

Build basic benchwork for a small layout p.32

Model Railroader®

How to model a tractor load p.38

February 2016
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Club railroading at its best

Members mix history with technology p.48

How to improve power pickup for DCC p.70

HOW TO

- **Build a crossing shanty from drawings** p.44
- **Build a lift-up gate for a walk-in layout** p.64
- **Take better photos of your layout** p.56

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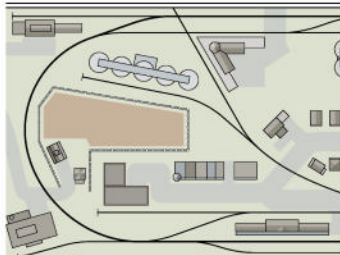
A simple mechanism holds a lift span high enough to walk under

by *James P. Murphy*

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by *Steven Otte* ▶ Online bonus ModelRailroader.com

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More 4 x 8 track plans are coming in March, along with ideas for sectional benchwork from Pelle Søbørg, a re-imagined Virginian project layout, and more!

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WIN \$2,000 to buy trains! See p.30
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On the cover: Southern diesel switchers mingle with steam locomotives on the Northern Virginia Model Railroaders club HO layout. Paul J. Dolkos photo

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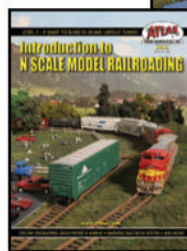
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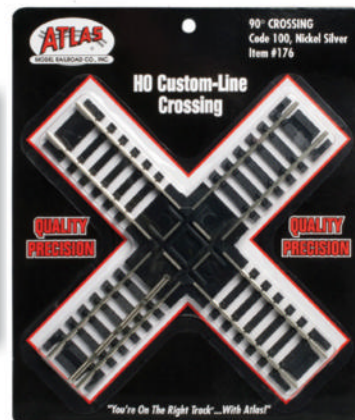
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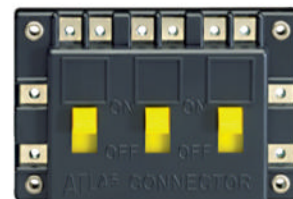
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Eagle Mountain RR online bonus



Benchwork for the MR staff project layout

MREXTRA

The monthly **Step by Step** column will be the home of the *Model Railroader* staff's 2016 project layout, the HO scale Eagle Mountain RR. This month's installment on page 32 focuses on benchwork. Subscribers can watch video highlights of the project with associate editor Eric White. Click on the link under Online Extras at www.ModelRailroader.com.

Product review videos



Watch new locomotive demos

MREXTRA

There are more than 1,000 product reviews and hundreds of product review videos at www.ModelRailroader.com. This month read and watch reviews for Bachmann Trains' HO scale United States Railroad Administration light 2-8-2 and Rapido Trains' HO scale Electro-Motive Division FL9.

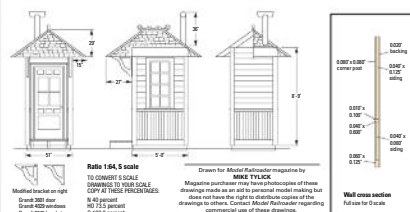
Special event

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The *Model Railroader* staff brings the pages of your favorite magazine to life. Spend a weekend with the magazine and Model Railroader Video Plus staffs and learn from your favorite magazine and hobby book authors. Find out more about how you can participate in this special event at www.ModelRailroader.com/live.



Project plans



Crossing guard shanty

Looking for a fun scratchbuilding project? Download the plans for this common trackside structure.

Take better pictures



More layout photo tips

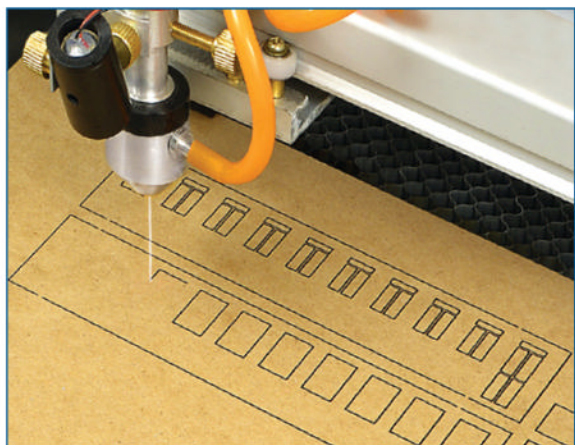
Author Brooks Stover provides a layout photography guide, including tips for using a point-and-shoot camera, in this free download. Click on the link under Online Extras.

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And the survey says ...



Model Railroader magazine has been surveying its readers for decades, long before the creators of the TV program *Family Feud* made a game show out of surveys.

In October we asked a random group of readers like yourselves questions about their layouts.

Here's what we learned, or, as they say on television, "And the survey says. ..."

First and foremost, we asked, "Do you have a layout?" Not everyone who reads *Model Railroader* has a layout, and some readers have more than one layout.

Our survey revealed that 75 percent of you currently have a model railroad in your home.

We followed that with, "If you have a layout, how finished is the layout?"

This was a multiple-choice question with four responses: just getting started, one-quarter complete, half complete, or 75 to 100 percent complete.

Interestingly, the responses were perfectly balanced. Twenty-five percent of readers were just getting started, 25 percent said they were one-quarter complete, another 25 percent were half-way complete, and a final 25 percent had nearly complete or complete layouts.

Next, we asked, "What time period do you depict on your railroad?"

The results were a bit unexpected.

Granted, the most popular modeling period remains the 1940s and 1950s at

about 35 percent. But the second-most popular period was the 1970s to 1980s at almost 19 percent. And about 18 percent of you model "no specific era."

Other modeling periods, such as contemporary and pre-World War II, each drew about 10 percent of the responses.

Another question we asked was, "Where did your track plan come from?"

Only 6 percent of you used a track plan straight from a book or magazine, but 31 percent of you were inspired by plans in books and magazines.

Ten percent of you drew a plan that closely matches a prototype location, and almost 49 percent of you drew your own freelanced plan.

The final question we asked was, "How much do you modify locomotives and rolling stock before putting them on your layout?"

This was another multiple-choice question. Almost half of you replied that you use locomotives and rolling stock "straight out of the box." About 30 percent of you weather them, add details, and improve their running characteristics. Just over 20 percent of you add weathering only.

Interesting stuff.

Keep in mind that our survey results are simply a snapshot of *Model Railroader's* readers. The survey was not conducted in a manner that would have pleased my college statistics professor. But I suspect Richard Dawson would have approved.

NEIL BESOUGLOFF

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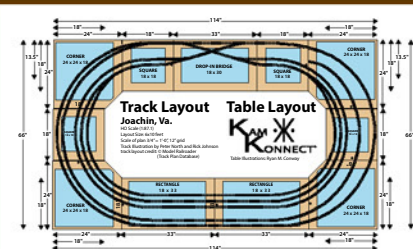



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Trainfest
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HO Union Pacific 8,500-hp “Big Blow” turbine. ScaleTrains.com’s first locomotive offering is this gas turbine-electric. The “Big Blow,” scheduled for release in April 2016, will be offered in eight road numbers (four per brand line) and will feature number-specific details, wire grab irons, air intake scoops, and separate water hoses between the A and B units. Museum Quality branded

models will include flange squeal and frog clank sounds, an illuminated cab and control panel, and spinning turbine fan blades. Models in the Rivet Counter line will sell for \$424.99 (direct current) and \$574.99 (with ESU LokSound decoder). Museum Quality models with an ESU Lok Sound sound decoder will be priced at \$724.99. ScaleTrains.com, 844-987-2467, www.scaletrains.com

ScaleTrains.com debuts at Trainfest

The 44th annual Trainfest was held the second weekend in November 2015 at the Wisconsin Exposition Center at State Fair Park in West Allis, Wis., a suburb of Milwaukee. The two-day show featured vendors and manufacturers, model railroad layouts, railroad historical societies, and clinics.

The big news was the debut of model train manufacturer ScaleTrains.com. An invitation-only unveiling party was held the night before Trainfest, where the Tennessee-based company showed its initial HO scale offerings, including a Union Pacific 8,500 hp “Big Blow” tur-

bine locomotive (above), UP water tenders, a Trinity 31,000-gallon crude oil tank car, and an Evans 5,100-cubic-foot-capacity double-door boxcar kit.

Athearn debuted its HO scale Electro-Motive Division SD39 diesel locomotive at Trainfest. The Ready-to-Roll model, shown on the opposite page, will be offered with and without sound.

Tangent Scale Models added to its portfolio of super-detailed freight cars with its HO scale General American Transportation Corp. 4,180-cubic-foot-capacity Airslide covered hopper (opposite page). The model will be offered in

three body styles and is offered in schemes from 1965 to the present.

On the N scale side, Kato continues to add to its lineup of Amtrak products. The firm announced it will be producing an Electro-Motive Division SDP40F diesel locomotive. The model, listed on page 14, is due out this spring.

We couldn’t fit all of the items from Trainfest into the magazine. To see the full report, additional product photos, and to watch associate editor Cody Grivno’s interview with ScaleTrains.com president Shane Wilson, please visit our website, www.ModelRailroader.com.

► Mobile Updates



Scan the code to access *Model Railroader's* website for weekly News & Products updates.

Cody Grivno

H0 scale locomotives



■ **General Electric U33B and U36B diesel locomotives.** Road names and features to be announced. Direct-current models and models with ESU LokSound sound decoder will be offered. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

■ **Union Pacific 4-8-8-4 Big Boy steam locomotive.** Road numbers 4014 and 4018. Five-pole can motor with brass flywheels and improved electrical pickup on all eight drivers. Direct-current model to be configured for 21-pin decoder. Also available with LokSound Select sound decoder with updated sound file. Price to be announced. First quarter 2016. Hornby Hobbies, 877-358-6405, www.hornbyamerica.com

■ **0-4-0T steam locomotive.** Atchison, Topeka & Santa Fe; Baltimore & Ohio; Canadian National; Canadian Pacific; Chesapeake & Ohio; Pennsylvania RR; Reading Co.; road number only; Southern Ry.; Union Pacific; and United States Army. Direct-current model, \$39.98; with sound decoder and Loco Genie, \$109.98. Model Power line. Model Rectifier Corp., 732-225-2100, www.modelrec.com

■ **General Electric Evolution Series diesel locomotive.** BNSF Ry. (low headlight, D4 A1A center idler axle truck), Canadian National (low headlight, standard high-adhesion truck), Canadian Pacific (low headlight, standard high-adhesion truck), CSX (low headlight, steerable truck), Norfolk Southern (high headlight, standard high-adhesion truck), and Union Pacific (low headlight, standard high-adhesion truck). Working front ditch lights, five-pole skew-wound motor with two brass flywheels, molded drill starter points for grab irons (sold separately), and Proto-Max couplers. Direct-current model, \$129.98; with dual-mode SoundTraxx sound decoder, \$199.98. Fall 2016. WalthersMainline. Wm. K. Walthers Inc., 414-527-0770, www.walthers.com



HO scale Electro-Motive Division SD39 diesel locomotive. Athearn's latest announcement is this six-axle road unit. The SD39 will be decorated for Minneapolis, Northfield & Southern; Atchison, Topeka & Santa Fe; Illinois Terminal; Norfolk & Western (two schemes); and Southern Pacific. The model will be offered in one to four road numbers per scheme. The Ready-to-Roll model, scheduled for release in October 2016, will feature railroad-specific details and wire grab irons. Direct-current models will retail for \$134.98. Versions with a RTR Sound Digital Command Control decoder by SoundTraxx will list for \$194.98. Athearn Trains, 800-535-5551, www.athearn.com



HO scale General American 4,180-cubic-foot-capacity Airslide covered hopper. The latest offering in Tangent Scale Models' product lineup is this covered hopper. The model, priced at \$44.95, is decorated for BNSF Ry.; Baltimore & Ohio; Chicago & North Western; Clinton Corn Processing; GATX; Gulf, Mobile & Ohio; Industrial Grain Products; and Milwaukee Road. The covered hopper is also available ready-to-run painted primer gray and as an undecorated kit (1965-1966, 1967-1969, and 1970-1980 body styles). The ready-to-run car has prototype-specific details and Kadee scale couplers. Tangent Scale Models, 828-279-6106, www.tangentscalemodels.com



HO scale Pennsylvania RR class L1s 2-8-2 steam locomotive.

This Broadway Limited Imports model will be offered in pre- and post-war versions in multiple road numbers. To read senior editor Dana Kawala's first impressions of the model and to see more photos, visit www.ModelRailroader.com. The Paragon3 model, due out in early 2016, will have a manufacturer's suggested retail price of \$499.99. Broadway Limited Imports, 386-673-8900, www.broadway-limited.com

Trainfest special!



HO scale National Steel Car 4,550-cubic-foot-capacity 59-foot cylindrical covered hopper. Wm. K. Walther's Inc. announced it will be adding this car to its Walther'sMainline series in April. The covered hopper will be decorated for the Canadian Wheat Board – Canada (CNWX and CPWX reporting marks), Alberta Heritage Fund (ALNX and ALPX marks), and Canadian Wheat Board (CNWX and CPWX marks) in multiple numbers per scheme. The model, which will sell for \$29.98, will feature see-through running boards, detailed brake gear, and 36" turned-metal wheelsets. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale freight cars



■ **36-foot double-sheathed boxcars.** With steel roof and ends and fish-belly underframe: Boston & Albany, Canadian Pacific, and eight other road names. Also offered with steel roof and ends and straight underframe; steel roof, wood ends, and fish-belly underframe; and steel roof, wood ends, and straight underframe in various road names. All body styles also available undecorated and data only (mineral red and oxide). Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Price to be announced. Mid to late 2016. Accurail, 630-365-6400, www.accurail.com



■ **50-foot boxcar.** Pre-production sample shown. Illinois Central; Atchison, Topeka & Santa Fe; Chesapeake & Ohio; Chicago, Burlington & Quincy; Great Northern; Louisville & Nashville; Reading Co.; Soo Line; and Union Pacific. Newly tooled injection-molded plastic model with and without running boards and sliding or plug doors as appropriate. Price to be announced. Rivarossi line. Hornby Hobbies, 877-358-6405, www.hornbyamerica.com



■ **Northwestern Fruit Growers 40-foot double-sheathed refrigerator car.** Cascadian apples. Separate door bars, grab irons, ladders, and uncoupling levers; metal wheelsets; and Accumate couplers. \$39.50. Produced by Atlas Model Railroad Co. (Master Line), available from Lowell Smith Signature Series, www.lowellsmith.net

■ **Trinity 31,000-gallon crude oil tank cars.** First run: Deep Rock Refining Co. and Trinity Industries Leasing. Second run (May 2016): General American Marks Co. (full and half



Prodigy Advanced2 Wireless. Model Rectifier Corp. added a new wireless unit to its Digital Command Control series. The Prodigy Advanced2 (\$629.98) features advanced and universal consisting; 14, 28, and 128 speed steps; and fast clock with adjustable ratios. The system, which features a wireless operating range of 60 feet, is compatible with Java Model Railroad Interface. Model Rectifier Corp., 732-225-2100, www.modelrec.com



N scale Amtrak Cities Sprinter bookcase set. A production sample of Kato's latest Amtrak set was on display at Trainfest. The Cities Sprinter bookcase set includes a Siemens ACS-64 electric locomotive, three Amfleet I coaches, Amfleet I cafe, and book-style packaging. The set, in hobby shops now, is priced at \$250. Kato USA Inc., 847-781-9574, www.katousa.com



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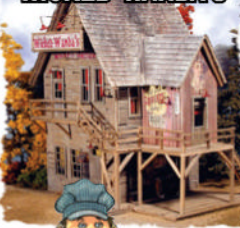
Visit our website for trademark information. Scene and photography by Ken Johnson. Actual model shown.



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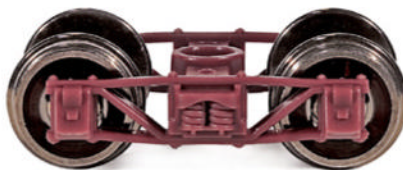


HO scale 70-ton center-discharge

ore cars. A new run of ore cars was shown by MTH Electric Trains. The 70-ton center-discharge cars are decorated for Duluth, Missabe & Iron Range (individual car four-pack and Mini-Quad with drawbar-connected intermediate cars) and Canadian National (individual car four-pack). The models feature injection-molded plastic bodies, metal grab irons, and Kadee couplers. A four-pack sells for \$129.95. MTH Electric Trains, 410-381-2580, www.mthhotrains.com

ladder) and Valero Marketing & Supply. Multiple road numbers per scheme; Rivet Counter models also available undecorated (full and half ladder) and unnumbered. Rivet Counter line features numerous factory-applied parts, including road name and number specific details. Operator line has fewer separately applied parts and simplified printing. Rivet Counter: one to five cars, \$38.99 each; six to 11 cars, \$36.99; and 12 or more cars, \$35.99. Operator: one to five cars, \$22.99; six to 11 cars, \$20.99; and 12 or more cars, \$19.99. ScaleTrains.com, 844-987-2467, www.scaletrains.com

HO scale details and accessories



■ 20-ton capacity 4'-8" archbar refrigerator car trucks.

HOn3. Boxcar Red with blackened metal wheels and prototype-specific details. Two-pack, \$12.95. Blackstone Models, 970-259-0690, www.blackstonemodels.com

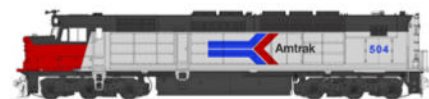


■ **Coal load.** For Broadway Limited Imports 70-ton four-bay hopper. Cast Hydrocal with factory-applied imitation coal. Two-pack, \$6.50. Motrak Models, 813-476-4784, www.motrakmodelsusa.com

■ **40-foot high-cube drop-frame trailers.** Corrugated side: Atchison, Topeka & Santa Fe; Great Northern;

Milwaukee Road; and Union Pacific (three numbers per scheme, \$24.95 to \$26.95 each). Smooth side: Illinois Central Gulf, Family Lines, and Norfolk & Western (three numbers per scheme, \$24.95 each). Second quarter 2016. Trainworx, 970-874-9747, www.train-worx.com

N scale locomotives



■ **Electro-Motive Division SDP40F diesel locomotive.** Amtrak (phase 1 and 2 schemes). Two road numbers per scheme. Based on Phase I carbody. Illuminated number boxes with factory printed number boards, all-wheel electrical pickup, and DCC friendly design. \$125. April/May 2016. Kato USA Inc., 847-781-9574, www.katousa.com

N scale freight cars



■ **30'-6" two-bay panel-side hopper.** Central Vermont (single car and two-pack), Delaware & Hudson, Missouri Pacific, New York Central, Rock Island, and Wabash. Injection-molded plastic sides, ends, and hopper doors; die-cast metal slope sheet, hopper bay, center sill assembly; Fox Valley Models metal wheelsets; and body-mounted couplers. Models available as single car (\$23.95), two-pack, (\$47.90), and three-pack (\$71.85) unless noted. Summer 2016. Bluford Shops, 618-822-6833, www.bluford-shops.com



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Model Railroader February 2016

NEWS&PRODUCTS

Trainfest special!



O scale Northwest Fruit Growers 40-foot double-sheathed refrigerator car. A second custom-run reefer (three-rail version shown) has been added to the Lowell Smith Signature Series. The 40-foot car is lettered for American Fruit Packers and features an advertisement for Hood River Pears. The model has an injection-molded plastic body, positionable ice hatches, and sprung die-cast metal trucks. The car, produced by Atlas O, sells for \$92. Lowell Smith Signature Series, www.lowellsmith.net

■ 70-foot Warren circus flatcar.

Ringling Bros. and Barnum & Bailey Circus and American Shows. Detailed deck pattern, riveted steel sides, separate stirrup steps, and Magne-Matic couplers. Price to be announced. March 2016.

Micro-Trains Line Co., 541-535-1755, www.micro-trainsline.com

N scale structures

■ Downtown seven-story building.

Laser-cut acrylic kit with cast roof details and graphics for several first-floor businesses. Measures 5 1/4" x 1 7/8" x 7 1/2". Price to be announced. Also available in HO. Custom Model Railroads, 410-889-0010, www.custommodelrailroads.com

■ **Century Plaza.** Cast-resin kit with separate, pre-colored doors and windows, and tab-and-slot construction. Measures 4 1/8" x 3 3/8" x 8 3/8". \$69.95. Lunde Studios, 479-253-5088, www.lundestudios.com

■ **Ivory Tower.** Cast-resin kit with separate, pre-colored doors and windows, and tab-and-slot construction. Measures 4 1/8" x 3 3/8" x 13 1/8". \$84.95. Lunde Studios, 479-253-5088, www.lundestudios.com

O scale passenger car

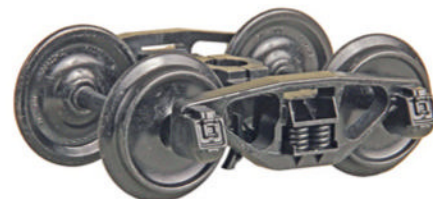


■ California Zephyr dome chair car with conductor's window.

Alaska RR (one road number); Amtrak (Silver Ranch and Silver Rifle); Chicago, Burlington & Quincy (Silver Rifle);

Denver & Rio Grande Western (Silver Colt); and Western Pacific (Silver Sage). Track or self-contained battery power interior lighting. \$164.95. Third quarter 2016. Atlas O, 908-687-9590, www.atlaso.com

Large scale accessories



■ **Assorted 1:29-proportion metal trucks.** American Steel Foundries (ASF) 50-ton A-3 Ride-Control with 33" metal smooth-back wheels, ASF 50-ton Bettendorf-style with 33" metal smooth-back wheels, and archbar with 33" metal ribbed-back wheels. Includes no. 4 mounting screws and mounting adapters for Aristo-Craft, Bachmann, LGB, and USA Trains rolling stock. \$49.99 per pair. Kadee Quality Products Co., 541-826-3883, www.kadee.com

Z scale structures

■ **Chicago & North Western enginehouse.** Basswood, cardstock, and laserboard construction with cast-resin and metal roof vents, lights, and oil tank. Based on prototype in Ishpeming, Mich. Price to be announced. Also available in HO and N scale. Monroe Models, 320-250-5610, www.monroemodels.us



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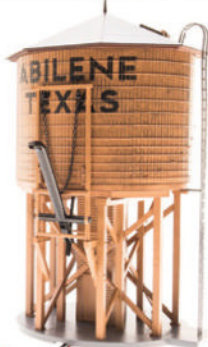
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- **Layout wiring kit for Digital Command Control power bus.** Contains 50 feet each of red and black 14AWG stranded wire, pre-stripped red and black 22AWG feeder wires (16 each), 32 wire taps for 14AWG stranded wire, and 32 quick connectors for 22AWG stranded wire. For 5 Amp and lower



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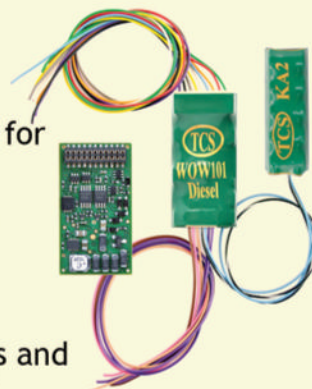
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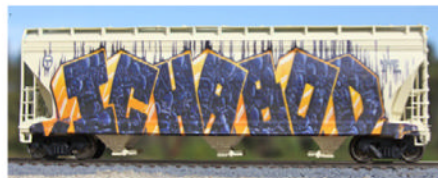
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The devil is in the details, and readers caught a few of them in this photo by Philip R. Hastings that ran in the December 2015 “The Operators” column.

A photo mystery

I’m curious about the description of the photo in “The Operators” column in the December 2015 issue, specifically the date and time taken. As Philip R. Hastings was known for taking copious notes on his images, and his good friend [longtime *Trains* editor] David P. Morgan also paid great attention to detail, I wonder about the accuracy of the given time.

Today’s (Nov. 3, 2015) GPS time of sunset for Mendota, Ill. is 4:48 p.m.

Surely the time for December 10th would be even earlier.

The illumination of outdoor features in the photo suggest a hazy or smoky condition at twilight. In that era were railroad clocks, or the Chicago, Burlington & Quincy’s set at a time different than local?

Jeff Melin, Carmel, Ind.

A number of you wrote about the time element of this photo. Indeed, there does seem to be a disparity in the stated

date and time, and some of you researched the weather and sunrise and sunset times on the supposed date the photo was taken.

The photo came from the David P. Morgan Library here at Kalmbach Publishing Co., probably originally submitted for use in Model Railroader’s sister publication, Trains.

Hastings did take plenty of notes when photographing, and after examining this print again, he had put his “Photography by Philip R. Hastings” stamp on the back and attached typewritten information. However, all that remains of the data are three small scraps of paper affixed with spots of glue. A few typewritten letters, including “&Q.” remain, but that’s it. There’s also a Dec. 10, 1954 date stamp, which may be the date the picture was received by Trains.

Associate editor Steve Otte took a closer look at the train orders hanging over the desk with a magnifying loupe. They appear to have a September 17 or 18 date on them, which would explain the towerman’s short-sleeved attire.

With the loss of the caption information, the only things we know for sure are the clock says 6:22, and the ambiance of a busy tower is exquisitely captured. – Hal Miller

I play with trains

It’s true, as stated in “Legacy of the Berkshire Lines” (November 2015) that many young people are introduced to the hobby of model railroading through the gift or purchase of inexpensive, toy-quality train sets. Be thankful that they are. The future of model railroading depends on it.

To say, as Mr. Nehrich is quoted, that the hobby might be trivialized with a “toy-train-around-the-Christmas-tree heritage,” is equivalent to saying a man in a three-piece suit might be trivialized by having started life in diapers.

To speculate “Adults may shy away from the hobby, not wanting to be perceived as merely playing with toys” deserves this from hobby pioneer Gordon Varney in his first HO catalog in 1939: “Nearly every treatise on Model

Railroading begins with an apology for ‘playing with trains.’ *If you want to play trains, I say play trains!* There are enough men in model railroading today so that it does not require an apology. It is grand entertainment, and is keeping many a high-pressured executive from cutting out paper dolls in a padded cell...”

As were so many boys, now men, I was introduced to railroad modeling by an around-the-tree set 20 years ago. It pleases me to say that today I’m involved in the production of a large-scale, horizontal format, kinetic art installation in my home – yes, a model railroad layout. Yes, I play with trains.

Rus Stolling, Clovis, Calif.

Pulling power

Your December Product Reviews again demonstrated that recent N scale

locomotives typically have higher ratios (25 to 33 percent) of tractive effort to weight than HO models (usually less than 25 percent), at least when they have no traction tires.

How can this be? Probably 50-plus years ago Lynn Westcott did a *Model Trains* magazine review of Athearn’s multiple mechanisms for its F-units and found that the Hi-F (rubber band) drive outpulled the geared units, even though the latter had better motors and were slightly heavier. Perhaps the lack of gears meant less vibration, which translated into greater surefootedness. If so, that suggests that N scale locomotives, with their typically less-precise gear trains, actually vibrate less.

Now, why the N locomotives can run slower is even more of a mystery.

Dennis Gordan, Longmeadow, Mass.

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. Please include your name, city, and state.

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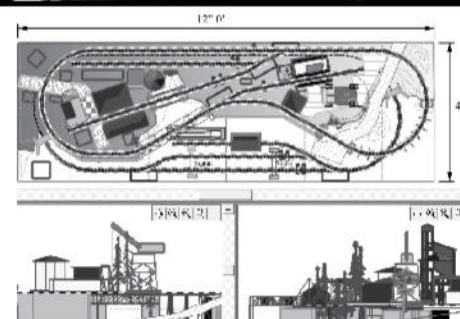
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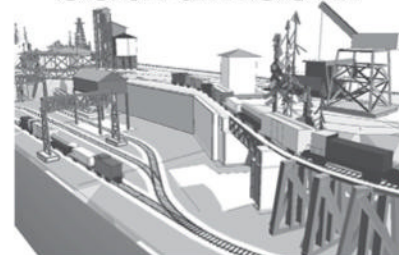
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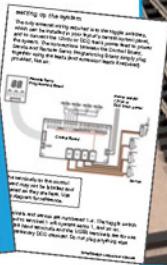
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Though a coat of clear flat finish like Testor's Dullcote will help protect a car's weathering job, it also tends to dull weathering powders. Associate editor Cody Grivno offers some ways to combat that effect. Jeff Wilson photo

Dullcote dulls weathering powders

Q I'm a big fan of using powders to weather my rolling stock, and I've seen it recommended that a spray of clear matte finish will keep the powders in place even when the pieces are handled.

The issue I'm having is each time I achieve just the right weathered look on a piece of rolling stock, it all but disappears once the clear coat is applied. I've tried putting on heavy layers of powders in hopes the finished product will come out at the right level, but even then, once the clear coat is applied the weathering is barely visible.

I currently use Testor's Dullcote from an aerosol can. It appears that once wetted by the clear coat, the powders just fade away. Any tips or ideas to help resolve this issue would be much appreciated.

Craig Fraley, Rogers, Ark.

A The problem that you're experiencing is one many modelers (myself included) have grappled with. Here are some solutions to fix, or at least minimize, the problem.

First, make sure the model is clean. Then spray the car with a clear flat finish *before* applying the pastels. You can either do this with an airbrush or a spray can (we've had good luck with Testor's Dullcote and Model Master Lusterless flat). Flat finishes have a slight texture, or "tooth," which helps the pastels adhere better to the model.

Second, use quality powders. The pigments in artist's oil pastels stick well to models and leave a darker weathering effect. You may find these pastels a bit more expensive, but the up-front investment is worth it.

If you want factory-mixed colors, try using weathering powders from A.I.M. Products (www.aimprodx.com) or pastels from PanPastel (www.modelingcolors.com).

When it comes time to seal the weathering, since the car has already been sprayed with a clear flat, you need only a light coat to seal the weathering. — *Cody Grivno*

Q I'm trying to ballast track that comes with a built-in foam roadbed. But when I add the diluted glue, the ballast just runs off, leaving large empty spots and piles of ballast on the adjacent scenery. Do you have any tips as to how to keep it from running off? It really is an annoying problem which I am guessing has an easy fix.

McKeegan Curran, Lombard, Ill.

A Try painting a coat of full-strength white glue or appropriately colored interior flat latex paint along the track shoulders with a brush, then sprinkle a light coat of ballast directly into it. Once that dries, it will provide a rough, slightly porous surface for the next step.

To add the rest of the ballast, shape it as desired, then carefully use a pipette or eyedropper to wet it with 70 percent isopropyl alcohol. Apply it to the shoulders of the ballast profile, letting it soak in from the sides, rather than from above. This will keep the drops from "cratering" the ballast. Then add the glue, again working from the shoulders. The alcohol will break the surface tension of the water-based glue and help the scenery cement soak in, rather than run off.

Q I'm wondering if I can get a reprint of an article on an N scale railroad in a coffee table that was published in the late 1960s or early 1970s. I believe it was titled the East Glasstop.

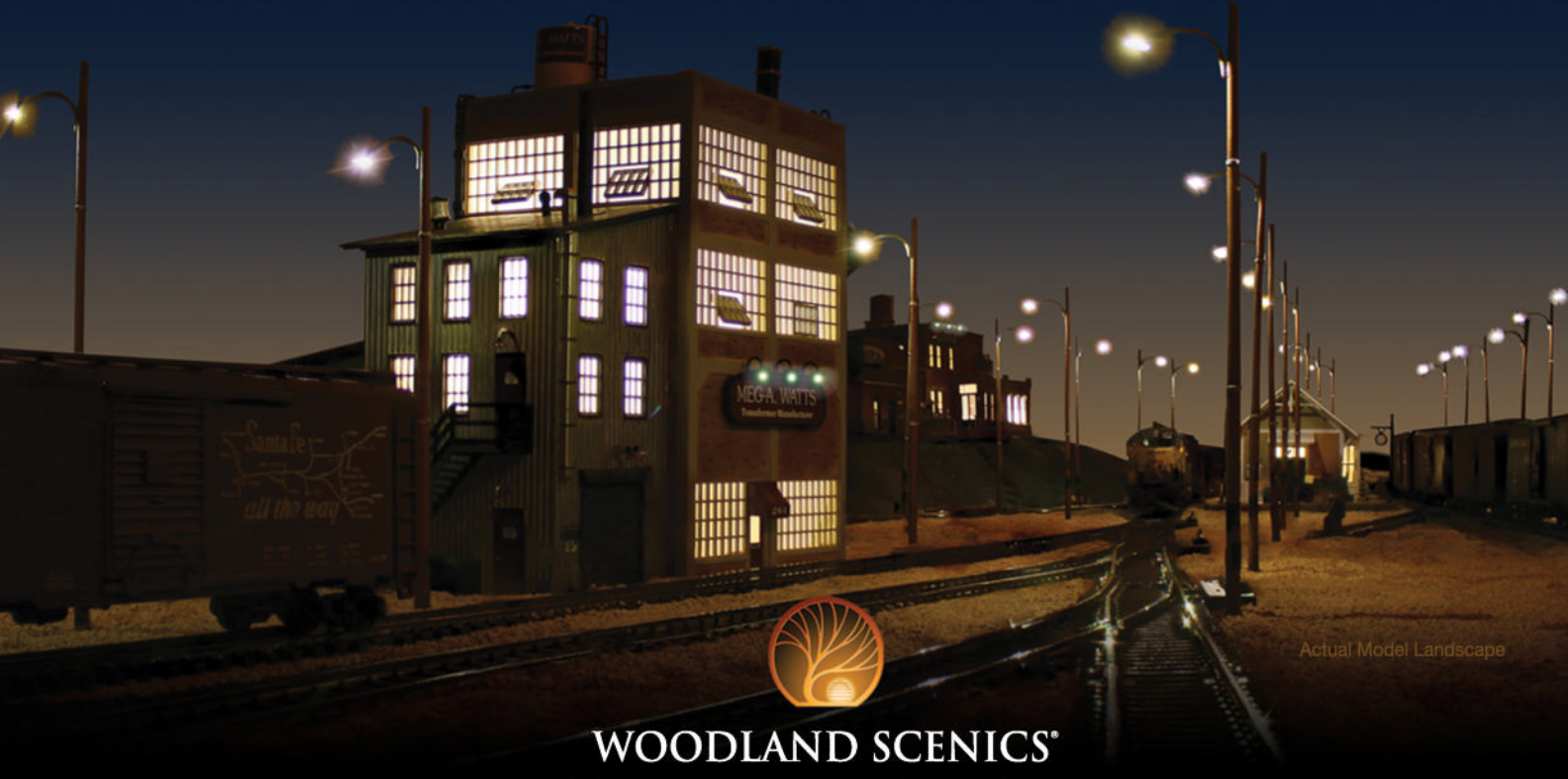
Mike Thompson, Dallas City, Ill.

A You have a good memory. The East Glasstop RR series ran in five parts in our December 1970 through April 1971 issues. We don't have back issues in our warehouse from that long ago; sometimes issues are available at swap meets or on the Internet at sites like eBay. Another option is to get a *Model Railroader* All-Access Pass, which will give you instant access to that article in our archive and thousands more from 1934 to today. Sign up at www.ModelRailroader.com/AllAccess.



Q I'm modeling the Ontario Northland Ry. in N scale and would like to know which locomotive in N scale is closest to the ONR SD751.

Carman Locke, South Porcupine, Ont.



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ASKMR

AIn 2008, Athearn announced an N scale SD75I that was decorated for the Canadian National. A BNSF Ry. version was offered a couple years earlier. You might still find them in hobby shops or auction sites online. You could then redecorate the model using Microscale decal set no. 60-1395.

If you can't find an SD75I, you might start with an SD70M or SD75M. The "I," which stands for "isolated cab," refers to the noise-dampening gasket that fills a space between the cab and the nose. This gap, which would be little more than a thin black line in N scale, is the main spotting difference between an SD75I and those models.

QWhere can I find information, preferably with no cost, about the Baldwin Locomotive Works factories? I'm looking to re-create a builder's photo of a locomotive on the Baldwin turntable, but I can't locate any site plans of the factory where the turntable was located or any information on the turntable itself. I've found numerous photos of Baldwin products on the turntable, but I need more information before I jump into building my diorama.

AIf you want information for no cost, your best shot is the public library. A number of great histories of the Baldwin company have been written, including John K. Brown's *The Baldwin Locomotive Works, 1831-1915* (Johns Hopkins



The Baldwin Locomotive Works' turntable at Philadelphia, Pa., was the stage for many a locomotive's official portrait, like Pennsylvania RR 4-4-2 2759, built in April 1905. The company photographer often retouched out the background in these beauty shots.

Baldwin Locomotive Works photo, from David P. Morgan Memorial Library collection

University Press, 2001) and Brian Solomon's *Baldwin Locomotives* (Voyageur Press, 2010). But I checked through the copies in our library, and despite being rich with information and photos, neither has the site plan you want.

I was able to dig up some information online, though. There doesn't appear to be a turntable on the site plans of Baldwin's Eddystone plant, so the one in all those locomotive beauty shots must be at Philadelphia. Baldwin's round-house and turntable occupied a triangle between the Reading Co. tracks (now Pennsylvania Avenue), 26th Street, and Aspen Street. A rough outline of the structure is visible on plate 11 of the 1910 Philadelphia atlas. (Scans of this atlas are available at www.HistoricMapWorks.com.) Today, that space is occupied by high-rise condominiums, with no sign of the site's significance to railroad history.

QI'm experiencing dead spots on my layout, especially on the turnouts. I've cleaned the rails, and it seems not to resolve the problem. My layout consists of Bachmann E-Z Track from the Walther's Railtech Digital Train Set. I run two engines, one with DCC and the other without. The direct-current engine works fine on the layout – no dead spots. But the DCC engine stalls out. Can you help me with my problem?

David Falconer, Lexington, Ky.

AIf the problem consistently occurs with one locomotive and not the other, the problem isn't the track, it's the locomotive. One possibility that I bet you've already checked is dirty wheels. But since you mentioned the DCC engine has particular trouble with turnouts, that points to another cause. Check the electrical pickup on the balky locomotive; if it's getting power from only one truck, crossing an unpowered turnout frog could be enough for it to go dead. Take off the shell and make sure the wheel wipers make good contact.

Another possibility is that the wheels on this engine are out of gauge, causing short circuits when a wheel spans the gap between the powered stock rail and the open point rail. Get a National Model Railroad Association gauge and check both the wheels and the turnouts.

Send questions and tips to associate editor Steven Otte at AskMR@MRmag.com.

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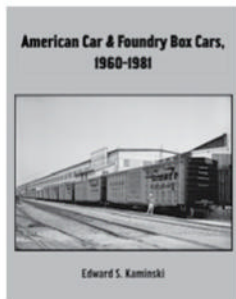





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When O scale brass was inexpensive

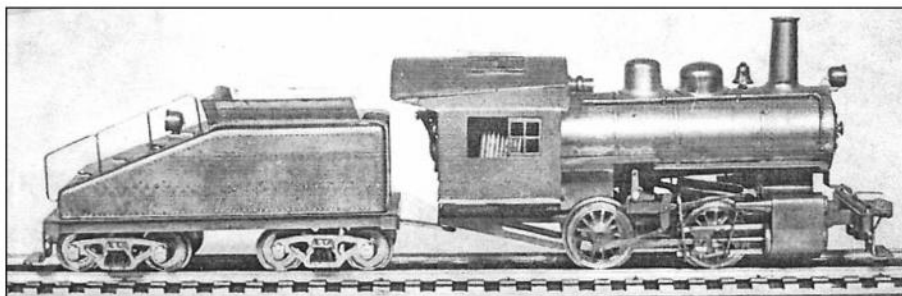


Fig. 1 Brass bargains. International's 1952 O scale imported Baltimore & Ohio class C-16a was similar to the late-1940s Thomas model, but cost about \$12 less.

When imported Japanese brass

began to enter the United States in the early 1950s, it was basic and cheap. Carmen Webster's 1950 American Model Railroad Equipment Corp. all-scales catalog revealed a few HO imports in steam, electric, and streetcars. They weren't in the same class as American manufacture, and were a mere trickle of what would become a thriving Japanese industry to eventually wash over our shores.

Regarding appearances, HO models were more foreign looking than accurate domestic prototypes, and could've been adapted to look more accurate. O scale steam locomotives had valve gear, something a few domestic makers lacked on theirs. A 1952 International Models Inc. of New York City catalog reveals where O scale brass stood in that era, and how it compared to domestic production, its cover proudly proclaiming "The largest Scale Model RR line in the world."

O scale brass was inexpensive compared to similar domestic models; steam locomotives lacked the surface details, piping, and appliances we expect today. They could be said to be much like 1939-1942 Mantua HO locomotives with plain rolled-brass boilers, minimum surface detail, and soldered castings. With these low-cost imports, one got what one paid for.

One stood out, though: the ubiquitous Baltimore & Ohio class C-16 Docksider,

popular on many HO layouts. International's was better detailed than Varney's cast version, with freestanding applied handrails, piping, steps to the cab, and valve gear.

Contrast in pricing is interesting too. Varney's HO version, less valve gear, was \$15, compared to International's \$22.50 O scale model with valve gear. International supplied alternating current (AC) series-wound motors for O scale modelers not yet converted to direct current (DC), allowing modelers to run the locomotives without costly conversion. The rear inside catalog page had instructions on how to install outside third-rail current collectors as well as inside third-rail pickups, a good indication where O scale stood in that era.

O scale locomotives could run equally on DC, AC, or hi-rail layouts. Japanese motors were not the best, and were often replaced with good permanent magnet ones from Fred Icken and others.

International offered a B&O C-16a 0-4-0 slope tender version (**fig. 1**) with less detail than might have been expected, but appears to have had a slight edge over a similar plain, late 1940s Thomas O scale model. International's was \$27.95, Thomas' \$39.50 in both two- and three-rail versions. Common to these small locomotives were large motors crowding their cabs.

We can best compare International's plain Pacific (**fig. 2**) with others on the 1952 market. Lacking much surface detail

other than smoke box rivets, two boiler bands, applied piping, and exterior appliances expected on a high performance prototype, it was a low \$37.50. By way of contrast, Lobaugh's 1952 well detailed, more costly brass and cast-bronze Pacific was \$85, while All-Nation's mainly die-cast metal model was \$68. International undercut them in price, but couldn't begin to compete in appearance. Japanese brass had a long way to go.

And it didn't take long. 1952 could also be said to have been an important year in imported brass, for Max Gray started his Perfection Scale Models import business with Japanese firm K-T-M as his prime producer, which had other subcontractors contributing to its manufacture.

Max Gray raised the bar on O and HO scale models alike with imported locomotives of a superior quality not previously seen. Others, like International, had to meet those standards if they were to survive in the postwar marketplace.

Having examined International's plain 1952 Pacific, let's jump a decade ahead to see what Max Gray offered in 1962, and how far Japanese craftsmanship had advanced where he could show an impressive DC, no longer AC series-wound, O scale Erie class K-5. It had an Elesco feedwater heater, Boxpok drivers, precise rivet detail, sprung drivers with oil-less bronze bearings, brake shoe hangers, a wealth of superb detailing, and all the external piping expected on a fast mainline machine, and not considered important by International.

And it cost more. A lot more. What had been International's plain \$37.50 Pacific, was by contrast, a superb \$178.50 Max Gray import. There could be no comparison. Imported O scale brass was no longer cheap, but the Rolls Royce of model railroading. Max Gray had pulled far ahead, setting standards that would in time exceed even his own. **MR**

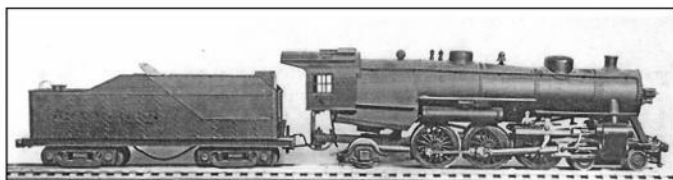


Fig. 2 Plain Pacific. In 1952, you could get an International Pacific for \$37.50, nearly half the price of domestic models, but with much less detail as well.



Fig. 3 Setting standards. By 1962, Max Gray was importing models built by K-T-M, such as this highly detailed Erie class K-5 Pacific, but prices were on the rise.

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 #80101 UNLETTERED #83403 MA&PA #4
 #80102 L&N #83404 MA&PA #5
 #80103 SOUTHERN #83405 MA&PA #6
 #80104 SEABOARD #83406 SRR, green
 #80105 CN #83407 MAINE CENTRAL
 #80106 B&O #83408 SEBOARD

SOUND & DCC ON-BOARD SUPER SALE \$139.99 EA.
 #80127 L&N #80129 SEABOARD
 #80128 SOUTHERN

#80131 BALTIMORE & OHIO SPECTRUM 4-4-0 SOUND & DCC ON-BOARD

BEST DEAL \$149.99

MAINTENANCE OF WAY HI RAIL EQUIPMENT TRUCK WITH CRANE DCC ON-BOARD

SALE \$77.99 EA.
 #16901 WHITE #16903 CONRAIL
 #16902 NORFOLK SOUTHERN #16904 UNION PACIFIC

Old Time 4-4-0 AMERICAN

SALE \$89.99 Ea.

#51102 SANTA FE #51124 CENTRAL PACIFIC
 #51114 PENNSYLVANIA #51144 B&O

0-6-0 W/SMOKE, DCC ON-BOARD

SALE \$95.99 Ea.

#51602 SANTA FE #51607 BURLINGTON
 #51605 NYC #52001 SMOKY MOUNTAIN
 #51606 NEW HAVEN

NEW 0-6-0 PORTER SIDE TANK, DCC ON-BOARD

SALE \$86.99 EA. **SUPER SALE \$69.99 EA.**
 #52102 MIDVALE STEEL #52104 PENNSYLVANIA
 #52103 MIDWEST QUARRY #52105 SANTA FE

0-6-0 With SMOKE

SALE \$74.99 Ea.

Yanderbilt Tender #50702 NASHVILLE CHATTANOOGA & ST. LOUIS #50704 SEABOARD
Slope Back Tender #50602 SANTA FE #50606 CN
 #50603 UP #50612 B&O
 #50604 SANTA FE #50615 PRR
 #50605 NYC #50616 NASHVILLE CHATTANOOGA & ST. LOUIS

NEW 2-6-0 SWITCHER

DCC READY SUPER SALE \$95.99 EA. **NEW!**
 #51701 PENNSYLVANIA #51707 PENNSYLVANIA
 #51702 NYC #51708 NYC
 #51703 CN #51709 CN
 #51704 ATSF #51710 SANTA FE
 #51705 UNION PACIFIC #51711 UNION PACIFIC
 #51706 B&M #51712 GREEN BAY & WESTERN

DCC SOUND VALUE SALE \$154.99 EA.
 #51807 PENNSYLVANIA #51812 WABASH
 #51808 NYC #51813 LACKAWANNA
 #51810 UNION PACIFIC #51814 CN
 #51811 B&M #51815 SOUTHERN
 #51816 SANTA FE

THOMAS THE TANK ELECTRIC TRAINS

WE CARRY THE FULL HO, O & G THOMAS LINE ON LINE - ON SALE

HO SCALE BACHMANN SPECTRUM EM1 2-8-8-4 BALTIMORE & OHIO ARTICULATED, DCC ON BOARD/SOUND READY

SUPER SALE \$219.99 EA. **NEW!**

#80406 Undecorated #80407 Road #7603
 #80408 Road #7629
 #80409 Road #7620 #80410 UNDECORATED 249.99

444951 SOUND MODULE for EM1 \$77.99

2-6-2 PRAIRIE with SMOKE

SALE \$89.99 Ea.
 #51501 UNION PACIFIC #51523 SOUTHERN PACIFIC
 #51504 SOUTHERN #51524 CANADIAN NATIONAL
 #51522 PENNSYLVANIA #51524 PENNSYLVANIA

BALDWIN 2-8-0 CONSOLIDATION, DCC ON-BOARD

SALE \$137.99 Ea.
 #51313 DURANGO & SILVERTON #51316 WESTERN PACIFIC
 #51314 SOUTHERN #51317 ROCK ISLAND
 #51315 UNION PACIFIC #51318 N&W

2-8-2 MIGHTY MIKADO LIGHT

DCC READY SUPER SALE \$189.99 EA. **NEW!**
 #54401 PERE MARQUETTE #54301 UNION PACIFIC
 #54402 ROCK ISLAND #54302 B&O
 #54403 SOUTHERN #54303 PENNSYLVANIA
 #54404 WESTERN PACIFIC #54304 NYC
 #54405 FRISCO #54305 MAINE CENTRAL

2-8-4 BERKSHIRE, DCC SOUND VALUE

SALE \$199.99 EA. **NEW!**
 #52401 NICKLE PLATE ROAD #52403 PERE MARQUETTE
 #52402 CHESAPEAKE & OHIO
 #52403 PERE MARQUETTE

2-8-4 BERKSHIRE, DCC ON-BOARD

SALE \$209.99 EA. **NEW!**
 #52404 NICKLE PLATE ROAD #52405 CHESAPEAKE & OHIO
 #52406 CHESAPEAKE & OHIO

2-8-4 BERKSHIRE, DCC ON-BOARD

SALE \$158.99 EA.
 #50901 PERE MARQUETTE #50906 NICKLE PLATE
 #50902 PERE MARQUETTE #50949 PAINTED UNLETTERED

BALDWIN 4-6-0

DCC READY SUPER SALE \$179.99 EA. **NEW!**
 #52201 NYC #51401 PENNSYLVANIA
 #52202 B&O #51402 UNION PACIFIC
 #52203 CP #51403 SOUTHERN
 #52204 MA&PA #51404 C&O
 #52205 TEXAS PACIFIC #51405 SANTA FE

#50204 GS4 SOUTHERN PACIFIC WABASH DCC ON-BOARD

SALE \$129.99 EA.

4-8-4 NORTHERN, DCC READY

SALE \$154.99 EA.

#53502 UP gray #53503 NYC

GS4 4-8-4 SOUTHERN PACIFIC, DCC ON-BOARD

SALE \$179.99 EA.

#50201 SP DAYLIGHT, #50202 SP DAYLIGHT
 #50206 WESTERN PACIFIC GS64 4-8-4, DCC READY SALE \$179.99

RS-3, 8-WHEEL

DCC ON-BOARD SALE \$89.99 EA.
 #64201 B&M #64203 WMD
 #64204 SRR #2137 #63902 CP, Multimark
 #64205 PRR, black #63903 B&M
 #64207 CN #63904 ERIE
 #64208 SOUTHERN #63905 CN
 #64209 ROCK ISLAND #63907 SEABOARD
 #64210 PRR #63908 SANTA FE
 #64211 NYC #63909 INTERSTATE

SD40-2, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$177.99 EA.
 #60501 SANTA FE #67012 KCS
 #60502 SANTA FE #67013 CSX, Bright Future
 #60503 CSX #67017 CN
 #60504 CSX #67019 UNION PACIFIC
 #60505 CSX #67021 CP RAIL
 #60506 CSX #67022 CN
 #60507 CSX #67023 CSX
 #60508 CSX #67024 CSX
 #60509 CSX #67025 KCS

NEW FTA DIESEL

DCC READY SUPER SALE \$59.99 EA.
 #63706 WMD #64301 SANTA FE
 #63707 D&RGW #64302 NYC
 #63708 C&O #64303 NORFOLK SOUTHERN
 #63709 B&O #64304 SOUTHERN PACIFIC
 #63710 ALASKA #64305 PENNSYLVANIA

AMTRAK ACELA HHP LOCO, DCC ON-BOARD

SUPER SALE \$79.99 EA.
 #83011 No. 656 #83012 No. 651

#65506 AMTRAK E60CP ELECTRIC, DCC ON-BOARD

SUPER SALE \$99.99

SPECTRUM GE 45T SWITCHER, DCC ON-BOARD

SALE \$98.99 EA.
 #85206 U.S. ARMY #85207 UNLETTERED black/yellow
 #85201 UNLETTERED yellow/black
 #85203 UNLETTERED red/yellow/black
 #85204 UNLETTERED green/yellow

GE 44 TON SWITCHER, DCC ON-BOARD

SALE \$77.99 EA.
 #62201 UNLETTERED, yellow/black
 #62202 UNLETTERED, black
 #62206 B&M #114
 #62209 PRR
 #62210 D&RGW
 #62211 SF
 #62212 PRG
 #62213 DRG
 #62214 NKP
 #62215 CN

S2 DIESEL SWITCHER

DCC READY SUPER SALE \$83.99 EA.
 #63306 SOUTHERN #63401 SANTA FE
 #63307 WIP #63402 B&O
 #63308 NKP #63403 PENNSYLVANIA
 #63310 CB&Q #63404 UNION PACIFIC

S4 ROAD SWITCHER

SOUND DCC ON-BOARD SALE \$139.99 EA.
 #63201 WMD #63203 NYC
 #63207 SP #63208 NYC
 #63213 PALE #63214 C&O
 #63215 CNW
 #63216 PRR

DCC READY SUPER SALE \$59.99 EA.

#63101 WMD #63103 NYC
 #63106 ERIE

DCC READY SUPER SALE \$77.99 EA.

#63107 GRAND TRUNK #63108 BNSF
 #63109 NP #63205 ATSF, Zebra
 #63110 NYC #63211 MILWAUKEE
 #63111 VERMONT RYVY #63212 EL

DCC ON-BOARD SALE \$68.99 EA.

#60604 LOUISVILLE & NASHVILLE #99
 #60607 YELLOW/BLACK
 #60608 UNLETTERED, green
 #60609 UNLETTERED, red
 #60610 UNLETTERED, black
 #60612 BETHLEHEM STEEL
 #60613 SOUTHERN PACIFIC

70TON DIESEL 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60804 GM #209 #60806 B&O #60807 PRR #2205
 #60808 PRR #2208 #60809 NKP
 #60810 NKP #60814 NKP
 #60815 UP #733
 #60816 PRR #2212 #60817 SANTA FE
 #60818 ACL #62310 NYC

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

NEW FA2 DIESEL

DCC READY SUPER SALE \$137.99 EA.
 #64601 CANADIAN NATIONAL
 #64602 NYC
 #64603 ERIE LACKAWANNA
 #64604 L&N
 #64605 B&O
 #64606 PENNSYLVANIA

SOUND DCC ON-BOARD

SUPER SALE \$99.99
 #64702 NEW YORK CENTRAL

BALDWIN RF-16 SHARK A OR B DIESEL, DCC ON-BOARD

A UNIT \$1807 DEMO \$1808 PRR, single stripe \$1809 B&O \$74.99 EA.
 #61807 DEMO #61808 PRR, single stripe #61809 B&O

NEW YORK CENTRAL BALDWIN RF-16 SHARK A DIESEL, DCC ON-BOARD

SUPER SALE \$49.99

UNION PACIFIC, EMD DD40AX DCC READY

SUPER SALE \$19.99 EA.
 #65101 ROAD #6900 #65103 ROAD #6940

DCC SOUND VALUE BEST DEAL \$159.99 EA.

#65105 ROAD #6900 #65102 ROAD #6929

NEW EMD GP7 DIESEL

DCC SOUND VALUE SUPER SALE \$129.99 EA.
 #65601 PRR #8809 #65602 GM DEMO #100
 #65604 ACL #109 #65605 B&M #1575

GP7 & GP9 DIESEL, 8-WHEEL DRIVE

GP-7 DCC ON-BOARD SALE \$83.99 EA.
 #62403 CHESSIE #6411 #62408 UP #114
 #62409 B&O #6411 #62411 ERIE #1212
 #62412 RG #5102 #62413 SRR #5183
 #62414 PENNSYLVANIA #62415 NYC
 #62416 WESTERN PACIFIC
 #62417 COTTON BELT
 #62418 B&M #62413 CN, green

GP-9 DCC ON-BOARD SALE \$83.99 EA.

#62801 UP #173 #62802 PRR #7046
 #62804 CN #1701 #62805 B&O #6431
 #62807 UNION PACIFIC
 #62808 PENNSYLVANIA
 #62809 SANTA FE
 #62810 CN
 #62811 BURLINGTON
 #62812 B&A
 #62813 CN, green

GP-30, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60804 GM #209 #60806 B&O #60807 PRR #2205
 #60808 PRR #2208 #60809 NKP
 #60810 NKP #60814 NKP
 #60815 UP #733
 #60816 PRR #2212 #60817 SANTA FE
 #60818 ACL #62310 NYC

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL

GP-35, 8-WHEEL DRIVE

DCC ON-BOARD SALE \$77.99 EA.
 #60705 CP #8205 #60706 CP #8210
 #60709 CP #8203 #60713 UNION PACIFIC
 #60714 PRR #2265 #60716 FRISCO
 #60717 EL</

WALTHERS LIFE LIKE WALTHERS PROTO WALTHERS TOP DEALER WALTHERS MAIN LINE WALTHERS TRAIN LINE

0-8-0 SWITCHER

W/DCC & SOUND
BEST DEAL \$229.99 EA.
#920-60114 ERIE #125
#920-60112 CB&Q #546
#920-60116 NKP #206

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BUDD CARS

BUDD RDC1 COACH
BEST DEAL \$49.99 EA.
#920-35252 CNW #9933
#920-35264 SP #10

BUDD RDC1 COACH
SUPER SALE \$59.99 EA.
#920-35262 SEASHORE M403
#920-35263 SEASHORE M405

#920-35202 CHICAGO NORTH WESTERN
BUDD RDC2
COACH/BAGGAGE \$64.99

REAL METAL FINISH
#920-35582
NEW HAVEN BUDD RDC3 COACH/BAG/RPO

PROTO 2000

F3 A W/DCC & SOUND
SUPER SALE \$149.99 EA.
#920-41276 SANTA FE
#920-41277 SANTA FE
#920-41280 MILWAUKEE
#920-41281 MILWAUKEE

F3 A W/DCC & SOUND
SUPER SALE \$374.99 EA.
#920-41274 SANTA FE
#920-41275 SANTA FE

F3 A STANDARD DC
\$139.99 EA.
#920-48280 MILWAUKEE #83A
#920-48281 MILWAUKEE #83D

F3 AB STANDARD DC
SUPER SALE \$249.99 EA.
#920-48275 SANTA FE

PROTO 2000

F7 A W/DCC & SOUND
BEST DEAL \$159.99
#920-40693 CNW
#920-40694 CNW
#920-40695 ROCK ISLAND
#920-40696 ROCK ISLAND

F7 A W/DCC & SOUND
SUPER SALE \$199.99
#920-40686 DINNER BELL

F7 A W/DCC & SOUND
\$219.99 EA.
#920-40699 SANTA FE
#920-40700 SANTA FE
#920-40708 GREAT NORTHERN
#920-40711 ALASKA #1502
#920-40712 ALASKA #1506

F7 AB W/DCC & SOUND
\$429.99
#920-40697 SANTA FE
#920-40698 SANTA FE
#920-40709 ALASKA #1502A/1503
#920-40710 ALASKA #1503B/1517

PROTO 2000

E7 A W/DCC & SOUND
SUPER SALE \$149.99 EA.
#920-40999 PRR, green
#920-41000 PRR, green

E7 AB STANDARD DC
\$259.99 EA.
#920-47971 UNION PACIFIC

E7 A W/DCC & SOUND
\$349.99
#920-40985 PENNSYLVANIA, green

E7 A STANDARD DC
\$139.99 EA.
#920-47994 NYC #4030

PROTO 2000
#920-41367 AMTRAK #254

E8 A W/DCC & SOUND
\$259.99 EA.
#920-41367 AMTRAK #254

E8 AA STANDARD DC
\$279.99 EA.
#48360 PRR, Tuscan #5804A/5807A

E8 AA STANDARD DC
SUPER SALE \$249.99 EA.
#48363 PRR, Tuscan #5712A/5713A

PROTO 2000
#920-41385 UNION PACIFIC

E9 A W/DCC & SOUND
\$239.99
#920-41385 UNION PACIFIC

E9 AB W/DCC & SOUND
\$449.99
#920-41384 UNION PACIFIC

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PROTO 2000

U28B W/DCC & SOUND
\$159.99
#920-41654 L&N #2500
#920-41655 L&N #2502

U28B W/DCC & SOUND
SUPER SALE \$189.99 EA.
#920-41654 L&N #2500
#920-41655 L&N #2502

U28B W/DCC & SOUND
\$239.99 EA.
#920-41654 L&N #2500
#920-41655 L&N #2502

U28B W/DCC & SOUND
SUPER SALE \$189.99 EA.
#920-41654 L&N #2500
#920-41655 L&N #2502

U28B W/DCC & SOUND
\$239.99 EA.
#920-41654 L&N #2500
#920-41655 L&N #2502

#920-805 DELUXE PENNSYLVANIA METROLINER 4-CAR SET W/FIGURES, W/DCC & SOUND

\$999.99

DELUXE PENNSYLVANIA METROLINER INDIVIDUAL CARS FROM SET, W/DCC & SOUND
SUPER SALE \$249.99 EA.
#920-14819 SNACK BAR COACH
#920-14839 PARLOR
#920-14858 COACH
#920-14859 COACH

AMTRAK METROLINER

W/DCC & SOUND
\$209.99 EA.
#920-14802 SNACK BAR COACH
#920-14803 PC PATCH COACH
#920-14822 PARLOR, PHASE II
#920-14823 PC PATCH PARLOR
#920-14842 PHASE II COACH
#920-14843 PC PATCH COACH

W/DCC & SOUND
SUPER SALE \$169.99 EA.
#920-14800 SNACK CAR
#920-14801 SNACK COACH
#920-14820 PARLOR
#920-14821 8888, PHASE I
#920-14840 METRO COACH
#920-14841 METRO COACH

W/DCC & SOUND
SUPER SALE \$169.99 EA.
#920-14800 SNACK CAR
#920-14801 SNACK COACH
#920-14820 PARLOR
#920-14821 8888, PHASE I
#920-14840 METRO COACH
#920-14841 METRO COACH

W/DCC & SOUND
SUPER SALE \$169.99 EA.
#920-14800 SNACK CAR
#920-14801 SNACK COACH
#920-14820 PARLOR
#920-14821 8888, PHASE I
#920-14840 METRO COACH
#920-14841 METRO COACH

PROTO 2000

SW900 W/DCC & SOUND
\$209.99 EA.
#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
\$209.99 EA.
#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

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#920-41496 UNLETTERED, yellow

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#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

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#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
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#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
\$209.99 EA.
#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
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#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
\$209.99 EA.
#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
\$209.99 EA.
#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
\$209.99 EA.
#920-41490 B&O #9400
#920-41491 B&O #9409
#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

SW900 W/DCC & SOUND
\$209.99 EA.
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#920-41492 CP #6710
#920-41493 CP #6715
#920-41494 GTW #2765
#920-41496 UNLETTERED, yellow

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GP-30, W/DCC & SOUND
SUPER SALE \$149.99
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\$239.99 EA.
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An ore train makes its way past the processing plant and into the tunnel on the Eagle Mountain RR project layout. Every railroad needs a good foundation, and this month we'll show you how we built the benchwork for our model railroad.

Build the benchwork for the Eagle Mountain RR

Model Railroader's 2016 project layout is a small, 4 x 6-foot oval. It depicts the mining operations at Kaiser Steel's Eagle Mountain Mine, which was served by the Eagle Mountain RR in Southern California.

The prototype hauled iron ore 51 miles to an interchange with the Southern Pacific at a spot called Ferrum, Latin for iron. Our layout depicts the shop area

and ore loader at Eagle Mountain. Since there's no elevation change in the track, we built tabletop benchwork with 1/2" plywood on a 1 x 3 open-grid frame.

The table top is attached to legs made of 2 x 3 lumber, and has the customary *Model Railroader* casters so we can easily move the layout around and out of the workshop to accommodate other projects.

To allow some variation in the surface for scenery, we used two layers of 1" extruded-foam insulation board. We built a backdrop from 1/8" tempered hardboard, braced with scrap 2 x 3s. The tempered hardboard was also used for the fascia.

This is simple, straightforward benchwork. Follow along and I'll show you how it was built.

►► Materials list

- 1 x 3 x 6-foot board (2)
- 1 x 3 x 8-foot board (2)
- 2 x 3 x 8-foot board (4)
- 4 x 8 x 1/2" plywood
- 1 5/8" drywall screws
- 2 1/2" drywall screws
- No. 16 x 1 1/2" wire nails
- 1/4-20 x 2" carriage bolts (4)
- 1/4-20 x 2 1/2" carriage bolts (8)
- 5/16-18 x 4" carriage bolts (4)
- 1/4-20 wing nuts (8)
- 5/16-18 wing nuts (4)
- 1/4" washers (8)
- 5/16" washers (4)
- 2" medium-duty swivel caster with brake (2)
- 2" medium-duty swivel caster (2)
- Carpenter's glue
- 4 x 8 x 1" extruded-foam insulation board (2)

Now on ModelRailroader.com

Subscribers can view video of this project and registered users can see the video introduction to the Eagle Mountain RR on the Online Extras link at www.ModelRailroader.com.



Step 1 A plan

Everything needs a plan, and the benchwork is no different. Once we had settled on the track plan for the layout, a variation on the Gold Hill Central from the March 1984 *Model Railroader*, I started to sketch ideas for the benchwork to hold it up.

My initial idea was to use 2 x 3 lumber for all of the framing and legs, as this is very inexpensive.

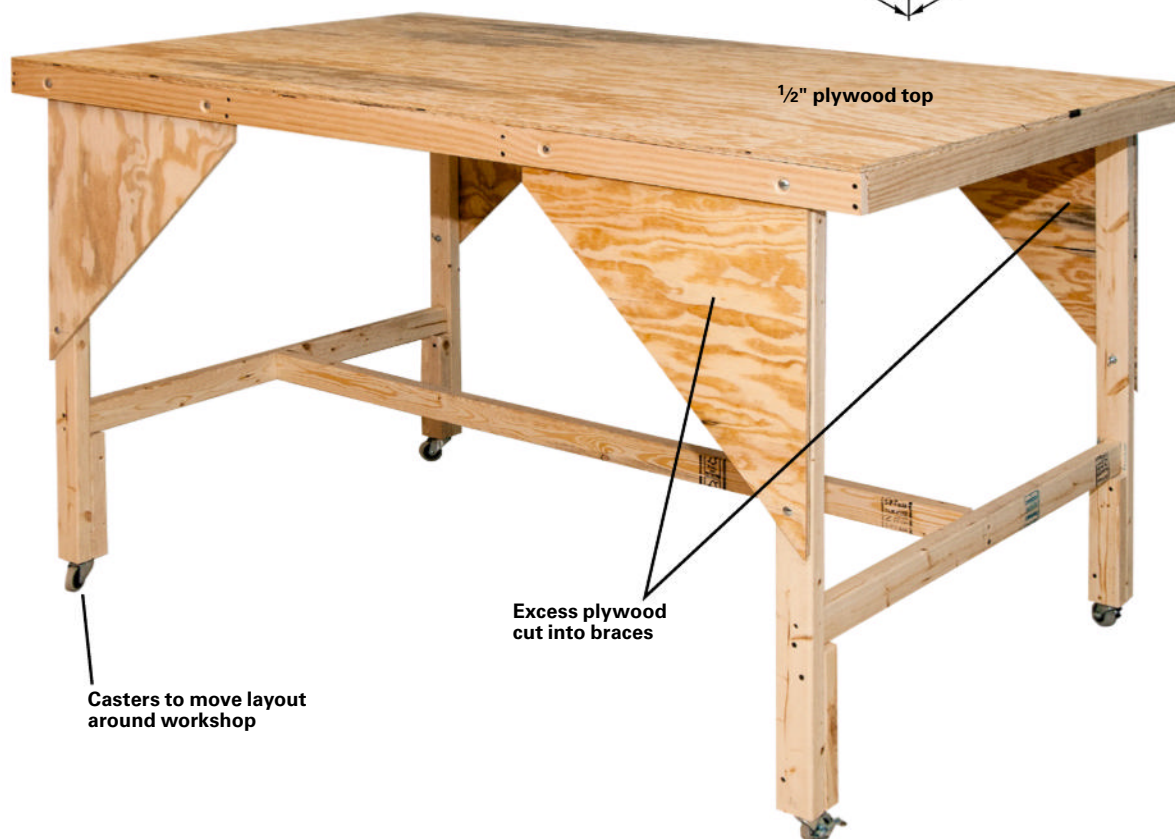
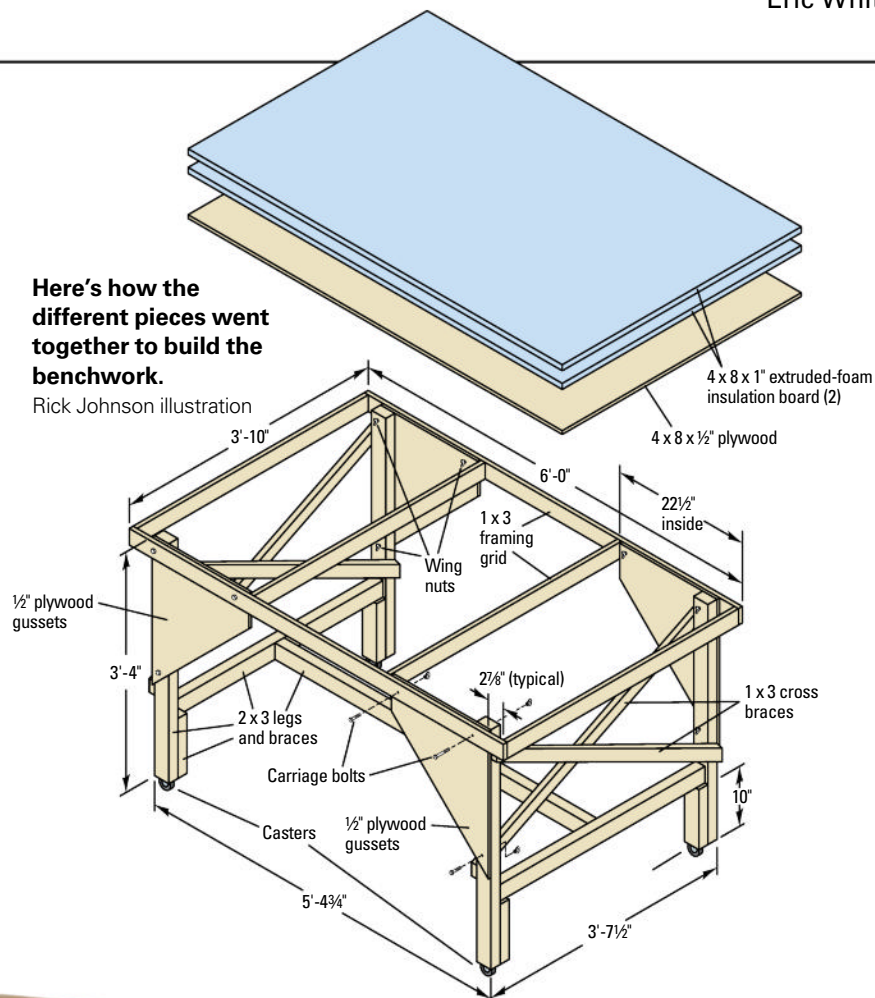
I knew cheap lumber could cause problems, so I was careful in choosing boards at the home center. However, after a week here in our workshop, about half the lumber developed twists and dips that weren't there when I bought it.

I tried to straighten the pieces out, but it was no good. I salvaged enough for the legs and braces, then went out and purchased some clear pine 1 x 3 to build the framework for the table top.

The benchwork for the layout is a tabletop on an open-grid frame. The frame is 1 x 3 clear pine, and the legs and braces are 2 x 3 lumber.

Here's how the different pieces went together to build the benchwork.

Rick Johnson illustration



STEPBYSTEP

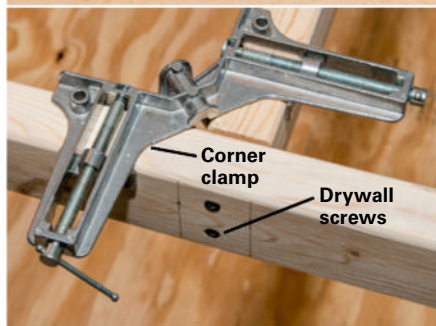
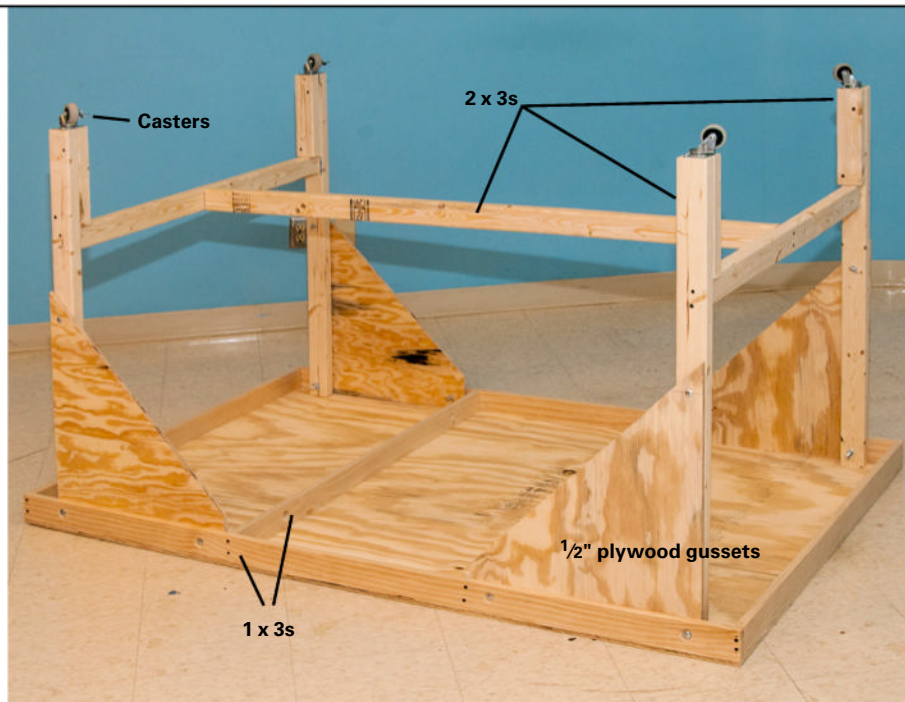
Step 2 Framework

The benchwork is an open grid frame of 1 x 3 clear pine screwed together with 1⁵/₈" drywall screws. The tabletop is 3'-10" x 6'-0". Our workshop is on the second floor, so we needed to take 2" off the width so the layout would fit into our elevator. No one wants to carry a layout down the staircase anymore.

I purchased two 1 x 3 x 6-foot boards and two 1 x 3 x 8-foot boards. I cut the 6-foot boards to exact length – they were a little long from the home center. I then cut four boards 3'-8¹/₂" long to run crosswise under the tabletop. These cross members are at each end, then 2'-0" in from each end.

The clear pine resulted in a much flatter tabletop than I was going to get with the 2 x 3s that developed warps and twists in the workshop.

Using corner clamps to hold the parts square, I drilled pilot holes for the drywall screws, then screwed the parts together. Before we attached the plywood layout surface, I drilled two 1¹/₈" holes in each cross member with a hole saw to accommodate the wiring bus that was to come.

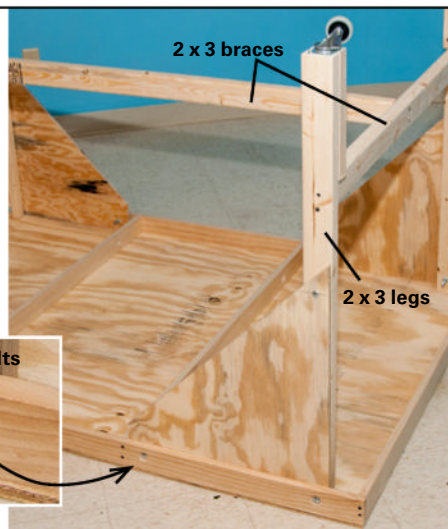
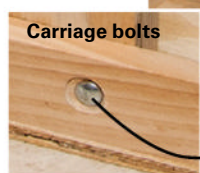


With the layout turned over, it's easy to see the 1 x 3 open grid framework that supports the 1/2" plywood top. Corner clamps make it easy to hold frame pieces together in order to drill pilot holes and drive screws.

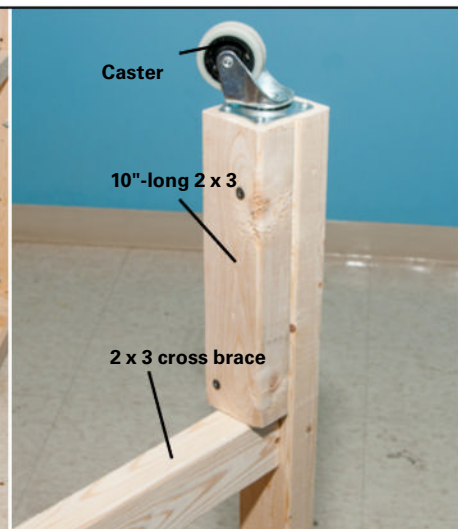
Step 3 Legs

I built the legs from the 2 x 3s salvaged from my first trip to the home center. The legs are 40" tall. I screwed and glued scraps of 10"-long 2 x 3 to the bottom of the legs to give me enough surface to attach the casters.

I centered a 2 x 3 crossbrace 3'-4¹/₂" long on top of the blocks at the bottom of the legs and assembled pairs of legs together. The 2 x 3 lumber is screwed together with 2¹/₂" drywall screws. Once I had the pairs of legs together, I added another brace between the crossbraces, creating a leg assembly that I could attach to the tabletop.

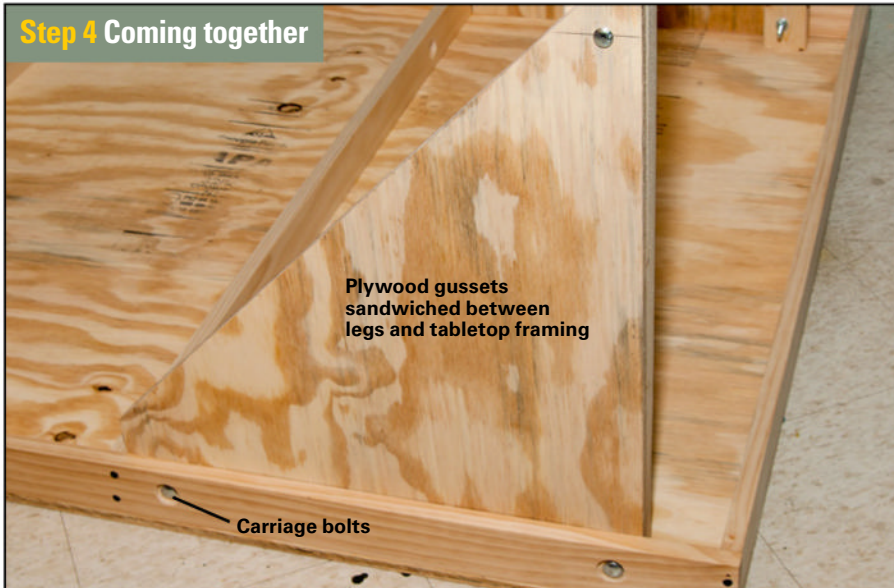


The leg structure is built from 2 x 3 lumber held together with 2¹/₂" drywall screws. The assembly is attached to the tabletop grid with carriage bolts.



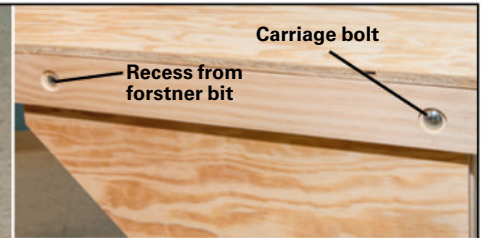
Scrap pieces of 2 x 3 were glued and screwed onto the legs to create enough surface to hold the casters and to simplify locating the cross brace between the legs.

Step 4 Coming together



Plywood gussets sandwiched between legs and tabletop framing

Carriage bolts



Leftover $\frac{1}{2}$ " plywood was used to make gussets to strengthen the connection between the legs and tabletop. The parts are assembled with carriage bolts in case there's ever a need to separate the layout from its legs. Eric used a forstner bit to recess the mounting holes for the carriage bolts. This allows the fascia, to be added later, to fit smoothly across the surface.

I laid the tabletop framework on the floor, then set the leg assembly inside the framework. Since I had a 2 x 4-foot piece of $\frac{1}{2}$ " plywood left over from the table top, I cut that into two 2-foot squares, then split each square into triangles. I trimmed the corner of the plywood triangles to fit the space between the legs and the crossmembers for the tabletop.


I slipped the triangles of plywood between the legs and the tabletop framework, then clamped everything together. I used a framing square to make sure the legs were square to the top, then drilled holes for the carriage bolts that hold the legs to the tabletop. I used 2"-long $\frac{1}{4}$ -20 carriage bolts where the plywood brace is attached to the 1 x 3 tabletop framework.

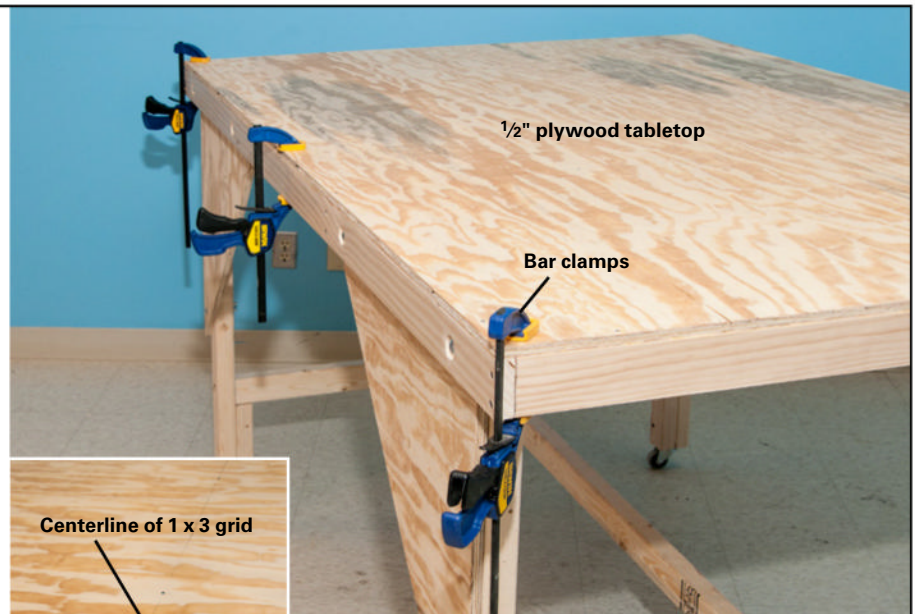
To attach the plywood brace to the legs, I used 2 $\frac{1}{2}$ "-long $\frac{1}{4}$ -20 bolts. I used $\frac{5}{16}$ -18 bolts 4" long to attach the legs to the tabletop framework. Each bolt got washers and wing nuts to make disassembly easier. Once the legs were attached, I used the holes in the caster mounting plates to mark pilot holes, then drilled the holes and attached the casters.

Step 5 Finishing up

Associate editor Steven Otte helped me flip the legs and framework upright. The tabletop is a piece of $\frac{1}{2}$ " plywood. We had the lumberyard cut off a 2-foot piece from one end, but I cut the 2" slice off the side here in our workshop.

Steven helped me lift the plywood onto the framework to make sure it would fit, then we removed the plywood and spread carpenter's glue on top of the 1 x 3 framework.

After placing the plywood back on the framework, we held it down using bar clamps. I used a framing square and a pencil to mark the centerlines of the tabletop framework crossmembers on the plywood. We then used no. 16 $1\frac{1}{2}$ " wire nails to secure the plywood to the framework while the glue dried. 



$\frac{1}{2}$ " plywood tabletop

Bar clamps

Centerline of 1 x 3 grid

$1\frac{1}{2}$ " wire nails

Eric used a framing square to draw the centerlines of the 1 x 3 grid on the tabletop to make it easier to nail down the plywood. Eric and Steven Otte clamped the plywood tabletop to the frame after glue was applied. Steven and Eric then drove wire wire nails into the top to hold it while the glue dried.

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ModelRailroader.com/Sweeps

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**Walther's Cornerstone® Cruisin'
Series Package in HO Scale**

Main Street roars
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Cruisin' series from
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classic HO structure
kits, perfect for 1950s
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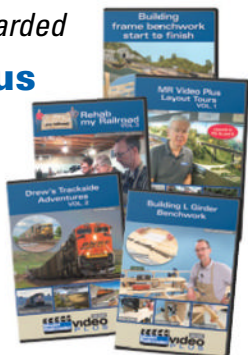


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1. Eligibility. The Model Railroader 2016 Sweepstakes (the "Sweepstakes") is open to residents of the United States and Canada (except Quebec) only, who are age 18 years or older and have reached the age of majority in their state/province of residency at the time of entry. Employees (and their dependents and immediate household members) of Kalmbach Publishing Co., ("Sponsor"), and of TrainWorld, WM. K. Walther, Inc., Atlas Model Railroad Co., Soundtraxx, and Micro-Mark, their advertising and promotional agencies and sponsoring companies are not eligible to participate. Void in Quebec and where prohibited by law. Sweepstakes is subject to all applicable federal, state and local laws.

2. Sweepstakes Period. The Sweepstakes begins on October 24, 2015 at 10:00:00 a.m. Central Time, and all entries must be transmitted online no later than March 31, 2016 at 11:59:59 p.m. Central Time.

3. How to Enter. To enter, complete the Sweepstakes Official Entry Form online at www.ModelRailroader.com/Sweeps with your name, address, city, state or province, and ZIP or postal code, and then click on the SUBMIT MY ENTRY button. You may submit only one entry through the Sweepstakes Online Entry Form during the Sweepstakes Period. However, when you submit your entry online, you will receive a link that you can share on Facebook, Twitter, Google Plus or by email; you will automatically receive three additional entries for each person who enters the Sweepstakes using that link. The online entry form must be filled out completely to be eligible. This Sweepstakes is in no way sponsored, endorsed, administered by, or associated with, Facebook, Twitter or Google Plus. Entries from any person submitting more than the stated number will be disqualified.

4. Prizes/Approximate Retail Value ("ARV") in U.S. Dollars. One (1) Grand Prize consisting of \$2,000 gift certificate to TrainWorld. ARV of Grand Prize: \$2,000. **One (1) First Prize** consisting of Walther's Cornerstone® Cruisin' Series Package in HO Scale. ARV of First Prize: \$557.64. **One (1) Second Prize** consisting of HO Scale Sound Locomotive Featuring LokSound (ARV: \$264.95). **One (1) Third Prize** consisting of SoundTraxx Full Train Sound Package (ARV: \$182.25). **Three (3) Fourth Prizes** consisting of \$100 gift certificate to Micro-Mark (ARV: \$100.00 per unit). **Two (2) Fifth Prizes** consisting of MRVP DVD Set (ARV: \$49.95 per unit), and **Eight (8) Sixth Prizes** consisting of Model Railroader subscriptions (ARV: \$42.95 per unit). TOTAL ARV of First Prize: \$2,000.00. TOTAL ARV of all prizes is \$3,748.34.

5. Drawing/Odds/Notification. A random drawing for the Grand Prize, First Prize, Second Prize, Third Prize, Fourth Prize, Fifth Prize and Sixth Prize will be held on or around May 30, 2016. Odds of winning depend on the number of entries received. Limit one prize per person. The average total circulation for Model Railroader magazine is 125,875. Winners will be notified by email on or before July 31, 2016.

6. Prize Restrictions. No cash equivalent or prize substitution permitted. All prizes subject to the guarantees/warranties of the manufacturer. Any applicable federal, state, and/or local taxes are the responsibility of the winner. For prizes of \$600 or more in value, winner's Taxpayer I.D. will be required to issue a Form 1099-MISC showing prize ARV as income.

7. Validation and Acceptance. Winner(s) in the Model Railroader 2016 Sweepstakes will be selected in a random drawing. The potential winner(s) may be required to sign and return an Affidavit of Eligibility, publicity release, and Release of Liability within fourteen (14) days of notification. If a potential winner cannot be contacted within a reasonable time period, if the potential winner is ineligible, if any notification is undeliverable, or if the potential winner otherwise fails to fully comply with these Official Rules, he/she will forfeit that Prize, and if time permits, an alternate winner will be randomly drawn from among all remaining Sweepstakes entries. Canadian prize winners subject to skill test requirement.

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Are you looking for an interesting load for your flatcar? Mont Switzer explains how he added tractors and prototype blocking to this HO scale flatcar. He also shares how to incorporate the load into multiple operating sessions.

How to model a flatcar full of tractors

Even the load can become a part of the operating session

By Mont Switzer • Photos by the author

During the post-World War II era and through the 1970s, the United States was dotted with farm tractor and implement dealers selling and supporting such names as Allis Chalmers, Case, Co-op, Farmall, Fordson, John Deere, Massey Ferguson, Massey Harris, Minneapolis-Moline, and Oliver, among others. These machines were built in plants located

mainly throughout the Northeast and Midwest. These equipment manufacturers used the nation's extensive rail network to supply their dealers with large and colorful tractor shipments, first in boxcars and then on flatcars.

By the late 1950s farm tractors and implements had become too large to be shipped inside boxcars and gondolas.

These irregularly shaped and brightly colored loads had to be handled out in the open on flatcars. Since the tractors were embarking on a life in the great outdoors, they typically weren't covered while in transit.

Tractor and implement loads tended to be relatively light, so longer flatcars were preferred. To optimize car utility,

multi-stop tractor and implement loads usually involved interchanging cars with one or more railroads. Compliance with Section 3 of the Association of American Railroads (AAR) *Rules for Governing the Loading of Road Grading, Road Making and Farm Equipment Machinery on Open Top Cars* was therefore essential in keeping the loads moving and in assuring timely deliveries. [Rulebooks like this one can be found with Internet searches. – Ed.]

Each railroad had to verify that these loads were secured properly before they were switched into a road freight. This job fell to car inspectors employed by the receiving railroad. The car inspectors checked for compliance with the aforementioned rules and how well the blocking and bracing held the tractor(s) or implement(s) in place after each stop.

All of this makes for an interesting, yet lengthy, modeling project consisting of four components: a flatcar that would typically be found hauling farm tractors or machinery in the late 1950s; a colorful and era-correct farm tractor load that would attract attention just like the prototype loads; blocking and bracing of the load to match prototype practices; and a routing system that allows the car to be delivered to several locations on the layout, thus providing enhanced operating appeal.

A detailed flatcar

For this project, I used a Tangent Scale Models' 60-foot General Steel Castings flatcar decorated as Wabash no. 415. Before putting the car into service, I partially disassembled the car for weathering. I set the car on a block of wood so the handbrake staff wouldn't get damaged. I then removed the screws that secure the trucks and draft-gear box covers. After removing the trucks and couplers, I replaced the covers and returned all screws to their original locations for safekeeping.

Then I used an airbrush to spray the underbody with a coat of the now discontinued Floquil Grimy Black [Model Master no. 4887 Flat Grimy Black is a suitable replacement. – Ed.] I held the airbrush so all of the paint hit the underbody, not the car sides. See **fig. 1**.

The truck sideframes are made of black engineering plastic. The trucks beg to be weathered, but the slippery plastic doesn't take paint or weathering well. Before weathering, I removed the wheelsets from the sideframes and set them aside. Then I placed small pieces of masking tape over the sockets so the wheels would remain free rolling.

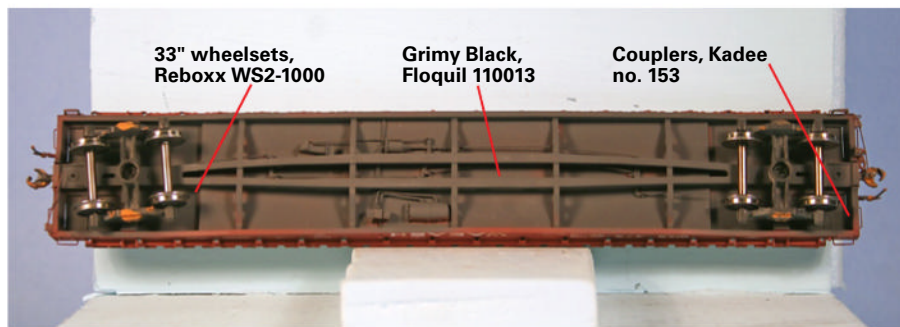


Fig. 1 From the bottom up. The underbody of the Tangent Scale Models flatcar is well detailed, so all Mont had to do was airbrush it with Floquil Grimy Black paint. He used Kadee no. 153 scale short shank couplers and Reboxx semi-scale wheelsets in place of the stock parts.

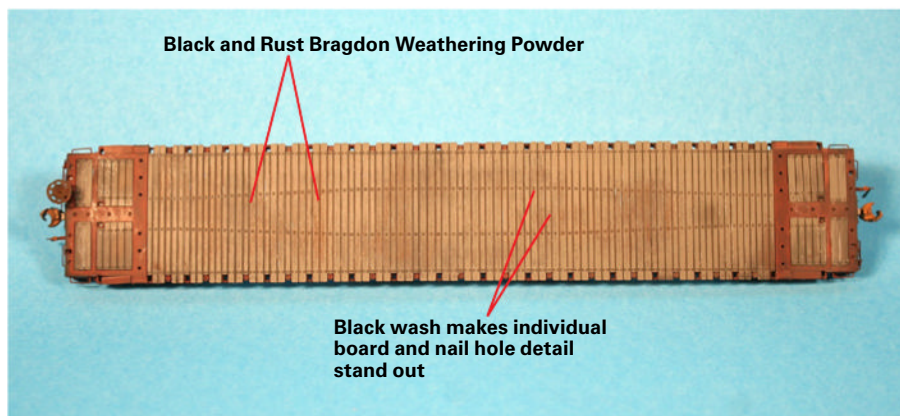


Fig. 2 Quick weathering. Mont first weathered the simulated wood deck using black acrylic paint thinned with Windex. Then he used rust and black Bragdon Weathering Powders to bring out the deck's fine details.

Then I sprayed the sideframes with a media blaster to give the plastic a dull, textured surface. (Do this in an enclosed booth to capture the media residue. Wear a respirator and proper safety gear to avoid breathing any media dust.) When I finished the media blasting, I removed the tape and washed the sideframes in warm, soapy water to remove any residue.

Next, I turned my attention to the wheelsets. I replaced the stock wheels with Reboxx set WS2-1000, which features .088" treads. Prior to installation, I painted the wheels and axles Grimy Black, keeping the paint off the treads and needle points. Once the paint had dried, I installed them in the sideframes.

I then added Kadee no. 153 whisker couplers. I applied dark rust paint to the major surfaces of the couplers, keeping it away from the centering spring and other moving parts.

While I had the rust-colored paint out, I weathered the glad hands on the air hoses, the brake staff, and the brake wheel. I painted the angle cocks above the air hoses the same color as the carbody. Boxcar Red is a close match for the Wabash car.

After I'd installed the new wheelsets in the sideframes, I re-attached the trucks to the car. I enhanced the appearance of the trucks by applying Bragdon weathering powders: dark rust on the spring packs and brake shoes and black around the journals to simulate oil that had leaked or was spilled from the journal boxes.

Hitting the deck

To make the details on the simulated wood deck stand out, I applied a wash of black acrylic paint thinned with Windex. The Windex breaks the surface tension and acts as a quick-drying thinner. I made sure the wash was thin enough to flow into all of the recessed deck details. Then I wiped the deck with a paper towel.

After giving the wash plenty of time to dry, I used an airbrush to apply Testor's Dullcote to the weathered deck as well as the carbody sides and ends.

The last step in readying the car for service was to apply a little Bragdon Weathering Powder (rust and black) to the car sides and ends. These powders adhere nicely to the Dullcote and bring out the model's fine detail. The powders

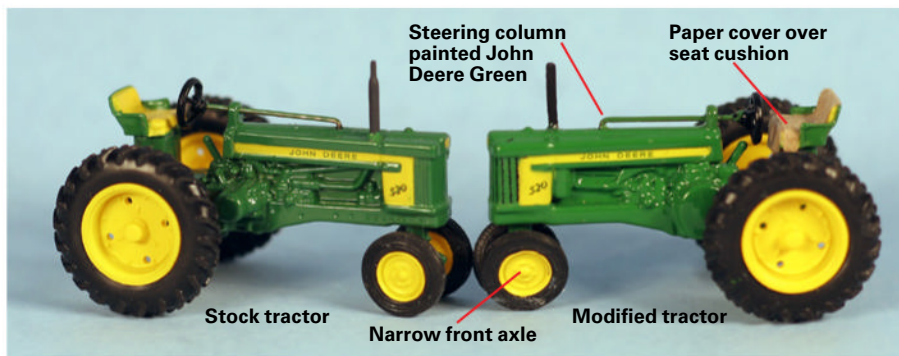
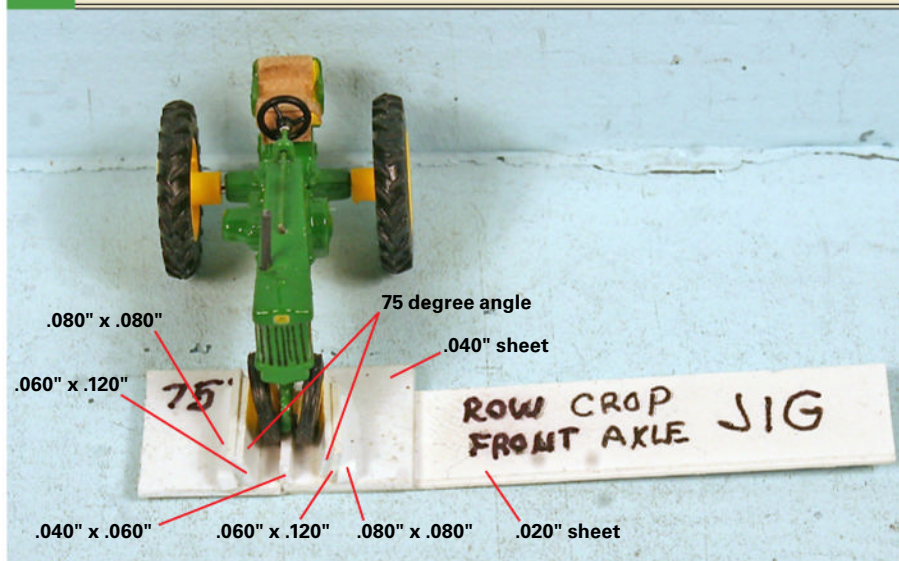


Fig. 3 Tractor upgrades. Mont made several upgrades to the Athearn tractor. He converted the tractor to a row-crop version, painted the steering column John Deere Green, and added a paper cover over the seat cushion.

A 30-minute tractor kitbash



Mont made this styrene jig to accurately model the row-crop front axle on the John Deere model 520 tractor.

I was able to convert the Athearn John Deere model 520 to a row-crop version (narrowed front axle) in less than 30 minutes each using these steps:

- Step 1:** Remove the tires from the front wheels and set them aside.
- Step 2:** Pry one of the wheels away from the center steering post and off the axle with a screwdriver. This exposes the axle cemented in the other wheel. Remove the axle from the steering post, then carefully separate the axle from the wheel. Trim the back of the wheel flat.
- Step 3:** Trim the back of the other wheel flat. Carefully drill out new centers in the back of each wheel with a no. 61 bit. Don't drill too deep, otherwise you'll go through the front of the wheel and mar the detailed outer surface.
- Step 4:** Grind or file the steering post on both sides until it's .025" thick at the axle mounting area. Then cut a new .65" long axle from .032" phosphor bronze wire.
- Step 5:** Insert the new axle into the hole in the center of the steering post and secure it with gap-filling cyanoacrylate adhesive (CA). This will not be a tight fit. When the CA has cured, use a pair of small-tip pliers to bend the axle ends downward approximately 10 to 15 degrees.
- Step 6:** Put the tires back on the wheels.
- Step 7:** Attach the wheels to the axle using CA. In the row-crop configuration, the wheels should almost touch at the bottom and be wider at the top.

With several tractors to convert, I made a row-crop jig from styrene. This sped up the kitbashing process and ensured consistency and accuracy. – M.S.

become permanent after drying a few days. The finished results are shown in **fig. 2** on the previous page.

Tractor modifications

The John Deere tractor load is what drove this project. Athearn produced model A, 50, and 520 tractors, all correct for my late 1950s era layout [Athearn no longer offers John Deere tractors in HO scale, but they still may be available in hobby stores. – Ed.] After doing research, I learned that the 520 was in production at the Waterloo, Iowa, plant in 1958, so that was the tractor I put on my flatcar.

Most modelers will use the Athearn John Deere tractor models straight from the box. However, I grew up in rural America, and my expectations were a little higher. I converted the eight stock tractors into row-crop versions, as explained in "A 30-minute tractor kitbash" at left.

I damaged the soft plastic exhaust stack on a few of the tractors while making the row-crop modification. To fix each stack, I drilled a no. 75 hole in the bottom of the broken stack and another in the former stack location. Then I inserted a piece of .015" wire in the bottom of the stack and secured it with cyanoacrylate adhesive (CA).

In a few cases, I lost the stack. I made replacements from .040" soft metal florist wire. I used a no. 61 bit to drill out the hole in the tractor hood for the plastic stack. Then I inserted the wire exhaust stack in the hole and secured it with CA. The exhaust stack determines the overall height of the tractor. When the CA cured, I trimmed the new stack so that the tractor's overall height was 7'-2".

Photos of new and restored John Deere tractors show that the exposed steering column was painted green like the rest of the tractor. While one of the many colors of green hobby paint will do the job, I used John Deere Green touch-up paint (purchased from an implement dealer) to cover the unpainted metal part. I also used this color to cover any nicks and scratches on the models.

The model 520s had screen-like grills to keep large obstructions like corn stalks out of the radiator fans. Vertical corrugations were added for strength. Unfortunately, the heavy paint on the Athearn model largely obscured the grill detail. I remedied this by making grill decals using a Pilot extra fine V5 RT rolling ball pen. I drew .5mm black lines as close together as I could on scrap pieces of decal paper and let the ink dry for 24

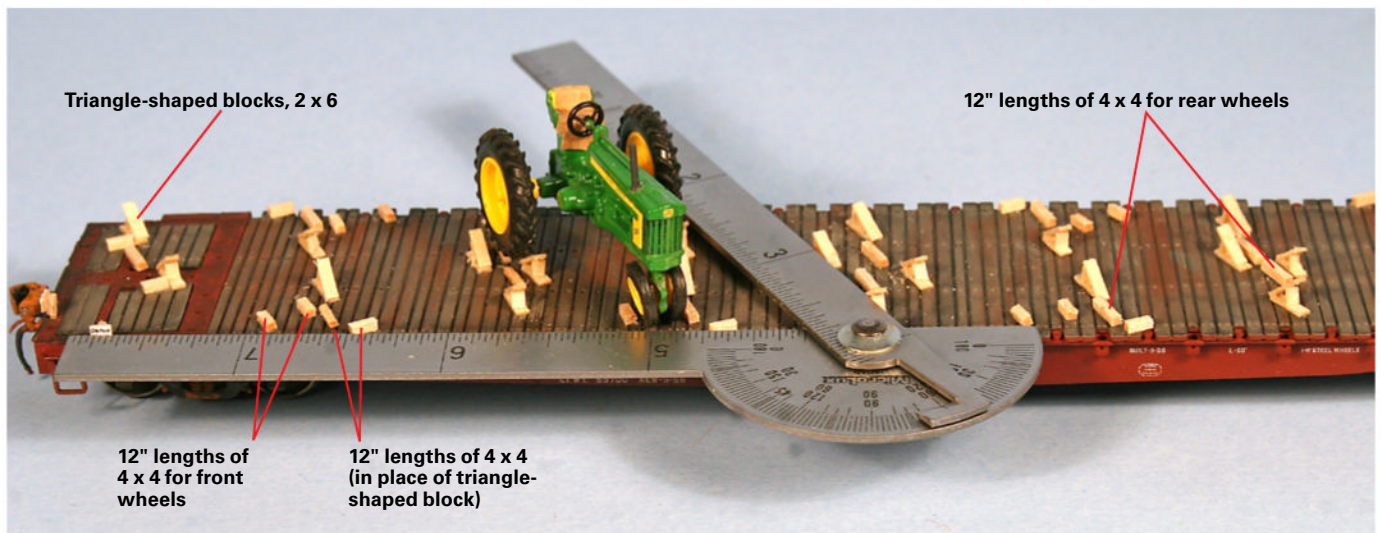


Fig. 4 Ready for shipment. Mont used prototype documents as a guide when adding blocking to the flatcar deck. He secured the blocking, which he made from stripwood, to the plastic deck with white glue.

hours. Then I sealed the decals with Rust-Oleum clear gloss.

I cut .175" x .335" sections from the paper and applied the grills like any other water-slide decal. I protected the decals with a brush application of Testor's Dullcote.

Around the beginning of the model 520's production, John Deere began building tractors with yellow vinyl seat cushions, which wouldn't absorb as much heat as the darker predecessors. I noticed in recent prototype photos that John Deere tractors are shipped with a clear plastic covering over the seats. In the late 1950s, the yellow seats were probably shipped with some sort of heavy paper covering. I covered the seats on the models with brown paper salvaged from a light-duty paper bag. I used white glue to secure the paper to the models.

This seemed like a good place to stop and get the tractors loaded on the flatcar. You can compare the stock tractor to my modified version in **fig. 3**.

Blocking and bracing

With the deck weathered, I was ready to add the blocking and bracing for the tractors. I drew a rough outline of the flatcar deck on a piece of cardboard. Then, referring to the Section 3 of the *AAR Rules for Governing the Loading of Road Grading, Road Making and Farm Equipment Machinery on Open Top Cars*, I placed two tractors together as close as practical, drew straight lines around them, and cut out a cardboard square to represent a pair of model 520 tractors.

I then cut out more cardboard squares and placed them on the car to see how all eight tractors would fit on

Materials list

Athearn

77082 John Deere model 520 farm tractor (6 or 8)

Floquil

110013 Grimy Black

Hobby Lobby

.040" soft metal florist wire

Jaeger HO Products

2100 freight car placards

John Deere

TY25644 Classic Green paint

Kadee

153 scale couplers, short shank

Reboxx

WS2-1000 33" wheelsets, .088" wide

Rust-Oleum

249117 Clear Gloss

Tangent Scale Models

11015-02 General Steel Castings
60-foot flatcar, Wabash

Tichy Train Group

1105 .032" phosphor bronze wire

Testor Corp.

1160 Dullcote

Kappler Mill & Lumber Co. stripwood

204 1 x 8

216 2 X 6

227 3 x 4

283 4 X 4

the deck. This was much easier than fumbling around with the free-rolling tractor models.

After each tractor was positioned on the flatcar, I added the required wood blocking. I cut all of the HO scale stripwood using a Northwest Short Line Chopper. Here's what I made:

- Triangle-shaped blocks for the rear drive wheels. I made these using two 18" pieces and one 6" piece of 2 x 6. The triangle stands 11½" high. Although four are required for each tractor, I could only get three to fit. I substituted two 12" lengths of 4 x 4 here.

- A 1-foot-long 4 x 4 (two per tractor) located outside of each rear wheel.

- A 1-foot-long 4 x 4 (two per tractor) located outside of each front wheel.

In the previous two cases, a 3 x 3 was used on the prototype, but I substituted 4 x 4 stock because that's what I had available. This would have been acceptable in the real world as long as larger nails were used to secure the larger blocking to the wood flooring. You can see the results in **fig. 4**, above.

I secured the stripwood to the flatcar deck with white glue. It holds the blocking firmly, but is easy to remove if an error is made and the blocking needs to be removed.

Once all of the blocking was installed and the glue had dried, I scraped off any



Fig. 5 Safe handling. These DO NOT HUMP signs alert train crews not to route this car through a hump yard. Mont made the signs using trimmed down 1 x 12 and 3 x 4 stripwood.

excess glue and touched up the areas with Dulcote and fine paintbrush. Then I added DO NOT HUMP signs, which I made using stripwood and a Jaeger HO Products placard. I inserted one homemade sign on each end and side of the car. See **fig. 5**.

The AAR rules also call for installation of cables or rods to secure the tractor wheels to the deck, or more likely, the stake pockets. Since the tractors will be removed during operating sessions, I ignored this portion of the rule.

Car routing

Wabash flatcar no. 415, complete with eight John Deere model 520s, draws a lot of attention during operating sessions.

Loaded with tractors consigned to four John Deere dealers located on or near the Monon, crews enjoy spotting this interesting car on team tracks across the layout. Between operating sessions, I remove the tractors consigned to their respective customers, turn the car cards, and ready the car for pickup by the next local or yard job during the next operating session. Here's what the car routing looks like.

Operating session one: Wabash no. 415 first appears on the layout in train No. 73, a southbound second-class freight from South Hammond, Ind., to Louisville, Ky. The car had been picked up at Dyer, Ind., in a cut of cars at the Elgin, Joliet & Eastern interchange where cars had been staged for pickup by a local freight train earlier that day. The

flatcar was set out in a cut of cars for Monon, Ind., around 4 a.m. Since there's an engine on duty (second trick yard job) at that time and the crew has the time, they spot the car at a ramp on the north side of town where two tractors consigned to a local implement company are to be unloaded.

Operating session two: The flatcar is picked up by the Monon second trick yard job and with six tractors remaining. The next destination is Frankfort, Ind., on the Air Line, or Indianapolis, Branch. The car is moved to the north yard where train No. 47, the daily-except-Sunday Indianapolis local, is being assembled. The train is scheduled out the next morning at 6:45 a.m.

Operating sessions three and four: Wabash no. 415 leaves Monon, Ind. The entire Air Line Branch is hidden staging, so the car will not reappear for two operating sessions.

Operating session five: The flatcar returns to Monon, Ind., in the early afternoon on train No. 46, the daily-except-Sunday local, with four tractors remaining. The car is now consigned to Reynolds, Ind., about 7 miles south of the Monon main line. The second trick yard job breaks up train No. 46 and puts Wabash no. 415 in the south yard with a cut of southbound shorts for pickup by the daily-except-Sunday South Hammond-to-Shops local No. 45.

Operating session six: The car is picked up at Monon, Ind., by train No. 45 at 1 p.m. and delivered to the

agent at Reynolds, Ind., just an hour later. The car is set out on the wye, which doubles as a team track.

Operating session seven: Wabash no. 415 is picked up at Reynolds, Ind., by train No. 45 at 2 p.m. with two tractors remaining. The car is moved to Shops Yard in Lafayette, Ind., where the train is terminated.

The last two tractors are consigned to Crawfordsville, Ind., 30 rail miles south of Shops Yard. As train No. 45 is disassembled, the flatcar is spotted on track 3 with other McDoel (Bloomington) shorts that will make up tomorrow's daily-except-Sunday train No. 43.

Operating session eight: The last time I saw those two remaining John Deere model 520s, they were on train No. 43 heading for south staging (Crawfordsville).

While running trains is the name of the game on our layouts, loaded flatcars can add another layer of interest to operating sessions. I hope you'll give these techniques a try. **MR**

Mont Switzer lives in Middletown, Ind. He'd like to thank Chad Boas, Chet French, Mike Johnston, Ron Marquardt, Bill Taylor, and Rick Ware for their assistance with this article.

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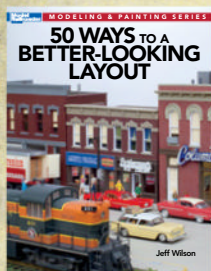


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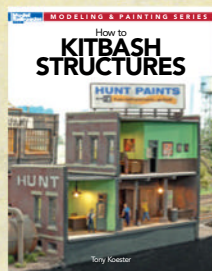
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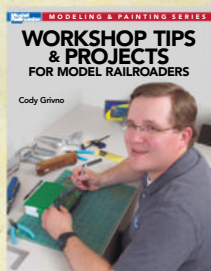
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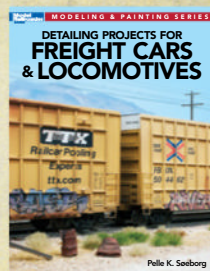
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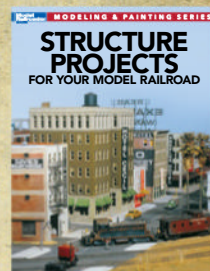
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Scratchbuild a **CROSSING GUARD'S SHANTY**

This compact structure adds character to a rural grade crossing

By **Mike Tylick** • Photos by the author except where noted

Before the invention of automatic crossing gates, railroad crossing guards protected grade crossings. Usually holding a flag, lantern, or STOP sign or operating a manual crossing gate, the crossing guard would warn motorists of an approaching train. A simple wooden shanty provided shelter for the crossing guard.

I wanted to add a crossing guard shanty to a grade crossing on my On30 Marshfield & Old Colony RR. The plans for my O scale shanty are inspired by several photos I found online, such as the one above.

Although automatic crossing gates and signals replaced most crossing guards by the 1950s, some locations still



Before the days of automatic crossing gates, crossing guards were a common sight at grade crossings. Inspired by prototype photos such as the one above (inset), Mike Tylick scratchbuilt a crossing guard's shanty for his O scale model railroad. Prototype photo courtesy Steamtown NHS Archives

used them into the 1960s, and many abandoned shanties stood for years.

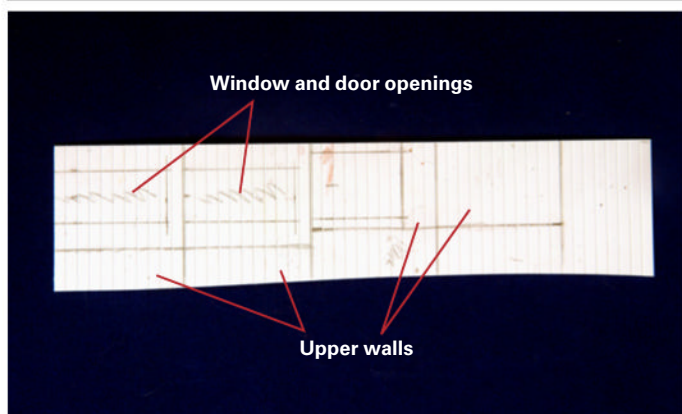
Whatever your modeling scale, a crossing shanty is a quick, easy, and fun scratchbuilding project.

Mike Tylick wrote "Good fences make good scenery" in the October 2014 issue of Model Railroader.

Materials list

Evergreen Scale Models	223 .093" tube	(.125" spacing)	3601 O scale 30" door
Styrene strip	224 .125" tube	9020 .020" plain	4029 S scale double-hung
105 .010" x .100"	242 .080" half round	9080 .080" plain	eight-pane windows
143 .040" x .060"			5027 HO scale Rio Grande
146 .040" x .125"	Styrene sheet	Grandt Line	Southern station roof trim
156 .060" x .120"	4060 .040" V-groove siding	3545 O scale ornate spool	
164 .080" x .080"	(.060" spacing)	and spindle gable trim with	Plastruct
211 .040" rod	4125 .040" V-groove siding	brackets	91656 HO wood shingles

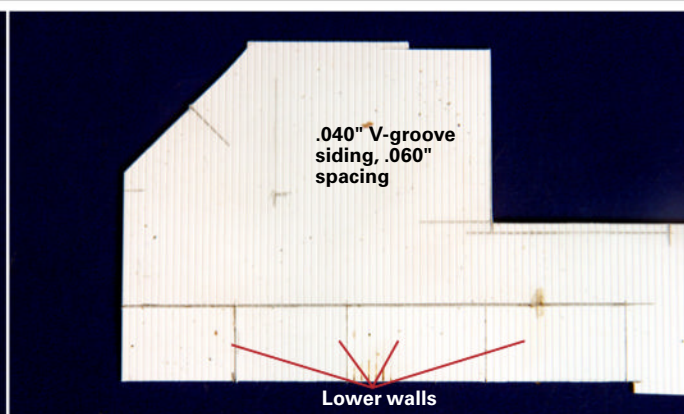
1. CUTTING WALL SECTIONS



Mike laid out the shanty's upper walls on .040" V-groove styrene siding with .125" spacing.

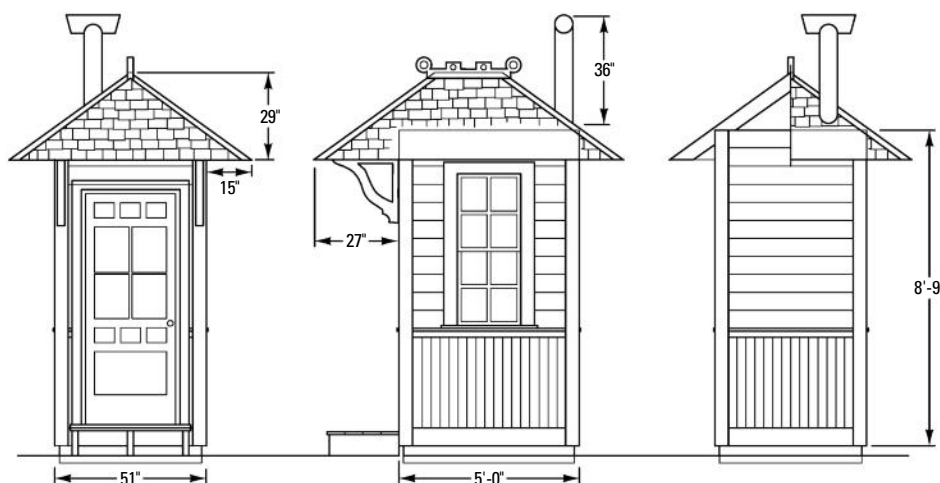
Instead of cardstock or basswood, I chose styrene for this project. The pieces I used are listed above.

The easiest way to cut styrene sheet is with the score-and-snap technique. After marking cut lines on the styrene with a pencil, I score it by making several light passes with my hobby knife or styrene scribe. Then when I bend the styrene sheet, it snaps cleanly along the score marks.



The shanty is small, so Mike could cut all his wall sections from styrene sheets left over from previous projects.

I used scraps of styrene sheet left over from previous projects, hence the smudge and paint marks in the photos. Using a pencil and a straightedge, I measured and marked the upper walls including the window openings on V-groove siding with .125" spacing. I laid out the wainscoting for the lower walls on V-groove siding with .060" spacing. Then I scored and snapped the pieces apart.



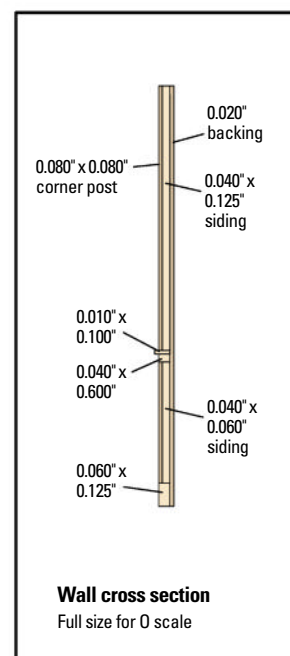
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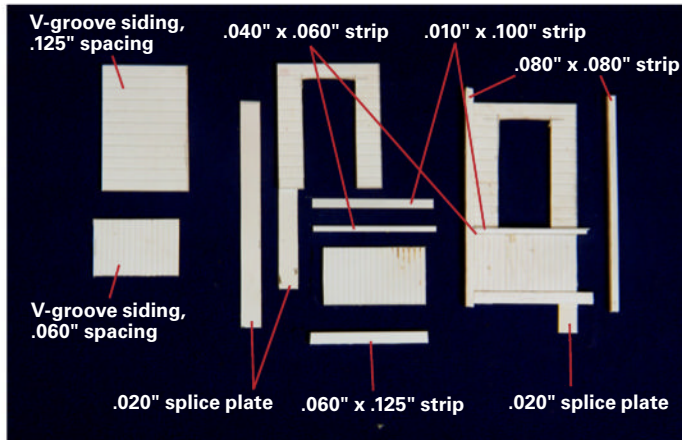
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Grandt 3601 door
Grandt 4029 windows
Grandt 3545 brackets



Wall cross section
Full size for O scale

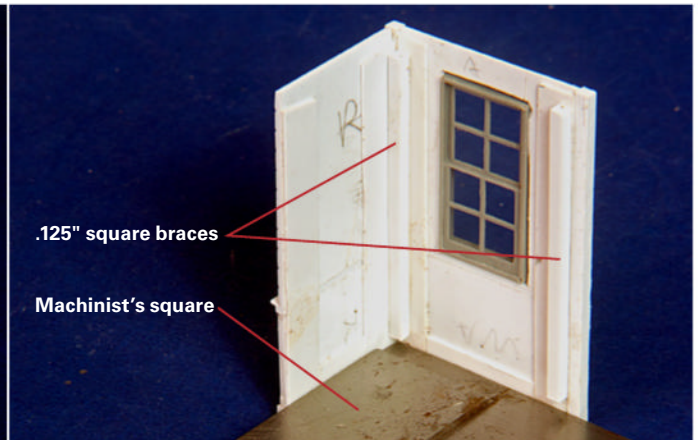
2. ASSEMBLING THE WALLS



Mike assembled the wall pieces on top of splice plates made of .020" styrene.

I assembled each wall section according to my plans on page 44. I find it easier to cut trim pieces slightly oversize in length. I then trim and file the pieces to fit after assembly.

For adhesive I use methyl-ethyl-ketone (MEK), which is commonly used as a paint stripper. I buy quart cans of MEK at my local home improvement center and decant it into smaller jars. [Note that the fumes from MEK can be harmful, so it's important to work in a well-ventilated area. – Ed.]

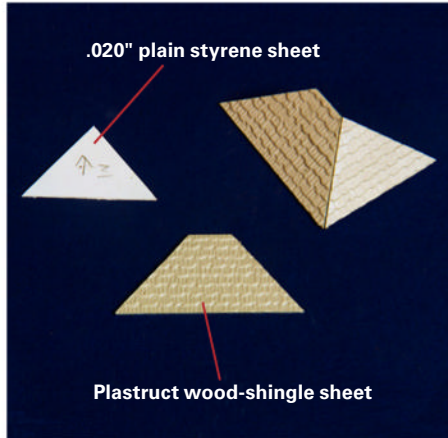


In addition to square braces, a machinist's square proved useful to keep the walls at a right angle.

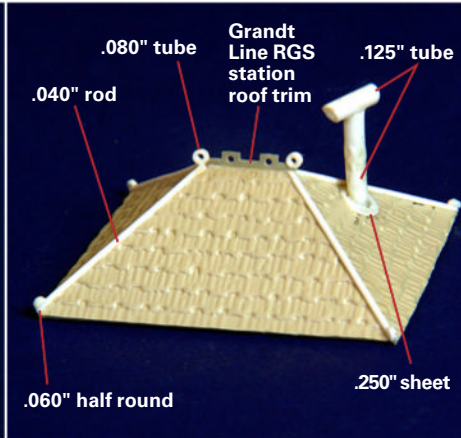
I glued the wall pieces atop splice plates made of scrap .020" styrene. The splice plates are completely hidden on the finished structure and make for a much sturdier model. As I built each wall, I cemented the Grandt Line window and door castings in place.

To connect the four walls together I added .125" square interior braces to each one. I also used a machinist's square to hold the walls at right angles during assembly.

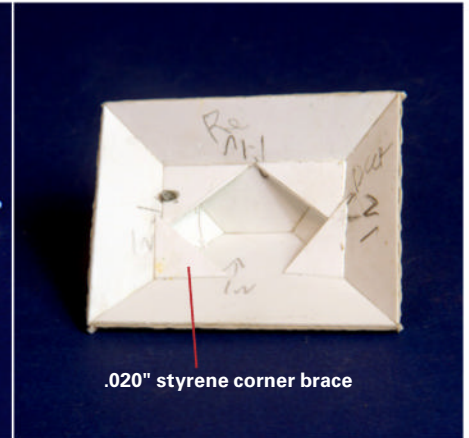
3. RAISING THE ROOF



The roof is made of shingle-textured sheet laminated on .020" styrene.



Styrene shapes hide the seams and simulate decorative trim.



To reinforce the roof, Mike added corner braces cut from styrene sheet.

Although the prototype photo shows a canvas roof, I believe that this was actually a replacement roof. Judging by the ornamental ridge pole and trim, I believe the shanty originally had an Oriental-style tile roof. Unfortunately I couldn't find any tile-textured plastic roof sheets that looked correct. Plastruct makes O scale Spanish tile, but that looked too large, and the HO tile looked too narrow. I settled on Plastruct wood-shingle-textured plastic sheet, which looked the most like the surface I wanted to replicate.

Following my plans, I cut subroof pieces from .020" plain styrene sheet, then laminated them with the Plastruct shingle-textured plastic sheets. After some sanding and filing, I made sure the pieces fit together, then applied MEK to the seams. I also made some right-angle braces out of

.020" sheet that I cemented to the underside of the roof for added reinforcement.

Next I hid the roof seams by cementing .040" rod along each one. A slice of .060" half-round stock adds a decorative ornament at each corner.

I made the distinctive ridge pole from Grandt Line Rio Grande Southern Station roof trim with a slice of .080" tubing on each end. Once painted, these pieces will blend together to be a "close enough" representation of the decorative trim of the shanties I found in prototype photos.

The smokejack is made of .125" tube. This may look a bit bulky, but it's correctly scaled to represent a 6" stove pipe in O scale. The smokejack flange is a .250" diameter disk that I cut from .010" styrene sheet using a hole punch.

4. PAINTING AND WEATHERING

After assembling the shanty walls and roof, I sprayed all the parts with a thin coat of Walmart Color Pace gray primer. Once all the parts completely dried, the structure was ready for paint.

My M&OC RR follows the same color palette as the Boston & Maine RR. I brush-painted the crossing shanty using two coats of Delta Ceramcoat acrylic craft paint. The firm's Yellow Ochre is a good representation of Depot Buff, and its Burnt Sienna is an excellent Boxcar Red. I used Yellow Ochre for the upper walls and Burnt Sienna for the lower walls, windows, door, and trim.

I then weathered the walls with a series of watercolor paint washes. I find that watercolors are ideal for weathering, since the paints will never completely cover the original color of the model. When the watercolor dries, it becomes even more subtle, so it's difficult to overdo the effect.

I applied a combination of white, burnt umber, and black watercolors to the shanty walls. The washes toned down the bright paint and added some age and just the right amount of grime to the model.

I painted the roof with Delta Ceramcoat Quaker Gray. Then I applied washes of brown and black watercolors. The washes helped define the shingle details on the roof. After the watercolors dried, I added highlights by rubbing gray powdered pastel on the roof with my finger. The finished roof is shown in the photo on page 44.



After spraying it with a coat of gray primer, Mike brush-painted the shanty with acrylic craft paint.

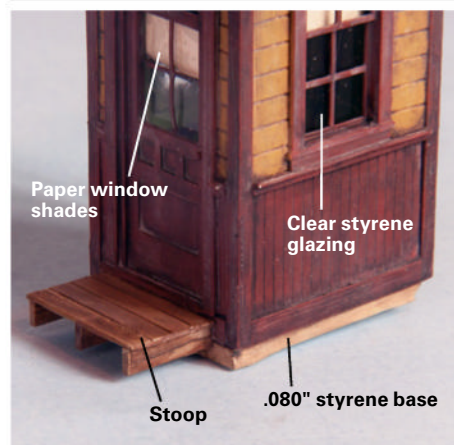


Watercolor paint washes toned down the bright colors and gave the shanty an aged appearance.

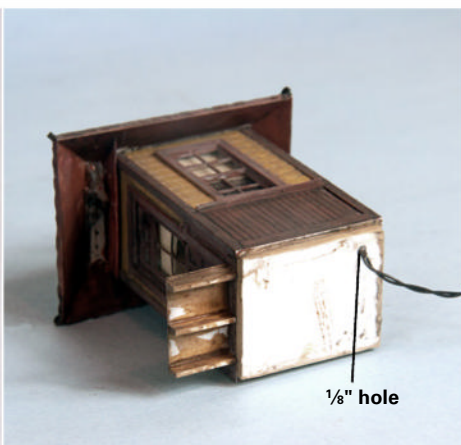
Now on ModelRailroader.com

Visit the *Model Railroader* website to download Mike's plans for the crossing shanty. Click on the link under Online Extras at www.ModelRailroader.com.

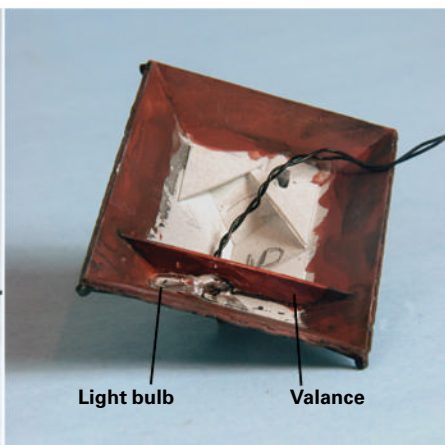
5. FINAL DETAILS



Mike mounted the shanty on a base and used scrap styrene for the stoop.



The wire for the light bulb runs through a hole in the model's base.



A valance directs light from the bulb down toward the front stoop.


I cemented the shanty atop a foundation made of .080" styrene sheet. The extra material will make it easier to install into my layout scenery base. Even though most of it would be concealed by ground cover, I painted the foundation gray to simulate a concrete pad. I made the stoop out of siding and strip pieces from my scrap box.

I painted the interior walls Delta Ceramcoat Sea Green but didn't add any other interior details. After the paint dried I installed Woodland Scenics clear styrene window glazing that I had left over from previous projects. I also added some window shades that I cut from paper.

Although I would keep the interior dark, I wanted to add one exterior light that would shine over the front stoop. Before installing the roof, I made a lighting valance out of

.040" styrene sheet. The valance will direct the light down toward the stoop. Then I painted the underside of the roof with Burnt Sienna.

I positioned a light bulb in the valance, then secured it in place using Gallery Glass. This translucent paint is used in craft projects to simulate glass and also makes an effective clear parts cement. I then ran the wires from the bulb down through a 1/8" hole that I drilled in the shanty base.

After cementing the roof in place atop the shanty walls, I added the Grandt Line roof brackets to finish off the structure. I modified the brackets as shown in the plan on page 45. My crossing shanty doesn't have a large footprint, but it's an eye-catching centerpiece of this grade-crossing scene on my layout. 

CLUB RAILROADING



IN A DEPOT

Members keep pace with changes in model railroading technology

By Douglas Kirkpatrick

Photos by Paul J. Dolkos

On this Tuesday evening, members are arriving for another night at the Northern Virginia Model Railroaders club. The club's extensive HO scale layout depicts the Southern Ry. in North Carolina from the cities of Spencer and Salisbury to Asheville.

Founded in 1949, the club has been headquartered in the Washington & Old Dominion (W&OD) railroad depot in the town of Vienna, Va., since 1976. The Northern Virginia Regional Park Authority and the town of Vienna gave the club support and access to the building in return for the club holding monthly free open houses for the public.

The Western North Carolina RR

The club was founded by six Northern Virginia hobbyists. After a year of holding round-robin meetings in each other's houses, club members obtained space in a vacant Southern Ry. yard office in Alexandria, Va. Now that the club had a permanent home, members started planning an HO scale model railroad. To recognize the generosity of the Southern Ry., club members decided to model their benefactor.

The members wanted single-track operation with towns and passing sidings scattered along the way. The Western North Carolina RR (WNC), a single-track line leaving the Southern Ry. main line between Spencer and Salisbury, then continuing west across the top of North Carolina, was a perfect prototype.

For more than 25 years, the members operated the layout in Alexandria until the Southern Ry. closed the yard and asked the club to vacate the building. One of the members brought up the vacant historic (1859) W&OD depot in Vienna, and the club's officers petitioned the park authority, owner of the depot, for use of the space.

In 1976, the club relocated from Alexandria to the Vienna depot, where the members now had the opportunity to design a new layout. The design committee kept the theme of the Southern Ry. across North Carolina, making one

Continued on page 52

1. *The Crescent* pulls into the Salisbury, N.C., station on the Northern Virginia Model Railroaders' HO scale club layout. The train is led by the pride of the fleet, a Southern Ry. Ts-1 4-8-2 painted in the green passenger livery.

► The layout at a glance

Name: Western North Carolina RR

Scale: HO (1:87.1)

Size: 21 x 50 feet

Prototype: Southern Ry.

Locale: North Carolina

Era: summer 1957

Style: walk-in with duckunders

Mainline run: 468 feet

Minimum radius: 32"

Minimum turnout:

no. 6 (main), no. 5 (yard)

Maximum grade: 3.75 percent

Benchwork: wood composite beams

Height: 40" to 94" (from

viewing platform), 76" to 130" (from floor)

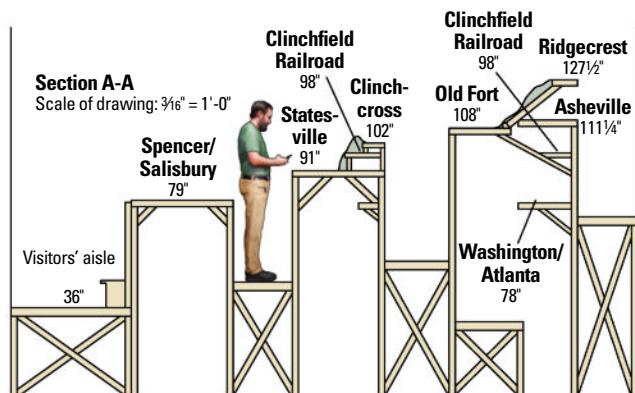
Roadbed: Homasote on particle board

Track: handlaid code 83 (main), code 70 (branch and yards); code 100 flextrack (hidden track)

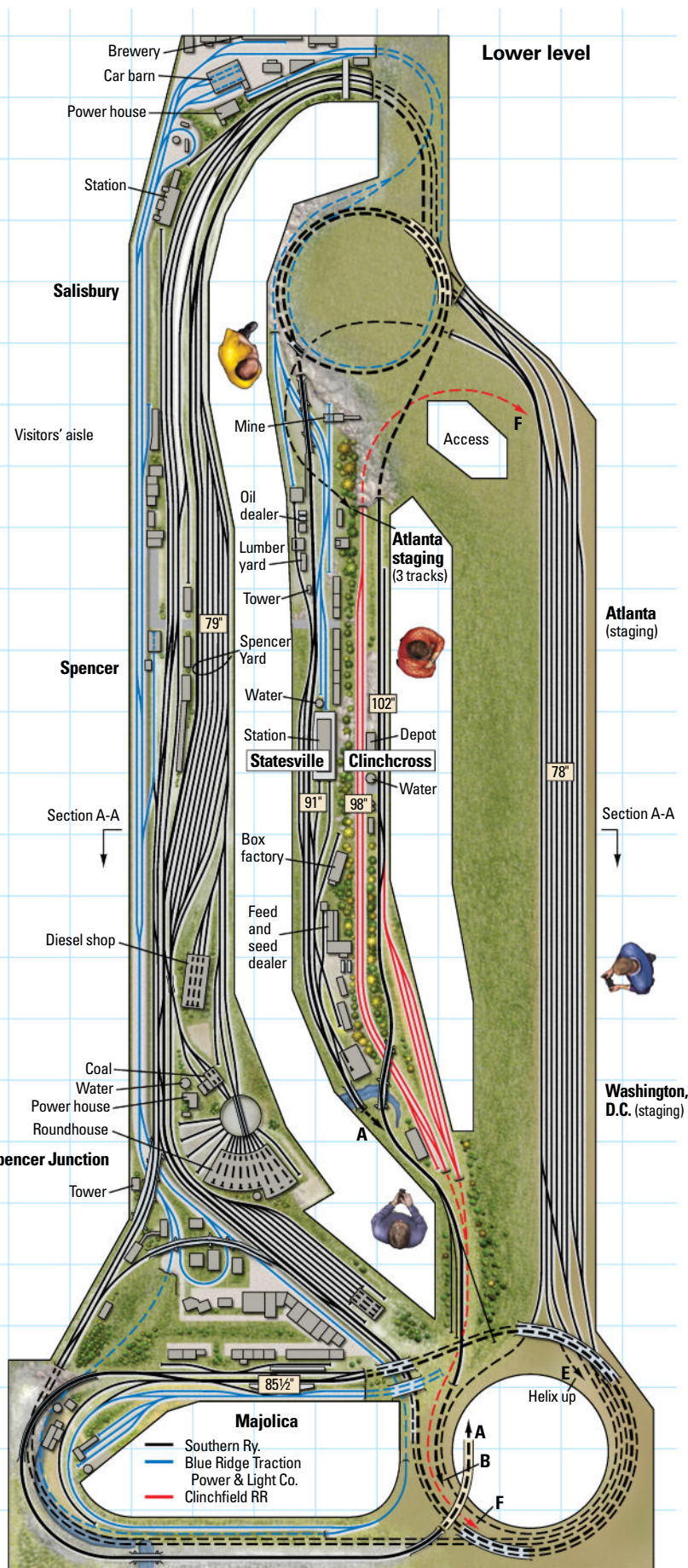
Scenery: Hydrocal over wire screen, rock castings and ground foam

Backdrop: hand-painted on the walls

Control: Digitrax Digital Command Control



2. Club members operate the HO scale Western North Carolina RR from the elevated platforms inside the layout's operating pits. This view from the far right corner of the layout room shows the different elevations trains must climb on the way from Spencer, N.C., to Asheville, N.C.





3. The Spencer engine terminal, halfway between Washington, D.C., and Atlanta, is a busy place. The club owns mostly Southern Ry. motive power, though club members can run their own engines and rolling stock on operating nights.



4. Two Southern Ry. RS-2s and an RS-3 slowly pull the southbound time freight into Spencer Yard to set out cars for the westward trip to Asheville. All visible track on the layout is handlaid on ties ripped from 1 x 6 lumber.

Continued from page 49

significant addition, a trolley line with two branches.

Unique layout design

The Vienna depot was being used to store equipment belonging to the then-abandoned W&OD. It had a waiting room on one side, a central agent's office, and a large baggage room on the other end. The old equipment was removed, and much of it was donated to local historical groups. The waiting room and ticket office were cleaned and painted.

The baggage room, 22 x 50 feet with 13-foot ceilings, needed a complete renovation to become the club's layout room. Members used their building skills to transform the room into a modern area by pouring a cement floor, installing insulation, hanging a drop ceiling, adding drywall, and rewiring the depot.

Members also turned their attention to the design of the new layout. The two main criteria were the need for visitor access and efficient use of the baggage room's height. A 4-foot-wide aisle was marked off along one wall, enabling

visitors to enter through the agent's office and exit at the other end to an outside platform. About 30 visitors can view the railroad at any one time.

To maximize both the amount of railroad that could be built in the room and the layout's visibility from the viewing aisle, the members settled on a terraced design. The model railroad starts at the visitor's level and climbs 5 feet toward the rear wall, like the seats in an auditorium. The layout has multiple levels connected by enclosed helixes and one open $3\frac{3}{4}$ percent grade over Black Mountain. The elevated platforms let club members walk under the layout for construction, maintenance, and access to hidden track.

The design of the railroad was strongly influenced by club member Dave Cooper, who included ideas he developed while operating on John Allen's Gorre & Daphetid model railroad. A two-track loop representing the Southern main line from Washington, D.C., to Atlanta, Ga., was installed at the visitor's level. Along the front aisle at Spencer, a wye was installed from which the WNC railroad proceeds back and forth across the room to terminate at

Asheville, N.C. Elevated operator platforms in each aisle let engineers follow their trains over the entire railroad.

Layout construction

The complex physical structure for the layout was designed by Pliny Holt, an aviation engineer who turned to aircraft design methods as inspiration. The support beams were made from 1/8" plywood on end, 5 1/2" deep, with 1" square flanges attached to the top and bottom. Holt worked from drawings to fabricate each benchwork element separately in his basement. When they were brought to the depot for assembly, they all fit! Particle board was placed over the beams as a subsurface and topped with Homasote to support the track.

A modified table saw in the agent's office was used to turn 1 x 6 clear pine boards into thousands of HO scale ties. Even the sawdust was collected for future scenery use. The track was handlaid if it could be seen from the visitor's aisle. The two loops from Washington/Atlanta to Spencer/Salisbury were installed first.

The club held its first Vienna open house in 1978, using a single direct-current (DC) power pack to run a train in each direction. More than 1,200 visitors attended. With the completion of the main line to Asheville several years later, the club held a golden spike ceremony with dignitaries from both the city and the park authority in attendance.

Power and control

The railroad was initially designed with DC block control, like the old Alexandria layout had been. Pliny Holt designed an automated system that could operate six trains, three in each direction, on the Washington/Atlanta loop. This system worked fairly well, but all the moving electro-mechanical parts were bad for reliability.

Eventually a new control system, CTC-16, was introduced, allowing independent control of up to 16 locomotives anywhere on the railroad. There were still some problems, particularly when different members would arrive with their locomotives hardwired to the same channel. This problem was solved by installing small DIP (dual in-line package) switches in the locomotives to allow easy channel changes.

In 1997, the club converted the layout to Digital Command Control (DCC) and became one of the first clubs to employ the Digitrax system on a large layout. With the potential to have so many operators and locomotives, the members



Northern Virginia Model Railroaders members stand in front of the Vienna, Va., depot that is home to the club's 22 x 50-foot layout. The 155-year-old structure, which once belonged to the Washington & Old Dominion RR, has been the club's home for the past 40 years.

In February 2010, two significant snowstorms hit the greater Washington area, depositing more than 22" of snow in three days. When the roads were finally cleared of snow, several club members inspected the 155-year-old depot. It was obvious that something was seriously wrong in the layout room. Many of the 2 x 4-foot ceiling tiles had fallen down and large cracks had formed in the walls.

The depot is constructed like an old barn, with wooden beams forming an outline of the room and large cross beams supporting the roof. The weight of the snow had pushed the top of the walls outward, allowing the ceiling beams to slip off their supports. The park authority that owns the depot immediately called engineering experts to examine the situation, and club members were told to vacate the building until it could be made safe.

Repairs would require removal of the drop ceiling, new roof supports, cables to stabilize the walls, and large steel brackets to anchor the roof beams. A limited number of members were allowed in the layout room to remove structures and rolling equipment, and a local rental storage unit was procured to warehouse everything.

It took more than eight months to make the basic repairs to the depot, which included building a false ceiling over the entire layout to protect it during the work.

When the club members could again safely enter the depot, the layout room was repainted, a new ceiling was installed, and new lights were added. Scenery and tracks were cleaned; each building, vehicle, and figure was inspected and repaired if necessary before reinstallation on the model railroad. In total, it took 15 months before the club again welcomed visitors to the layout. — *Doug Kirkpatrick*

divided the layout into nine power districts, requiring a command station and eight boosters.

Since most members tended to bring their largest steam locomotives or multiple diesel units, most of which have sound, the railroad would have restart problems when short circuits occurred. This was due to the high current demand

to replenish the capacitors in the sound units. To overcome this, the layout was further divided into subdistricts using Digitrax Power Shields. Since then, the club has had up to 20 operators at a time and numerous locomotives operating or idling without problems.

Each member is expected to have his own throttle; most have radio throttles



5. A Southern class Ms-4 2-8-2 glides past Old Fort station and its distinctive arrowhead monument. After descending the 3.75 percent grade, the engine will hold in town until the brakes have cooled.



6. A Blue Ridge Traction, Power & Light Co. freight motor spots a loaded hopper on the coal trestle for the line's power plant. The layout's overhead wire is live, supplying electricity to the traction line's motive power.



that utilize multiple receivers throughout the room. The club has several throttles for probationary members and visitors.

To power the several hundred turnouts on the railroad, the members fabricated economical slow-motion switch machines using a series of reduction gears powered by 12V DC motors. Over the decades, the homemade switch machines and their complex linkages wore out. The club is in the final stages of converting the layout to use Tortoise by Circuitron switch motors.

Individual control panels were made for each yard, staging area, and local town. A two-button diode matrix-based routing system was developed for each yard and staging area that aligned all of the turnouts along the selected route. A single-button system was employed for individual turnouts in towns and along the main line. To ensure reliability, panel lights and turnout controls throughout the model railroad have their own separate 12V DC power systems.

Locomotives and rolling stock

Originally, the members decided to purchase and accept gifts of rolling stock to equip the railroad. Eventually a time period of the mid-1950s was established for the railroad, and the freight car fleet was inventoried and brought into compliance. A large fleet of Southern passenger cars was also acquired, along with bay-window cabooses decorated for the railroad. The club also added motive power for both mainline and yard service. Members may still run whatever equipment they wish to bring to the club, including their own rolling stock.

Realistic scenery and structures

Initially, scenery played a minor role, as building mock-ups and plaster cloth draped over wooden supports were used as place holders. North Carolina vegetation was simulated with green horsehair padding laid over chicken wire.

Once the track and electrical systems were in place, money became available

for the scenery. Thousands of individual trees were built and planted on the newly created hillsides.

Members volunteered to scratchbuild structures, replacing the simplistic stand-ins with craftsman kits. Care was taken in both design and placement of the structures throughout the layout to provide the greatest visual impact. Several hundred vehicles and figures were also added.

Several towns, including Majolica and Asheville, aren't visible from the visitors' aisle, but are still fully detailed for members' enjoyment.

The traction line

Several of Dave Cooper's trolleys appear in photos of John Allen's G&D layout, and it seemed natural that the club layout would include a traction line. The Blue Ridge Traction, Power & Light Co. line incorporates dual tracks down Spencer Boulevard, two branch lines, multiple industries, an interchange with



the Southern main line, and two interchanges with the WNC. Streetcars draw power from the overhead wire via trolley poles with sliding shoes; both rails are the common ground.

Trolleys and freight motors operate under DCC with the line separated into independently controlled power districts capable of two-rail or overhead wire operation. The branch lines to Majolica and Statesville use long tunnels without visual access, so to prevent de-poling in the tunnel, 1/8" brass angle was installed as a trough for the trolley pole to ride in.

Visitors are impressed that the trolleys and freight motors are powered from the overhead wire, and enjoy viewing the trolleys running down Spencer Boulevard with their bells clanging as they stop for passengers.

Operations

One Friday a month, the club holds an operating session. Sessions have evolved over the past years from a

generic "fun run" of simply moving trains from one end of the railroad to the other, to a switch list system, and finally to the use of timetable-and-train-order (TT&TO) operation.

The overall strategy of operation has evolved with significant help from Steve King, a local expert in TT&TO. During the three-hour sessions, 20 through trains and four locals run, supported by a dispatcher and two yard masters. Temporary racks for car cards and waybills are attached to the fascia with hook-and-loop fasteners.

Trains are assembled and staged throughout the railroad, and members have the option to use their own locomotives during the session. The agent's office houses a permanent dispatcher's console with a master fast clock and repeaters in the train room.

Club status

The club has more than 90 members on its roster. Members meet every

7. The westbound local, headed by a Southern SD9, rolls through Statesville on the main line. Most of the structures on the layout were scratchbuilt by club members.

Tuesday evening, alternating between "work nights" and "run nights."

While the club celebrated its 66th anniversary in May 2015, members are looking forward to many more years of model railroading in the club's historic home. When you are in the Washington, D.C., area, consider a short trip to Vienna to visit. Please see the club's website at www.nvmr.org. New members are always welcome. **MR**

Doug Kirkpatrick has been an HO scale modeler since 1965 and a member of the Northern Virginia Model Railroaders for 40 years. His own HO scale Virginia & Western layout was featured in the May 2008 MR. He's retired from NASA and lives in Falls Church, Va., with his wife, Lorraine.



Using a point-and-shoot digital camera, George Hermach took this sharp photo of a scene on the Elmhurst Model Railroad Club's HO scale layout. George shows it's possible to take quality photos without an expensive camera.

Point-and-shoot camera tips for model railroaders

How to use the digital camera in your pocket to take quality layout photos

By **George Hermach** • Photos by the author except where noted

Many modelers think they need an expensive digital single-lens-reflex (DSLR) camera and fancy lighting rigs to take quality model railroad photos. However, it's possible to take almost as good photos with a less expensive "point and shoot" camera.

Many point-and-shoot cameras, including the Sony DSC-H5 that I use, have adjustable features beyond the general scene modes of landscape or portrait. I'll show you which features to look for and how to use them. Note that not all the features that I discuss will be supported by every camera. A camera's advanced features will be outlined in its user manual.

Get the most out of a .jpg

Although some shoot in higher resolution .tiff or .RAW formats that are preferable for publication, most point-and-shoot cameras shoot compressed .jpg files. Publishers prefer RAW files because that format offers more options

if retouching is necessary; however, it's still possible to take a quality .jpg image.

Some cameras allow the user to adjust the resolution to settings called "jpg fine" or something similar. This setting will yield an image with the maximum sharpness the camera is capable of producing. The first step to taking better photos is to make sure the camera's resolution is on its highest setting.

Depth of field

Maximum depth of field is important for model railroad photography because it allows all of the scene to be in sharp focus. Shallow depth of field photos have only the foreground objects in focus while those in the middle and background are blurry.

An opening in the camera lens diaphragm called the aperture determines the depth of field. The size of the aperture depends on the f-stop setting.

The f stop is usually adjusted automatically, which is okay for a snapshot.

For the sharpest possible photo, I suggest using aperture priority mode, if it's available on your camera. This is usually denoted by an "A" on a dial or settings menu. This allows the photographer to manually select the f-stop.

For layout photos I set the f-stop to its highest setting. On my Sony camera, that setting is f8. The higher the f-stop, the smaller the aperture and the greater the depth of field.

Also note that depth of field is greater on a wide-angle setting and decreases when the telephoto zoom is used. It's better to place the camera closer to the object being photographed instead of using the zoom feature.

Since aperture and shutter speed are inversely proportional, a small aperture will result in a longer exposure time. That's why rock-solid camera support is necessary to achieve a sharp image.

I suggest using a tripod at the edge of the layout, or resting the camera on a flat surface, instead of simply holding the

camera in your hands. Using the camera's self timer is also better than pressing the shutter button with your finger. At a slow shutter speed, the slightest movement of the camera will blur the image. For my photos I mount the camera on a tripod and set the timer for a two-second shutter release.

Dealing with layout lighting

The ISO setting on a digital camera is the equivalent of film speed (or ASA) in analog cameras. A high ISO means the camera is set for higher light sensitivity and, like a faster film speed, requires less light and higher shutter speeds to capture an image. A high ISO setting would be useful for freezing the action of an indoor sporting event.

For most model railroad applications, a photographer would want the lowest ISO setting. A high ISO can produce noisy images (the equivalent to a grainy film photograph). Low ISO means the camera's sensor takes more time to capture an image, resulting in finer detail.

To achieve uniform lighting, it's important to use whatever layout room lighting is available. Don't use the camera's built-in flash, as the resulting images will have overexposed, harshly bright foregrounds and underexposed, dark backgrounds.

Another important setting for dealing with different types of lighting is white balance. Although this setting is usually automatic, the white balance may need to be set manually if the camera produces photos with colors that don't match the actual subject. White balance optimizes the image quality for different types of lighting, such as daylight, incandescent light, and fluorescent light.

Another way to compensate for lighting involves using spot metering. This feature lets the photographer select the most important part of the scene, and the camera's internal light meter will adjust the settings accordingly for the selected subject. It's also not necessary for the subject to be in the center of the frame. In spot metering mode, the photographer can point the camera at the subject, push the shutter half way down to engage spot metering, then recompose the shot and take the photo.

Composing the shot

High-angle "aerial" type shots can be interesting to show track arrangements and the overall layout of a model railroad scene. However, the most realistic shots are those taken from track level that mimic the shots that railfans take of



Many point-and-shoot cameras have features that rival more expensive DSLRs. This Kodak camera allows the user to adjust aperture, ISO, and white balance. Bill Zuback photo

prototype railroads. In either case, the image needs to be in sharp focus.

Most point-and-shoot cameras use autofocus (AF), where the camera's onboard computer does the work of focusing the lens on the object being shot. However, the camera can get confused by what to focus on in a scene with multiple objects at similar distances, which occurs often on model railroads.

To compensate for this, many AF cameras allow the user to set the focal point of the image, such as the front of a locomotive. Usually the focal point is the center of the image. However, on most cameras, the focal point can be set anywhere in the frame by holding the shutter down halfway in AF mode. The image can then be recomposed as desired.

When taking close-ups of small details on a model or scene, most cameras include a macro feature that allows the photographer to hold the camera a few inches from the subject. This setting is usually denoted by a flower.

Even on the simplest cameras, such as those included in most cellphones that don't have adjustable features, following some of these tips will produce better photos. Hold the camera at track level for a dramatic railfan's view. Rest the phone

on a solid flat surface or steady your hands against the edge of the fascia and hold your breath as you press the shutter button or touch screen to avoid the slightest movement. These simple steps provide sharper, more realistic photos.

I took the photo accompanying this story with my Sony DSC-H5. The camera's aperture was set to f8 and the white balance was set to fluorescent. I also used a 2-second self timer on the shutter. I set the AF focal point on the E unit's nose. The final image has even lighting and sharp depth of field.

This image hasn't been retouched in any way. That's not to say that photo-editing software isn't a useful tool for model railroaders to learn. However, it's beyond the scope of this article.

With digital photography, the image is almost instantly available on the camera screen. If the image turns out bad, simply delete it and try again. All it takes is a bit of practice and anyone can take great layout photos. **MR**

A retired engineering product manager, George Hermach lives in Woodridge, Ill., with his wife, Sharon, and is a member of the Elmhurst Model Railroad Club in Elmhurst, Ill.



Now on ModelRailroader.com

To learn more about taking better digital photos of your layout, check out the free online booklet *How to photograph a model train layout* by Brooks Stover. You can download the PDF booklet at www.ModelRailroader.com.

Rocky Mount



ain showcase



2. A three-truck Shay lettered for the F&SP works the Jenny Lee Mine above Fremont. The mine is one of many scratchbuilt structures on the layout.

Museum-quality structures and scenes highlight the freelanced HO scale Fremont & South Park

By Dave Rickaby • Photos by the author

Lynn Draper vividly remembered family trips spent exploring abandoned rights-of-way, defunct stamp mills, and ghost towns in southern Colorado's "mineral country." The Rocky Mountain scenery and narrow gauge lines inspired Lynn's freelanced HO scale standard gauge layout, the Fremont & South Park RR. Set in the 1940s, the 14 x 51-foot model railroad filled Lynn's basement with steam locomotives, superdetailed scratchbuilt structures, and benchwork-to-ceiling scenery.

Getting back into trains

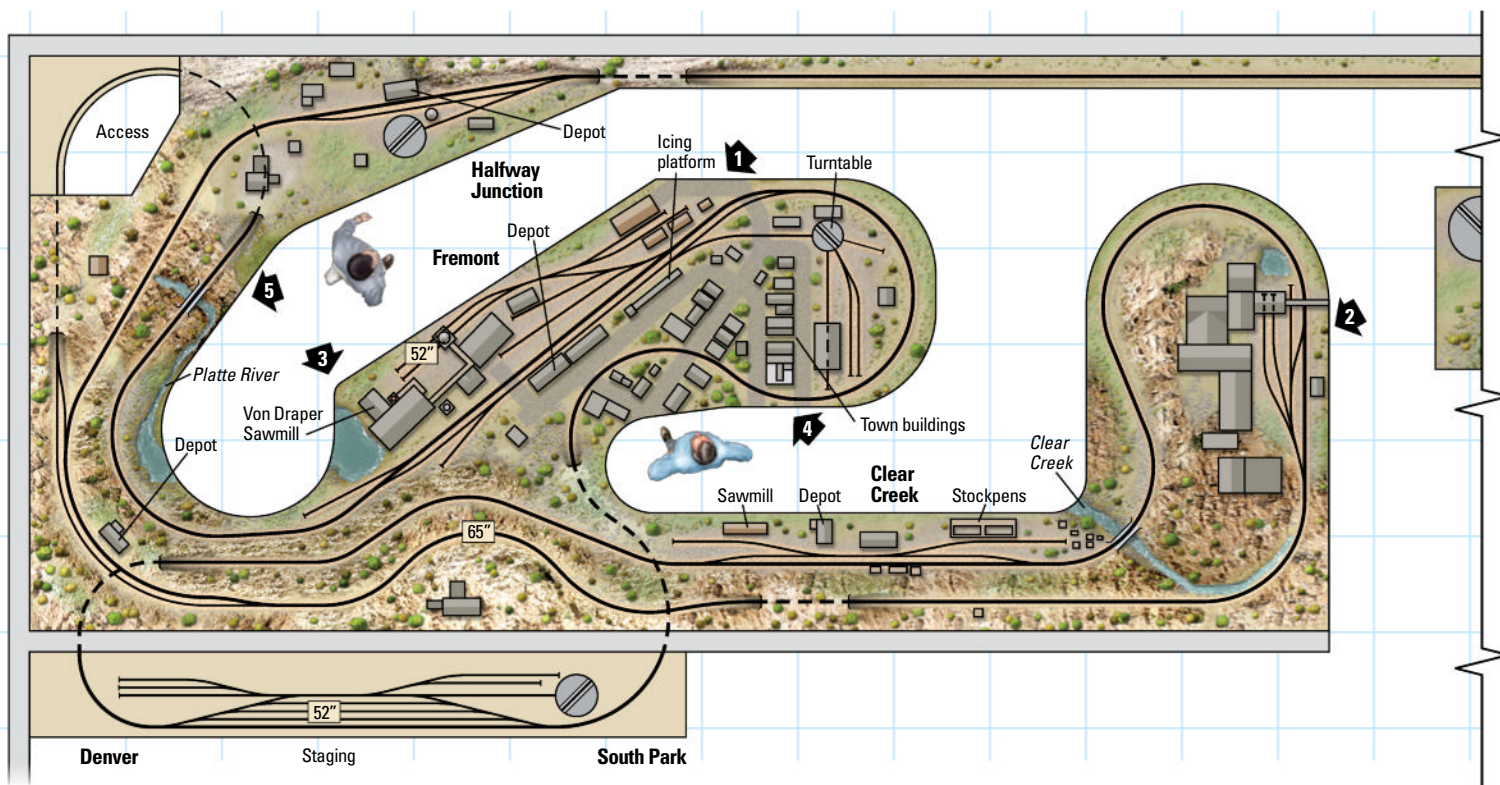
As with many model railroaders, Lynn's first experience with model railroading involved watching trains run

1. Train No. 303 rolls through Fremont on Lynn Draper's HO scale Fremont & South Park. The freelanced layout is set in southern Colorado in the 1940s.

around a circle of track under the family Christmas tree. He built a few compact layouts through childhood, until his freshman year of high school, when typical adolescent interests put his model railroading hobby on hold.

Lynn came back into the hobby as an adult. At age 35 another Christmas stood out in his memory. On the morning of that holiday, his wife, Cindy, surprised him with model-railroading-related presents.

Lynn had also moved to Wisconsin, where he learned how to scratchbuild structure models when he undertook a display project for the Fremont (Wis.) Historical Society. Lynn's display represented Fremont's main street in the 1920s. Eventually the museum display had to be dismantled. Cindy suggested that Lynn should have a place to keep his collection of models and suggested that he build a layout for that purpose.



3. Workers guide logs down the flume at the Von Draper sawmill, while a freight train led by no. 4001 leans into the curve on the main. Lynn modeled the mill pond and other water using two-part epoxy resin.

Designing the layout

Lynn wanted to build a layout that highlighted mining railroads running through steep canyons. Along with mining, the layout would model the logging industry. Although narrow gauge lines were his inspiration, he designed his layout for standard gauge track. One of the best parts of freelancing a model railroad is that you can change certain details to suit your preferences.

The first track plan ran around the walls of a 12 x 27-foot section of Lynn's basement and included a 5 x 12 peninsula

for the town of Fremont and its many structures, including the large Von Draper sawmill. Lynn eventually expanded the layout with another 12 x 24-foot section that included the town of Black Eagle. The track elevation rose from 52" at Fremont up to 65" at Fremont Pass.

A solid foundation

Truss-joint I-beams (also called TJI or I-joists) are an engineered wood product commonly used as floor joists. Lynn became familiar with this material during his career as a professional home-builder. Made of a 1/2" pressboard center with 2 x 2 rails on the top and bottom, these I beams are light and can carry a lot of weight over a long span without warping. The beams are available in 6" to 24" heights and can be cut to any length.

Lynn realized that by incorporating I-joists into his benchwork he could give his layout a stable base without adding a lot of legs for support. Starting with a frame of 8" tall I-joists placed 2 feet on center, Lynn attached benchwork 2 x 2 legs only where the beams butted together. Even though the legs are as far apart as 22 feet, the benchwork doesn't show any signs of sagging.

Lynn then placed 1 x 4 open grids over the beams. He used 3/4" birch plywood for subroadbed that he attached to 3/4" risers placed 16" on center.

He then laid cork roadbed, followed by Atlas code 100 flextrack and Peco

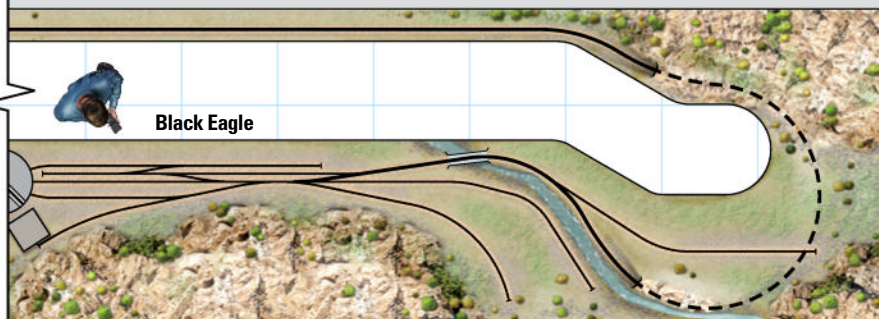
turnouts with manual ground throws. Lynn wired the layout for Digital Command Control using a Digitrax system, and all his locomotives feature SoundTraxx DCC decoders.

Rocky Mountain scenery

Lynn wanted rock formations to be a scenic focal point of the layout. Inspired by the mountain landscape of John Allen's Gorre & Daphetid and Malcolm Furlow's layout scenery work in *Model Railroader*, Lynn installed benchwork to ceiling rock faces to depict the Rocky Mountain setting. He also drew on his own knowledge as a geology major at the University of Arizona.

The mountain scenery started with plaster-soaked paper towels placed over screen wire forms. Lynn then added rock castings to this scenery base. During scenery construction, he used 20 different rock molds from Bragdon Enterprises and about 900 pounds of plaster.

For his rock castings, Lynn preferred Durabond 20 plaster. He mixed the plaster to a doughy consistency, then poured it into the rubber molds. This material usually takes 20 minutes to set. Lynn found that the water left over from cleaning the mixing bowl between batches still contained some of the plaster's setting agent. By adding some of this "dirty" water to subsequent batches of plaster, he reduced the setting time to 10 minutes.



Fremont & South Park RR

HO scale (1:87.1)

Room size: 14 x 51 feet

Scale of plan: 1/4" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Kellie Jaeger

Find more plans online in the
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» The layout at a glance

Name: Fremont & South Park RR

Scale: HO (1:87.1)

Size: 14 x 51 feet

Prototype: freelanced

Locale: Colorado

Era: 1930s to 1940s

Style: walk-in

Mainline run: 280 feet

Minimum radius: 24"

Minimum turnout: Peco no. 4

Maximum grade: 4 percent

Benchwork: open grid and
L-girder on I-joists

Height: 52" to 65"

Roadbed: cork

Track: code 100 flextrack

Scenery: paper towels dipped
in plaster over screen wire and
extruded-foam insulation board

Backdrop: painted on wall

Control: Digitrax DCC



4. A leased Atchison, Topeka & Santa Fe Ry. Baldwin-built 2-8-0 leads a freight across main street in Fremont. Lynn's carefully detailed scenes are inspired by the work of George Sellios and other well-known model railroaders.



5. Double-headed steam locomotives cross the Platte River at Halfway Junction. Towering rockfaces are a scenic focal point on much of the layout.

With the castings in place, Lynn stained the rocks with thinned acrylics. The colors used included burnt umber, raw umber, burnt sienna, and yellow ochre. He also used real crushed granite, which has a reddish brown color that accurately represents the landscape of southern Colorado.

For the greener parts of the layout Lynn used both natural sheet moss that

he pulverized in a blender and Woodland Scenics ground foam. The deciduous trees were a combination of sage brush and Scenic Express SuperTrees armatures covered with various colors and textures of ground foam. The pine trees were made of limbs from an artificial Christmas tree.

Lynn modeled still water, such as the mill pond, with EnviroTex Lite two-part epoxy resin. He used clear silicone caulk to model waterfalls and rapids.

Superdetailing scenes

The town of Fremont on the F&SP allowed Lynn to display his museum-quality scratchbuilt structures along with several other kit-built and kit-bashed models. Lynn studied articles by Fine Scale Miniatures founder George Sellios about his famous Franklin & South Manchester layout. These articles reinforced the importance of taking the time to detail each scene.

Following George's lead, Lynn added dirt and trash on the city streets and grass growing between cracks in the sidewalks. All the buildings were weathered, including peeling paint and faded advertisements. He approached his layout as a series of 2- to 3-foot dioramas, making sure to add figures and other details. For Lynn, the world around the railroad was just as important as the trains running on the tracks.

Running the railroad

Many of the F&SP's locomotives were leased from other railroads, such as the Atchison, Topeka & Santa Fe Ry. and the Union Pacific RR. Lynn lettered a few models for the F&SP.

Instead of using a timetable, Lynn ran his railroad with an operating sequence. He found this method of operation allowed him to easily operate the layout by himself or with a group.

Staging tracks in an adjacent room represented both Denver and South Park. The operating sequence dealt with several trains moving in both directions between the two cities.

Train No. 1 from Denver to South Park and Train No. 2 in the opposite direction were passenger trains that ran every other day and made all stops, including mail traffic. Train No. 101 carried freight to Fremont before continuing to South Park. Its counterpart, No. 102, dropped cars at Clear Creek and Jenny Lee Mine. Train No. 103 was the Denver to Black Eagle through freight. After setting out its cars in Black Eagle and picking up any Denver-bound freight, this train made the return trip as No. 104.

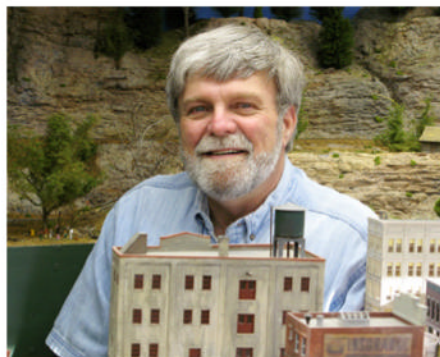
Train No. 303, the morning local out of Fremont, operated as a mixed train to Halfway Junction. After No. 303 exchanged freight, passenger, and mail cars with No. 502, the Black Eagle mixed train, No. 303 continued to Jenny Lee Mine and Clear Creek. This train then returned to Fremont as No. 304, while the Black Eagle mixed train returned to its terminus as No. 503.

When there were enough operators, Lynn also ran two coal trains on the F&SP. Train No. 400 was a loaded coal train from South Park to Halfway Junction. The empty hopper train, No. 401, ran in the opposite direction to South Park and was usually the last train of the day.

In memoriam

Lynn Draper passed away after this article was written. Until his death, Lynn continued to build superdetailed scratch-built structures and modeled scenery for the layout's 12 x 24-foot addition. Even though it wasn't quite finished, the HO scale Fremont & South Park was an impressive layout built by a talented model railroader. **MR**

Dave Rickaby is a frequent contributor to Model Railroader magazine. He wrote "Chasing history on the Pennsy" in the April 2014 issue.



► In memoriam: Lynn Draper

Born and raised in Denver, Colo., Lynn Draper lived with his wife, Cindy, in Fremont, Wis. After retiring from a career as a professional homebuilder, Lynn was an active member of the Waupaca (Wis.) Area Model Railroaders Club. He passed away in 2013.

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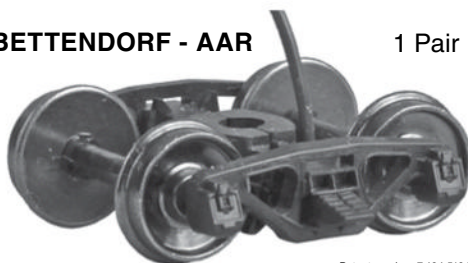
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James Murphy stands under the lift-up section he built for his model railroad. Drawer glides from a home improvement store make for a stable, smoothly operating mechanism. Lou Sassi photo

BUILD A LIFT-UP SECTION that safely locks in place

A simple mechanism holds a lift span high enough to walk under

By James P. Murphy • Photos by the author except as noted

My layout design required the track to cross a door opening, so I needed an easy-to-use and safe way to get into the layout area. The device had to be convenient and reliable. My simple, easy-to-build lift-up does all this, and is fun to operate.

Why a lift-up section?

A traditional hinged swing-up section would limit scenery and structures. If the

section didn't swing beyond 90 degrees, I'd need a brace to hold up the section. If the brace was bumped, the section could fall and someone could get hurt.

A well designed lift-up is safer, especially if it latches in place when raised, as mine does. It also allows for great scenic possibilities, as seen in **fig. 1** on the opposite page.

In order to keep the lift-up section from becoming an obstacle, it had to be

simple and easy to use – easy enough for one hand. The latch is as simple as closing a door. You push it up, and the section stays up. You release the latch, and the section lowers back in place.

Safer, quicker, easier, versatile

I made my lift-up section to move on drawer glides, available at home improvement stores. Just 24" of travel is required for my 4-foot-high benchwork. That gives

me nearly 6 feet of clearance when the section is locked in the raised position.

I used metal rods, a spring, wire, locating pins, brass tubing, and screws to build the latching mechanism. The release lever is cut from a piece of plywood (see **fig. 2**). Tools required include a drill, screwdriver, a portable scroll or jig saw, a level, a carpenter's square, and wood glue to build the lift-up section and latching mechanism.

I cut the moving section pieces from seasoned wood and mounted the rails of the drawer glides vertically to the door frame at the layout entrance. Make sure you understand how the wheels mount into the track, following the package directions on your drawer glides.

Construction

I bought my lumber well in advance and left the materials in my layout room to season, allowing the moisture content of the room and benchwork to match. Any warping as the wood dries can be more easily dealt with during construction. Warping after the track is down is almost impossible to fix. Once the project was completed, I added a couple coats of polyurethane sealer to the wood pieces.

Build the benchwork inside your room to the edge of the door jamb, at the height of the rails less about 1½" to allow space for roadbed, subroadbed, lift-up section top, and shim washers, which are a must for final adjustment between the lift-up and the benchwork.

Note that the inside corners of the lift frame have a radius, seen in **figs. 2** and **3**. Not only are these inside corners easier to cut with a portable jigsaw, they're much less likely to crack with use.

I built the lift-up section, as pictured in **fig. 4** on the next page, from good-quality plywood and assembled with reinforcing strips of soft pine. Check that everything's square, get your clamps ready, then glue and screw the joints. Using carpenter's glue and screws assures a solid, smooth-operating unit. When finished, I marked centerlines on both sides of the plywood back panel.

My lift-up spans a doorway 36" wide. If your door isn't 36" wide, add or subtract for your door width. I mounted the drawer glide rails on the jamb opposite where the door swings open. I installed a few countersunk screws to hold the guide rails inside the door jamb, in front of the stop (see **figs. 3** and **5**, on the next page). I measured the exact distance between the inside of the drawer glide rails, and subtracted ⅛". The outside dimensions of the guide wheels must match this dimension.



Fig. 1 Scenery options. Jim built a bridge scene on his lift-up section. A lift-up allows more options for scenery than a tilt-up hinged section would.

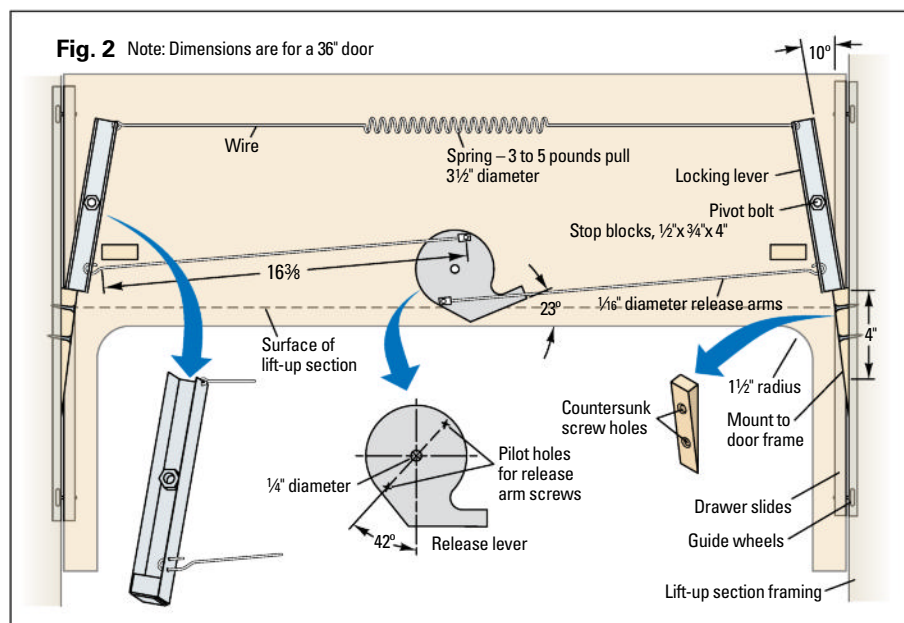


Fig. 2 Release mechanism. Parts are plywood, and hardware store items.



Fig. 3 Radiused corners and drawer glides. James cut the corners of the lift-up section as a curve to reduce cracks. The drawer glides are installed inside the jamb on the non-swing side of the door frame.

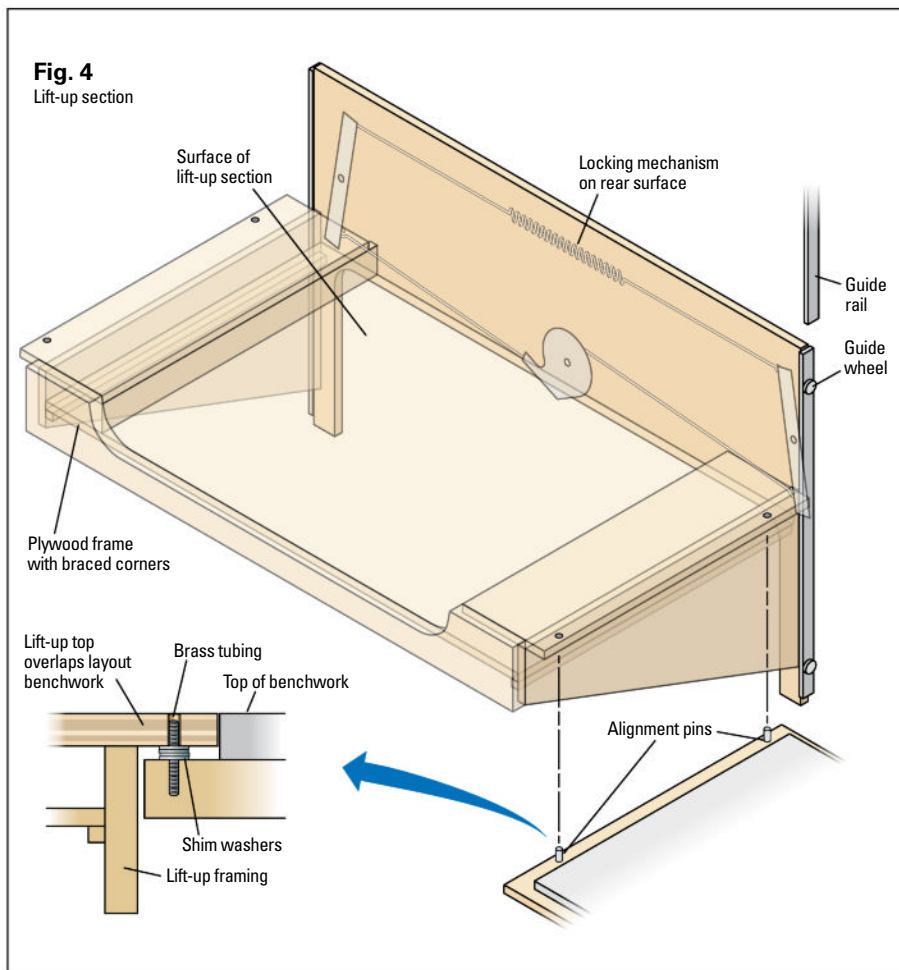


Fig. 4 Lift-up section. The lift-up section is assembled from plywood with 1 x 1 pine blocking in the corners. The parts are glued and screwed together to ensure a sturdy structure. Illustrations by Rick Johnson

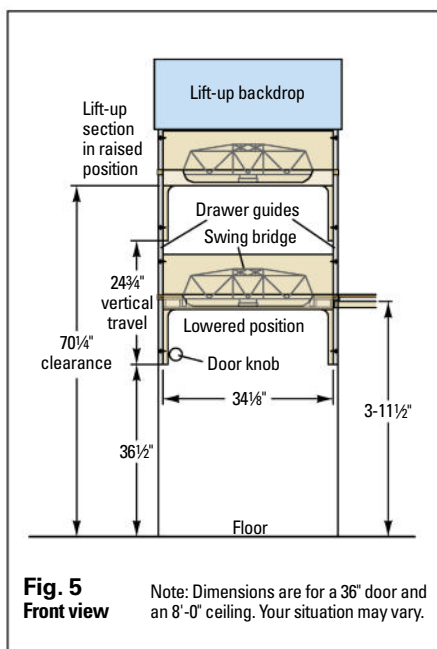


Fig. 5 Front view. The lift-up section rides in drawer glides attached to the door jamb. When it's lowered, it rests on the layout benchwork, and is located by metal pins.

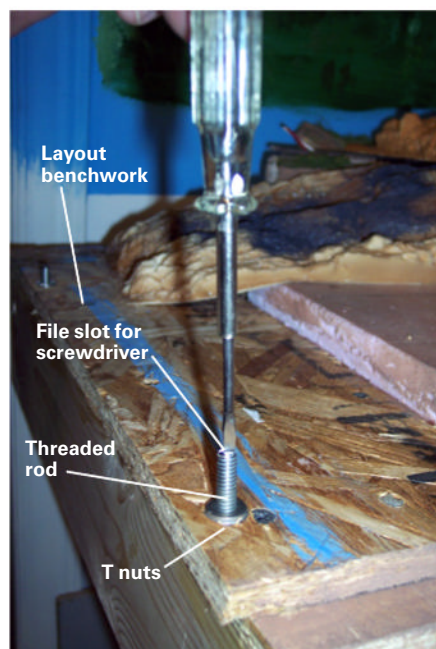


Fig. 6 Location, location. James used threaded rod, which was tapered and filed to fit tightly into the brass tubes he installed in the lift-up section, to locate the section precisely.

With the lift-up assembly complete, I mounted the guide wheels on the lift-up section sides to the above dimension, loosened the rails to install the wheels, and set the lift-up in the rails.

With the lift-up section resting on the layout benchwork, I drilled $\frac{1}{4}$ " holes through the lift-up top on the four corners into the benchwork. I raised the section, and then drilled just the lift-up to press-fit a $\frac{1}{2}$ " length of tubing that slipped loosely over the locating pin. I made my locating pins from threaded rod, which was filed to precisely fit inside the tube guide I inserted in the lift-up.

I installed the pins in threaded T-nuts driven into the layout benchwork (see **fig. 6**). Only a metal-to-metal sliding lock will keep tracks in alignment and release easily as your house moves and twists with the seasons. Ask me how I know.

With the shelf in the lowered position, I shifted the guide rails to center the wheels and tightened all the counter-sunk screws on the guide rails. I raised the lift-up to within $\frac{1}{4}$ " of the top of the door jamb, using a temporary shim taped in place to set the distance, and propped up the shelf. I drew a vertical line $\frac{5}{8}$ " away from and parallel to the door stop on the lift-up frame. This will be the vertical centerline for the locking levers.

I made the locking levers from hardware store metal channel with a smooth surface on the levers' ends where they rest in the catches. I drilled holes in the center of the levers for pivot bolts. There are also holes in each end for the release arms at the bottom and the return-spring rods at the top. The tapered stop blocks that hold the lift-up in the raised position are long, $\frac{3}{4}$ "-thick hardwood wedges that push in the locking levers as the section goes up.

I held one locking lever in a vertical position with the pivot hole centered on the line I drew earlier, then marked the hole for the pivot bolt on the line. I marked the other bolt center the same distance down from the top of the door jamb, using a carpenter's level. Don't assume the door frame is square! It's probably not.

I drilled holes for the pivot bolts, then installed the locking levers using washers, bolts and self-locking nuts. I tightened them, then backed off a quarter turn to allow easy motion. The levers must move freely. I installed a spring between two rods at the top of the levers to pull the tops of the levers and push the bottoms into the door jamb. The levers should be leaning in at about 10 degrees, as seen in **fig. 2** on the previous page.

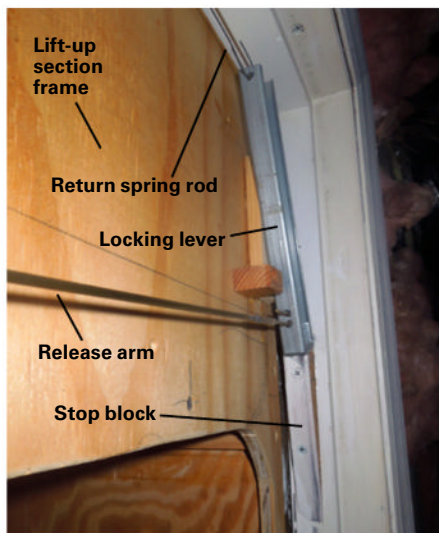


Fig. 7 Holding up. The key to James' system is the locking levers that engage the stop blocks.

I drew the release lever on a piece of $\frac{3}{8}$ " plywood, marking the center hole and the screw locations for the actuating rods as shown earlier in **fig. 2**. I drilled a $\frac{1}{4}$ " diameter through hole for the center pivot, and $\frac{1}{16}$ " diameter pilot holes for the screws that will hold the locking lever rods. I cut out the release lever after drilling the holes.

On the rear panel of the lift-up section, I drew a line from locking lever to locking lever at the height of the release arm connection. Where that line crossed the centerline I'd already drawn on the rear panel, I drilled a $\frac{1}{4}$ "-diameter hole for the release lever. I inserted a 1"-long bolt through the release lever and the rear panel with washers on both sides, then I installed a self-locking nut. I tightened the nut, then backed off a quarter-turn to allow free rotation.

I made release arms from thin brass rod, but you could also use heavy coat-hanger wire. The secret is the elongated loops at the ends of the rods that allow the levers to move outward freely, yet are retracted by rotating the release lever. Hardwood locking levers would work; just use a lag screw to restrain the elongated loop. I kept the mechanism thin, as the assembly must fit between the closed door and the lift-up section.

I made sure the lift section was still level and could be raised another $\frac{1}{4}$ ". Then I installed the tapered stop blocks with countersunk screws (see **fig. 7**). I lowered and raised the section and applied dry lubricant to ensure smooth operation.

With the lift-up section complete and installed, I built my bridge scene. The bridge needed to be of robust construction, as there is some flexing in the lift-up

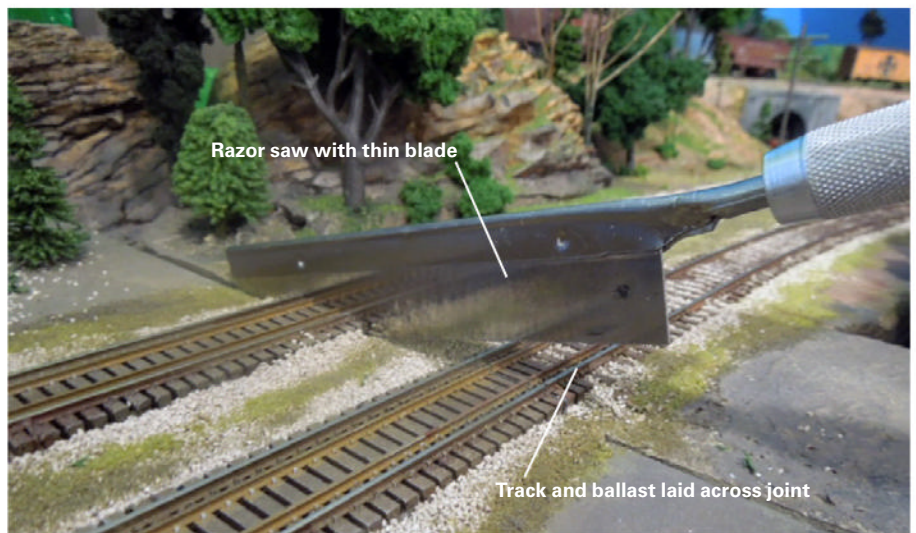


Fig. 8 Making the cut. James laid the track and glued the ballast in place before he cut through the track and roadbed to free the lift-up section from the benchwork. Plastic wrap between the sections made separating things easier.

structure. Most important is plenty of support under the ends of track where the section meets the room benchwork. I didn't use any plastic bridge abutments here; solid foundations only.

The last step took patience. I put plastic wrap at the joint between the lift-up and the benchwork, then I laid track continuously across the joint, added ballast, and glued everything down thoroughly without getting ballast cement or scenery glue in the joint.

I added guardrails at the joint between the layout and the lift-up. After a few days of drying, I cut the rails at the joint. The cut must be square, vertical and thin, so I didn't use a rotary tool, but a thin razor saw over the end of the lift-up (see **fig. 8**). I passed a long, thin blade through the joint to cut the plastic and free the lift-up. I made sure all gaps were open before raising the section for the first time.

I soldered feeder wires to the tracks and made allowances for lighting on the lift-up section. Then I connected the wiring back to the layout with enough slack to allow for the lift-up to reach the raised position (see **fig. 9**). With the section in the up position, I installed a lightweight backdrop board to cover the door and painted it to match the layout room. I left at least $\frac{1}{2}$ " clearance between the backdrop and the ceiling when the section is raised.

Now for the reward for all the work. I lifted the section high enough to hear the locking levers snap into position. I held the shelf in one hand and released the lever, gently lowering the shelf. If your lift-up section feels heavy, a simple counterweight or spring can be added to help carry the load.

Walk tall for model railroading! 

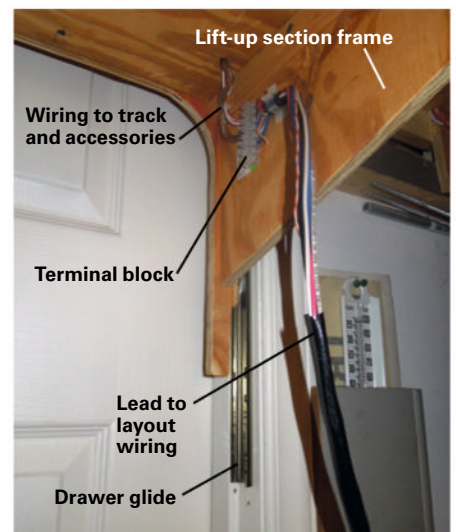


Fig. 9 Power connections. The lift-up section gets its power from the rest of the layout through a wiring lead long enough to reach the section in the raised position.

▶▶ Meet Jim Murphy

Jim Murphy's Berkshire Short Line grew from a board under a bed to the current 18 x 29-foot layout. Detailed contest models, along with backdrops painted by his artist wife, Nancy, complete the scene.

In his career as a process engineer for a large construction company, Jim met modelers on six continents. To promote the hobby, Jim is an officer in his National Model Railroad Association division and a Boy Scout railroad-merit badge counselor.



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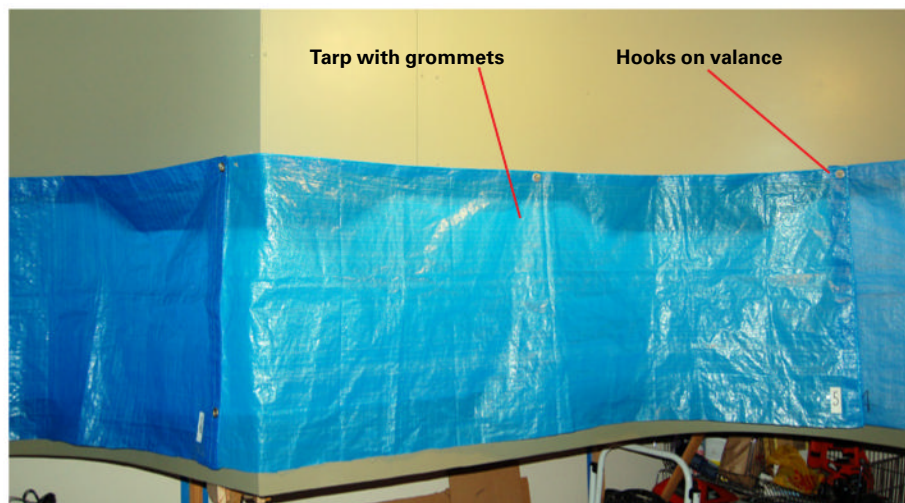


Fig. 1. Dust cover. In the June 2012 issue of *Model Railroader*, Howard Lloyd described how he made this curtain to protect his layout from dust using a plastic tarp available at most hardware stores. Howard Lloyd photo

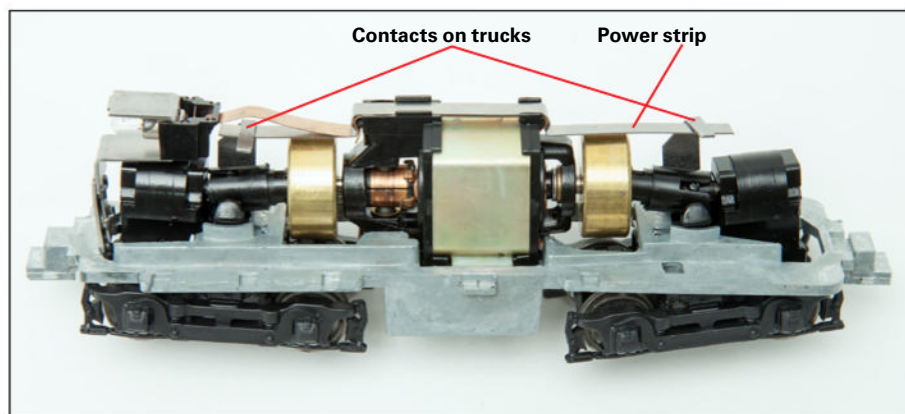


Fig. 2. Power strip. The metal strip on top of the Athearn motor conducts current from the truck gear towers to the motor, but can be a point of poor electrical contact if the strip sags or the contacts corrode.

For generations, model railroaders have been working on their locomotives to get them to run smoother, at lower speeds, with more power, and few if any stalls. During that time, devices like impeller transmission drives, replacement gears and wheels, sliders and wipers, and oversized flywheels have been used.

When I first got serious about model railroading more than 30 years ago, it was common practice to replace motors and flywheels, add lead slugs, and break-in gears by replacing the lube with toothpaste and running locomotives that way for several hours to smooth the gear surfaces. Fortunately, most locomotive models today have efficient designs, so we don't generally have

to resort to these extreme measures. That said, we still can face undependable operation. So what hasn't changed?

If there's one thing Digital Command Control (DCC) is sensitive to, it's poor electrical pickup. Keep in mind DCC decoders are essentially little computers, and we all know what happens when power to a computer is interrupted even briefly – it shuts down. The same thing happens to a decoder when it briefly loses power.

And the really bad thing is, when power returns, instead of continuing at its previous speed, the decoder first resets to speed step "0" then jumps back to the previous speed once it receives an update from the command station. This

results in jerky operation that can knock cars off the tracks and lead to erratic sound.

So, in our search for more reliable operation, we have to turn to the causes of power interruptions. These include unpowered turnout frogs, dirty track and wheels, and unreliable internal connections. Let's take a look at each of these and discuss some easy ways to fix the problems.

Powered frogs. In the November and December 2015 DCC Corner columns, I discussed turnouts and how to power frogs, so there really isn't a lot more I can add on that subject. If you decide to use electrically dead frogs, there are devices you can add later to deal with stalling. Plus, as long as you use turnouts with metal frogs, you can add feeders later, although it will be a lot more difficult and, in some cases, ugly.

For example, you can add feeders to Atlas turnout frogs after they're installed, but it will mean adding a screw to the frog casting and soldering a feeder to it right in the middle of your track instead of hiding feeders under the turnout.

Clean track. Dirty track and wheels are common problems with DCC locomotives. The dirt on our tracks comes from airborne dust, scenery materials, corrosion of the metal rails, and oil and grease from our locomotives. These all mix to form the dark greasy grunge that can cake wheels and rails. The easiest way to prevent it is to keep things clean in the first place.

A lot of dirt and dust can filter down from unfinished ceilings and work its way up from raw concrete floors. So the best way to prevent that is by finishing the train room, or at least paint the floor and staple plastic sheeting to the ceiling joists.

Garages in particular can be dirty places for layouts, and the only real option there is to hang plastic sheeting over the layout and add removable plastic curtains to protect it when not in use, as shown in **fig. 1**.

Another common source of dirt is scenery materials. To prevent it from gumming up the rails, I like to cover the rails with old newspaper or blue painter's tape when I'm applying plaster or other scenery materials.

When converting an existing layout to DCC, I strongly recommend a thorough track cleaning. This may require using something like GooGone or isopropyl alcohol to remove any built-up deposits on the track. If you do use GooGone, it can leave a sticky film behind that will attract more dirt, so always follow up with a clean, dry rag. Alcohol, on the other hand, will evaporate off the rails. Just be sure to open the windows when you use a lot of it. I don't recommend using lighter fluid or other highly combustible solvents.

Once the rails are clean, a moist rag or track cleaning car will usually be enough to remove any dust that accumulates. When you get around to a thorough cleaning job, don't forget the wheels on all your locomotives and rolling stock. If you don't get it off the wheels, that grunge will just end up back on your clean rails, and you'll have to start cleaning all over again.

Internal wiring. Another source of erratic performance can be traced to unreliable electrical connections inside the locomotive itself. Older Athearn "blue box" models and others of similar design are especially susceptible. If you look at the chassis of an old Athearn model, you'll see a metal strip on top of the motor (**fig. 2**, on the previous page). This strip picks up current from the trucks and passes it to the motor.

However, electrical continuity depends on physical contact between the strip and the metal riser on each gear tower. Over time, the strip can rust or sag and electrical continuity may become unreliable. An easy fix is to replace the metal strip with flexible copper wire soldered to the gear towers and motor contact.

Another issue with the old design is the contact between the truck and frame (**fig. 3**), which conducts power to the motor. The trucks ride on a bolster with a small cast-in pin on the frame that mates with a hole in the truck. For DCC use, the motor must be isolated from the frame.

The bearing surface on the truck consists of a steel plate that can rust or get fouled with lubricants and dirt. This can result in intermittent loss of electrical continuity. The fix here is to solder a piece of flexible copper wire to the truck frames and from there to the motor.

Electronic solutions. While keeping track clean and powering frogs will

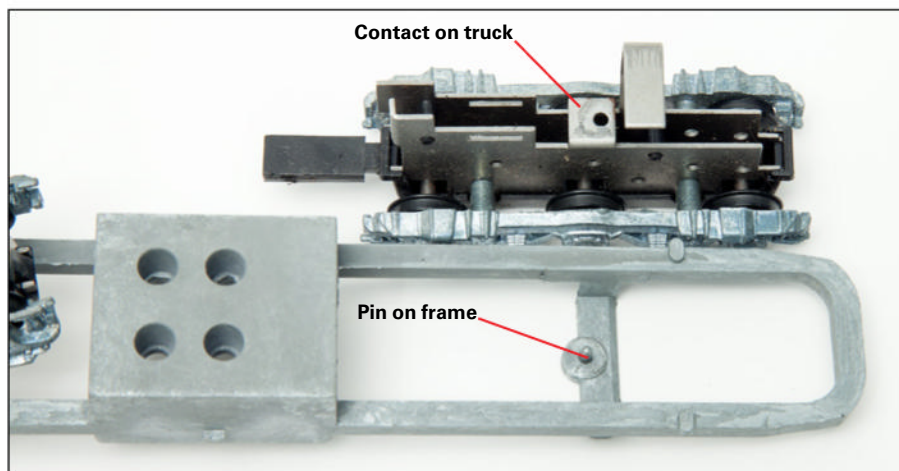


Fig. 3. Bolster pin. The Athearn bolster pin on the frame mates with a hole in the truck's gear case and serves as the other electrical contact point.

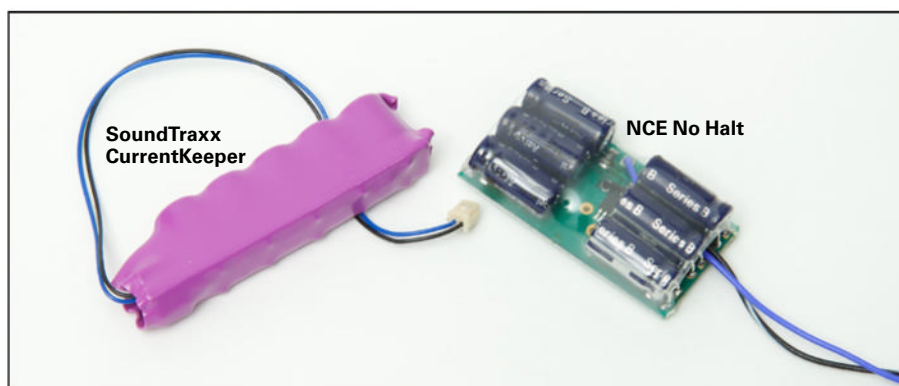


Fig. 4. Move along. Capacitors designed for model railroaders, like these from SoundTraxx and NCE, can power a decoder for several seconds, allowing it to pass uninterrupted over dirty or unpowered sections of track.

greatly improve electrical pickup, another option is to install capacitor units in your balky locomotives. Most of the major decoder manufacturers offer capacitor units under brand names such as Keep Alive, CurrentKeeper, or Power Xtender for use with their decoders (**fig. 4**).

These consist of several capacitors that charge up while receiving track power and feed that to the decoder, acting essentially as little batteries. When your locomotive hits a dirty section of track or a dead frog, the engine will glide right over it, powered by the capacitors.

Most capacitor units carry a large enough charge to keep a decoder operating for several seconds after track power is turned off. The net result is smooth, uninterrupted performance, including sound.

Although capacitor units add somewhat to the cost of a decoder installation, you need to consider the total cost relative to what it costs you to power each frog and keep track and wheels clean.

If you have lots of locomotives, it may cost more to install capacitors in them. However, on a switching layout with many turnouts and only a handful of engines, capacitors may be less expensive. The only problem may be squeezing a capacitor circuit into small switchers along with a sound decoder and speaker.

In an upcoming DCC Corner column, I'll be installing an NCE mobile decoder with its No Halt capacitor unit in an older Athearn diesel locomotive. I'll also show how to make the modifications I described in this article. In the meantime, you can visit my website at www.dccguy.com for more information. **MR**

Send your questions about Digital Command Control to DCC Corner, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail dcc@mrmag.com. We regret we can't answer all the questions we receive.



Bachmann USRA light Mikado features new tooling, sounds as good as it looks

One of the most common locomotives of the late steam era, the United States Railroad Administration (USRA) light 2-8-2 Mikado, is now available as a sound-equipped HO scale model from Bachmann Trains. The well detailed model represents a prototype that served on almost every railroad of its day. Equipped with a Sound Value Digital Command Control decoder, Bachmann's model sounds like the real thing. It's available in 10 road names.

History. When America entered World War I in 1917, the nation's railroads weren't up to the effort. President Woodrow Wilson nationalized the railroads and placed them under the control of the United States Railroad Administration.

One of the measures taken by the USRA was to create a set of standard locomotive designs that all builders would follow. Standard blueprints would allow parts to be mass produced, speeding maintenance and repair. The idea was unpopular at first, with engineers and executives objecting to the practicality of "one-size-fits-all" designs.

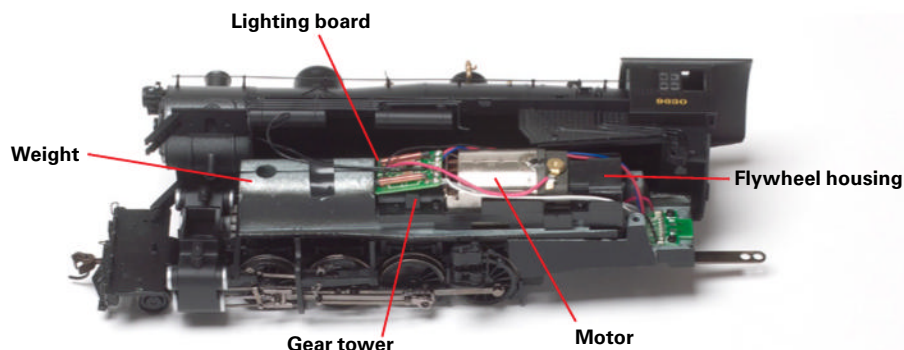
The agency silenced critics, though, with the release of 12 standard designs. The designs proved so practical and the benefits of standardization so useful that builders kept using the designs long after the USRA relinquished control of the railroads in 1920.

The first USRA locomotive built was a light 2-8-2, built by Baldwin and assigned to the Baltimore & Ohio, which

numbered it 4500. This proved to be the most popular of the USRA designs, with 625 built by Alco, Baldwin, and Lima for more than four dozen railroads. Resales and power leasing meant that the USRA light Mikado eventually saw service on practically every railroad in the country (and in Canada and Mexico, too). Many lasted to the end of the transition era.

Measuring up. I checked the model's dimensions against the diagram of a USRA light Mikado in *Model Railroader Cyclopedia Vol. 1 – Steam Locomotives* (Kalmbach Books, 1960), and the model measures up. Overall length, dome size and placement, boiler shape, and wheel-base all match the drawing. The model's drivers are about 3 scale inches smaller than the prototype's 63" diameter, but that's a necessary trade-off to maintain proper wheel spacing with a model's proportionally larger flanges.

Though some Pennsy steam purists may scoff at this model's lack of a square Belpaire firebox, the model is actually true to its prototype. Number 9630 was one of five USRA light 2-8-2s assigned to the Pennsylvania RR. Built by Alco's Schenectady plant in 1919, these Mikados had radial-stay fireboxes. The Pennsy numbered them 9627-9631 and designated them as class L2s. Alvin Stauffer's book *Pennsy Power* (1962, Standard Printing



To make room for more weight over the drivers, a lighting board is the only circuit board in the boiler. The Digital Command Control decoder is in the tender.

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& Publishing Co.) says the Pennsy was never fond of the USRA designs, and assigned the five Mikados to its Grand Rapids & Indiana RR subsidiary. The L2s locomotives worked most of their careers out of Pendleton, Ohio.

A photo of no. 9630 in *Pennsy Power* shows a distinctly radial-fireboxed steam engine. The prototype has the same standard USRA short tender the model has, and its "PENNSYLVANIA" lettering appears correctly sized and positioned. The Pennsy equipped few of its Mikados with feed-water heaters, so it's right that the model lacks one, too.

Overall, the model strongly resembles the prototype photo. But some details are missing, such as the builder's plate on the smokebox and the steps on the side of the firebox. The whistle is on the wrong side of the steam dome, the generator should be just behind the headlight, and the model has a spoked pilot, instead of a beam pilot with footboards.

The mechanism. I removed the boiler by first taking off the Delta trailing truck, which gave me access to two screws under the cab. A third screw under the smokebox was removed through a convenient hole in the lead truck's radius bar. After I disengaged the wire front deck braces, the plastic boiler shell and cab assembly easily lifted off.

Under the shell, the motor rested in a slippery engineering plastic assembly atop the die-cast metal frame. The gear tower was in front, while the small flywheel was enclosed behind the motor to keep it from rubbing against the wiring. A small printed-circuit (PC) board for lighting was on top of the gear tower, and another under the cab had a socket for wires to the tender. The Digital Command Control decoder and speaker were in the tender.

Testing. I first ran the engine under direct current. Most DCC sound decoder equipped locomotives require 7 to 9 volts just to get moving. The Bachmann L2s had better-than-average DC performance right out of the box.

The locomotive started rolling a bit quickly at 6V, but after it had started, I could dial it back down to 5V for a smooth, slow roll at just over 1 scale

mph. At this speed, the bell sounded along with the engine chuffs. The engine looked good in motion, its Walschaerts valve gear moving smoothly.

As I tested the engine, I noticed that the engine chuffs were coming a little fast – between five and six chuffs per wheel revolution, rather than the prototypical four. I looked up the Sound Value decoder manual on Bachmann's website (www.bachmanntrains.com), and saw that the decoder's Configuration Variable 116 was called BEMF (Back-Electromotive-Force) Auto Chuff Rate. I placed the locomotive on a DCC programming track, and by trial and error, found that a value of 61 for this CV produced four chuffs per revolution.

Next I tested the engine under DCC. The engine moved smoothly at just under 2 scale mph in speed step 1. It progressed to a top speed of almost 39 scale mph at speed step 28, which is a little slow for a prototype capable of topping 50 mph. The model's speed is appropriate for an engine hauling a full freight train, though.

I used the NCE Powercab's function buttons to trigger the bell (F1), long horn (F2), short horn (F3), and steam blow-down (F4) sound effects. Function 7 dimmed the headlight (or backup light if moving backward), and F8 muted the sound effects.

Our sample ran smoothly through 18" radius curves, but this required that the tender and locomotive have a scale 4 foot space between them. A hole is provided in the locomotive drawbar for more prototypical spacing. Close coupling the locomotive and tender requires broader curves.

Our test bench force meter registered a drawbar pull of 2.72 ounces, which translates to 38 free-rolling 40-foot boxcars on straight, level track. On the MR&T, the locomotive pulled eight loaded gondolas up a 3 percent grade.

They're everywhere. Bachmann's Sound Value light 2-8-2 is a sharp-looking model of a ubiquitous locomotive. Its Sound Value DCC decoder provides easy operation and realistic sound. For the last three decades of the steam era, these handsome engines could be found on practically every railroad in the country. If you model the steam- or steam-to-diesel-transition eras, you should find a spot for one in your roundhouse. – *Steven Otte, associate editor*

Dana Kawala

►► HO scale USRA light 2-8-2

Price: Digital Command Control-ready, \$315; with SoundValue DCC sound decoder, \$399

Manufacturer

Bachmann Industries Inc.
1400 E. Erie Ave.
Philadelphia, PA 19124
www.bachmanntrains.com

Era: 1918 to early 1950s

Road names: DCC-ready: Pere Marquette, Rock Island, St. Louis-San Francisco (Frisco), Southern Ry., Western Pacific. DCC-equipped: Baltimore & Ohio, Maine Central, New York Central, Pennsylvania RR, Union Pacific.

Features

- Blackened metal wheels, in gauge
- Electrical pickup on eight drivers and all tender wheels
- Five-pole, skew-wound motor with flywheel
- Minimum radius: 18"
- Plastic boiler shell, cab, and tender
- Plastic E-Z Mate Mark II knuckle couplers, at correct height
- Sound Value Digital Command Control sound decoder (DCC version) or 8-pin decoder socket (DCC-ready version)
- Weight: 15.2 ounces (engine and tender), 11.6 ounces (engine only)
- Wire handrails, grab irons, and coupler lift bars

Bachmann HO scale USRA light 2-8-2

Drawbar pull	2.7 ounces		
	38 HO scale freight cars		
Scale speed (DC)		Scale speed (DCC)	
Volts	Scale mph	Speed step	Scale mph
5	1.1	1	1.8
7	14.5	7	12
9	27	14	23
12	46	28	39

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Subscribers can see and hear the Bachmann HO scale Sound Value USRA light Mikado hauling a freight train. Click on the Videos tab at www.ModelRailroader.com.



Rapido HO scale FL9 captures the details and sound of a unique locomotive

No, this is not yet another F7. Yes, Rapido's HO scale FL9 is an F unit, but it's unlike any other that was built. This diesel-electric locomotive had third-rail pickup shoes to operate in the New York City electrified zone.

The prototype. The Electro-Motive Division FL9 was the solution for the New York, New Haven & Hartford RR's problem of getting trains into and out of Manhattan's Grand Central Terminal. A 1903 law banned steam locomotives from Manhattan, so the lines were electrified. By the end of World War II, the New Haven was in the market for new locomotives for its commuter service. Although parts of the New Haven were electrified, the management under Patrick McGinnis wanted to remove the overloaded system.

The FL9, an F9 with a lengthened frame, could operate from third-rail shoes in the electrified zone, but diesel power outside New York City, thereby reducing the load on New Haven's marginal electrified system. The longer frame accommodated the extra equipment needed for this commuter duty. A six-axle A1A rear truck helped spread the locomotive's weight, important for loading requirements on the Park Avenue viaduct leading to Manhattan's Grand Central Terminal.

New Haven ordered 30 FL9s in 1956, then another 30 in 1960. The locomotives were powered by 16-567 diesel engines of 1,750 and 1,800 horsepower, respectively.

The locomotives went through several owners over their lifetimes, and with rebuilds, served into the 2000s. The last FL9 operated for the New York

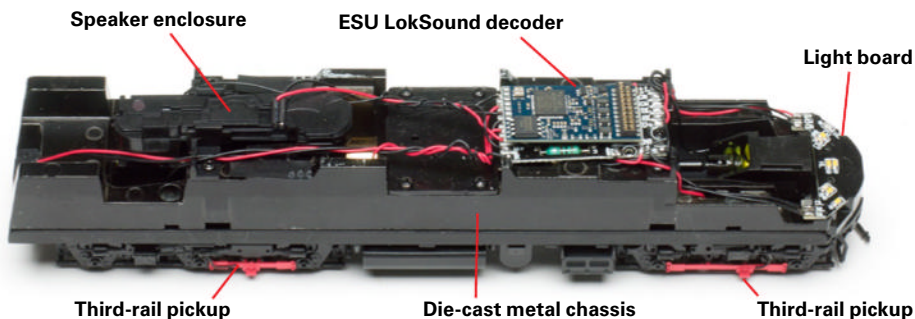
Metropolitan Transit Authority's Metro-North Commuter RR in 2009.

The model. Rapido offers its FL9 in two versions matching the two batches of locomotives delivered to the New Haven. The models have details specific to their paint schemes, too.

We received two samples. The New Haven locomotive, in the New Haven McGinnis-era scheme of black, white, and orange-red, was detailed as a first-batch locomotive in as-delivered form, so it has nose M.U. doors, roof-mounted cooling coils for the 16-567C engine, a Hancock air whistle, and a pantograph for overhead third rail. The pantographs were removed in the 1960s.

The Metro-North locomotive, in a silver, blue, and red scheme, was detailed as a locomotive from the New Haven's second order. The ledge on the engineer's side of the nose is a handy spotting feature, although they were later added to older locomotives.

The models have Flexicoil trucks, with two axles in the front and three axles on



Rapido's HO scale FL9 has a die-cast metal frame with a can motor and flywheels nestled inside. The trucks are detailed to match the era of the paint scheme.

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the rear. On the full-size locomotive, the center axle on the rear truck was an idler. All axles are powered on the model.

Dimensions match those published in *Model Railroader Cyclopedia, Vol 2: Diesel Locomotives* (Kalmbach Publishing Co., out of print), and *Diesels to Park Avenue, the FL9 Story* by Joseph R. Snopek and Robert A. La May (New England Rails Publishing, 1997).

Lettering was accurate on both samples. The paint was opaque and evenly applied, but there was some fuzziness and misalignment on the nose of the Metro-North sample. Alternate road number decals are included.

Slipping toothpicks between the body shell and frame made it easier to release the latches above the trucks holding the shell on. The motor and flywheels are nestled in a die-cast metal frame. Driveshafts connect to gear towers on the trucks, which pick up current from all 10 wheels. The detailed cab interior, which is era-specific, doesn't have any crew figures. The cab snaps out of the body shell for access.

On the test track. I started testing on direct current (DC). Start-up sounds commenced at 5V, and at 6.5V the locomotive started moving at less than 1 scale mph. At 12V, the locomotive reached 61 scale mph. Unless you have an analog sound controller such as a Model Rectifier Corp. Tech 6, the only sounds available are the engine sounds, which notch up and down with voltage.

In DCC, the ESU LokSound decoder offers the full array of diesel-electric locomotive sounds, plus some features unique to Rapido's FL9. One that caught my attention was Grand Central Terminal Mode, accessed with function 14.

When the FL9s headed into the tunnels for Grand Central, the crew shut down the diesel engine and set a drum switch to draw power from the 600V third rail. On the model, pressing F14 locks the prime mover in idle, but increases the volume of the traction motor blowers. Pressing F8 will shut down the diesel engine sounds, but leave all other sounds working. Although the Hancock air whistle produces an unexpected sound for a diesel locomotive, it sounds like the examples I found online.

On *Model Railroader's* club layout, the Milwaukee, Racine & Troy, Rapido's FL9 had no trouble pulling a three-car passenger train up the 5.5 percent grade connecting the staging areas.

▶▶ HO scale FL9 locomotive

Price: \$349.95 (DCC sound)

\$249.95 (DC, no sound)

Manufacturer

Rapido Trains Inc.

500 Alden Road, Unit 21

Markham, Ontario L3R 5H5

Canada

www.rapidotrains.com

Era: 1957 to 1996, depending on paint scheme

Road names: New Haven, three paint schemes; Penn Central, NH patch; Penn Central, black; Penn Central, blue and yellow; Conrail, blue and yellow; MTA, silver and blue; Metro North, red, silver and blue; Amtrak, phase II; Amtrak, phase III; undecorated

Features

- Full underframe detail including piping and conduit
- Available with an ESU LokSound sound decoder or as a direct current, DCC-ready model
- Five-pole, skew-wound motor
- Macdonald-Cartier metal knuckle couplers mounted at the correct height
- RP-25 metal wheels, in gauge
- Weight: 1 pound, .4 ounce

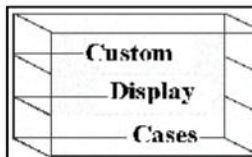
Rapido HO scale FL9 locomotive

Drawbar pull	3.7 ounces
	17 HO passenger or 52 HO freight cars

Scale speed (DC)		Scale speed (DCC)	
Volts	Scale mph	Speed step	Scale mph
6.5	<1	1	<1
7	6	7	12
9	29	14	31
11	49	21	55
12	61	28	58

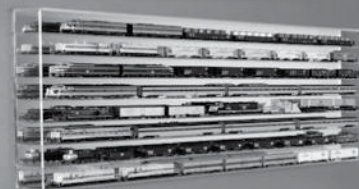
The locomotive had very good slow speed operation in DCC, moving at less than 1 scale mph in speed step 1. In speed step 28, the locomotive topped out at only 58 scale mph, which is slower than the prototype, but fast enough for most model railroads.

If you're modeling commuter operations into and out of New York City, Rapido's FL9 fills a hole in the rosters of layouts set from the late '50s into the early 2000s. With all of its DCC features, this locomotive will make that a fun era to re-create. — *Eric White, associate editor*



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Walthers HO scale 40-foot boxcars model common transition-era prototypes



1944 AAR boxcar



1948 AAR boxcar



PS-1 boxcar

Three all-new ready-to-run boxcars from Walthers make it easy to model common post-World War II prototypes. Although not as detailed as a top-of-the-line WalthersProto model, these WalthersMainline cars feature accurate, molded details and are each available in about a dozen road names.

Prototypes. Whether built by a freight car manufacturer or by a railroad's own shops, boxcars often followed standard designs developed by the Association of American Railroads (AAR) as well as its predecessors, the American Railway Association and the United States Railroad Administration. These included early steel boxcars such as the 1932 ARA and 1937 AAR 40-foot boxcars.

In 1944 the AAR came up with an improved 40-foot boxcar design. By this time, a 10'-6" inside height was more common than the 10'-0" inside height of the 1937 design. The other notable spotting feature was the 1944 car's improved Dreadnaught ends. While the previously

designed Dreadnaught end had triangular "darts" between the main corrugations, the improved Dreadnaught ends featured an additional narrow corrugation between the wide corrugations.

In 1948 the AAR changed the boxcar design slightly when it added a rectangular rib at the top of each end. By this time, the diagonal panel roof became a popular option for boxcar builders.

In 1947, Pullman-Standard came out with its own boxcar design, essentially a proprietary version of the 1944 AAR boxcar. The 40-foot car was the first of Pullman's PS-1 line, which eventually included 50-foot and exterior-post boxcars. The main spotting feature for the 40-foot PS-1 included Pullman's proprietary end design with rounded corrugations and roof design with distinctive "bow-tie" raised panels. All-welded construction was a big selling point for the PS-1s, although some very early examples had riveted side panels.

The PS-1 design also changed over the years. Early production cars featured

flat roof panels, without raised bow-tie sections, at the ends, while later cars had bow-tie panels along the entire roof. Later PS-1s also had rectangular stiffener panels welded on the ends under each roof peak. After 1949, cars could be ordered with Pullman diamond-panel side doors.

Details. Most of the detail on the boxcars is molded, including the side and end ladders, tack boards, and grab irons. The Ajax hand brake wheel and end corner stirrup steps are separately applied. The plastic running board is also a separate part with see-through tread that models an Apex metal running board.

The well-defined detail matches the spotting features of each model's prototype. Both the 1944 and 1948 AAR boxcars have rivet seams between the body panels, while the PS-1 correctly has welded seams.

All the cars have appropriate end, roof, and door details. These included the improved Dreadnaught ends and Murphy raised panel roof on the 1944 AAR car, the improved Dreadnaught ends with the extra rectangular corrugation and a diagonal panel roof on the 1948 AAR car, and the P-S ends and "bow-tie" roof for the PS-1.

The HO scale PS-1 also models an earlier production car with flat end roof panels, 6-scale-foot wide Superior doors, and no stiffener panels. The HO scale 1944 and 1948 AAR cars are available with 6-scale-foot wide Youngstown corrugated doors.

The plastic underframe of each model features molded center sill, bolster, and stringer details. The car floor includes molded floorboards and the crossbearers have molded rivets. The arrangement of the brake details are the same for each model, including a separately applied triple valve, reservoir, and brake cylinder. The accurately proportioned cars would make a solid starting point for a super-detailing project for those looking to model a specific prototype.

Paint and lettering. The models are smoothly painted with clearly printed graphics. Most of the models' decoration



All the models feature prototype-specific roofs. These include the Murphy raised panel roof (top), diagonal-panel roof (middle), and PS "bow-tie" roof (bottom).

matches photos of the prototype or cars that were part of the same order.

Our 1944 AAR sample is decorated for Nickel Plate Road no. 5279, part of a 500-car order delivered to the railroad in 1946. The model has the correct 6-foot corrugated Youngstown doors.

Our review sample for the 1948 AAR car is decorated as ATSF 16949. This prototype, classified by the SF as BX-78, was a war emergency boxcar (class BX-38) that was rebuilt in the late 1950s on a cushion underframe. The BX-78 had the same dimensions as a 1948 AAR car. However, this SF prototype had 8-foot door openings rather than the 6-foot doors depicted on the model.

Our PS-1 sample is decorated for New York Central no. 167001, which was part of a 1,000-car group delivered by Pullman in 1948, according to an NYC freight car roster. The car's decoration matches its prototype after a 1959 repaint. However, the model has an incorrect 1945 built date.

Weight, trucks, and couplers. Each car weighs 3.7 ounces, which is .1 ounce too light according to National Model Railroad Association Recommended Practice 20.1. The car body is cemented to the floor, making it difficult to gain access to the interior to add more weight.

The plastic 50-ton AAR trucks feature accurate molded detail, including the twin coil springs and solid-bearing jour-

▶ WalthersMainline boxcars

Price: \$24.98 (1948 BAR is \$27.98)

Manufacturer

Wm. K. Walthers Inc.
5601 W. Florist Ave.
Milwaukee, WI 53218
www.walthers.com

Era: 1940s to 1960s (as detailed)

Road names (two numbers each)

1944 AAR: Nickel Plate Road; Atchison, Topeka & Santa Fe; Canadian National; Canadian Pacific; Chicago & North Western; Chicago, Burlington & Quincy; Delaware & Hudson; Denver & Rio Grande Western; Louisville & Nashville; Monon; New York Central (boxcar red and *Pacemaker* schemes); Northern Pacific; Reading; Union Pacific; Wabash; Western Pacific.

1948 AAR: SF; Baltimore & Ohio; Bangor & Aroostook; CN; CP; Great Northern; Illinois Central; Pennsylvania (boxcar red and *Merchandise Service* schemes); St. Louis Southwestern (Cotton Belt); Toronto, Hamilton & Buffalo; Western Maryland.

PS-1: NYC; Boston & Maine; CNW; Delaware, Lackawanna & Western; Green Bay & Western; Lehigh Valley; New York, New Haven & Hartford; Norfolk & Western; Rock Island; Seaboard Air Line; SF; UP. Undecorated versions available.

nal covers. The trucks all have accurate 5'-6" axle spacing and screw into the bolsters with Phillips-head screws. The free-swiveling trucks allow the car to easily negotiate an 18" radius curve.

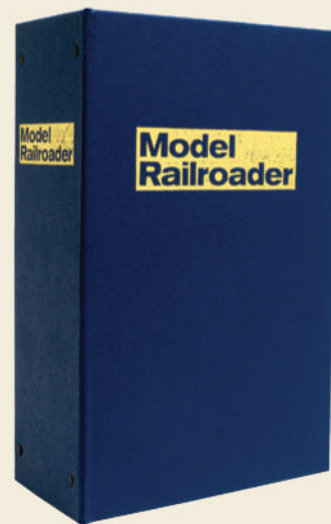
Correctly gauged according to NMRA standards (S-4.2), the metal wheels are mounted on insulated plastic axles. Each wheel is a prototypically correct 33" in diameter. A little paint and weathering will enhance the appearance of the shiny wheel faces.

I appreciate that Walthers includes metal, rather than plastic, knuckle couplers for added durability. The Proto-Max couplers are mounted at the correct height per NMRA S-2. The coupler trip pins also didn't require any adjustment.

These HO scale boxcars make it easy to model the backbone of a freight car fleet. — Dana Kawala, senior editor

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PRODUCTREVIEWS

QUICKLOOK

Fox Valley Models N scale Pennsylvania RR H30 hopper

Price: \$26.95

Manufacturer

Fox Valley Models

P.O. Box 1970

Des Plaines, IL 60017

www.foxvalleymodels.com

Road names: Pennsylvania RR (red in six road numbers and gray 1960s scheme), Conrail (gray), Penn Central (Jade Green, regular and sand service schemes), and Norfolk & Western. Three numbers each unless noted.

Era: 1935 to late 1970s

Comments: A Pennsylvania RR (PRR) class H30 covered hopper has been added to the Fox Valley Models product lineup. The ready-to-run injection-molded plastic model features a one-piece body; separately applied discharge gates, roof, center sill, brake wheel, and slope sheet bracing; and body-mounted couplers.

The PRR started building the class H30 covered hopper in 1935. By the end of production in 1946, more than 1,300



cars were produced. The 1,973-cubic-foot-capacity covered hopper was used to transport cement, lime, and sand, among other commodities.

Fox Valley Models captured the distinguishing features of this car. The running board, which features a raised diamond pattern, is integral with the roof (the pattern should also be on the brake wheel platform, but was omitted). The slope sheets and diagonal braces are both accurately at 48-degree angles. The locking mechanisms for the hatch covers follows the correct 3-2 pattern.

The Fox Valley Models car mostly follows prototype drawings published online. The truck centers are a scale 6 inches too short, and the distance over the strikers is a scale foot short.

The paint is smooth and evenly applied. The lettering is opaque and crisp and follows prototype placement.

The car weighs .8 ounce, which is .1 ounce too light per National Model Railroad Association recommended practice 20.1. The metal wheelsets are correctly gauged. The couplers are at the correct height.

I ran the car on our Red Oak project layout from 2015. The model easily negotiated the 13" radius curves and Peco no. 6 medium turnouts.

Though the H30s started life on the PRR, the covered hoppers survived into the Penn Central and Conrail era. Depending on the paint scheme, this car would be right at home on layouts from the steam era through the late 1970s. – *Cody Grivno, associate editor*

QUICKLOOK

NCE DCC Twin

Price: \$159.95

Manufacturer

NCE Corp.

82 East Main St.

Webster, NY 14580

www.ncedcc.com

Comments: For model railroaders who want to run Digital Command Control (DCC) equipped locomotives, but still want the familiarity of a direct-current (DC) power pack, the NCE DCC Twin provides a solid option. The unit is as easy to master as a DC power pack, and also allows easy access to several user-triggered effects.

In addition to the main throttle unit, the DCC Twin includes a 1-Amp power supply, which is powerful enough to handle two HO or N scale DCC-equipped locomotives. The unit also comes with a plug-in set of screw terminals for the track leads from a pair of terminal rail joiners or rail



section (not included). A pair of wires could also be directly soldered to the rails to provide track power.

The DCC Twin is two separate throttles in one unit, allowing an operator to control two DCC locomotives even if they're on the same track. The throttle knobs control both speed and direction.

In addition to headlight buttons, there are numbered function buttons and a shift key under each throttle. The unit supports up to nine DCC functions.

Out of the box, the DCC Twin doesn't have any programming

capability. However, the best part about the system is that it isn't a dead end. A jack for a telephone-style cable that serves as a cab bus (sold separately) is found on the back of the unit. Once a modeler is comfortable with basic DCC control, it's easy to expand the DCC Twin into a fully featured DCC system using other NCE components.

The DCC Twin can support up to six wired or wireless throttles. With the addition of an NCE Procab, a modeler can program DCC equipped locomotives and accessories.

For modelers who upgrade to a more powerful command station, the DCC Twin can also be connected to the cab bus. In this scenario, the DCC Twin functions as two separate utility throttles. This could be useful in a location such as a yard or a large industry where it would make sense to have one or two stationary cabs.

The NCE DCC Twin offers a user-friendly way to ease into Digital Command Control. – *D.K.*

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TRACKSIDE PHOTOS



▲ On the Colorado Midland in 1897, westbound freight No. 38 is passing one of the most famous landmarks on the railroad, the deep chasm known as Hell's Gate. Having dropped its helper at Ivanhoe, the train is on its way to Grand Junction. Andrew Dodge of Olney, Md., photographed the scene on his O scale layout. The engine is scratchbuilt and the cars are modified LaBelle kits.



Want to see your work in Trackage Photos?

Trackage Photos is a showcase for the work of *Model Railroader* readers. We encourage contributions. Send your photos (digital images 5 megapixels or better) to: *Model Railroader*, Trackage Photos, P.O. Box 1612, Waukesha, WI 53187-1612; or upload them to <http://fileupload.kalmbach.com/Submission/contribute/>. Include caption information, such as what's going on in the picture; the layout's scale, era, and locale; and information about the rolling stock or structures shown. For a copy of our photo submission guidelines, contact associate editor Steven Otte at 262-796-8776, ext. 370, or sotte@mrmmag.com.

Now on ModelRailroader.com

The photo above, of Andrew Dodge's O scale Colorado Midland layout, is this month's free computer wallpaper. You can download it from www.ModelRailroader.com.

TRACKSIDE PHOTOS



▲ Long Island Rail Road Alco RS-1 no. 464 enters the seaside town of Eastport with the local while dock workers service a fishing boat. The action takes place on an HO scale switching module built by John Cisela of Mineola, N.Y. John says his modeling is influenced by Iain Rice's Roque Bluffs series in the Oct. 2003-April 2004 *Model Railroader*. John also shot the photo.



◆ Fremont, Elkhorn & Missouri Valley Ten-Wheeler no. 210 backs to pick up a passenger car at Crown Hill, S.D., near the end of the railroad's narrow gauge tracks. Anthony Richter of Spearfish, S.D., used prototype photos to scratch-build the Crown Hill depot for his HO scale FE&MV layout (see our June 2013 issue). He also took the photo.

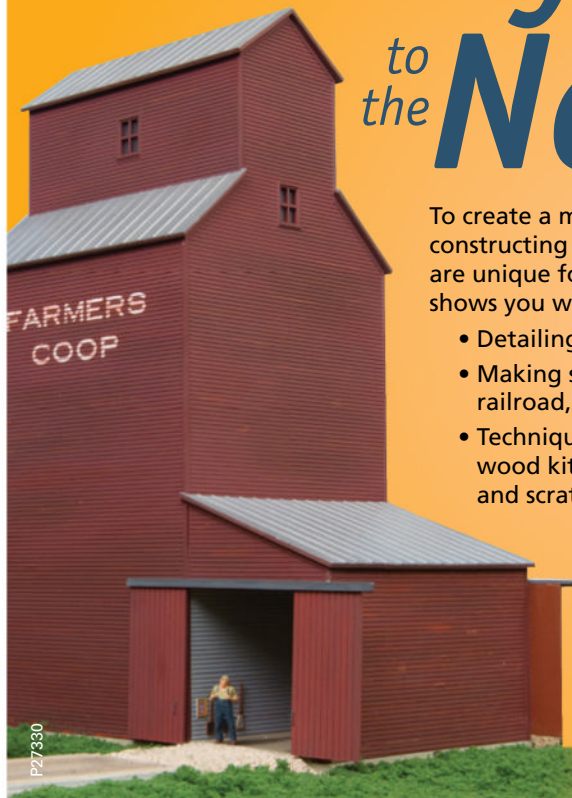


▲ Japanese National Rys. class C56 no. 111 pulls a coal train past a grove of cherry trees while a railfan in traditional kimono watches. James Stapfer of Illnau, Switzerland, shot the photo on the OJ scale (1:45 on 24mm track) modular layout built by the Nippon Rail Swiss modeler's group in Zurich.

► A Kansas City Southern Electro-Motive Division F7A rolls onto the turntable at Leesville, La., in preparation for another day transporting lumber from Hutchins Sawmill to New Orleans. Phil Pesek, whose father worked for the KCS, photographed the action on his HO scale layout. Phil, a member of the Evergreen Model Railroaders group in Spokane Valley, Wash., has been a model railroader for just four years.



Take your Layout to the Next Level

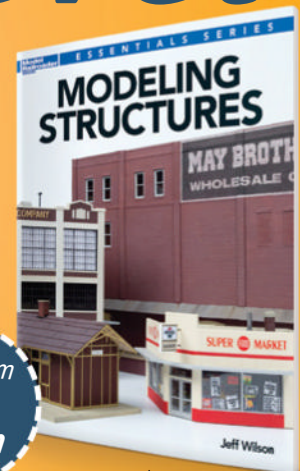


To create a more realistic layout, consider constructing buildings and structures that are unique for each project. Jeff Wilson shows you what you'll need to know about:

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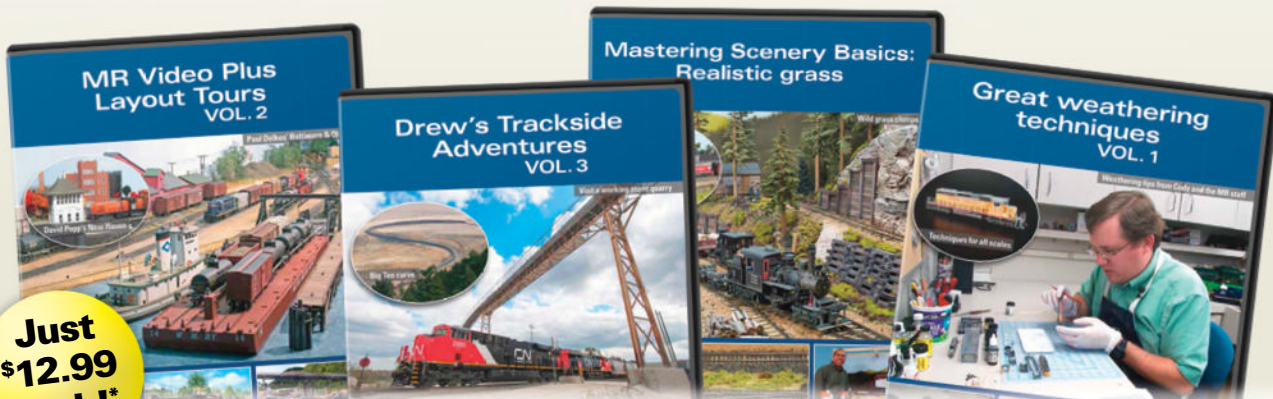
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CLOSING DATES: March closes Dec. 16, April closes Jan. 19, May closes Feb. 23, June closes Mar. 22, July closes Apr. 25, Aug. closes May 20, Sept. closes June 20, Oct. closes July 25, Nov. closes Aug. 18, Dec. closes Sept. 20.

Note to Readers: Show dates, times and locations sometimes change. Confirm the details before driving any distance.

Schedule of Events

AL, FOLEY: Annual Train Show. Sponsors: Caboose Club (FOLEY RR Museum) and SWARM. Foley Civic Center, 407 E. Laurel Ave. March 12-13, 2016, Saturday 9:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$4.00, under 10, military, fire, police, FREE. Free parking. Bob Adams, santafebob95@msn.com or Charlie Boyer, 251-914-0893, charlieboy6@att.net

AR, SPRINGDALE: Sugar Creek Model Railroad Historical Society, Thirteenth Annual Show. Holiday Inn & Convention Center, 1500 South 48th St., Zip: 72762. Saturday, February 27, 2016, 9:00am-4:00pm. Adults \$8.00, under 12 free. Keith Johnson, 479-871-2802, E-mail: train072@cox.net or NWA Train Show, PO Box 1283, Farmington, AR 72730, Website: www.railroadclubsugarcreek.org

CT, GREENWICH: Southern Connecticut Model Train Show, Greenwich Civic Center. March 13, 2016, 9:00am-3:00pm. Adults \$7.00, under 12 free. Valley HO Trak and 4 more layouts. Clinics, 150 tables, door prizes, free parking, refreshments. Ron's Books, PO Box 714, Harrison, NY 10528, 914-967-7541, ronsbooks@aol.com www.southerncttrainshow.com

CT, WALLINGFORD: The Mark T. Sheehan High School 8th Annual Model Train Show. 142 Hope Hill Road. April 3, 2016, 10:00am-3:00pm. Layouts, vendors, ride-on-train, food, door prizes. Adults \$6.00, 5-17 \$1.00, under 5 free. Flat surface, no stairs. Contact Phyllis Drescher: 203-265-0223 or e-mail: jpdrescher@comcast.net

FL, INVERNESS: Citrus Model Railroad Club Annual Event, Citrus County Fairgrounds, Horticulture Building, February 20, 2016. Registration 8:30. Fee: \$15.00 which includes coffee and donuts, lunch, clinics and operating session on the club layout. Contact Jim Robertson, 1199 N. Lombardo Ave., Lecanto, FL 34461, 352-746-4039

FL, JACKSONVILLE: 38th Jacksonville Rail Fair. Prime Osborn Convention Center, 1000 Water Street, Saturday, February 13, 2016, 9:00am-5:00pm. Adults \$8.00, (under 12 free). Over 350 tables. Large operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954, E-mail: rrshows@aol.com

FL, LARGO: TCA Train Show. MinnReg Building, 6340 126th Ave. Saturday, January 23, 2016, 10:00am-3:00pm. Adults: \$5.00, children under 12 free. Displays, layouts, door prizes. Contact for more information or directions: Charles Anyan, 727-345-0288, canyan1@tampabay.rr.com

FL, PALM BEACH GARDENS: TCA Train Show. St. Marks Church, 10635 Gardens East Dr. Saturday, February 13, 2016, 10:00am-3:00pm. Directions: Easy access from I-95 and Turnpike. Off Burns Road. Adults: \$5.00, under 12 free. Displays, layouts, scavenger hunt, drag races. Contact: Al Galli, 772-219-7653.

FL, PORT RICHEY: Toy Train & Hobby Show, 5850 K of C Drive. Saturday, February 13, 2016, 9:00am-2:00pm. Admission: \$5.00 adults, 12 and under free. Vendors, operating layout, Lunch items for sale. Contact Joe, 727-244-1341, visit: www.regalarailways.com for more information.

FL, STUART: Martin County Model Railroaders 8th Annual Train Expo. Martin County Fairgrounds, 2616 Old Dixie Hwy. January 16, 2016, 9:00am-3:00pm. Admission: Adults \$6.00, Operating layouts, sales tables, displays & NMRA information. Information: Wesley Phillips, 772-486-0591, mcmr2616@yahoo.com, PO Box 1498, Stuart, FL 34995.

IL, HOOPESTON: ECI Model Railroad 10th Annual Model Train Show. Hoopston Civic Center (on IL Rt. 1). February 20-21, 2016, Saturday 10:00am-4:00pm, Sunday 10:00am-3:00pm. Adults: \$2.00; Children 12 & under FREE. Sell and Trade. Handicap Accessible. Free Parking. Contact Lenard 217-497-5668 for more information.

IL, LOMBARD: Chicago O Scale Meet (2-Rail). Westin Lombard Yorktown Center, 70 Yorktown Center. We've moved into April for 2016! April 1-3, 2016. Friday dealer set-up, show open to public Saturday 9:00am-5:00pm, Sunday 9:00am-2:00pm. Largest dedicated O Scale show out there. \$20.00 entire weekend. Info: Melissa 630-745-7600 or www.marchmeet.net

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the State Fairgrounds. Sunday, March 13, 2016, 10:00am-4:00pm. Early Bird shopping starts at 9:00am. Free parking. Largest show in down-state Illinois! For info call Mike at 217-306-8427 or visit www.springfieldtrainfair.com

IN, FORT WAYNE: RxR Mania Train Show. Horizon School campus, 2000 N. Wells Street. Saturday, February 6, 2016, 9am-5pm. Adults \$5.00, under 12 free. \$20/dealer table, approx. 150 8' tables. More info: RxRMania.com or call Jim (260) 627-2176.

IN, KOKOMO: Antique Toy & Train Show. Ivy Tech Event & Conference Center, U.S. 31 By-Pass North. Saturday, February 6, 2016, 11:00am-4:00pm. Adults \$5.00, 13-18 \$1.00, 12/under free, 200+ tables, all gauges, free parking, good food/ drink. Contact: David Moree, 4402 East 100 South, Kokomo, IN 46902, 765-457-1044.

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, February 28, 2016, 10:00am-3:00pm (Chicago time). Adults \$3.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186.

IN, MIDDLEBURY: Essenhaus Train Show. On the Das Dutchman Essenhaus campus, 240 US 20. Saturday, February 20, 2016, 9:00am-2:30pm. Admission \$3.00/person or \$6.00/family. (Children under 7 FREE w/adult). All gauge, operating layouts, repairs, parts dealers, selling and trading. Display tables \$15.00 each. Essenhaus.com or 800-455-9471 (x443).

MA, AUBURN: Worcester Model Railroaders Show & Open House at the Elks, 754 Southbridge St. Sunday, February 28, 2016, 10:00am-3:30pm. Admission: \$5.00, children under 12 free. Dealers and operating layouts. Contact: Ralph Kimball, Jr., 508-868-5189, ralphkimball@charter.net or www.wmrr.org

MA, WALTHAM: Hub Division NER/NMRA Spring TRAINing Model Railroad Clinic/Train Show; Sunday, April 3, 2016, 10:00am-4:00pm. Embassy Suites by Hilton Boston-Waltham, 550 Winter St. (I-95, North or South exit 27B). Admission \$7.00, under 12-FREE. Featured clinician Bill Barnaby. Information and clinic details visit website: www.hubdiv.org

ME, AUGUSTA: Whitefield Lions Club 30th Annual Model Railroad & Miniature Dollhouse Show, National Guard Armory, Western Avenue. February 20, 2016, 10:00am-3:30pm. Adults \$5.00, under 12 free, family \$10.00. Operating layouts, miniature displays. Contact: Steven P. Landrie, 50 Fairview Ave., Randolph, ME 04346. Telephone: 207-582-1410, E-mail: slaudrie@roadrunner.com

MI, SALINE: The Ann Arbor Model Railroad Club 45th Annual Train Show & Sale, Saline Middle School. February 13-14, 2016. Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$6.00, under 10 free w/paid adult. 400+ tables, free clinics, free parking, shuttle buses. Contact: www.a2trainshow.com 734-426-5100 Wednesday Evenings.

MO, ARNOLD: The Warrior Express Train Show, Fox C6 High School Gym, 751 Jeffco Blvd. Saturday, February 13, 2016, 10:00am-3:00pm. Admission: \$3.00, under 12 free. Tables \$14. All scales represented. Dirk P. Reynolds, 618-973-2237 for flyer emailed.

NC, ASHEVILLE: Asheville Train Show. Western North Carolina Agricultural Center. March 4-5, 2016, Friday 12:00pm-7:00pm and Saturday 9:00am-5:00pm. Admission \$5.00, under 10 free. All scales, all gauges, collectibles, artifacts. Operating layouts, Thomas The Tank Engine, hundreds of vendor tables. More: www.Asheville-Trainshow.com

NC, GREENSBORO: 8th Annual 'Greatest Little Train Show'. AMTRAK Depot, West Concourse, 300 E. Washington St. Saturday, March 19, 2016, 10:00am-3:00pm. \$5.00 adults, under 12 free. Greensboro's only train show. CMR layouts open. Meter parking free. Walt Sabin, 336-312-4198. carolinamodelrr@aol.com or CMR, PO Box 13642, Greensboro, NC 27415.

NC, NEW BERN: 21st Annual Train Show, New Bern Riverfront Convention Center, 203 South Front St. February 20-21, 2016, Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$7.00, under 12 free w/adult. Operating layouts, 25+ vendors, food concession, door prizes. Carolina Coastal Railroaders, Joseph T. Hofmann, 252-474-4153.

NY, FISHKILL: Fishkill Model Train and Railroad Hobby Show. Fishkill Recreation Center, 793 Route 52. Sunday, February 14, 2016, 10:00am-4:00pm. Adults \$7.00, kids under 12 \$2.00. 13,000 sq. ft. Operating layouts, dealer, vendor tables, Thomas the Tank engine and LEGO trains. Information: 845-616-0931 or kingstonmts@aol.com

NY, ROCHESTER: TCA Upstate NY Chapter & Edgerton Model RR Club's Train Show. Edgerton Community Center, 41 Backus Street. Zip: 14608. Saturday, February 27, 2016, TCA Members: 9:00am-10:00am. Public: 10:00am-3:00pm. Admission \$5.00, children under 17 free w/paid adult. Call: Chuck 716-390-8216 or Lee 585-544-0916. E-mail: tca.usnyc@yahoo.com or www.upstate-ny-tca.com

NY, SYRACUSE: Syracuse Model Railroad Club Open House. Eastwood American Legion Hall, James Street at Nichols Ave. Sunday, February 28, 2016, 10:00am-4:00pm. Adults \$4.00, 12 and under \$2.00, family maximum \$12.00. Two HO layouts, LEGO layout, dealers selling train models and railroad items. Contact: Ken Cameron, 315-706-7580.

OH, COLUMBUS: The 8th Ohio N Scale Weekend, "For N-Scalers by N-Scalers" Franklin County Fairgrounds, Hilliard, Ohio. Presented by Central Ohio N-Trak. May 14-15, 2016, Saturday, 10:00am-5:00pm and Sunday 9:00am-3:00pm. Set-up Friday May 13th, 1:00pm-8:00pm. Event registration \$10.00. Event info www.centralohiontrak.org or e-mail ohionscaleweekend@yahoo.com

OH, DALTON: CJ Trains Spring Greater Wayne County Train and Toy Show. Buckeye Event Center, 624 Henry St., 44618. Sunday, March 20, 2016, 10:00am-4:00pm. \$5.00 admission, 12/under free. \$25.00/dealer table, 600+ 8' dealer tables. Jon Ulbricht, 941 Buchholz Drive, Wooster, OH 44691, 330-262-7488. cathijon@sssnet.com www.cjtrains.com

OH, HAMILTON/CINCINNATI: Ross H.S.-Larry Keller Memorial Train Show Fundraiser, 3371 Hamilton Cleves Road. Saturday, March 5, 2016. Public welcome 9:00am-2:00pm. Adults \$5.00, under 12 free. Tables \$20.00, additional tables \$15.00, 88 available. Operating Layouts, Door Prizes. Music Performances. GREAT EVENT WORTH THE DRIVE. Kent Acree, 513-235-3086

OH, KIRTLAND: Railfest 2016. Lakeland Community College (AFC), 7700 Clocktower Dr., Zipcode: 44094. NMRA MCR Div. 5. March 19-20, 2016, Saturday and Sunday 10:00am-4:00pm. All Gauge Train Show with over 400 tables. 440-357-8890, www.railfest.org

OH, TOLEDO: Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Perrysburg, OH 43551. Sunday, March 13, 2016, 11:00am-3:00pm. Early Birds: 9:00am-3:00pm. Adults \$6.00/Early Birds \$10.00, 12/under FREE w/adult. Contact: Randy Ramsey, 1566 South Ave., Toledo, OH 43609, 419-215-4181, toymasters.org or trainmasters@bex.net

OH, VERMILION: Norwalk & Western RR Model Train Show & Swap Meet. German's Villa, 3330 Liberty Avenue (US Rt. 6). Sunday, January 17 2016, 10:00am-3:00pm. Admission: 10 and over \$4.00. Trains all scales, historical items, operating layouts, lunch available, free parking. Information: 419-706-8038, www.norwalkandwesternrr.com

TX, PLANO: NTC offers the 31st Annual Dallas Model Train Show. Plano Centre at 2000 E. Spring Creek Parkway. January 16-17, 2016, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$8.00, children 12 and under are free. 12 operating layouts, gauges N-G. Information: dfwtrainshows.com or 469-955-5405

WA, SPOKANE: River City Modelers Spring Train Show. Spokane Fairgrounds, 404 N. Havana St. Sunday, March 6, 2016, 9:30am-3:30pm. Admission \$6.00, 12/under free. 200+ tables of railroad related items for sale, clinics, operating layouts, Operation Lifesaver, more. Free parking. Contact: Shirley Sample, 509-991-2317, E-mail: shirley@busnws.com

WA, TACOMA: Tacoma Northwestern Model Railroad Club Show & Swap Meet. Pacific Lutheran University, Olson Hall, 12180 Park Ave. South. Zip: 98447. April 2-3, 2016, Saturday 9:00am-4:00pm; Sunday 10:00am-3:00pm. Admission \$7.00, \$3.00 under 12. Scouts in uniform free. Portion of proceeds to Boy Scouts. Contact: petermcoulton@gmail.com 206-550-4583, www.tnwmrr.org

WI, LA CROSSE: The 25th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. January 30, 2016, 9:00am-3:00pm. Admission \$5.00, under 12 free. 280 Tables: All Scales; Model, Toy & Antique Trains & Memorabilia. Information: 4000 Fondakland, PO Box 3411, La Crosse, WI 54602, 608-781-9383.

WI, STEVENS POINT: CWMR 19th Annual Model Railroad Show. Holiday Inn Convention Center Hotel, 1001 Amber Avenue. January 16-17, 2016, Saturday 9:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$3.00, kids 11-16 \$2.00. Many layouts, swap/sales tables, vendors. Paul Clasen, 4546 Buckhorn Lane, Stevens Point, WI 54481, 715-341-5253 or designcentralwi@yahoo.com

WV, CHARLESTON: KVRa Model Train Show, Coonskin Park. February 20-21, 2016, Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm. Admission \$4.00, children free. Layouts, vendors of new and used equipment. Tables \$15.00. Information: www.kvrrailroad.org, jhorter@gmail.com or 304-539-6721

CANADA: ONTARIO, ESSEX Model Train Show. Essex Public School, 71 Brian Ave. E., Presented by Heritage Essex Historic Train Station. February 27 and 28, 2016, 9:30am-3:30pm daily. Admission: Adults \$5, Seniors and teens \$4, under 12 \$2. Contact Essex Train Station at 1-519-776-9800.

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Limiting your options



Of the Frankfort eastbound yard's 14 tracks, how many of them had to be modeled to keep the yard fluid? I had space for 8; so far, so good. Tony Koester photo

Constraining one's choices doesn't sound like a particularly desirable course of action, but it actually can be quite helpful. For starters, it can help to avoid that bane of all hobby endeavors: paralysis by analysis.

Let's consider the most basic of problems facing railroaders who work in any scale from Z up to full size: switching cars. I'll pose a switching problem, and then you decide how many yard tracks it will require to solve it.

The eastbound yard at Frankfort, Ind., is as good an example as any. Trains arriving from the west are routinely sorted into blocks: "probers," for distribution in Frankfort; "locals," cars for towns between Frankfort and the next division point yard east of there; and "throughs," which are destined to or beyond the next division point.

Making the job a bit more complex is the fact that there are four divisions ra-

diating out of Frankfort: two to the east and two to the west. We'll consider only the two to the east: the Toledo and Sandusky divisions.

The cars for Toledo and Sandusky division local freights have to be blocked in station order to make switching easier and more efficient for the local's crew. There are quite a few towns between Frankfort and the next division points.

Assuming the inbound freights were properly blocked – probers, Toledos, and Sanduskys – it would be nice if Frankfort's eastbound yardmaster took time to add outbound cars to the proper blocks. That would lead the Delphos and Lima yardmasters to think favorably of him and maybe return the favor.

Now then, at an absolute minimum, how many yard tracks does the eastbound yardmaster need?

Just two. You can sort any cut of cars into any required sequence using two

tracks. However, they'd have to be very long tracks. And efficiency (throughput) would plunge.

Ideally, he'd have at least three tracks for probers, Toledos, and Sanduskys. Another two tracks on which to build the Toledo and Sandusky locals would be nice. And a "for-now" track is always handy, as is an arrival and a departure track, plus a caboose track.

But two tracks are sufficient, and you can find many examples of that economical situation on small railroads, including many of today's regionals.

Considering the larger picture that comprises all aspects of prototype railroading and ways to model it, this is a simplistic example. But it does make my point: We can consider so many options that our brains develop "dial tone," easy solutions escape our attention, and progress comes to a halt.

Looking back at Frankfort's eastbound yard, the prototype yardmaster had 14 yard tracks to work with. I have modeled eight of those tracks. Assuming he's building an outbound on one track and keeping another open for an arriving train, he still has six tracks to work with. Is that enough?

The trains we receive in and send out of that yard are shorter than their prototypes, but this has little effect on blocking. We model every single scheduled freight, quite a few sections thereof, and an extra or two. Obviously, unless the yardmaster works with the general yardmaster, roundhouse foreman, and the fellow who handles all trains in and out of east-end staging to keep his yard fluid, he's in trouble. But it appears that I managed to provide enough yard tracks. Adding more would have made a wide yard even wider. Maybe I erred a track or two either way, but I made a decision and moved ahead. We'll manage.

The key to moving ahead is to consider a limited, tightly defined set of options, do a modest amount of due diligence on each, make a choice, then work hard to convert that choice into a very good choice. The alternative is to endlessly weigh your options, which is a sure way to not make headway. You're never going to know everything you think you need to know about anything. **MR**

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