

## N scale freight cars



• **Pennsylvania RR class H21a four-bay hoppers.** Pennsylvania RR ("Coal Goes to War" slogan, early lettering, black with block lettering, and black with keystone herald; circle and shadow keystone heralds in six road numbers each), Norfolk & Western (large "N&W" lettering), Penn Central (black class H21G ex-PRR car with Deepwater Green body panel and class H5 with PC herald), and Virginian Ry. leased car. Three numbers per scheme unless noted. Crown trucks with Fox Valley Models metal wheels and body-mounted couplers. \$27.95. Summer 2022. Executive Line. Bowser Manufacturing Co. Inc., 570-368-2379, bowser-trains.com

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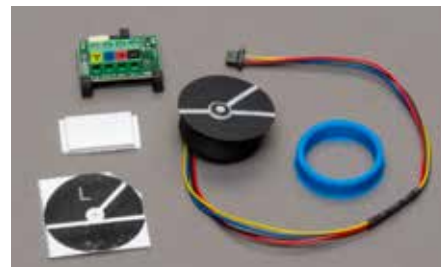
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Chesapeake & Ohio (brown), Detroit & Mackinac (brown), Norfolk & Western (black), Rock Island (blue with "Route Rock" lettering), and Western Pacific (brown with "The Western Way" slogan). Two road numbers per scheme; also

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A pair of Electro-Motive Division FT diesels head up a manifest freight bound for Richmond, Calif., on the Atchison, Topeka & Santa Fe in February 1951. Though the white flags mark this train as an extra, Santa Fe train NCX would have a similar consist. Photo from the David P. Morgan Memorial Library collection

## Santa Fe's NCX: A freight you can model

**Q** I've heard about a freight train the Atchison, Topeka & Santa Fe operated in the early 1970s and earlier in California called the NCX. The few references I've seen indicate it was a hotshot intermodal train. This train sounds interesting, especially since it ran at the same time as the famous Santa Fe Super C. There's not much information on this train on the internet, but it sounds like a good train to model. Please share anything you have.

*Steve Novotny, South Pasadena, Calif.*

**A** Northern California Express, or NCX, was an eastbound regular manifest running from Los Angeles to Richmond, Calif. (Although it ran north, in Santa Fe parlance, anything away from Los Angeles was considered timetable east.) Its westbound counterpart was designated SCX (Southern California Express).

It generally left from Los Angeles' 1st Street Yard after dark and arrived in the wee hours of the morning at San Bernardino. There it would drop off locals for SB and change crews, cabooses, and motive power, switching to a four-unit set of EMD F units (FTs, F3s, or later F9s). It might also pick up a helper or two for the climb up Cajon Pass to Barstow. In Barstow it would pull into B Yard, cut off any locals, and change directions. Cars bound for Reno, Nev., or farther up the Pacific Northwest were handed off to the Southern Pacific or Western Pacific at Stockton. The train then headed west to terminate in Richmond Yard.

A typical NCX consist was 50 to 80 cars long. Most of its boxcars carried less-than-carload lot (LCL) traffic from freight forwarders in Los Angeles. Other significant cars were boxcars of manufactured goods, class XAR automobile boxcars, perishable reefers (usually blocked at the front of the train to be cut off at San Bernardino), the occasional flatcar, and tanks of crude oil, refinery products, asphalt, liquid sulfur, and sulfuric acid.

Motive power for the first part of the journey from Los Angeles to San Bernardino would be a pair of 2-10-2 steam locomotives in early years, later to be replaced by a pair of EMD Geeps. Past San Bernardino, duties would be handled by a four-unit set of EMD FTs, F3s, or F9s. Helpers would be 2-10-2s even into the early diesel era. And when you swap motive power, don't forget to change out the caboose, too!

**Q** I have an N scale steam engine whose tender derails on my code 55 turnouts. I found that the tender's wheel flanges were bottoming out through the frog's shallow flangeways. I thought when I bought the engine many years ago that it had "low profile" wheels, but it appears the wheel flanges on this model are somewhere between National Model Railroad Association Recommended Practice RP-25 and old-fashioned deep flanges. Are there standards for wheel profiles besides RP-25 that I should be aware of? Is "low profile" a standard or a manufacturer's description? Also, as I look for replacement wheels for the tender, will 33" or 36" wheels most closely approximate the originals?

*Richard Nesbitt, Minneapolis, Minn.*

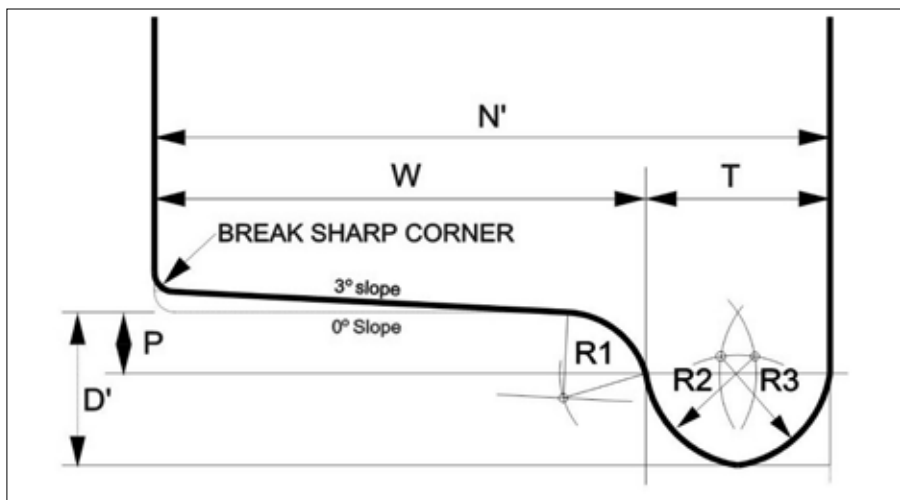
**A** Smaller scale models, especially those made many years ago and by lower-end manufacturers, tend to have proportionally larger wheel flanges than other scales. This is because flange depth is independent of scale. Rather, it depends on the wheel thickness. Just like scale rails, wheels have codes that correspond to their thickness at the wheel tread, measured in thousandths of an inch. The width of the tread, flange thickness, flange depth, and other wheel dimensions are based on the wheel code – not its diameter or even its scale.

So if one car has code 88 wheels and another has code 79, the first will have a larger flange depth, even if both supposedly follow RP-25. And while the second car's manufacturer might say it has low-profile wheels, that's not a term with an accepted standard definition; there's nothing keeping the first manufacturer from claiming the same thing.

Just because a car has RP-25-contour wheelsets doesn't mean it won't bump over shallow flangeways. Check the flange depth with an NMRA wheel gauge. For more on the RP-25 profile, download the NMRA's document at [nmra.org/index-nmra-standards-and-recommended-practices](http://nmra.org/index-nmra-standards-and-recommended-practices).

If you replace your wheels, you should use ones of the same diameter as the originals, just with lower profile flanges. Since I don't know what size wheels your model has, I suggest taking a caliper to them before buying replacements.

Send questions and tips to senior associate editor Steven Otte at [AskTrains@Trains.com](mailto:AskTrains@Trains.com).



The National Model Railroad Association's Recommended Practice RP-25 defines the shape and dimensions of a model's wheels based on the thickness of the wheel, not the scale of the model. Models of the same scale can have wheels with different flange depths but still conform to RP-25. National Model Railroad Association

**Q** I'm a newbie at modeling. When I do my scenery, I get craters. Do you have a video or something that tells how to correct or resolve the craters?

*Glenn Ginsburg*

**A** Cratering is caused when drops of wet water or scenery cement splash down onto light ground cover material like ground foam or fine dirt. The only way to fix craters in your ground cover

material is to cover it with more ground cover material. But before you can do that, you need to know how to avoid causing more craters.

There are two steps to avoiding this. The first is to stick the ground cover material down before applying glue. Moisten the area with wet water (either a solution of about 4:1 water with isopropyl alcohol or water with a few drops of dish detergent) before sifting on your dirt, sand, or ground foam. Once it's applied, spray more wet water with a plant mister or other spray bottle that produces a fine mist.

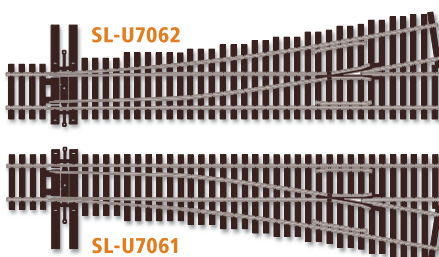
Second, don't drop scenery cement onto your ground cover from above. Use a pipette, at ground level, to slowly flow the cement into the already damp ground cover from the side. The wet water should help the cement flow into the scenery material until it's saturated. Start at a high point so gravity can help the cement flow downhill. If you get rivulets or other bare patches, fill them in with a sprinkle of ground cover before the cement dries.

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**Q** I have a Bachmann stockcar whose couplers hang down so low that the pins catch on turnout closure rails, grade crossings, or crossing diamonds. How can I get them up to the right height? Will a coupler shim work, or do I need to do something else?

*Joseph Kuepfer, Milverton, Ont.*

**A** That depends on whether it's the coupler's trip pins that are hanging low, or the entire coupler. The easiest way to find out is with a coupler height gauge. If the couplers on your car are mounted too low, there are a couple ways to adjust them. One way, which you mention, is to add thin washers or shims between the car's trucks and its kingpins, raising the entire car body and the couplers with it.

Another fix for low-hanging couplers is to replace them with underset shank couplers. As the name implies, the shank of these couplers is mounted at the bottom of the knuckle, which shifts the coupler head up.

However, you might find that the couplers are mounted at the correct



A trip pin plier, like this one from Micro-Mark, can be used to bend trip pins that hang too low and snag on turnouts and crossings. *Jim Forbes photo*

height and it's just the trip pins themselves that are dragging. There's an easy fix for that, too, and it's called a trip pin plier (see above). This tool has one round jaw and one concave one. Gently squeezing a low-hanging coupler trip pin between these jaws can curve it upward so it clears your turnouts and crossings. Adjust your trip pins bit by bit and check throughout the process to make sure you don't bend them up too far; pins that are


bent up too far won't respond to uncoupling magnets reliably. There should be a place on your coupler gauge to check.

**Q** I have Märklin freight cars I want to use on my direct-current HO scale layout. I know I have to replace the wheels, but do I use insulated or non-insulated wheels, and where can I purchase them?

*Henry Scharpenberg, Stafford, Va.*


**A** Since freight cars generally don't have a need for track power (unless they're equipped with something like a flashing rear-end unit or a sound module), they should be equipped with insulated wheels in order to prevent short circuits. Most of the replacement wheelsets you'll find for sale, even the ones with metal wheels, will be insulated. There are plenty of manufacturers who offer replacement wheelsets that will work on your cars, such as NorthWest Short Line, Walthers, Atlas, Fox Valley Models, Con-Cor, Kadee, Rapido, InterMountain Ry. Co., and Bachmann. **MR**

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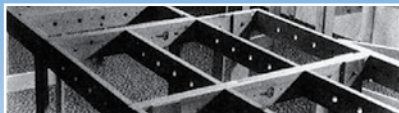
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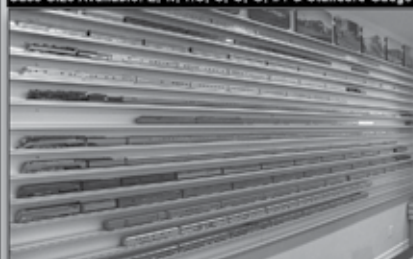
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## Railway Post Office

Conducted by Steven Otte



When Benjamin Maggi cuts off a structure at the fascia, he paints the “fourth wall” to match the rest of the building to make it less distracting. He also cuts openings to let workers reach ground throws, as seen at left. Benjamin Maggi photo

## Cut 'em off at the fascia

**Tony Koester's Trains of Thought** column in June's issue resonated with me, as I have had to face a similar issue on my layout. Many of my structures are scratchbuilt, and due to the narrow benchwork on my layout, most of them are truncated at the fascia. I considered installing black fascia pieces for the “fourth wall” of the building, but I thought that they visually distracted from the look I was after. So instead, I painted the fourth wall and weathered it to match the rest of the building. Astute viewers realize quickly that the real building isn't as narrow as represented on my layout, but visually it looks a lot better than a blank wall.

One problem I ran into, though, was that I use edge-mounted ground throws to control my turnouts, and I needed to locate one right where a building was to go. My solution was to cut access holes in the fourth wall so operators can reach inside the building to access the ground throws. This can be seen on the building on the left.

*Benjamin Maggi, Loudonville, N.Y.*

## Stunning Trackside Photo

**Wow! I was stunned** by the excellence of Rick Sutton's San Joaquin RR Trackside Photo in the September 2021 issue of *Model Railroader*. I couldn't tear my eyes away from the photo.

Everything was outstanding with regard to fidelity to detail: the blue tarps on the locomotive and pallet load, the looming clouds in the distance, the rust on the shop building, the figures (one on a cellphone), the road weathering, the signage, the delicate power lines, etc.

Bravo and kudos to Rick. Stuningly beautiful modeling.

*Jim Robertson  
South Orange, N.J.*

## The first cut is the hardest

**The article by Dave Abeles** in the August issue (“Kitbashing a Conrail C30-7A”) brought back a memory from several years ago. I attended a swap meet where there was a young fellow demonstrating his techniques and selling beautiful models made using body parts from various manufacturers to match the specific locomotive he was modeling. When I asked him how he could put a saw to those beautiful Kato locomotive shells, he replied, “Once you make the first cut, all the guilt is gone.”

Hopefully, Dave feels the same way.

*Mike Hirvela  
Waukegan, Ill.*

Comments, suggestions, and additional information on *Model Railroader* articles and departments are welcome in this column. Every comment will be read, but not all can be printed or answered. Make your statement in 300 words or less, and send it to **Railway Post Office, Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187**, or e-mail [rpo@mrmag.com](mailto:rpo@mrmag.com). Please include your name, city, and state.

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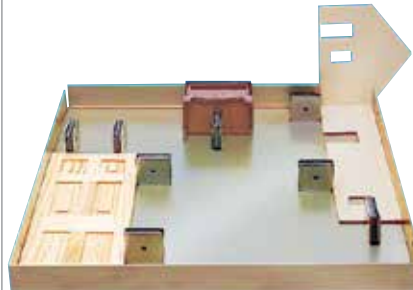
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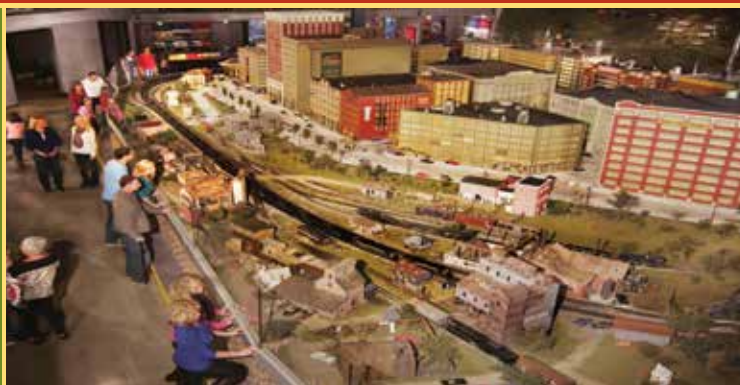
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## Detail a grain elevator

**Thirty five years ago**, then-associate editor Jim Kelly wrote about modeling Continental Grain Co. in HO scale. The large export grain elevator, featured in the November 1986 *Model Railroader*, was part of the city scene on the original Milwaukee, Racine & Troy (MR&T) when Kalmbach's offices were located at 1027 N. 7th Street in downtown Milwaukee.

Because of how the grain elevator was positioned on the old layout, the back of the main elevator building wasn't visible, so Jim used a piece of unpainted tempered hardboard there. On the current MR&T, all sides of the elevator can be seen, so he replaced the hardboard with styrene and added the same window castings he used on the other three sides.

While Jim was at it, he built new silos and a headhouse that seat against the main building. A pair of distributors

with associated pipes and supports are seated on the roof of the headhouse.

However, a move and 35 years under fluorescent layout room lighting had taken its toll on the structure. Details like the elevator legs, roof vents, dust collection pipes, and downspouts were missing. The tar paper roofing material was starting to lift off. Trim was never added to the back of the main building, either. My task was to freshen up and finish the parts of the elevator facing the hallway on the Jones Island section of the MR&T.

This was a time vs. benefit project. The storage silos are tucked in the corner against the layout room wall. There was no room for the elevator legs, and some of the rooftop details would go unnoticed. Instead, I focused on adding details to the portions of the silos visible from the hallway windows.

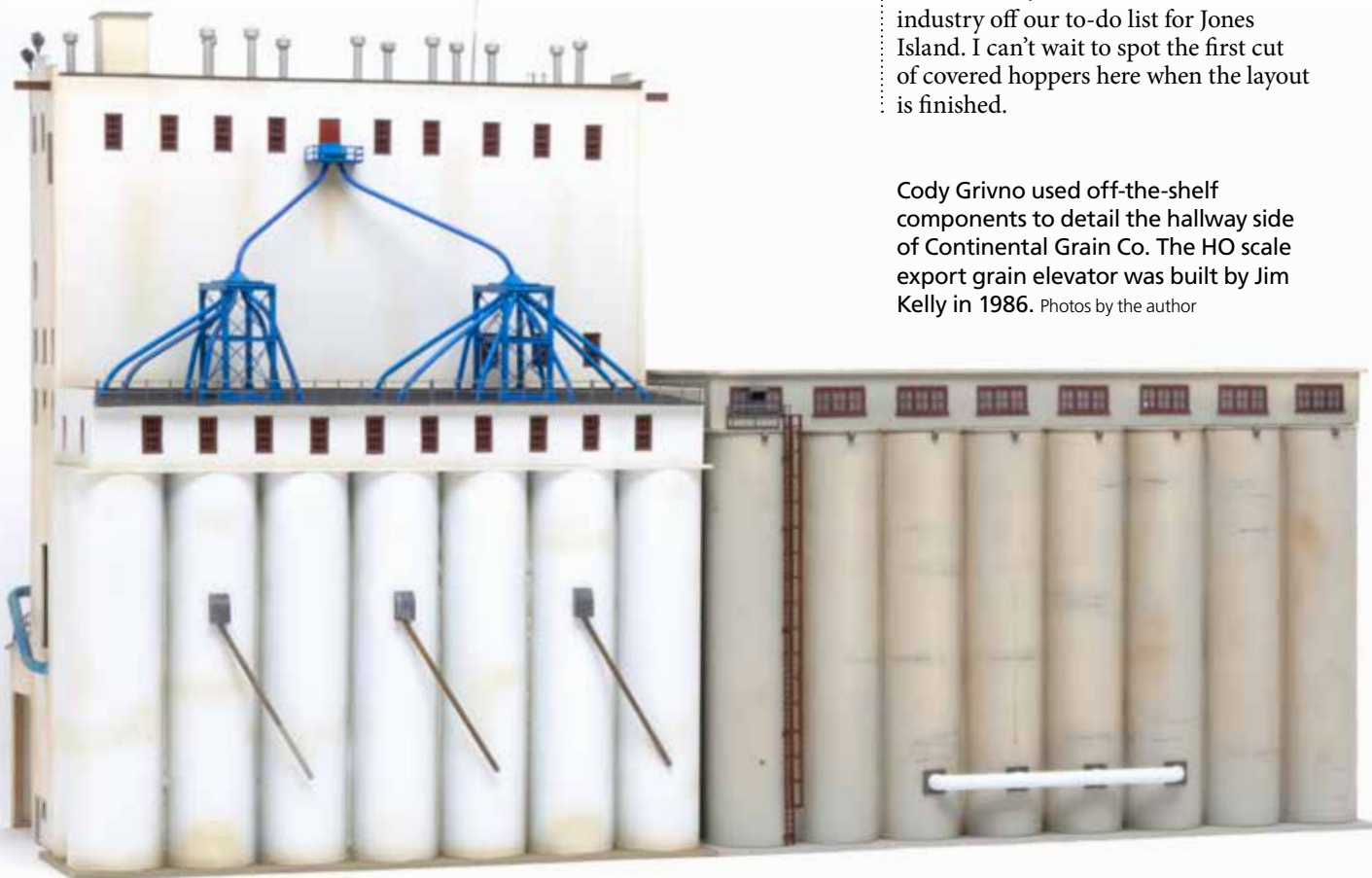
The main elevator, silos, and headhouse mainly needed some sprucing up. Trim, new roofing, safety railings, and weathering were the key areas I addressed.

The full-size silos attached to the main building have two-way diverter gate valves, swivels and booms, and a complex network of cables and pulleys to position the telescoping spouting for loading boats. There's also a marine leg that, judging by the rust on it, has seen little if any use in the past 20 or 30 years. In the past it was used to unload grain from vessels.

Though it would have been neat to add all of those details, they would go largely unappreciated. Visitors and operators want to be inside the layout room, not observing the model railroad from the hallway. I opted to add three simple loading spouts to the silos.

With that, we can check another industry off our to-do list for Jones Island. I can't wait to spot the first cut of covered hoppers here when the layout is finished.

Cody Grivno used off-the-shelf components to detail the hallway side of Continental Grain Co. The HO scale export grain elevator was built by Jim Kelly in 1986. Photos by the author



## STEP 1 WINDOW REPAIRS



**When I was moving** the grain elevator off the layout, I learned the headhouse wasn't attached to the storage silos – the hard way. The headhouse crashed to the floor, causing 12 of the 18 window castings to pop out.

This was a fortunate bounce, so to speak, because none of the windows had glazing. After removing the remaining six castings, I cut 18 pieces of  $\frac{9}{16}$ " x  $1\frac{1}{8}$ " .010" clear styrene, as shown at left. I attached the styrene to the metal castings with Aleene's Tacky Glue.

After the glue had dried, I attached the windows face down to blue painter's tape on a wood stick. I sprayed the back of the glazing with Testor's Dullcote (no. 1260), as shown in the middle image. This made the glazing translucent, allowing light to pass through while hiding the fact the headhouse is empty.

I re-attached the metal castings to the styrene headhouse with Tacky Glue (right photo). I used the same glue to attach the headhouse to the plate on top of the silos.

## STEP 2 STORAGE SILOS



**When studying prototype photos**, I noticed a horizontal pipe spanning the middle six storage silos on the harbor side. To re-create the detail, I used the smallest 90-degree elbows, tees, and pipe included in the Walther's Blower Engine House Piping Extension kit (no. 933-4605).

I built the parts per the kit's instructions. Then I cut three  $1\frac{1}{8}$ " long pieces of pipe to go between the elbows and tees. To make the glue joints stronger, I inserted pieces of  $\frac{7}{32}$ " styrene tube inside the joints. You'll need to remove some material inside the elbows and tees to accommodate the styrene.

I filed and sanded the plastic so it would look like a single piece. I spray-painted the pipe with Rust-Oleum Painter's Touch 2X Gray Primer (no. 249088) and Flat White (no. 249126), as seen in the left photo.

I used the mounting flanges (no. 76) included with the kit to make the connection points between the pipes and silos look neater. After spraying the parts with Gray Primer, I attached the flanges with CA.

On the full-size elevator, there's a ladder with a safety cage on the right (west) end on the harbor side. That would be out of sight on our model, so I shifted the ladder to the left end.

As I was looking through Walther's Roof Details kit (no. 933-3733), I spotted a two-piece angled exhaust/intake. Part no. 15 fit neatly over a window. The opening in the part would reveal the window behind it, so I plated the metal casting with a piece of .015" x .250" styrene strip (middle image), which I later painted flat black.

I painted the vent Primer Gray and attached it with Tacky Glue. The safety railings on the top of the silo are from Tichy Train Group's open grate platforms with handrails (no. 8001). I used the same gray on the handrails and secured them with CA.

I turned to Walther's Caged Ladders & Vents kit (no. 933-3515) to model the ladder with safety cage. I had to splice two ladders and cages to connect the top and bottom the  $8\frac{1}{4}$ "-tall silo. I added .040" square styrene strip standoffs to the back of the ladder.

I spray-painted the assembly with Painter's Touch 2X Red Primer (no. 249086). Once dry, I applied Monroe Models Quick Age Weathering Wash (no. 493-978).

Finally, I added vents to the top of each silo using an unnumbered part from sprue B in the Rix Grain Elevator kit (no. 628-0407). I sprayed the castings Primer Gray and installed them with CA. See the right-hand photo.



## STEP 3 MAIN ELEVATOR BUILDING



The .060" styrene sheet back of the main elevator building was added when the model was put on the current MR&T. There was no corner trim to conceal the seams. I fixed that by adding .020" x .156" styrene strip. Notice that I left a gap where the headhouse seats against the structure.

In preparation for priming and painting, I wet sanded the painted styrene back wall with 1000-grit sandpaper. I removed the dry transfer lettering, as it was starting to crack and didn't look as good as the painted sign on the opposite side. The sanded wall is shown in the photo at left.

After cleaning the sanding residue with a damp cloth, I masked the windows and door. Then I primed the model with Tamiya Surface Primer L White (no. 87044). Once that dried, I used an airbrush to spray the wall with Vallejo Model Air White (no. 71.001).

I knew matching the color on the trim and back wall would be difficult, as the paint Jim used on the rest of model is long discontinued. I used weathering to make the difference less jarring. First, I sprayed a control coat of thinned Vallejo Model Air White Gray (no. 71.119) to tone down the white. Then I used thinned Micro-Mark MicroLux Railroad Tie Brown (no. 29003) to add streaks of grime similar to those found on the front and sides. See the middle image.

Finally, I re-attached to two spotlights, which came from Preiser set no. 10062. The block-and-tackle hoists which Jim had scratchbuilt from styrene had snapped off over the years. I replaced them with  $\frac{3}{4}$ " lengths of  $\frac{3}{16}$ " I-beam, painted with Red Primer and weathered with Testor's Dullcote and Monroe Models Quick Age and Dark Brown (no. 493-977) Weathering Washes. These details are visible in the right-hand photo.

## STEP 4 HEADHOUSE ROOF



Jim made the tar paper roofing on the main headhouse using typing paper. He secured the paper to the styrene with an unspecified adhesive and painted it Floquil Dark Green. The painted paper was in pretty rough shape, but I was able to peel it off with little effort, as shown at left.

I replaced the typing paper with American Model Builders peel-and-stick rolled roofing (no. 286). I attached Evergreen .100" styrene angle (no. 293) where the roof meets the main building. See the middle image.

I spray-painted the roof Tamiya Rubber Black (no. TS-82). Then I added safety railings from Tichy Train Group kits 8001 and 8002. I painted the railings Primer Gray and attached them with plastic solvent cement.

Then I reattached the distributors and supports with Aleene's Clear Gel Tacky Glue, as seen at right. The glue is ideal for this application as it has a slow drying time, which allows for repositioning without damaging the roofing material.



Photo: AdobeStock

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## STEP 5 SIMPLE SPOUTING



I found an image online of another Great Lakes export elevator that had covers over the swivel spouting used to load boats. I was able to re-create those with parts from the same Walthers Roof Details and Rix Grain Elevator kits I referenced earlier.

I used three of part no. 14 from the Walthers kit for the covers. From the sprue, the parts have a flat gluing face. To reshape the parts, I attached a piece of 600-grit sandpaper to the unpainted side of the PVC pipe silo. I then gently sanded the parts, checking my work often, until they matched the profile of the silo. The setup is shown in the photo at left.

Next, I used plastic solvent cement to attach a round spout end (part no. 10 from the Rix kit) inside each cover. I trimmed the vertical portion of the spout end below the split with sprue cutters. Then I attached a 3½" length of spouting to the angled portion. See the middle photo.

To make the plastic look like weathered metal, I sprayed the housings and spouting Primer Gray. After that dried, I sprayed the parts with Dullcote. I used a paintbrush to apply Monroe Models Quick Age to the housings. The alcohol-based wash reacted with the Dullcote, giving the covers the look of weathered galvanized metal.

I used the same company's Dark Brown on the spouting. I applied Vallejo Model Air M495 Light Gray (no. 71.298) to the bottom 9 scale feet of the one spout to suggest it had been repaired. The painted section of spouting can be seen in the image at right.

## STEP 6 FINISHING TOUCHES



Before I could install the covers and spouting, I needed to take care of some painting and weathering on the silos. First, I brush-painted the base Vallejo Model Air Imperial Japanese Army Ash Gray (no. 71.311), as shown at left.

I then masked the windows and applied the same thinned White Gray as a control coat to tone down the white paint. I used thinned Railroad Tie Brown to add weathering where the headhouse walls meet the top of the silos (middle) and at the base of the silos.

Once the paint had dried, I installed the three spouts (right). The top of each cover is 5½" from the base of the silo. I used Tacky Glue to attach the parts. This gave me sufficient working time, and any smudges were easy to clean up with a damp cotton swab. [MFR](#)



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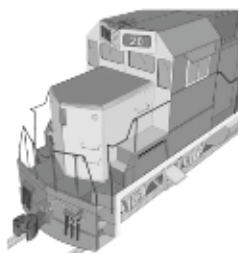
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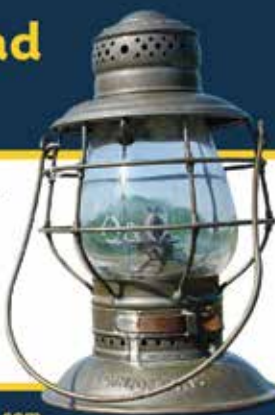
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A trio of workers position a conveyor in preparation for unloading the hopper load of coal that's just arrived. Clark Propst makes sure the figures on his HO scale model railroad don't just stand around, but interact with the railroad.

# Every figure TELLS A STORY

Don't just place figures on your layout – tell stories with them

By Clark Propst • Photos by the author

**W**hen it comes to figures, it seems most modelers fall into one of two camps. Some use only figures in static poses, like sitting or standing. The others enjoy making active scenes, like busy station platforms or marching bands.

I don't remember putting very many figures on my previous layout [featured in *Great Model Railroads 2016 – Ed.*] I guess I just never considered them important. But when I was detailing my present layout [*Model Railroad Planning 2018* and *GMR 2019*], I thought I would use figures to help tell the stories of my rail-served industries. I wanted to help the viewer

understand what went into loading or unloading the freight cars I spotted there.

I wanted at least one such vignette in each of my three towns. Since I started building the layout at the end of the line and worked toward the beginning of the branch, I did the same with my figure scenes. I started at Story City, placing three little storytelling vignettes there, then made one at Roland and two more at Zearing.

Good looking miniature figures can be expensive. Make thoughtful decisions so their placement will help tell a story that will enlighten viewers.





## CHURNING THE BUTTER (TUB STAVES)

**THE FIRST FIGURES I PLACED** were inspired by a photo of the crew at the Story City (Iowa) Butter Tub Co. factory back in the day. The photo shows a line of employees standing by a horse-drawn wagon near the train tracks. In the background to the right, a fellow is stirring the vat where spruce staves soak in preparation for bending into the basket-like tubs made to hold bulk butter. Because the vats I built were taller than the ones in the photo, I had to stand my figure on the top step of a ladder. The figure I chose was looking into the distance, rather than down at his work, so I had to give him something to look at. I therefore placed another figure in a second-story window for him to be chatting with.



## SHOVELING SPILLAGE

**MY LAST VIGNETTE** in Story City is at Jensen Concrete Products. I added a couple conveyors to transport material: one to unload aggregate from hopper cars and another to feed the batch mixer. Since Jensen uses a backhoe to move this material, there are plenty of chances for spills. Having worked around conveyors for years, I have some knowledge of where the spills would occur. The scene at Jensen's has a couple of workers shoveling spillage from loading the hopper at the end of the conveyor belt into a tractor bucket. The figures add life to an otherwise mundane area.



## TOOLS OF THE TRADE

**MY NEXT ATTEMPT** was also inspired by a photo. That photo, of a boxcar being prepared for grain loading, included a tractor with a box mounted on its hitch holding tools to aid in the installation of wood grain doors. I copied the idea, adding a box to the rear of a tractor and filling it with tools and a chain for moving cars. I placed a figure of an elevator employee explaining to a day worker how to install grain doors on the just-spotted boxcar. I also placed a stack of wood grain doors nearby, along with a ladder to get in and out of the car while installing them.



## COAL FOR THE CONVEYOR

**I ONLY PLACED ONE GROUP** of figures in Roland, at Marshall Canning. These fellows (seen in the lead photo on the previous page) are jockeying the conveyor around so it will dump coal where they want it now that the next carload has arrived. These conveyors, from Wm. K. Walthers, come three to a package, so I also used them in another scene at Karlberg [MR March 2021 – Ed.] I piled coal on the ground here, too. But unlike in the Roland scene, I had the crew just showing up for work, rather than work in progress.





## SPECIAL LCL DELIVERY

**ACROSS THE STREET IS** my favorite storytelling scene. I bought a package of detail parts at a Trainfest train show in Milwaukee. When I opened the package, I saw that the appliances that were labeled as trash would actually be new at the time I model. Why not use them to highlight less-than-carload lot (LCL) traffic? I dug through my detail parts and found a two-wheeled cart and figure that could be pushing it. I adjusted the arm on another figure so he looked like he was opening the back door on a van.

The van, salvaged from a depot seen on my previous layout, was originally painted for Railway Express Agency.

I have a list of all the businesses in Zearing for the time that I model. I found one that could have sold appliances and designed a sign for it on the computer. After printing it on regular printer paper, I cut it to fit the side of the van and glued it on. Some friends in an internet modeler's group told me appliances would have been shipped in wooden crates in my era. So I used some dimensional wood strips to make a couple shipping crate bases and strewn several more lengths of lumber around, along with some tools our delivery men will pick up later.



## HOIST THAT POLE

**AT ZEARING I HAVE** two areas of activity close to each other. I'd rather have placed them farther apart, but that wasn't to be. One is at the utility company's pole yard. I built a Tichy stiff-leg derrick kit to pick up poles from flatcars or gondolas and place them on a storage rack. Instead of having the derrick just stand there, I thought I could add some life by having a crew actively moving a pole. Unlike the coal unloading crew at Marshall Canning in Roland, this vignette doesn't look realistic without a car to unload, so I just force myself to ignore it when no car is present.



## FILL 'ER UP!

**LASTLY, I HAD ONE FIGURE** that was in a very strange position, crouching down with his head turned to the side. I found he would work great for loading a fuel truck, holding the nozzle in one hand while watching the meter on the loadout platform. I didn't like the original gray-and-red paint job on the Mini Metals truck, so I painted it all red. I then made a Standard Oil sign on the computer, printed it out, and cut it to fit the sides of the tank. [MIR](#)





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# HOW TO SCRATCHBUILD A SEMAPHORE

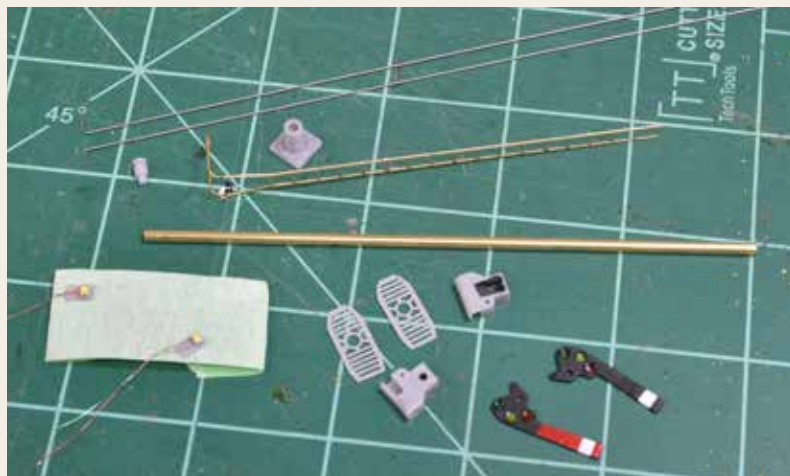
Use new and old methods to construct this HO scale lineside detail

By **Dave Mashino** • Photos by the author

**M**y freelanced HO scale layout, the Wildcat Valley Ry., is a double-deck model railroad set in the 1920s and '30s. I've been working on it since early 2018. One of the design requirements I had for the layout was an operating signal system. I found some commercial semaphore signals that fit my railroad's era to get me started.

When COVID hit in 2020, I had a lot of time to work on the layout. However, I could no longer source the remaining signals because of supply chain issues. When my wife and I retired at the start of this year, I suddenly found myself with less money and more time to devote to the hobby. This made the decision to scratchbuild my own semaphores a no-brainer. I wanted the new signals to closely match the existing ones, so I used the previously purchased models as a reference.

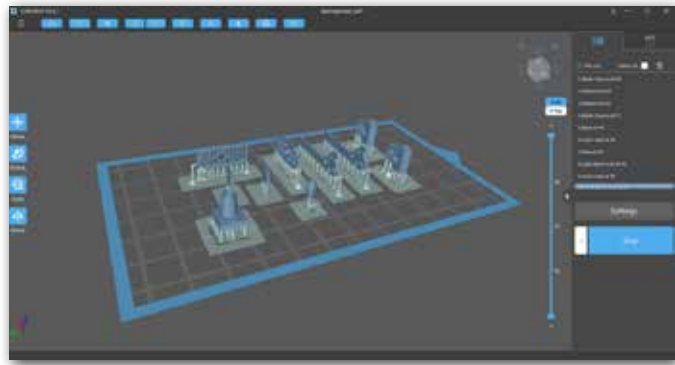
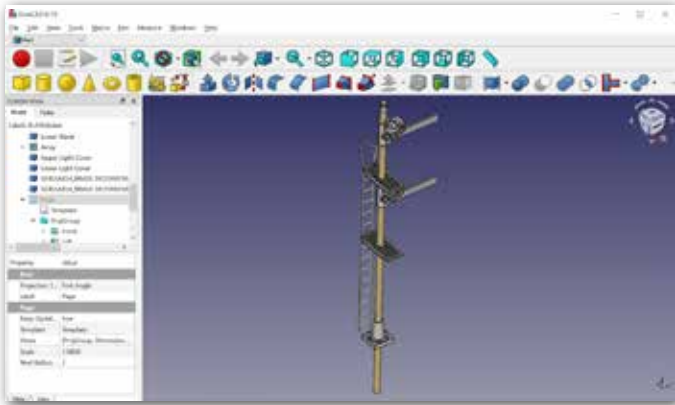
*Dave Mashino recently retired as manager of a mold shop in Kokomo, Ind. He has been involved in model railroading off and on since he was 10. Now at 64, Dave spends a lot of time in the basement working on the second iteration of the Wildcat Valley Ry. He has been a member of the National Model Railroad Association's Central Indiana Division since 2016. Away from the hobby, Dave enjoys spending time with his children and grandchildren and traveling with his wonderful wife, Chris, and faithful dog, Tucker.*



When supply shortages made off-the-shelf HO scale signals hard to find, Dave Mashino mixed old and new techniques to scratchbuild semaphores like the one at left for his Wildcat Valley Ry. The parts he used to construct the semaphore are shown above.



## DESIGNING AND PRINTING PARTS



I received a Qidi Tech Shadow 5.5 S 3-D resin printer for Christmas. I can print many of the things needed for my layout with this small, inexpensive printer. It has become an invaluable tool in my modeling arsenal.

In my previous life as a tool maker and CAD designer, I had considerable experience with solid modeling and design. After I found FreeCAD software online ([freecadweb.org](http://freecadweb.org)), it didn't take long to become proficient enough to design the items I needed for the semaphores. The interface is a little clunky compared to the high-end software I was accustomed to, but it's a full-featured CAD system. A screen capture is shown in the top image.

I started by creating a rough pencil drawing with the dimensions I would need to have in order to model the components that would be 3-D printed. Then I modeled and printed most of the components for a prototype version, knowing that there would inevitably be engineering changes. A screenshot from the Chitubox slicer software with all of the printed components is shown below.

I've placed the .stl files for the 3-D printed components needed on GitHub ([github.com](https://github.com)) at DMASHINO/HO-Scale-Semaphore. The files have no support structures and are HO scale. The ABS-like resin worked well to print the parts.

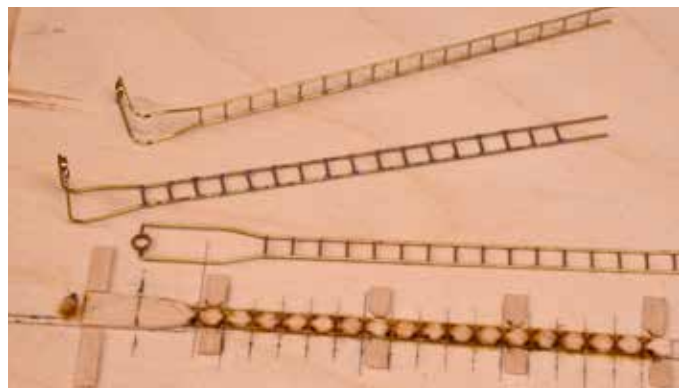
## THE MAST



I used  $\frac{3}{32}$ " brass tube for the mast. A slot is required for each signal head to accommodate the .015" diameter music wire actuator. A hole is also required for the wires that power the light-emitting-diode (LED) illuminating the signal head to feed into the tube.

I built a fixture from two blocks of hardwood and drilled a hole to securely hold the tube. Then I used a small ball cutter in a motor tool to mill the slots. In doing this, I found that once the brass wall was thinned, it collapsed inward. I used a hobby knife to clean up the openings. I ran a .063" drill down the tube to clean out any burrs.

## MAKING THE LADDER



Being a do-it-yourselfer, I fabricated the ladder instead of using off-the-shelf options. I selected .020" diameter brass rod, about  $1\frac{3}{4}$ " in HO scale, for the side rails and rungs.

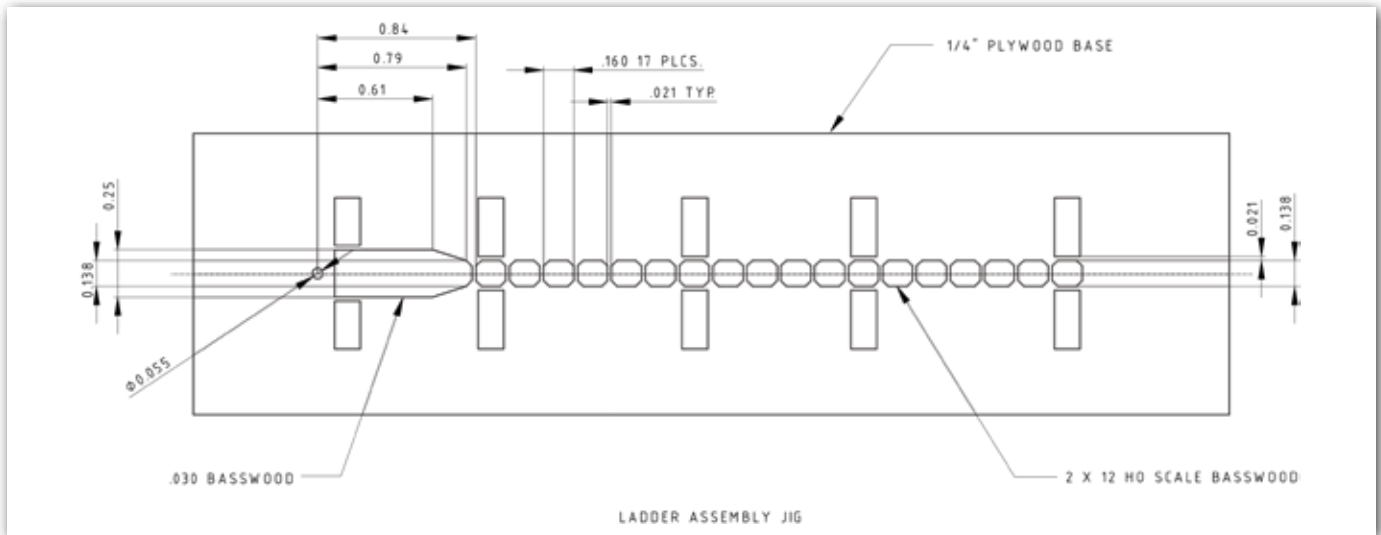
To construct the jig, I cut 18 pieces of 2 x 12 basswood to .160" long and chamfered the corners to allow space to solder the rungs. I used a straightedge to keep the pieces in alignment while attaching them to the  $\frac{1}{4}$ " plywood with wood glue. A .022" drill bit proved an ideal spacer for the rungs. The bit is slightly larger than the brass rod. The extra clearance makes it easier to remove the finished ladder from the jig.

I used .030" basswood to form the spread of the sides rails above the platform. I glued pieces of wood along each side of the form to hold the rails, again using the bit for spacing.

After some trial and error, I came up with the position for a .055" hole. This is the where the collar, the top termination



## MAKING THE LADDER (CONT'D)



point for the ladder rails, is located. I inserted a round toothpick into the hole.

Next, I cut a 4½" long ladder rail from the 12" long brass rod. Using my NorthWest Short Line Chopper, I cut 17 rungs approximately .135" long. I cut the other 4½" rail from the remaining rod.

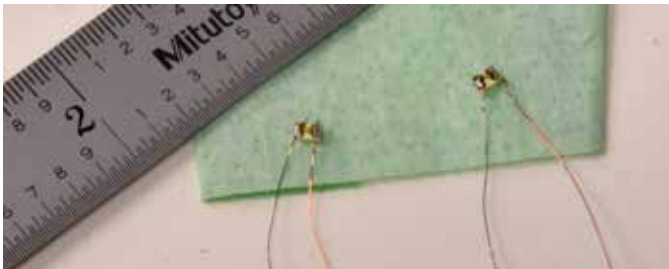
Then I chucked a piece of ⅛" brass tube in my hand drill. While rotating it, I used a motor tool with a cut-off disc to

cut the collar. Do this carefully and use personal protective equipment, most importantly eye protection.

I bent the side rails to the appropriate configuration using the jig. Then I set the collar and rungs into place. After applying flux with a Microbrush, I soldered all the pieces together.

I finished this part of the project by filing the excess solder and bending the top of the ladder to a curve using trip pin pliers. I trimmed the oversized ladder to length later on.

## SIGNAL HEADS



I coated the inside of the pocket in the signal heads where the LEDs would be placed with black paint. This reduces the chance of light leaks through the plastic. I used a no. 62 bit to size the hole for the blade pivot screw and a 00-90 tap to cut the threads. Use plastic-friendly lubricant for this operation.

Next, I soldered 38-gauge magnet wires, purchased from engineering.com, to the 0805 SMD white LED. After determining the polarity from the minuscule icon on the back of the chip, I soldered the magnet wires to the pads. You can strip the coating off the ends by passing the ends through a blob of hot solder on your soldering iron. I used some of my wife's fingernail polish to insulate the bare portion of the wires.

Next, I fit the light box cover to the opening in the light head. Then I attached the LED to the pad on the box cover with cyanoacrylate adhesive. The leads should face toward the mast. As long as the LED is located inside the periphery of the pad, the cover should go together at assembly time. It might be wise to test the LEDs at this time. A 1½V battery works well for this.

## SIGNAL ARMS



I then shifted my attention to the signal arms, also called blades. I first painted 3-D printed blades white. Then I cut a ⅜" wide strip of masking tape and wrapped it around the blade to create the white stripe.

After another light spray of the white to seal the tape, I applied flat black to the back side and the front to represent the spectacle, which contains the red, yellow, and green roundels.

Then I masked and sprayed a portion of the blade red. I aimed the paint straight on, leaving the edges black.

I came across a clinic on semaphores by Paul Allard and Dana Brown where they used Gallery Glass, a translucent paint, to make the roundels. I used no. 16015 Ruby Red, no. 16004 Sunny Yellow, and no. 16008 Kelly Green.

I used a toothpick to apply Testor's Clear Parts Cement & Window Maker to the back of each roundel opening to create a clear lens. Then I applied two coats of Gallery Glass from the front with a toothpick. The Gallery Glass goes on opaque but becomes translucent as it dries.

## PUTTING IT ALL TOGETHER



**Now it was time** to take the assorted bits and pieces and make a working semaphore. I started by installing the lower signal head. Use the slot in the mast and the signal head as a guide for placement. Make sure you can look inside the light box and see the hole for the wiring. I attached the lower signal head with CA.

Next, I slid the upper platform into place, followed by the collar on the ladder. Leave these loose until the upper head is installed. The upper platform will be glued on top of the top ladder rung and to the mast. You may need to work on the final shape of the ladder to get this done. Be sure to leave the space between the lower head and the platform so the lower blade has room to swing.

I slid the lower platform up the mast and glued it to the top of the seventh rung and the mast, making sure it was level. I secured the finial and base with CA **1**.

Then I installed the LEDs in the signal heads, which required some patience. I fed the wires through the back of the signal head and the hole in the mast one at a time until they came out the bottom **2**. I set the covers in place but didn't glue them, figuring the paint would hold them well enough.

Next, I cut the ends of a couple of round toothpicks to form plugs to seal the light aperture on the front of the signal heads for painting. I used gray primer, followed by a coat of metallic paint, for this assembly **3**.

I then cut a couple of lengths of .015" music wire for the actuator rods. Leave enough length to accommodate whatever will be driving them from below. I bent one end at 90 degrees, leaving approximately  $\frac{3}{16}$ " to fit into the hole in the blade arm. Inserting the upper actuator is easy. You'll need to slide the lower actuator through the slot in the upper platform closest to the center to get it fed down into the mast slot.

All that remained was to position the blades with the actuator in the small hole and install the 00-90 screw that the blade rotates on.

Once the assembly was done, I put the signal into a base that was mounted from the underside of the existing  $\frac{1}{2}$ " plywood subroadbed. There's a pedestal on top that protrudes through a hole cut in the roadbed and scenery that brought the base of the signal up to track level. I mounted two servos on the underside of the plywood to drive the signal actuators **4**. This unit is made to be easily removable for any maintenance that might be required. I found that a 2K $\Omega$  resistor was about right for the LEDs using a 5V power source.

Overall, I found my scratchbuilt semaphore to be a close facsimile to the existing signals on my layout. I didn't have much trouble with the build, though some steps were a bit tedious. I'm happy with the final product. Only five more of these to go, then on to the single-arm units. **MR**



Learn more about adding signals to your model railroad in Dave Abeles' book *Guide to Signals & Interlockings*. To order a copy, visit

[KalmbachHobbyStore.com](http://KalmbachHobbyStore.com).



# A tale of two railroads

A bit of modeler's license lets the Santa Fe cross rails with Colorado narrow gauge

By John Vavra • Photos by the author

**Most of those in our hobby** know where their interest in model railroading began. For many, such as myself, it was with an early Lionel or American Flyer train set. In my case, my dad had accumulated a fair collection of American

Flyer trains that he would set up for a few weeks every year, then it would get boxed up and put away until next time. By the time I was 8 or 9, I was getting it out on my own and leaving it up for a longer time.

Then, a visit with my older brother to the home of his friends changed everything. These friends had a nearly complete HO scale model railroad, the first I'd ever seen. Old timers like me may remember the Granite Gorge &





Northern plan from a popular track plan book in the 1960s. It was beautifully done, with plaster mountains, grass, trees, the works. The Athearn rolling stock was so much more detailed than the old tinplate stuff I was used to. That was it! From that point on, it was HO for me. Currently I'm on my fifth layout.

In addition to knowing exactly when I became an HO scale model railroader, I know the precise moment I decided on a prototype to model. It was on a family vacation in 1965, when I was 12 years old. We were following old Route 66 east through northern Arizona, which was a delight for me, because the tracks of the Santa Fe paralleled the highway.

We saw a number of trains throughout the day. We stayed the night in a town called Holbrook, Ariz. That evening, I was able to talk my dad into going over to the tracks and look for trains. At that time, Holbrook only had

one road that crossed the tracks (this may still be the case today). We stopped by the grade crossing and waited under a streetlight next to a small brick Santa Fe freight office.

After a few minutes of waiting, we were startled by the sound of the crossing bell and gates coming down. We were a bit surprised, as we hadn't seen or heard a train coming. I looked to the east and saw a headlight in the distance. Before I could react, the roar of diesel locomotives was upon us, and there, under that streetlight, was a giant, blue Santa Fe diesel. In the blur that followed there were three more locomotives, followed by a lot of freight cars.

Standing within 20 feet of a passing train at 60mph is a truly impressive sight! The image of that first blue locomotive with the big yellow "Santa Fe" on the side along with the roar of the diesel engine were permanently instilled in my

12-year-old mind, and I've been a Santa Fe guy ever since.

In 1986, my family and I visited Durango, Colo., and rode the Durango & Silverton Narrow Gauge RR. I became obsessed with narrow gauge Colorado mountain railroading. The narrow spaced rails with minimal ballast (at least in those days) running through the most beautiful scenery one could possibly imagine... once you've experienced it, it's hard to forget. It's like a time

① It's a cold, foggy morning in the San Juan Mountains of Colorado as two Durango & Silverton locomotives are readied for their daily round trips to Silverton. John Vavra's HO scale layout uses modeler's license to combine the Atchison, Topeka & Santa Fe with the narrow gauge D&S. The locomotives are from Blackstone and the enginehouse is a Walthers kit.







## The layout at a glance

**Name:** Santa Fe Lines  
**Scale:** HO (1:87.1) and HOn3 (36" narrow gauge)  
**Size:** 20 x 22 feet  
**Prototype:** Atchison, Topeka & Santa Fe and the Durango & Silverton Narrow Gauge  
**Locale:** Northern Arizona/Southwestern Colorado  
**Era:** 1994  
**Style:** walk-in  
**Mainline run:** 150 feet (Santa Fe) plus 110 feet (D&S)  
**Minimum radius:** 24" (ATSF), 22" (D&S)  
**Minimum turnout:** no. 6  
**Maximum grade:** 2.2 percent (ATSF), 2.5 percent (D&S)  
**Benchwork:** open grid  
**Height:** 39"-54"  
**Track:** Atlas code 83 flextrack, Shinohara and Walthers turnouts (ATSF); Shinohara code 70 (D&S)  
**Backdrop:** painted on walls  
**Control:** MRC Prodigy Elite Wireless

**2** The town of Durango, Colo., is front and center in this overall view of the 20 x 22-foot layout room, seen from the entrance.

machine of sorts. Of course, I knew right away that I needed to model narrow gauge in some form. That created a bit of a problem, as I wasn't going to give up modeling my beloved Santa Fe.

### The beauty of artistic license

When we returned from Colorado, I put pencil to paper and started designing a track plan that would incorporate both a standard gauge Santa Fe main line and a narrow gauge tourist railroad like the D&S. I quickly discovered that wasn't going to be easy. We value our real estate in this hobby, and I was splitting mine in half to accommodate two distinctly separate railroads. I designed, built, and operated this layout for several years, but the design compromises I had to make resulted in a less than satisfying layout.

In 1996 we remodeled our home, and a 20 x 22-foot room became available behind our garage. I knew just how to fill the room, and back to designing I went. After several attempts, each closer to what I wanted than the last, I came up with a track plan that featured a pretty decent double-track Santa Fe main line and an acceptable narrow-gauge line that climbed a total of 13" to the summit.

It was conceived as a railfan's layout with several places designed to allow watching trains roll through the scenery. There are minimal opportunities for switching operations, which weren't important to me at the time.

While I was very pleased with the track plan, there was a pretty good-sized

hurdle that I needed to get over. Anyone familiar with the railroads I'm modeling knows they don't come anywhere near each other. On my plan, they run side by side for a bit and cross over or under each other several times.

Enter artistic license. To make my railroad plausible, it was necessary to reroute the Santa Fe roughly 130 miles to the north. I know the purists out there will struggle with this a bit, but I would just refer them to rule no. 1 of the Model Railroader's Creed, which is, "My railroad, my rules."

By default, Durango would be a main focal point of the layout. I also needed to select a time frame for my layout. Being a hardcore Santa Fe fan, I had to set the

layout prior to the BNSF merger in 1995. I really like modern equipment like double stacks, so I set it in July 1994. This date isn't set in concrete; if I find equipment I like that came along after 1994, I don't let a little thing like a date stand in the way. For example, the SD70ACe wasn't produced until 2004, but you'll find several roaming around.

That 1994 setting meant my Colorado narrow gauge tourist line would be the Durango & Silverton, not the D&RGW (even though a lot of my narrow gauge equipment is still lettered for the earlier



**3** Narrow gauge 2-8-2 Mikado no. 461, a former Denver & Rio Grande Western K-27, emerges from a tunnel onto the high steel bridge on the way north to Silverton. The locomotive is from Blackstone.









**4** Durango Yard is full as the last train of the day has returned from Silverton. The iconic Durango depot is a Ragg's to Riches™ kit. John scratchbuilt Francisco's Mexican restaurant, at left, to pay tribute to a favorite eatery during family visits.

three 3-foot lengths together before laying the track to ensure smooth, kink-free curves. I was sure to leave some gaps at the end of each 9-foot section to allow for expansion, but that's not much of a problem in a climate-controlled room.

At the time of construction, I believed that Shinohara turnouts were some of the best on the market, so I chose them. For a time, Walthers turnouts were made by Shinohara, so I used those as necessary. Most of the Santa Fe mainline turnouts are no. 8, but I had to use a couple of no. 6 in tight places.

My double-track main lines are spaced at 2¼" centers on straight track and 2½" on curves. In order to squeeze the most railroading into the space I had, I used curves between 26" and 30", dropping to 24" in a couple of spots. I'm not sure I would make this same choice again. In a perfect world, I would love a minimum radius of 30" or more.

For the narrow gauge I used a combination of mostly Shinohara flextrack and a little Micro Engineering, all code 70, with Shinohara no. 6 turnouts. The curves on the narrow gauge are 22" radius. All but two of the turnouts on the Santa Fe line are operated with Tortoise by Circuitron slow-motion switch motors. Due to space limitations, I had to use a couple of twin-coil machines on two of them.

On the narrow gauge, a couple of key turnouts are operated with Tortoise by Circuitron switch motors, but the rest are all lined by hand. I regret not installing Tortoises on all of them, but it was a question of economics. Another lesson learned for next time.

My previous layout had only two hidden staging tracks, both single-ended. That was one of the biggest mistakes I wanted to correct on this layout. My plan called for seven hidden double-ended storage tracks, between 12 and 15 feet long. Those were the first tracks laid. All have sensors to detect the presence and direction of stored trains.

Seven tracks sounded like plenty, more than anyone would ever need, right? Wrong! Now I wish I had 20. Yet another lesson learned.

## Scenery

The railroad's northern Arizona and southwestern Colorado setting requires a variety of scenery. The line runs from the high desert of western Arizona through the forested area around Flagstaff, Ariz., and into the beautiful San Juan Mountains of Colorado.

Because of the vast distance, I had to choose which areas to model. Early in construction, a friend volunteered to paint a scenic backdrop for me highlighting some of these areas, even though she'd never painted a backdrop before. It's served the railroad for 25 years, but my goal is to replace it with a photo backdrop in the near future.

As for actual construction, I stuck with the same method that had worked for me in the past. Mountainous areas began with a wood framework. Card-board strips, masking tape, and wads of newspaper gave the mountains their shape.

In the early years, I draped paper towel pieces soaked in Hydrocal over



these shapes and applied a second coat of Hydrocal for added strength once the first coat was dry. I textured the top coat to give the color and ground cover something to stick to.

In recent years, though, I switched to plaster-impregnated cloth for the first layer. I learned a trick from a fellow model railroader that really helps reduce the mess. I layer the area to be plastered with paper towels, spray them with water so they conform to the scenery form, and apply the plaster cloth over the towels. This method is much cleaner. I work in as many rock castings as I can, using commercially available rock molds.

The plastered areas then get painted with diluted craft paints in a variety of earth tones. I sift on real dirt that I collected on trips to Colorado. Ground foam, real rocks, an assortment of bushes and trees, and any other detail I can add finish the scene.

My layout requires a lot of trees. Currently there are only about 400 on the layout, but I'll add many more in the future. Over the years I've purchased a lot of different types of trees at train shows and swap meets. This allows for a



good variety. Recently, I've been using trees from McKenzie Brothers Timber Co. ([mckenziebrotherstimmerco.com](http://mckenziebrotherstimmerco.com)). They are some of the most realistic I've seen.

I've got a couple of small lakes, ponds, creeks, and waterfalls on the layout. Water can be intimidating to model. For lakes and ponds, I formed the bottoms out of Hydrocal, painted them the appropriate colors, and added rocks and twigs for a natural look. When I was satisfied with the result, I used Enviro-Tex Lite two-part resin for the water. I like it because it dries clear and hard.

Moving water is more of a challenge. I used Woodland Scenics Water Effects to add ripples as needed, drybrushing the tips with white paint to get the whitewater foam effect I wanted.

Waterfalls were even harder, but after refining my technique over the years, I'm fairly pleased with my results. For higher falls, I cut a piece of clear window glazing material to the shape of the falls, then run ribbons of clear silicone caulk down the plastic. Before it dries, I tease the caulk to blend the ribbons together. After this, I drybrush the falls with white

craft paint and glue it to place on the layout. A little Woodland Scenics Water Effects at the top and bottom blends it into the stream or lake. Smaller falls or rapids don't need the clear plastic and were done with just caulk.

### What's in a name?

My railroad has three towns: Flagstaff, Ariz.; Durango, Colo.; and Silverton, Colo. The first two are 75 percent complete, but Silverton is still a future project. In modeling these towns I made little effort to model them as they are. My goal was to get the feel of the real location without trying to reproduce it. That term "artistic license" applies again. I needed those towns to be included because of the railroads I chose to model, but in modeling them I did what I wanted.

The same holds true for other locations on the layout. I used names that I liked but modeled what I wanted. A great example is Crazy Woman Creek. This is a real creek between the towns of Durango and Silverton. There's a sign post along the narrow gauge pointing in

**5** On a cold, damp night in Durango, Santa Fe Electro-Motive Division SD75M no. 222 leads its train across Main Street in downtown Durango, horns blaring. John has added signals, lighting, and building interiors to add interest to the layout. The locomotive is from Athearn.

the direction of the creek, but you can't actually see it from the tracks. I loved the name and knew I had to use it on my layout knowing full well it wasn't prototypical to do so. I suppose that leaves my layout somewhere between a prototypical layout and a completely freelanced one. I can live with that.

There are a few exceptions to this. In Durango, the most iconic structure in town is the D&S station. Built in 1880 by the Denver & Rio Grande, it looks today more or less like it's looked for the last 140 years. I wanted to model that structure as accurately as I could. Fortunately, one manufacturer, Ragg's to Riches ([raggstoriches.biz](http://raggstoriches.biz)), makes a laser-cut wood kit of the station, so I was able to incorporate it into my layout.

Another Durango structure is Francisco's Mexican Restaurant, where my family always made sure to dine on





**6** Santa Fe EMD GP50 no. 3853 charges out of the tunnel and up a 2.2 percent grade. The locomotive is an Athearn model. The signal is from Tomar, driven by circuits from Logic Rail Technologies. The trees are from McKenzie Bros. Timber Co.

our numerous trips to the city. So, obviously, Francisco's had to be included in my version of Durango. I wasn't able to find a kit close enough to the building to use in a kitbash, so I scratchbuilt it. I felt that if I could model the distinctive roof line, the sidewalk overhang, and the front signage accurately, I could "sell" the model. I think I accomplished that.

The majority of the other structures on the layout are plastic kits from Walthers or Design Preservation Models. The majority are lighted and have interior details. The remaining structures will be upgraded or replaced with new lighted structures in the future.

One thing I like to do is name businesses after friends and family members. Sometimes I poke a little fun at them with the business I choose, but they all enjoy seeing their names on businesses when they visit.

## New power for the layout

For my entire modeling life, I've been a direct-current guy. I thought that would never change. Oh sure, I could see some benefits to Digital Command Control, like sound and constant lighting. I just didn't think it was worth trying to convert my locomotive fleet for it. Then, in 2007, Blackstone came out with its first narrow gauge steam locomotive, a Denver & Rio Grande Western K-27 2-8-2. When I first saw that locomotive

— or, more accurately, heard it — I knew I had to have one. And I knew that to get the most out of the locomotive's sound, I would have to switch to DCC, at least on the narrow gauge line. So that's what I did.

Rewiring the narrow gauge was simple, as a lot of the scenery on the way to Silverton had yet to be constructed, so access was easy. Once the switch was made, operating the narrow gauge became much more enjoyable, and the writing was on the wall for a switch to DCC on the standard gauge Santa Fe line, too.

In 2017, with the help of my sons-in-law, Jared Hren and Lyndon Cacho, the standard gauge was converted to DCC. It was a bit of a task running new feeder wires in spots, as some of my concealed trackage, particularly the staging yard, has very limited access. The results were definitely worth the effort. Running trains with sound is very enjoyable for me, and visitors love it.

I had good luck in my DC years with MRC power supplies so, when it came time to choose a DCC system, I went with an MRC Prodigy Elite Wireless. It's pretty straightforward and has performed well. All my DC locomotives were either converted to DCC (thank you, Kevin at Arnie's Trains in Westminster, Calif.) or replaced with new DCC units. All my decoders are sound-equipped.

Speaking of locomotives, most of them are from ScaleTrains.com, Athearn, or Kato. Most have been weathered to some degree, ranging from my SP tunnel motors, which get a pretty heavy load of grime and rust, to the Santa Fe Warbonnets, which get a very light touch. That reflects what I observed on my numerous railfanning trips to Cajon Pass and Tehachapi Loop in the 1990s. As for rolling stock, most of my cars are from Athearn or Walthers. All are equipped with Kadee couplers and nearly all are weathered.

## Operation

For me, one of the joys of model railroading is watching trains roll through the scenery I created. It takes me back to those railfanning trips I mentioned. Double track creates the opportunity for a lot of action. I typically have 10 trains on the layout, seven in the staging yard and three in the yard at Flagstaff. During operation, I will bring trains out of staging and dispatch others back in. This creates some operational challenges and keeps me on my toes.

I'm aware that I'm in the minority in our hobby, as most model railroaders prefer more prototypical operation. But my railroad was built for railfans like me, and I enjoy it very much.

Over the past two years, I've added some features that help to bring my railroad to life. The Main Street grade crossing in Durango was fitted with operating crossing gates, lights, and a bell. I used gates and lights from Tomar controlled by infrared sensors and circuits from Logic Rail Technologies. I think this bit of animation really adds a lot to the street scene.

I also have incorporated a couple of emergency vehicles with special lighting effects (a Santa Fe Railroad Police car and work truck with flashing strobe lights, and a UPS delivery truck with flashing lights), all with circuitry and lighting from East Coast Circuits.

Most recently, I've begun to add operating block signals to add just a little more animation to the layout. Once again, I chose lights from Tomar controlled by circuits from Logic Rail Technologies. I used infrared sensors to detect the trains so no modification to the rolling stock was necessary.

## Down the line

The model railroad is roughly 75 percent complete. I still have two major





7 A pair of Santa Fe Warbonnets leads an eastbound stack train out of the tunnel at Pagosa Junction. The General Electric C44-9W locomotives are by ScaleTrains.com.

projects ahead of me, starting with the town of Silverton. I have several structures for that location ready to install, including three that were built by my friend John Thompson. My plan is to either kitbash or scratchbuild two or three more structures based on some of the buildings in the real Silverton to capture the flavor of that mountain town turned tourist mecca.

But the biggest project coming up will be the construction of Canyon Diablo, Ariz., and the Santa Fe's massive bridge over it. The double-track bridge will be approximately 42" long and roughly 30" above the canyon floor. When completed, it will be the scenic focal point of the railroad. Those two projects plus a multitude of smaller ones should keep me busy for the next few years.

We are all very fortunate to be involved in such a great hobby. There are so many aspects to it – constructing the benchwork, laying the track, wiring,

building scenery, building kits – that it never gets boring. I like to bounce around and maybe do a few scenic projects, then go off in another direction and build a structure kit, then weather some freight cars, and then on to something else. It's this variety that has kept my interest for nearly 60 years and, hopefully, many more to come.

Since my retirement a few years back, I have much more time for my model trains. On average, I spend at least 10-15 hours a week in the train room. When I'm involved in a project, I lose all track of time. It's a beautiful thing.

I've begun to share my work for the first time with other modelers through various Facebook groups. I've even had a couple of my layout photos make it into the Tracksides Photos section of *Model Railroader* magazine.

With as much as I've accomplished on this layout, I'm still learning new techniques all the time. I consider myself an average modeler who has a lot left to learn and a lot of techniques left to perfect. It's what makes our hobby so enjoyable. As the saying goes, "Model Railroading is Fun!" **MR**



## Meet John Vavra

**John Vavra lives in** Escondido, Calif., with his wife, Vickie, and their psycho-beagle, Molly. John and Vickie also have two grown daughters who live in the San Diego area. John spent 40 years as a supermarket manager before retiring in 2012. When he's not in the train room, he spends way too much time playing computer games or watching old movies.





Two employees at Rowland, W.Va., use a conveyor to unload their portion of the coal from a hopper that just arrived from another customer. After they take their half load, the hopper will head back to the mine.

This photo of an early 1950s Bardin employee unloading half a hopper of coal, as printed in *The Chesapeake & Ohio Historical Society* magazine, served as inspiration for John's project.

# Model half empty coal hoppers

An old photograph gives a clue to operations during the 1950s

By John Brown • Photos by the author

For the past 30 years, I've modeled the Chesapeake & Ohio in West Virginia's coalfields near Thurmond, W.Va., with the timeline set in 1956 (See "A Business for Main Street" in the December 2019 *Model Railroader*). I held monthly operating sessions with about a dozen people until the COVID-19 virus started.

I recently made enhancements to these sessions to allow my operators to understand what railroading was like in the mid-1950s. One change was to my MA Cabin Order Board ("cabin" in C&O terminology are called "towers" on other railroads) to have all the eastbound trains stop at MA Cabin for 19 orders. I had made up orders for all my eastbound trains, having them set out a car for a hotbox or pick up an employee, since, like many cabins on the C&O, they were in places with no nearby roads. I find this adds realism to the operating session. Some train crews have to set out a car, which extends their running time and requires switching, instead of just running a train between terminals.

Another change I made this year was prompted by an image in an article from the November-December 2016 issue of *The Chesapeake & Ohio Historical Society* magazine. The image was of a C&O 50-ton composite wood-sided wartime hopper car. C&O 54577 was sitting on a coal trestle at Bardin Coal Co. in Wilson, N.C., on December 28, 1951.

## The prototype

The article relates that an employee of Bardin Coal was unloading the hopper. In the photo, he is lying on his side at the open door of the left hopper. The words "Bardin Coal" are written on a sign for the company to the left of the C&O hopper, and he was only taking half the load. The other half of the hopper car coal load was chalk marked "Wilson Coal." Can we assume a local switching crew will pick it up and take it to Wilson Coal Co. in Wilson, N.C., to be unloaded at their coal company yard?

A few years ago, in the March 2017 issue of *Model Railroader*, there was an article on half-empty coal hoppers, but that was a little different than my idea. This half load would make an interesting operating session move on my layout.

Kevin Leddy, a friend of mine who retired from BNSF after more than 20 years of service, emailed to tell me that until the early 1990s, there was a type of waybill called "stop unload" that allowed for cars to carry loads to multiple destinations. Kevin mentions that the last one

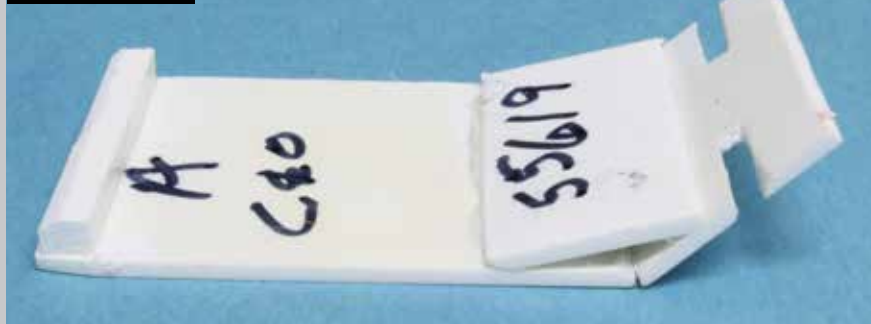
# Building the coal load

## STEP 1



I used .060" Evergreen styrene. I cut the slope sheet 1.265" wide and .75" long to fit the inside the hopper car. I used an Athearn composite wood-sided 50-ton hopper (no. 55619), but any hopper would do. I cut two slots approximately .25" from the one end and .4" in from the sides, wide enough to slip through the two triangular braces that go from the center of the hopper car to the sides. The slots are at an angle so the slope sheet will slide down over the two triangle braces. I then cut a 1.265" x 1.875" styrene piece for the bottom of the coal load, also known as the sub-base.

## STEP 2



I then glued the slope sheet to the 1.265" x 1.875" sub-base, making sure to file the upper top of the slope sheet at angle before attaching for a secure joint. The slope sheet should be attached at approximately 40 degrees to the sub-base. I also added a .75" x 1.265" piece of styrene at an angle between the sub-base and slope sheet for support (labeled with the hopper number in the photo). I then added a .125" x .162" x 1.265" piece of styrene at the opposite end of the sub-base so that the load will rest on the slope sheet in the hopper.

## STEP 3

Once the glue dried and the sub-base was stable, I put it in the hopper car and filed any parts that wouldn't allow the sub-base to sit snugly in the hopper. My Athearn hopper had a slight taper to the sides toward the end, so I had to file both sides of my styrene base to match the taper. This final fitting included the two triangular uprights in the middle of the hopper. After I was satisfied that the sub-base would slip in and out of the hopper, I spray painted it black.





## STEP 4



Once the paint dried, I slipped the black sub-base into the hopper with clear plastic wrap around the bottom and sides of sub-base. I put a layer of white glue onto the top of the sub-base and spread a layer of commercial coal on both the flat and sloped surfaces.

The plastic wrap was thin enough to allow the sub-base to slide in and out of the hopper and prevent any excess glue from attaching to the sides of the hopper car. I added multiple layers of the coal until I got a natural-looking load heaped in the center. I found that only one layer of coal was necessary on the slope sheet.

I added loose coal from a small pill bottle to the load at the bottom of the hopper doors, making sure to hide the edge of the slope sheet in the hopper. After delivery of the first half load, I empty the hopper car of loose coal back into my pill bottle for the next time.



John's completed C&O 55619 carrying half a coal load is seen sitting on the weigh scales at Waynesburg, W.Va., before being shipped off to the next customer. Nearby, roofers tar the roof of the weigh station building.

he saw involved grain products. Like many old railroad services, it became difficult to manage and was unprofitable over time.

Kevin added that the railroad had to weigh the hopper car before it went to the first customer. Then, the half-empty hopper would be weighed again

before delivery to the second customer to ensure the second customer got billed for the exact amount of material remaining in the hopper.

Kevin said, "Deregulation put an end to this type of load, as railroads were able to do market pricing. All the extra handling of these types of loads made

them too costly to continue. Plus, the scales that railroads had across their systems were old and worn out."

Did the Chesapeake & Ohio use this type of waybill? I was surprised to find Wilson, N.C., was not near a C&O line but was serviced by the Southern Ry., Atlantic Coast Line, and the original Norfolk Southern.


I decided to model the hopper's load and deliver it to one customer, and then, with the hopper half loaded, deliver it to another customer. This order would add interest and another sense of working on the railroad in the 1950s.

## On the layout

I plan to have the fully loaded coal hopper car come from one of my nine mines and then switch the car with a way freight to a siding in one town. I didn't have room for a coal unloading trestle, but I did have a team track siding. In that town, I also have a scale. The crew would weigh the full hopper, then set it on the siding for unloading. The local coal dealer would use a portable unloader and load his trucks with coal for his customers.

For the next operating session, I will have replaced the full load with my half load. Then, the way freight will pick up the half-loaded hopper, weigh it again, and then send it to the next town. Once again, I don't have room for a coal trestle there either, but I have a team track. The local coal dealer uses a portable unloader to fill his trucks. After the operating session, we remove the half load, and the empty hopper goes back to the mines with other empties for loading and start the cycle again.

I also use this half load at my Mallet houses, Callow and Thurmond. In winter, a full load of coal was placed in the Thurmond, W.Va., Mallet house to be unloaded as needed to fuel the boiler. Historically, this rendered driving through the Mallet house a problem on one of the two through tracks. This way, I can have the half-loaded hopper car sit for a few operating sessions.

This simple technique added a unique bit of realism to my operators' understanding of railroading 70 years ago. 

*John Brown is a National Model Railroad Association (NMRA) Master Model Railroader. He is also a member of the Chesapeake & Ohio Historical Society. John is retired after 23 years in the tool room at Elcan Canada (Division of Raytheon) in Midland, Ont.*

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# Resuscitating a lifeless locomotive



Has your locomotive's heart stopped beating? Try these tips to resuscitate it before you send it back.

**Good news!** If your lifeless locomotive has ever run under Digital Command Control (DCC), chances are good that you can get it running again without having to send it off for repair. The solution is easy, too!

More good news! If you have a new steam locomotive that doesn't run or only partially works, maybe all that's wrong is that the connector between the engine and tender isn't seated correctly. Make sure the connector is oriented correctly and pushed all the way in. Just be careful not to damage the wires when doing this.

Let me be specific about which locomotives can easily be brought back to life. A locomotive that ran on address 3 out of the box has hope. A locomotive that you or someone else put a decoder in and ran on address 3 also has hope. Locomotives that ran before a decoder was put into them, but not after, may need more help than I can cover in this column.

Before you get started, make sure you have track power. Check your track status light, try another locomotive, or short the track and see if your booster (or electronic circuit breaker, if you are using one) trips.

If the locomotive has run before, maybe it's not on the

address you think it is. Or the locomotive might have been part of a consist. Sometimes there can be a mix-up with short versus long addressing. The locomotive may have been inadvertently shut down. Finally, one or more CVs (Configuration Variables) may have accidentally been set to something that renders the locomotive inoperable. Less common is that your speed steps may have changed for your throttle. I'll address each of these.

**Usually, when someone** gives me a DCC locomotive that doesn't run, all they can tell me is that it doesn't run any more. They usually also can't tell me what manufacturer's decoder is in it. I will try to determine if it has been reset and check to see if it responds to the default address of 3. If I can't do that, then I do a factory reset. Here's how to do these things.

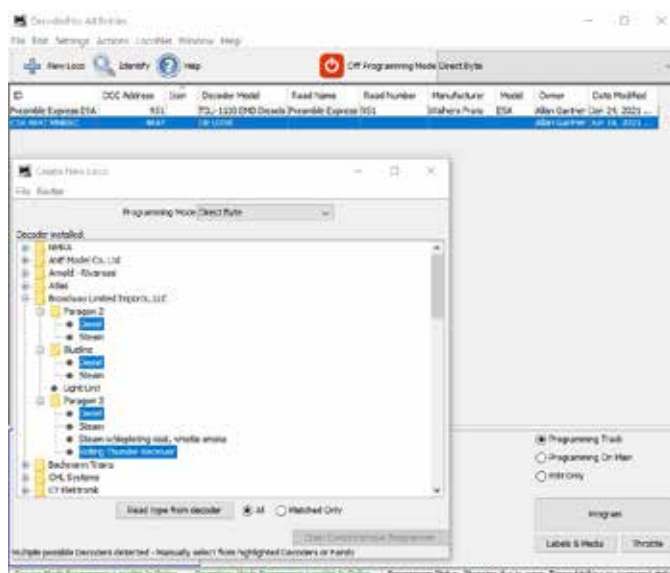
First, there are a couple of things you need to know. There are generally two ways to program a locomotive. Programming on the main only works if you know the address of the locomotive. If you knew this, you probably wouldn't have a problem with your locomotive. Programming on a programming track doesn't require you to know the address. The reason

programming on the main requires you to use the address is so you don't reprogram your entire layout.

First try the locomotive to see if it was inadvertently reset and will respond to address 3. If that doesn't work, are you entering a leading 0 – that is, 03 instead of just 3? For example, NCE allows you to do either, but when you do, it treats them differently. So if you entered 03, try just 3.

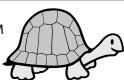
If address 3 works, you're probably relieved that you won't have to send back your locomotive for servicing. If it doesn't work, there are other things that might be at issue. You can address these other issues, but if the locomotive is new and you haven't configured it or set up speed tables, it's easy to do a factory reset.

**If a dead locomotive** doesn't respond to the cab number or address 3, I do a factory reset.



Perhaps the most popular way to program a decoder today is with Decoder Pro. Launch it and make sure the PROGRAMMING TRACK radio button is selected (lower right). Then select NEW LOCO or IDENTIFY. If you pick IDENTIFY, you might discover the address your locomotive is set to. In any event, make sure the programming mode is set to DIRECT BYTE. Open the comprehensive programmer and select the "CV" tab. Set CV8 = 8 to reset the decoder.

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Often, in less than 5 minutes, it's running again. Then I set the address to its cab number.

Before you do a factory reset, you need a programming track. Except for the very basic starter systems, most systems provide for a programming track. The NCE PowerCab, when not used with its AutoSwitch, combines programming and mainline on the same output. If you don't have an Auto-Switch, make sure no other engines are on the track when you go to program mode.

When you do a factory reset, the decoder will be reset to the way it was when you took it out of the box. You will lose your speed table settings, any configuring of sound settings like the bell or whistle, and any address you set it to. If it was part of a consist, you'll lose that, too. More on consists in a bit.

I've seen at least one decoder that allows you to do a factory reset while keeping your speed table. If you have a speed table set up, you might want to check your decoder's manual or the manufacturer's website and see if a factory reset can be done without losing your speed table. Though a screwed-up speed table is one reason a locomotive might not run.

Another way to trim the speed of a locomotive is

adjusting CVs 5 and 6. These are "Voltage high" and "Voltage mid," respectively. If you changed the values in these CVs, this is where you may have gone wrong. To fix this, set CV 5 = 255 and CV 6 = 128.

Almost all decoders can be factory reset by setting CV 8 to a value of 8. Easy

enough to remember. I can only recall one decoder that was reset differently. Check the decoder manual or manufacturer's website. But if you want to do a factory reset, there's no harm in trying CV 8 = 8. I also recall seeing a decoder that if you set CV 8 = 9, it would retain your speed table. So if you have set a speed table, you can try that.

Programming on the main, also known as ops or operations mode programming, requires you to know the locomotive's address, but all other programming modes do not. All systems that offer programming capability give you at least two choices. Other than ops mode, you will often have the choice of direct mode or page mode. Some decoders are picky, but try direct mode first; that is the most prevalent mode now.

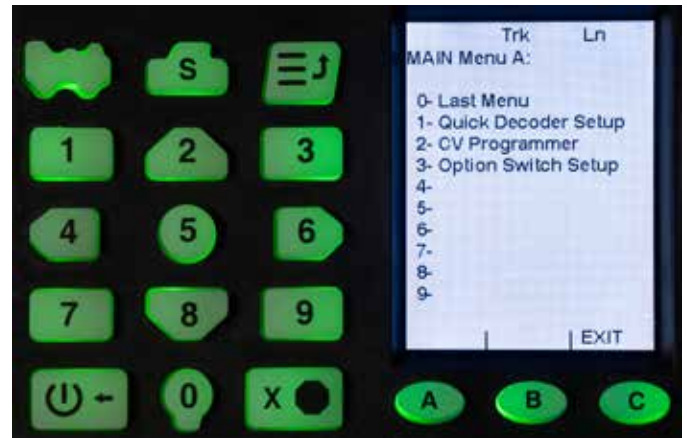
**Here is how you do** a factory reset. Just enter programming, select direct or page if given a choice, and select programming a CV. Select CV 8 and then enter 8 for the data for that CV. The locomotive may move slightly or make a sound acknowledging the command. Now try selecting address 3, and your locomotive should run again.

Now breathe a sigh of relief and set your locomotive

to the address of your choice. Don't enter a leading zero. Most systems provide an easy way to set your locomotive's address. Especially when setting a long address (128 or higher), multiple CVs are involved. So follow your DCC equipment manufacturer's procedure that sets the various



**IF A DEAD LOCOMOTIVE DOESN'T RESPOND TO THE CAB NUMBER OR ADDRESS 3, I DO A FACTORY RESET.**  
— ALLAN



If using a Digitrax system, select the menu key (with the three lines on it). Then select CV PROGRAMMER. The next screen will default to programming direct. Select that and then you will be able to change CV8 = 8.



If using a NCE system, press the PROG key several times until this screen appears. Then press ENTER.



Selecting 2 will allow you to set CV8 = 8. When done, hit ESC.

CVs for you correctly and easily. You can also use DecoderPro if you have a computer connected to your DCC system. DecoderPro is part of the free Java Model Railroad Interface suite of software. You can download it at [jmri.org](http://jmri.org).

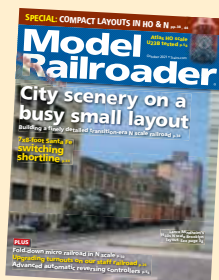
**There are a few other** possibilities that may make your locomotive unresponsive that you can try before doing a factory reset. If your locomotive doesn't run, but did and was part of a consist, it may think it's still part of the consist. Call up that consist on your system and then break up the consist. The address you normally use for that locomotive should work again without doing a factory reset.

Another reason for a now seemingly dead locomotive may be that you shut it down. This feature is built into many sound decoders so you don't have to listen to a lot of locomotives all making sound at once. It also allows you to start it up with a sound sequence. When shut down, besides not making sounds, the locomotive will also not run. It depends on the manufacturer, but sometimes pressing F6, F8, or F9 will shut down the locomotive. Pressing the correct function key again will start it up.

Now that you have resurrected your locomotive from the dead, save that box and bubble wrap for something else you might need to ship! **MR**

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# Is superiority complex?

Recently, I polled a group of friends knowledgeable about timetable-and-train-order (TTTO) operation. I asked them which TTTO concepts were most important to learn for a successful operating session. Superiority and its implications was the hands-down winner.

The clinical definition of “superiority complex” makes me smile because it specifically links superiority with inferiority. This is exactly the point in TTTO operation, where a superior train ranks above an inferior train. However, superiority need not be complex. Let’s see how.

The Standard Code has four basic rules of superiority for single track. Rule S-71 states that right, class, or direction makes a train superior to another. It adds that a train order confers right, and a timetable establishes class and direction. Note the subtle distinction between right and authority. We often speak of timetable rights, but a schedule in a timetable gives authority. Right, which comes only from a train order given by a dispatcher, can modify or take away authority.

Rule 72 defines class for regular trains. First class trains are superior to

second class, second class are superior to third class, and so on. S-72 makes trains in the direction defined by timetable superior to trains of the same class in the opposite direction. And Rule 73 makes extra trains inferior to regular trains. At meets, the inferior train must clear the



Bright afternoon sun paints this 1950s scene at Whitefish Lake near Vista, Mont., where Great Northern posed its westbound and eastbound *Western Star* streamliners for a publicity photo.

Great Northern photo, courtesy Adam Burns

main track and wait for the superior train.

These rules create a hierarchy: right, class (first, second, third and so forth, then extra), and direction. Remember, schedules define class, and a timetable states the superior direction. Harold Krewer, one of those I polled, compares this to poker hands. Aces beat kings, kings beat queens, and suit – or direction – breaks a tie. A train order is a wild card that beats all. An order containing the phrase *EXTRA 7 EAST HAS RIGHT OVER NO 1* makes a lowly way freight superior to a crack limited.



**THESE RULES  
CREATE A  
HIERARCHY:  
RIGHT, CLASS  
(FIRST, SECOND,  
THIRD AND SO  
FORTH, THEN  
EXTRA), AND  
DIRECTION.  
— JERRY**

**The photo gives** a good example of superior by direction. Great Northern’s *Western Star* ran westward as No. 3 and eastward as No. 4, both first-class schedules. The railroad’s 1950 employee timetable made westward the superior direction. In the photo, Electro-Motive

Division F7 no. 365 heads No. 3 on the main, the well-maintained track which is heavily and crisply ballasted. No. 4, inferior by direction, waits in the passing siding for the meet, as required by rule.

Chasing down the details of the photo turned up a hidden story that teaches more about superiority. Its eye-catching appeal marks it a publicity shot, likely made by a photographer from Hedrich-Blessing, the Chicago studio GN used. The location is thought to be near Vista, Mont. The trains’ schedules normally had them meet a few miles further west at Lupfer, Mont., but Vista enjoys the scenic view of Whitefish Lake. No. 4, the inferior train, would wait at Lupfer for No. 3’s arrival, so a train order probably arranged the meet for the photographer: *NO 4 HAS RIGHT OVER NO 3 LUPFER TO VISTA*. This takes away No. 3’s superiority by direction, making it the inferior train. Nevertheless, No. 4 must clear the main track at Vista because its arrival fulfills the order and restores superiority to No. 3.

A meet order, *NO 3 MEET NO 4 AT VISTA*, also sets up

the photo without giving No. 4 right over No. 3. No. 3’s superiority governs at Vista, as in the first example, and No. 4 must use the siding. Some railroads, including GN, allowed the addition of the phrase *NO 4 TAKE SIDING* to leave no doubt which train clears the main. Without this, the order relies on both crews to apply the rules of superiority properly.

**Superiority does not apply** for an extra train with respect to another extra, but the extra in the inferior timetable direction takes the siding when opposing extras meet. However, a “right over” train order, the wild card, can make one extra superior to the other and determine which clears the main.

Test yourself: Which is the inferior of two opposing first-class trains, where the timetable makes east superior? Does a train order giving the westward train right over the eastward change this? Applying the hierarchy, direction makes the eastbound superior, but right given by an order can reverse this and make it inferior. Very good! You’ve overcome superiority. **MR**



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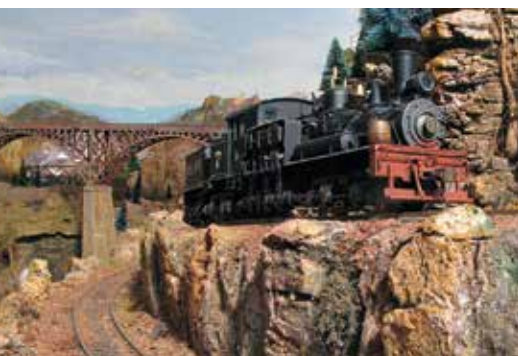
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## Walther'sProto HO scale EMD FP7 and F7B

**Walther's has reissued** its HO scale Electro-Motive Division FP7 and F7B diesel locomotives with new tooling and a LokSound 5 Digital Command Control sound decoder. And wow, is it a brute. The pair of locomotives together mustered almost  $\frac{2}{3}$  of a pound of drawbar pull in our benchwork test and wrestled 30 cars up a curving 3 percent grade on our staff layout. If you're looking for some nicely detailed transition-era diesels to pull a long passenger train on your layout, Walther's has a set for you. Though most road names are sold out at Walther's website, they're still available at many hobby shops.

Electro-Motive Division's 1,500hp FP7 was developed to be the best of both worlds. Railroads whose passenger trains traversed mountainous grades found the E series' A-1-A trucks provided insufficient traction, while F units didn't have

big enough water tanks to supply the steam generators on long trips. Enter the FP7, basically an F7 freight locomotive with 4 extra feet of length for a bigger water tank. Between June 1949 and December 1953, almost 300 were built in EMD's LaGrange, Ill., plant for American railroads; 57 more were made in London, Ont., for Canadian roads. Mexican railroads received 18 FP7s, and two more went to oil company Saudi Aramco in Saudi Arabia.

No cabless B units of the FP7 were ever made; they were instead sold paired with the F7B booster, like Walther's model. Since the F7Bs had no cabs, they had plenty of room for water tanks, so an extended version wasn't necessary.

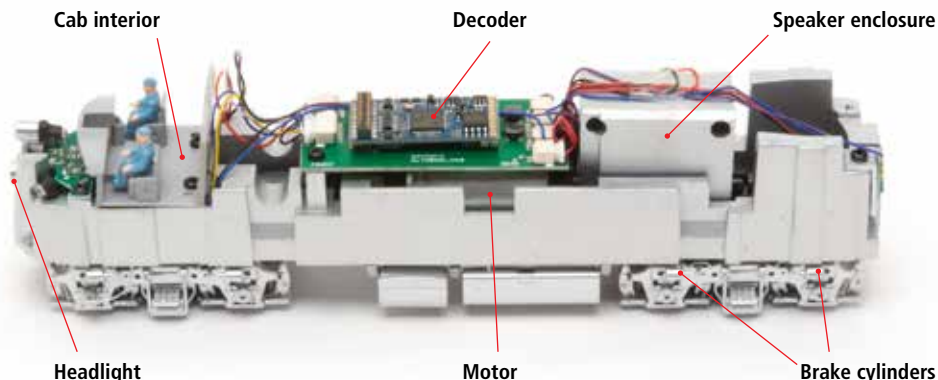
Many FP7s remained in service into the Amtrak era of the 1970s. Several are still in working condition today, serving rail museums and excursion railways.

**Dimensions and details.** I found drawings of the FP7 in *The Model Railroader Cyclopedic: Vol. 2, Diesel Locomotives* (Kalmbach Books, out of print). I placed the HO scale locomotive on its side directly on top of the drawing, and every feature and dimension lined up. The model also resembled prototype photos published in that book and in *The Milwaukee Road Diesel Power* by Frederick Hyde and Dale Sanders (The Milwaukee Road Historical Association, 2009).

Our sample set is decorated in the Milwaukee Road's Union Pacific-inspired Armour Yellow and Harbor Mist Gray scheme, adopted when the Milwaukee began forwarding UP's *City* trains from Omaha to Chicago in October 1955. The paint is smooth and even, with sharp color edges between the yellow, gray, and the red lines that separate them. The lettering is crisp and legible, including the thin black outlines on the red lettering.

The model bears numerous prototype-specific details, including a winterization hatch, rooftop oil cooler with cover, and the Milwaukee Road's unique barrel-style spark arrestors. The eye-catching stainless steel horizontal side grills show air intake detail behind. The handgrabs, sunshades, cab steps, and nose-access toe shelf are painted gray, a nice contrast against the yellow. The silver trucks also have a wealth of separately applied details, like brake cylinders and speed recorders.

Removing the body shell is a simple matter of removing the rear coupler (so as not to damage the delicate uncoupling lever), gently spreading the sides of the



The die-cast metal frame provides most of the model's 1 pound, 2.2 ounce heft. The speaker is in an enclosure just ahead of the rear gear tower. The trucks bear separately applied details including a speed recorder and brake cylinders.

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12	41
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7	10
14	29
21	54
28	67

shell to disengage the locking tabs, sliding the frame out of the shell, and threading the front coupler through the opening in the pilot. The silver-painted, die-cast metal frame accounts for the model's weight of more than a pound. The motor and flywheel are nestled in the bottom center and topped with a printed-circuit lighting board and plug-in decoder. Driveshafts connect the motor to the gear towers on each truck. The speaker is solidly enclosed between the motor and the rear gear tower.

**Testing, one, two.** Our sample models were equipped with dual-mode ESU LokSound DCC decoders, so they can run under either direct current or Digital Command Control (DCC). I tested them first under DCC.

Both engines in the FP7 and F7B set are powered and equipped with sound decoders. I put both of them on the MR

workshop's test track and discovered that they were geared identically, so I did all my testing on the A unit only. The locomotive was programmed with so much momentum that at speed step 1 it merely twitched. This could be corrected by reducing the momentum with an adjustment to Configuration Variable (CV) 23 and/or by increasing the value of Vstart (CV 2). The locomotive rolled steadily on speed step 2 at a stately 1.5 scale mph. On speed step 28, it topped out at 67 scale mph. This is only slightly more than half the prototype's rated top speed of 118 mph, but it's probably plenty fast for most model railroads.

I checked out all the sounds and light controls available on the throttles' function keys. The bell (function key 1) and horn (F2) sounded great. Function key 3 played a coupler crash and F4 dynamic brakes. I liked that the headlights (F0), Mars light (F5), and lighted number boxes (F6) could all be turned on and off separately.

Under direct current, the only sounds that played were the diesel engine rumble and a brake squeal when the speed was sharply reduced. Sounds came on at 8.5 volts, and at 10V, the locomotive rolled at 2.5 scale mph. At 14V, the peak output of the Atlas power pack I used, it moved at 85 scale mph, which was faster than the top speed in DCC, but still slower than the prototype.

The locomotives' pulling power floored me. When I hooked the A unit to our workbench force meter, I actually had to hold the instrument down lest the engine drag it down the track. It registered more than  $\frac{1}{3}$  of a pound of drawbar pull – enough to haul 80 40-foot freight cars or 40 passenger cars on straight and level track. The B unit was even stronger.

Using our workshop's NCE PowerCab DCC system, I was easily able to set up a consist with both engines. The FP7 and F7B were well speed-matched right out of the box. Coupled together, the two mustered almost  $\frac{2}{3}$  of a pound of force.

I then took the consisted locomotives to our Milwaukee, Racine & Troy staff layout and coupled them to a string of 20 assorted 50- to 60-foot freight cars in the Bay Junction yard. I notched up the throttle and the train summited the curving 3 percent grade to Skyridge without a hiccup. I tacked on more and more until the wheels slipped at 35 cars.

## Facts & features

**Price:** FP7 and F7B set: with LokSound 5 DCC and sound, \$549.98; DC no sound, \$369.98. FP7 only: DCC sound, \$279.98; DC, \$189.98.

**Manufacturer**

Wm. K. Walther's Inc.  
5601 W. Florist Ave.  
Milwaukee, WI 53218  
walthers.com

**Era:** 1949-1970s (some remain in service on excursion railroads today)

**Road names:** Milwaukee Road (Armour Yellow and Harbor Mist Gray and modified orange and maroon), Amtrak (pointless arrow), Pennsylvania RR ("Brunswick Green" single stripe scheme), Soo Line (maroon and Dulux Gold), Southern Pacific ("bloody nose" scheme), and Southern Ry. ("tuxedo" scheme).

**Features**

- Blackened-metal RP-25 contour wheels, in gauge
- Cab interior with engineer and fireman figures
- Directional light-emitting-diode headlight and backup light
- ESU LokSound 5 Digital Command Control sound decoder (available)
- Etched-metal grills, windshield wipers, lift rings, and other details
- Five-pole, skew-wound motors with flywheels
- Lighted number boxes (A unit only)
- New body tooling
- Proto-max metal knuckle couplers, at correct height
- Prototype-specific details
- Weight: 1 lb., 2.2 ounces (FP7); 1 lb., 1.6 ounces (F7B)
- Wire grab irons
- Working Mars light (A unit only)

Thirty was about the limit. You don't have to worry that your passenger train is too long for these locomotives.

**A home run.** Walther's has hit it out of the park again. The upgraded body tooling is attractive and accurate, the drive-train is smooth and responsive, and the LokSound 5 decoder's sounds are strong and vibrant. This is a locomotive set that deserves to be at the head of your railroad's crack passenger streamliner.

– Steven Otte, senior associate editor



Though the Milwaukee Road often put the train number on number boards, it sometimes used the locomotive number, as on the Walther's Proto model.





## Micro-Trains N scale NSC 60-foot high-cube double-door boxcar

A contemporary 60-foot high-cube double-door boxcar with exterior posts is the latest N scale body style from Micro-Trains Line Co. The model, based on a National Steel Car (NSC) prototype, has body-mounted couplers, metal wheels, and a mix of molded and separate, factory-applied details.

**Our sample is decorated** as TBOX no. 667101, part of railcar leasing company TTX's 667000 through 667724 series. The full-size cars were built by National Steel Car under Job P7065/13 between August and December 2013.

The 100-ton double-door car is used to transport a variety of commodities, including aluminum plate and billets, asphalt shingles, malt liquors, newsprint, plywood, oriented strand board, pulpboard, and tin, among other items. The car has nailable steel floors and wall and floor anchors.

**The Micro-Trains boxcar** has a one-piece injection-molded plastic body with separate, factory-applied doors. The double plug doors are cast as a single unit that press fit into an opening on the car side. The doors have freestanding

door rods and numerous stencils, the latter legible under magnification.

The ladders on the sides of the car are molded; those on the end are separate parts. Other factory-applied end details include etched-metal see-through cross-over platforms, ladders, uncoupling levers, and a brake wheel.

On top, the boxcar has a friction-fit one-piece plastic roof that's painted flat aluminum. The roof accurately has three X panels on each end and seven diagonal intermediate panels. A metal weight is inside the car.

Plastic stirrup steps, molded in yellow, are separate castings attached to the car's underbody. The Magne-Matic couplers, which have blackened metal trip pins, are body-mounted with screws.

**Measuring up.** The boxcar's dimensions closely follow data published in the January 2016 *Official Railway Equipment Register*. The TTX boxcar is neatly painted yellow and black. The lettering placement matches prototype photos.

Though the boxcar will negotiate 11" radius curves, the overhang isn't very prototypical. At 4<sup>5</sup>/<sub>8</sub>" long, the model will look better on broader curves.

**Micro-Trains has always produced** fine N scale models, but the company upped its game on the NSC 60-foot high-cube double-plug-door boxcar. The body-mounted couplers with blackend metal trip pins, metal wheels, and etched-metal crossover platforms are all welcome additions on this modern-era car.

The full-size cars transport a variety of commodities and can be found on railroads throughout North America. This is a must-have freight car for a contemporary N scale layout. – *Cody Grivno, group technical editor*

### Facts & features

**Price:** three-pack, \$119.95; single car, \$59.95

**Manufacturer**

Micro-Trains Line Co.  
351 Rogue River Pkwy.  
Talent, OR 97540-1200  
micro-trains.com

**Road names:** TTX (modern and black logos, pink "On Track for a Cure" scheme in one number), Canadian National, CSX, and Union Pacific. All schemes offered in a three-pack unless noted.

**Era:** 2013 to present

**Features**

- 36" metal wheels on plastic axles, correctly gauged
- Body-mounted Magne-Matic couplers with blackened trip pins, .015" too high on both ends
- Weight: 1.1 ounces (.1 ounce too light per National Model Railroad Association Recommended Practice 20.1)



Underneath, the boxcar has a one-piece casting that features the center sills, crossmembers, and brake appliances. Modeler-installed train line hoses are included in the box. The 100-ton roller-bearing trucks are pin mounted.

# Tangent HO scale Greenville 86-foot high-cube boxcars

**High-cube boxcars** seemed to be everywhere in the 1970s, and thanks to Tangent Scale Models, highly detailed models of Greenville Steel Car Co. 86-foot high-cubes can roll on your HO layout, as well.

**These monster cars** were products of the 1960s, when bigger was better and efficiency was the watchword of corporate America. Earlier methods of moving car parts required specially equipped boxcars, which were really only appropriate for a single type of load. As automakers in the 1950s began making yearly changes to the styling of their cars, and in the late 1950s and early 1960s started expanding their lines into compact, mid-sized, and full-sized automobiles, boxcars that could carry only one type of part fell out of favor.

Designing loads to fit pallets and “baskets” that could be loaded by forklift into large boxcars let these larger varieties of parts be more safely and efficiently carried. The pallets and baskets came along about the time many boxcars were reaching the end of their useful lives, so it made sense to develop cars that could serve the auto industry better.

First on the scene were 60-foot auto parts cars, which were used for higher density parts such as engines, transmissions, and axle assemblies. But less dense items, such as body panels and interior parts, filled the 60-foot cars well before their load capacity was reached.

Ford worked with American Car & Foundry (ACF) to develop larger cars that could more closely match the weight and volume of the load. The result was a prototype 85-foot car with a volume of 10,000 cubic feet and a height of 17 feet (a high cube indeed!).

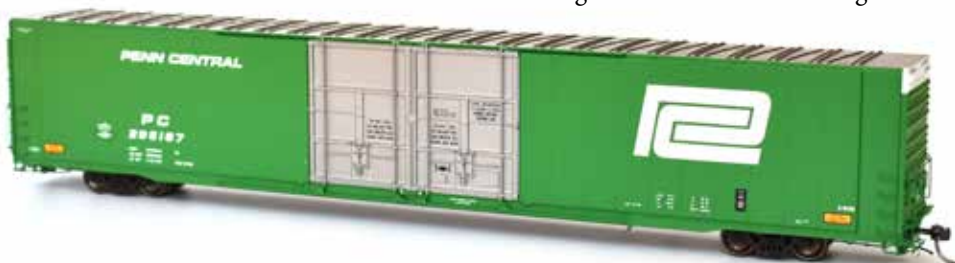
In addition to ACF, other makers of high-cube cars were Greenville Steel Car Co., Pullman-Standard, and Thrall. The production cars were 86 feet long and equipped with either four or eight doors (two pairs per side). Greenville built more than 4,400 of these cars between 1964 and 1978 for multiple railroads to run in pool service. Some of these cars are still in service.

**Our samples from Tangent** are decorated in Penn Central and Erie Lackawanna as-delivered paint schemes and represent some of the many variations Tangent has designed into its high-cube boxcars.

Our two cars each have different cushioning systems, center of car on the PC car and end of car on the EL car. Our samples also show off the two truck types designed for these cars: 70-ton Barber S-2A or 100-ton “low profile” Barber S-2-C trucks. Cars are equipped with either 33" or 36" wheels, as appropriate. Grab irons, crossover platforms, brake equipment, and door hardware are among the plethora of separately applied parts on these models.

Our models featured opaque paint – Penn Central Deepwater Green or Boxcar Red for the EL car, both with metallic gray doors. All of the printing was sharp and legible under magnification. The Penn Central car represents a car delivered to the railroad in October 1968, originally painted in PC colors, rather than a repainted Pennsylvania or New York Central car.

The EL car is one of the first batch of 100 cars Greenville delivered to the Erie Lackawanna in 1965. Erie Lackawanna went back to Greenville in 1966 for another 143 cars, making it one of the larger rosters of Greenville high-cubes.



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Note the extended draft-gear boxes on the Erie Lackawanna car, left, indicating its center-of-car cushioning system. Paint on both models is superb.

Both cars measured within inches of a drawing I found in the 1974 *Car and Locomotive Cyclopedia Centennial Edition* from Simmons-Boardman. The PC car's lettering placement matches a photo in the 1970 *Car and Locomotive Cyclopedia*. Lettering on the EL car matches photos in the *EL Color Guide to Freight and Passenger Equipment* by Larry DeYoung (Morning Sun Books, 1995).

I tested the cars on the Atlas no. 4 and no. 6 turnouts on my shelf layout and had no trouble pushing or pulling the cars through the crossovers and down into each of the yard and spur tracks. The models are designed to work on 24" minimum radius curves, but they'll look better on much broader curves in the 40" radius range.

The CNC-turned metal wheelsets with rotating bearing caps were all in gauge, and the Kadee scale-sized couplers were mounted at the correct height. The cars weigh 8.1 (EL) and 8.2 (PC) ounces, making them about 1 ounce heavier than the called for weight of 7 ounces in National Model Railroad Association Recommended Practice 20.1

**As a fan of 1970s** railroading, I was excited to see these cars. They're beautifully detailed and operate well, and I'm looking forward to seeing these eye-catching paint schemes on my future layout. Maybe there's a place for a few on your model railroad, as well. – Eric White, senior editor

## Facts & features

**Price:** \$54.95

**Manufacturer**

Tangent Scale Models

P.O. Box 6514

Asheville, NC 28816

tangentscalemodels.com

**Era:** 1964 to present, depending on paint scheme

**Road names:** Penn Central; Erie Lackawanna; Baltimore & Ohio; Chicago, Burlington & Quincy; Conrail; Detroit, Toledo & Ironton; Missouri Pacific; Southern Ry.; and Wabash

**Features**

- 33" or 36" CNC machined metal wheels as appropriate, in gauge
- Kadee scale couplers at correct height
- Multiple factory-applied prototype-specific details
- Two truck brake beam part options
- Weight: 8.2 ounces (1.2 ounces too heavy based on NMRA RP-20.1)

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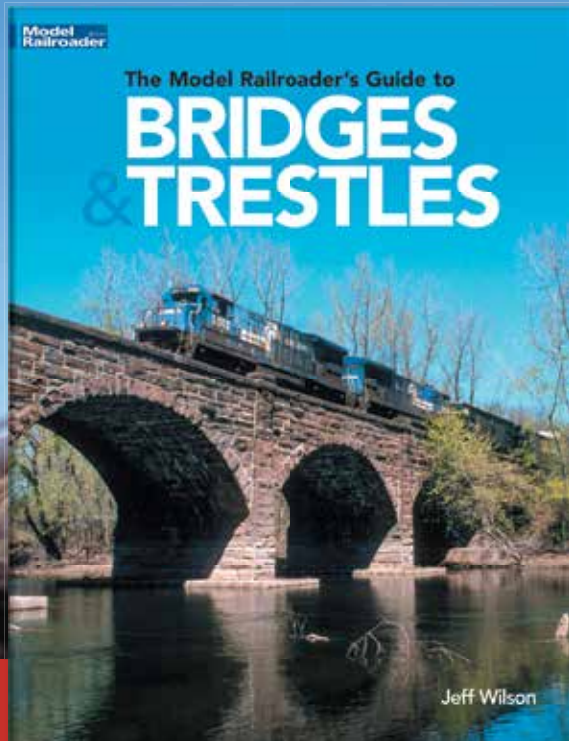
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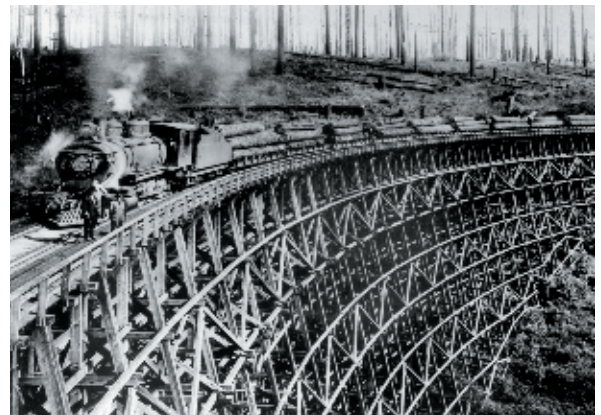


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**D&B Lumber Climax no. 6** crosses Eagle River on the lumber branch. Larry Burk of Holly, Mich., photographed the scene on his On30 layout. The scene is only 12" deep but seems deeper because of how Larry blended the foreground river into the photo backdrop, which is from Trackside Scenery. The locomotive is by Bachmann and the bridge was built from an S scale Hunterline kit.



**Atchison, Topeka & Santa Fe** no. 201, an Electro-Motive Division F3, waits for service at the sand house in Winslow, Ariz., before beginning its workday. Ray Mlecko of Phoenix photographed the scene on his HO scale northern Arizona layout. Ray scratchbuilt the sand house based on photos of the prototype. The locomotive is an Athearn Genesis model.



**Canadian National SD75i** no. 5758 leads train No. L588 back from Wausau into Stevens Point Yard. The action takes place on Alan Saatkamp's HO scale Wisconsin River Division. The locomotive is an Athearn Genesis model. Alan, of Normal, Ill., shot the photo.





**Fonda, Johnstown & Gloversville** Alco S-2 no. 20 crosses West 10th Ave. in Broadalbin, N.Y., with a single boxcar for Broadalbin Feed in July 1958. The scene is part of Stephen Lamora's HO scale FJ&G layout. The locomotive is a custom-decorated Alco model; the boxcar is by Kadee. Johnathan Munster shot the photo.

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# There's a prototype for everything!



**Want to model modern** mainline action with one engine and two cars? Don't worry – there's a prototype for everything! On June 19th, 2021, Lindsay Korst photographed BNSF 6800, a General Electric ES44C4,

hurrying westbound near Harrington, Wash. with an empty centerbeam flatcar (probably for added braking power) and a Boeing Aircraft parts car. How did this odd train come about? Thirty minutes earlier, the same

photographer had seen a westbound freight passing with two Boeing 737 fuselages and several Boeing parts cars in its consist. Had an urgently needed car been forgotten – or bad ordered – and was hurrying to catch up with the

train carrying the aircraft subassemblies? **MR**

*Do you have an odd, off-beat, or just plain weird railroad photo to share? We want to see it! Email Carl Swanson at [cswanson@kalmbach.com](mailto:cswanson@kalmbach.com).*

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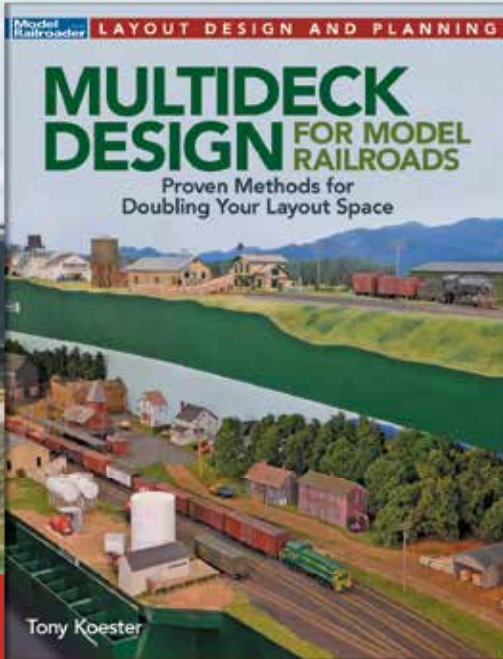
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**All ads must be prepaid and pertain to the subject of model railroading.**

## Schedule of Events

**CA, TURLOCK:** San Joaquin Valley Toy Train Operators, Inc. 46th Train, Construction & Farm Toy Show. December 4 & 5, 2021. Saturday 10am-5pm. Sunday 10am-3pm. Admission: \$8.00, kids under 12 free with an adult. Operating layouts, vendor tables, free parking. Stanislaus County Fairgrounds, 900 N. Broadway. Information: Ed Cathcart 209-479-4432 or Vernon Cowan 714-686-7165 www.sjvtoytrainoperatorsinc.com

**CO, LOVELAND:** Rocky Mountain Train Show November 27 & 28, 2021. The Ranch Complex, 5280 Arena Circle, Loveland, CO 80538. Saturday, 9am-5pm, Sunday 9am-3pm. 200+ sales tables, 50+ vendors, operating layouts, model trains of all scales. Admission \$8.00, under 12 free. Free parking. 303-364-0274 www.RockyMountainTrainShow.com Information@RockyMountainTrainShow.com

**FL, DOVER:** Regal Railways presents a Toy Train, Collectible and Hobby Christmas Sale/Show. Hillsborough County Fairgrounds, 215 Sydney Washer Road, Zip: 33527. Saturday, December 11, 2021, 9:00am-2:00pm. Admission: \$5.00 adults, children under 12 free. Vendors, videos, and operating layout. Lunch items available. Contact Joe: 727-244-1341 or visit: www.regalrailways.com for more information.

**FL, DUNNELLON/OCALA:** "Trains for Christmas" Free train show Saturday and Sunday, December 4 & 5, 2021. Sat. 9am - 3pm, Sun. 9am - 1pm. Multiple layouts, no vendors, and a spectacular raffle. This event is located at Holy Faith Episcopal Church, 19924 W. Blue Cove Dr., Dunnellon, FL 34432. Contact Bill Quast at 352-209-5422 or wmqast@gmail.com

**FL, PINELLAS PARK:** Suncoast Model Railroad Club Train Show/Open House. Saturday, December 11, 2021. SHOW- New venue! Pinellas Performing Arts Center, 4951 78th Avenue N., Zip: 33781. 9am-3pm. Admission: \$7.00, Children \$2.00, under 11-free. Free parking. Food/snacks. Tables: Hugo Sacco: saccohugo459@gmail.com OPEN CLUBHOUSE: 12355 62nd Street North, Suite A, Largo, FL 33773. Admission: free. Visit: www.suncoastmrrc.com

**GA, ATLANTA:** Scott Antique Markets (featuring Anton's Antique Toy & Train Show), November 11 - 14, 2021. Atlanta Exposition Center, 3650 & 3850 Jonesboro Rd., Atlanta, GA 30354. Thursday: 10:45am-6pm, Friday & Saturday: 9am-6pm, Sunday: 10am-4pm. Admission \$5, good all weekend. Contact: Anton 937-397-3499, or email: tweissmann6@gmail.com

**IN, DANVILLE:** Central Indiana Division-NMRA annual Danville Train Show (Indianapolis area) at Hendricks County Fair Grounds, 1900 E. Main St., Danville, IN 46122. Saturday, November 20, 2021. 10:00am-3:00pm. Admission \$3.00 adults, \$5.00 family. Operating Layouts, Vendors, Clinics, Food. Dealer Tables 8 feet at \$16.00. Info: johnporay@gmail.com or 317-627-1660. CID website http://cidnmra.org

**IN, MICHIGAN CITY:** Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St., Michigan City, IN 46360. Sunday, November 21, 2021, 9:30am-2:00pm (Chicago time). Adults \$4.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186. (Masks are optional.)

**KS, DODGE CITY:** Boot Hill Model Railroad Club Train Show. Western State Bank Expo Center. 11333 U.S. Hwy 283, Zip: 67801. November 20 & 21, 2021. Saturday 10am-6pm and Sunday 11am-4pm. Admission: \$6 adults, good for both days. 10 and under free w/paid adult. Food available. Additional info, contact Henry Turner 620-271-4306. Email: hat9@cox.net or cwht@cox.net

**MA, MARLBOROUGH:** Hub Division NER/NMRA. Royal Plaza Trade Center, 181 Boston Post Road (Rte. 20 West), Marlborough, MA. Saturday December 4, 2021, 10am-5pm and Sunday December 5, 2021, 10am-4pm. Admission: \$12.00; Children under 12 and Scouts in Uniform FREE. Admission good both days. Information: Mark 508-528-8587; E-mail TE.info@hubdiv.org; website: www.hubdiv.org

**MI, EAST LANSING:** Lansing Model Railroad Club Show and Sale. Michigan State University Pavilion. Sunday, November 14, 2021. 10:00am-4:00pm. Admission \$6.00, under 12 free. Michigan's largest train show: layouts, demonstrations and 500+ tables. Free parking. Flyer, table forms and map www.lmrc.org or call Ron St. Laurent 517-256-3588

**MI, SALINE:** Southeast Michigan Model Railroad Flea Market & Show presented by Rails on Wheels. Washtenaw Farm Council Grounds; 5055 Ann Arbor Saline Road, Saline, MI 48103. Sunday, November 28, 2021. 10am-3pm. Adults \$4. Children under 12 FREE with an adult. Early Bird Special 8am-10am \$10. Modular layouts. Refreshments. Free Parking. Contact John Young, 517-449-9063, cdjyoung@yahoo.com

**MO, JOPLIN:** Museum Complex Train Show and Swap Meet. Saturday, November 27, 2021. Schifferdecker Park, 7th Street & Schifferdecker between the golf course and pool. 9:00am-3:00pm. Adults \$4.00, under 12 free. Rick Gardner, 11486 County Lane 214, Oronogo, MO 64855; 417-673-4888 or e-mail: rickgardner4449@gmail.com

**NJ, BRICK:** ECTP and Collectibles LLC presents The Brick Special Holiday Train Show. Elks Lodge, 2491 Hooper Avenue, Brick, NJ 08723. Sunday, December 12, 2021, 9:00am-2:00pm. Admission: \$6.00; under 10 free with adult. John LaLima 732-845-5966. Go to www.eastcoasttrainparts.com and click on The Brick Show.

**NJ, WAYNE:** ECTP and Collectibles LLC presents The Wayne Special Holiday Train Show. P.A.L. Hall, 1 Pal Drive, Wayne, NJ 07470. Sunday, December 19, 2021, 9:00am-2:00pm. Admission: \$6.00; under 10 free with adult. John LaLima 732-845-5966. Go to www.eastcoasttrainparts.com and click on The Wayne Show.

**NY, ALBANY:** December 5, 2021, "Great Train Extravaganza"™. Largest model train show in Capitol Region. Empire State Convention Center. 10am-4pm. \$7 adults, children free. Operating layouts, all scales, plus Legos. 300+ tables: model trains, train sets, craftsman kits, buildings, accessories/parts, scenery, books, DVDs, railroad memorabilia/prints, switching puzzle, educational and NMRA displays. Door prizes. Refreshments. www.gtealbany.com, 518-668-9892, trains@gtealbany.com

**OH, DAYTON:** Dayton Train Show, The New Montgomery County Fairgrounds, 645 Infirmary Road, Dayton, OH 45417. November 6-7, 2021. Saturday, November 6, 11am-5pm and Sunday, November 7, 11am-4pm. Admission: \$8.00 per adult, children 12 and under free with paid adult. Gail Yarnall, PO Box 341233, Dayton, OH 45434, NMRA.Div.3@gmail.com. Go to http://www.DaytonTrainShow.com for updates.

**OH, MASSILLON:** CJ Trains Winter Train and Toy Show. Massillon Knights of Columbus Hall, 988 Cherry Road NW, 44647. Sunday, December 12, 2021, 10:00am-3:00pm. Admission: \$5.00, 12 and under FREE. \$25/dealer table, 152 - 8' dealer tables. Jon Ulbright, PO Box 446, Wooster, OH 44691, 330-262-7488, cathijon@ssnet.com www.cjtrains.com

**PA, MONACA:** Beaver County Model RR Fall Train Show & Sale. Monaca Turners, 1700 Old Brodhead Road. Sunday, November 21, 2021, 10:00am-3:00pm. Adults \$5.00, under 12 free. All scales. 50/50 raffle, food, fun for the whole family! Sponsored by Beaver County Model RR & Historical Society. Contact: Walt Steiner 724-843-3783 or www.bcmrr.raifan.net or beavercitymrr@gmail.com

**TX, HOUSTON:** Greater Houston Train Show presented by the San Jacinto Model Railroad Club. Saturday, February 12, 2022, 10:00am-4:30pm. Pasadena Convention Center, 7902 Fairmont Parkway, Pasadena, TX 77504. Operating Layouts, Classes on Railroads and Modeling Subjects, NMRA Contests, and Vendors from across the Southwest. Admission: \$5 adults, under 12 FREE, \$10 family. Concessions, free parking. Info: http://sanjacmodeltrains.org/

**TX, PLANO:** Dallas Area Winter Train Show. Plano Event Center, 2000 E. Spring Creek Parkway. January 15-16, 2022. Saturday 10am-5pm; Sunday 10am-4pm. Adults \$10.00 (for both days), 12 and under free w/adult. 80,000 sq.ft. of model railroading with numerous operating layouts on display. Dealers, layout tours, and drawings. Information: Chris Atkins, chris@railroadmodelers.com 469-438-0741. Visit: www.dfvtrainshow.com

**WA, KENT:** Boeing Employees Model Railroad Club Annual Swap Meet, 525 4th Avenue North, Kent Commons. November 13, 2021, 9:30am-4:00pm based on current Covid-19 status. \$10.00 admission, under 16 free. Ed Sherry, 550 SW Colewood Lane, Normandy Park, WA 98166; 206-244-3884; swapmeet@bemrrc.com

**WA, SPOKANE:** Holiday Model Train and Toy Swap Meet. Sunday, November 21, 2021, 9am-3pm. Centennial Hotel Spokane, 303 W. North River Dr., Spokane, WA 99201. Swap meet located in the Main Ballroom. For additional info, email: robert@whiffen.org

**WI, LA CROSSE:** The 30th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. Saturday, January 29, 2022. 9:00am-3:00pm. Admission \$5.00, under 12 free. 300 vendor tables. All Scales; Model, Toy & Antique Trains & Memorabilia. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383. Visit: 4000foundation.com

*All listed events were confirmed as active at the time of press. Please contact event sponsor for updated status of the event.*

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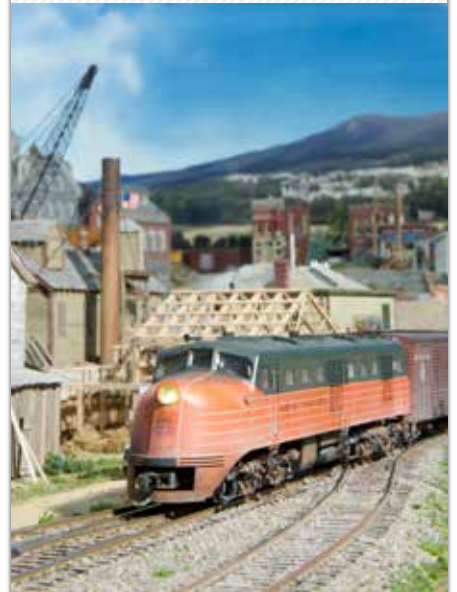
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# The magic of trains



Teddy and Pete Abeles grasp the past, present, and future as they experience the wonder of model trains that were once a Christmas gift received by their grandfather. Dave Abeles photo

**For many of us,** the journey into model railroading began with a train set received as a child. I count myself among the fortunate who were so blessed. In some cases, a tradition was started or carried on as Dad's or Grandpa's trains were passed on to yet another generation of future model railroaders.

The latter is the case here: Professional railroader and *Model Railroad Planning 2018* contributor Dave Abeles thought I would enjoy a "quick grab shot" he took one morning in December 2018 as his boys Teddy (then almost 4) and Pete (21 months) discovered his dad's 1946 Lionel no. 1666 and cars that graced their Christmas tree that year.

"The magic continues," Dave commented, "and this reminds me just how much there is to be thankful for. The hobby still is fun, and it's still allowing connections that make life better."

**As you read the** December 2021 issue of *Model Railroader*, I hope you will take time to reflect on the many blessings and enhancements to your life that your involvement with model railroading has brought your way. If I may, let me list a few of my own by way of example.

I received a Lionel train set just after World War II. I was too young to realize it at the time, but it marked a period when everyone was thankful that the war was over and, in our case, that my dad was back home safe and sound.

The train set hadn't arrived by post office closing time on Christmas Eve, but a thoughtful and caring small-town assistant postmaster went back to the facility one last time to see whether it was among some late-arriving mail – and it was! "A boy has to have his Christmas," Archie Gamm commented as he handed the parcel to Dad.

**When I bought** my first copies of MR and *Railroad Model Craftsman* at Kuhn's Drug Store in Cayuga, Ind., in 1954, I couldn't have guessed that I would one day edit RMC and later an annual issue of MR called *Model Railroad Planning*. But the die was apparently cast about then, as future career moves slowly but surely led me in that direction.

I consider it an honor to have been privileged to work with both publications for much of my professional career.

During my college years at Purdue, I was an active member of the Purdue Railroad Club. Friendships made there endure to this day. My good friend Bill

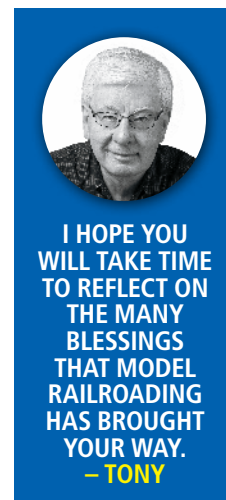
Wischer got a job with Walther's; Jim Schwinkendorf went to Burlington Northern and for a time headed their steam program; Bill and Mary Ann Darnaby are our frequent traveling companions, almost always on trips with a mix of rail and sea travel. None of these people would have enriched our lives had model railroading not intervened.

**I joined the** National Model Railroad Association in the 1960s and served on the National Board of Directors for eight years in the 2000s. I figured I owed my time and effort to an organization that has done so much for the hobby – such as the NMRA Standards Gauge, a long list of helpful standards and recommended practices, the proliferation of Digital Command Control (a gift from inventor Bernd Lenz), and local, regional, and national meets and conventions that offer a wealth of information via clinics, portable layouts, field trips, and social interaction. I can honestly say that virtually all my close friends are model railroaders.

As Dave Abeles said, we have so much to be thankful

for, and this is a time of year to reflect upon those blessings. As we do that, look again at Teddy and Pete as they joyfully bridge three generations by touching equipment that at one time brought an equal dose of magic to the life of their grandfather.

What a great hobby we all enjoy! **MR**





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