

5 MUST-HAVE TOOLS FOR WIRING p.52



**Athearn's new
tunnel motor** p.54

July 2019
www.ModelRailroader.com

Model Railroader®

BIG DCC ROUNDUP!

Find out which system is right for your layout p.24

**Modelers' guide
to grain hoppers** p.40

**Bold color:
Visit upstate
New York
in the
1960s >>**

p.34

PLUS

A light, portable N scale layout p.46

Replacing cracked locomotive gears p.22

How to renumber a group of cars p.16

**BONUS
ONLINE
CONTENT
CODE PG. 4**



*“Family
Magic
OF
Trains”*



Saturday, July 6 & Sunday, July 7

Open 10 a.m. – 5 p.m. both days

Vintage Toy Trains • Collector Trains • Operating Layouts
Vendors & Exhibitors • Train Dealers • Railroad Clubs & Organizations

Buy Discount Tickets at

MENARDS®

or Menards.com/trains

Discount Price

\$3⁰⁰

Door Price \$6

Children 17 & Under Free

Chippewa Valley Expo Center

5150 Old Mill Plaza • Eau Claire, Wisconsin

I-94 exit 59, located on HWY 312

InternationalToyTrainExpo.org

Sponsored by Kalmbach Media, Model Train Classics, LLC, and Operation Life Saver.



Take time to dream



Dreaming up your next big project can be exciting, and *Walthers 2020 Model Railroad Reference Book* will help your imagination soar. When you're ready to come down from the clouds and belly up to the workbench, we're here for you too, with thousands of products to help you build a great model railroad.

2020 HO-N-Z Reference Book

913-220 \$17.98 Fall 2019 Delivery



WALTHERS

Visit walthers.com/reference-books to find out more!

Order your book today! Visit your participating hobby shop, call us at 1-800-4-TRAINS or visit walthers.com ©2019 Wm. K. Walthers, Inc.

Features

24 A buyer's guide to DCC systems

Learn about the latest Digital Command Control starter sets and their key features
by Dana Kawala

- Online bonus ModelRailroader.com



34 Autumn in New York **MREXTRA**

Friends and memories populate this freelanced, compact HO scale layout
by Lou Sassi



40 The modeler's guide to covered grain hoppers

"Jumbo" covered hoppers took over for boxcars in the 1960s
by Jeff Wilson



46 A portable, lightweight layout

The N scale Georgette & Springfield is 24½ x 49 inches – and weighs less than 35 pounds

by Philip A. Lawson

- Online bonus ModelRailroader.com

In every issue

6 Model Railroader Video Plus

Check out our latest videos

8 From the Editor

Keeping the hobby moving forward

10 News & Products

Hobby industry news

- Online bonus ModelRailroader.com

16 Ask MR **MRVP**

How do I renumber a Roundhouse ore car?

20 N Scale Insight

Dirt: N scale's arch enemy



22 Step by Step **MRVP**

Replacing cracked gears on a locomotive

52 DCC Corner

Handy tools for DCC wiring projects



54 Product Reviews **MREXTRA**

Ready-to-roll HO Athearn EMD SD40T-2, EMD GP39-2 in N scale by Atlas, and more

62 On Operation

Stop the presses!

64 Trackside Photos

- Online bonus ModelRailroader.com

73 Index of Advertisers and Cartoon

74 Trains of Thought

Up on the high iron

54

52

24

40

34

46

22

16



On the cover: Lehigh Valley power rolls on George Marshall's New York-based freelanced HO scale layout.
Lou Sassi photo



Next issue

In August, we visit the club-sized, transition-era HO scale Sunset Route. Also, add depth to your backdrops, build a steel arch bridge, add a store interior, and more!

MREXTRA

www.ModelRailroader.com
subscriber extra

MRVP

Video on
www.MRVideoPlus.com

Model Railroader (USPS 529-810, ISSN 0026-7341) is published monthly by Kalmbach Media Co., 21027 Crossroads Circle, P.O. Box 1612, Waukesha, WI 53187-1612. Periodicals postage paid at Waukesha, Wis., and additional offices. POSTMASTER: Please send address changes to *Model Railroader*, P.O. Box 8520, Big Sandy, TX 75755. Printed in USA. Canada Publication Mail Agreement # 40010760.

Make These Cars the Center of Your Layout!



Shown left to right:
Canadian National, First Union Rail and Coe Rail

The Atlas Master® HO 73' Center Partition Car features wire brake rods, over 20 grab irons, razor sharp lettering, and much more - along with 3 road numbers per road name.

Atlas Master® HO 73' Center Partition Cars Now Available from Atlas!



Atlantic & Western



Coe Rail



Canadian National



Florida Central



Desticon (NOKL)



TTX

Visit your local hobby shop or www.atlasrr.com to find these and other high quality models from Atlas - in N, HO and O Scales!



ATLAS MODEL RAILROAD CO, INC. • 378 Florence Ave., Hillside, NJ 07205 • www.atlasrr.com



Learn about all things Digital Command Control (DCC) with Model Railroader Video Plus. If you're a DCC newbie, be sure to check out DCC Programming with *Model Railroader* senior editor Dana Kawala. The step-by-step videos show you there's no reason to be intimidated by configuration variables! Learn the basics of decoder addresses, consisting, speed matching, and everything else to get the most out of your DCC-equipped locomotives.

Type DCC in the search bar on the MRVP website and you'll find decoder installations, wiring projects, and more.

Be sure to check out the DCC starter system roundup on page 24. And don't miss the MRVP Tech series that showcases some of the featured systems.



► Get an overview of working with Digital Command Control in the DCC Programming series on MRVP!
MRVideoPlus.com/DCCProg

CHECK OUT THESE MRVP TECH DCC SYSTEM DEMOS!



PIKO America SmartControl. SmartControl features a Wi-Fi throttle with a touchscreen, programmable soft keys, and a large speed control knob.
MRVideoPlus.com/PIKOSC



SPROG USA Pi-SPROG One. Pi-SPROG One combines a Raspberry Pi computer and a JMRI interface for a fully functional DCC system.
MRVideoPlus.com/PiSprog



Roco/Fleischmann Z21. An outstanding smartphone throttle app and support for multiple command bus protocols highlight the Z21.
MRVideoPlus.com/Z21

JOIN THE FUN!

With your subscription to MRVP, you'll have access to exclusive HD videos covering all aspects of model railroading. You'll enjoy:

- Behind-the-scenes access to MR staff and projects
- Authoritative advice from notable contributors
- Layout visits, interactive track plans, trackside adventures, and more!

Sign up at MRVideoPlus.com/27deal



IT'S MY RAILROAD WITH STEVE BROWN

In this new series, regular-guy model railroader Steve Brown brings his enthusiastic approach to Model Railroader Video Plus. Watch as he tackles a variety of projects while

building his N scale Brown Smith RR, including planning a port scene and using light-emitting diode (LED) strips for layout lighting.

Steve may be familiar to viewers as the host of his own popular YouTube channel. For this new series, Steve provides exclusive episodes that can only be seen on MR Video Plus. Not a subscriber yet? Go to the link at left to check out this free introductory episode.



MRVideoPlus.com/MyRailroad1

CUSTOM MODEL RAILROADS

Construction of Fine Scale Model Railroads
Private Layouts - Museum Exhibits - Custom Structures
Let us build the Model Railroad of your Dreams



Quality built layouts since 1991
www.custommodelrailroads.com

Railroad Headquarters



NEW HO & N SCALE

410-889-0010
Visit our website to see these and more kits from CMR
www.custommodelrailroads.com

Call **TODAY** to order! 1-800-466-3131

Storage Boxes

Foam Lined
Self Closing
Fully Assembled



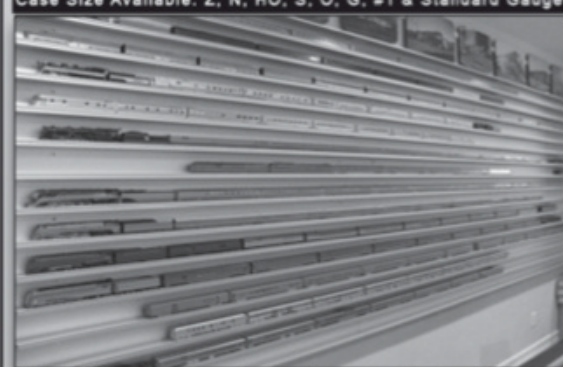
HO Scale
Holds 20 Cars - \$29.95
N Scale
Holds 36 Cars - \$29.95
Tote Bags
\$35.95
Plus S&H

AXIAN TECHNOLOGY
623-580-0800
fax: 623-580-8008
21622 N. 14th Ave. • Phoenix, AZ 85027-2806
www.axiantech.com

Patented U.S.A.

SHOWCASE-EXPRESS

Wall to Wall Expandable Display Case
Case Size Available: Z, N, HO, S, O, G, #1 & Standard Gauge

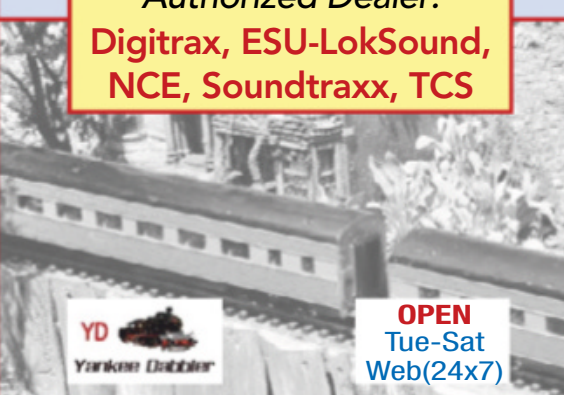


Lighting Kits and Backgrounds Available
Join Top to Bottom or End to End
714-842-0672
www.SHOWCASE-EXPRESS.COM

YANKEE DABBLER INC

Check out our complete train store!
Repairs and decoders installed.
N, HO, S, O, G

Authorized Dealer:
Digitrax, ESU-LokSound, NCE, Soundtraxx, TCS



YD
Yankee Dabblers

OPEN
Tue-Sat
Web(24x7)

(856) 312-8084 101 W. Kings Hwy.,
Bellmawr, NJ 08031
www.yankeedabblers.com

So much fun, it should be
OUTLAWED!

CABOOSE

Sharing Our Passion for Trains Since 1938

10800 West Alameda Ave.
Lakewood, CO 80226
(303) 777-6766
Open 7 days a week!

MyCaboose.com

TRAIN COLLECTORS ASSOCIATION™

JOIN TCA!

Friendships that
Last a Lifetime!

Here are just a few great TCA benefits:

- TCA Train Meets (including York, PA!)
- *3* Publications: The Train Collectors Quarterly, National Headquarters News & TCA E-Train, our online magazine
- TCA x-change (online marketplace)
- National Toy Train Museum
- Toy Train Reference Library




Call or visit us online for
your application today!

717.687.8623
www.tcamembers.org

Tortoise™



For 25 Years, Simply...
The BEST!
Slow Motion Switch Machine



MADE IN THE USA

800-6000 \$ 22.95
6006 6-PACK \$132.00
6012 12-PACK \$250.00

- Enclosed Gear Drive Mechanism (NOT a Screw-Drive Machine!)
- Simple Mounting - All Linkage Included!
- 2 Sets SPDT Auxiliary Contacts

AT YOUR LOCAL HOBBY SHOP OR DIRECT
INCLUDE \$8.00 FOR SHIPPING & HANDLING
Send SSAA for more info or \$8.00 for complete
60 page Catalog & Application Book to:
CIRCUITRON
211 RocBaar Dr., Romeoville, IL 60446-1163

The only way to **SAVE** is to **SIGN UP!**

MicroMark THE SMALL TOOL SPECIALISTS
FREE ROTARY TOOL!
with ANY ORDER over \$75



MicroMark TRAINS
FREE SHIPPING!
On ANY Order Over \$100



1. Click HERE to go to
2. **MicroMark** THE SMALL TOOL SPECIALISTS
3. **5 DAYS ONLY!**
20% OFF ANY ORDER!
To Activate Offer, Click HERE!




SUMMER SALE STARTS JUNE 15!

Sign up for our Email Newsletter
to receive money-saving offers,
new product news and more!
micromark.com/newsletter
or call 800-225-1066 & mention Promo Code 4467

Micro-Mark®

Keeping the hobby moving forward

What's new in DCC? Keep reading this month and you'll find out.

Dana Kawala, our in-house expert on the subject, has compiled a great roundup of the DCC starter systems available today.

If you're thinking about taking the plunge, or maybe you're due for an upgrade but aren't sure about the equipment that's right for you or your layout, hopefully you'll find what you need here to make an informed decision.

It's been a while since we've done an article like this – more than a decade, in fact. While many things have remained the same, a lot has changed. Maybe the biggest shift is in how we use these command-control systems.

Wi-Fi networks and “smart” devices like tablets and phones are giving users increased non-tethered

capability. Indeed, some of these systems are quite capable of being operated from across the globe, if desired, although the vast majority of us are content to have one work across a room.

The interfaces have gotten better. You can identify locomotives through pictures, control turnouts, and run trains on a device that can be configured to be most comfortable to you.

If your eyes are like mine these days, you might appreciate being able to adjust the brightness and view size on a smartphone or even an 8" or 10" tablet that features the controls you need.

If you opt for more conventional control, you can hardly go wrong, either. Available handhelds have gotten somewhat more intuitive and user friendly. Or maybe after decades we've just gotten used to how they function.

At any rate, DCC is one of the technologies that's carrying the hobby into the future. I can't wait to see where it's headed in the next decade.

I know, I'm going to have some folks who say, “All this is well and good, but I have a DC (direct-current) layout that works really well and has for years! I'll never change to DCC! Never!”

We hear you, and to you we say, “Don't change!” Just keep on keepin' on. You are carrying the hobby forward just by your continued participation, so it's all good.

And now to the mail bag.

Reader Richard Morrison wrote *Re: Spruce up a scene with static grass – Excellent article on how to use static grass. From the looks of his new photo, though, it looks like Hal was holding the static grass applicator upside down.*



At least he had the good sense to wear safety glasses.

Well played, sir.

But that grounding pin in my chin smarted just a little and the glue was a mess.

Model Railroader

Model railroading is fun!

Founder
Editor
Managing Editor
Senior Editor
Group Technical Editor
Associate Editors
Contributing Editors
A.C. Kalmbach 1910-1981
Hal Miller
Jeff Reich
Dana Kawala
Cody Grivno
Steven Otte, Eric White
Tony Koester, Pelle Søborg,
Larry Puckett, Lou Sassi
Phone 262-796-8776
E-mail mrmag@mrmag.com
Fax 262-796-1142

Model Railroader Art Team

Art Director
Senior Graphic Designer
Graphic Designer
Lead Illustrator
Production Specialist
Thomas G. Danneman
Scott Krall
Samantha Primuth
Rick Johnson
Cindy Barder

Model Railroader Video Plus

Producer
Associate Producer
Associate Editor
Assistant Editor
A. David Popp
Kent Johnson
Ben Lake
Jenny Freeland

Contributing to Model Railroader

We welcome contributions from readers, including articles, photographs, and drawings. For more information on submitting material, call us at 262-796-8776 and ask for an MR staff member or e-mail us at mrmag@mrmag.com. Model Railroader assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Kalmbach Media unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

Advertising Department

Ad Sales Manager
Ad Sales Representatives
Ad Services Representative
To purchase an advertisement
Phone 888-558-1544, ex. 643
E-mail adsales@mrmag.com
Lori Schneider
Martha Stanczak,
Mike Ferguson
Daryl Pagel

To sell Model Railroader in your store:

Phone 800-558-1544
Outside U.S. and Canada 262-796-8776, ex. 818
E-mail tss@kalmbach.com
Website www.Retailers.Kalmbach.com
Fax 262-798-6592

Customer Sales and Service

Phone 877-246-4879
Outside U.S. and Canada 903-636-1125
Customer Service
customerservice@ModelRailroader.info



Kalmbach Media

Chief Executive Officer
Senior Vice President, Finance
Senior Vice President, Consumer Marketing
Vice President, Content/Editorial Director
Vice President, Operations
Vice President, Human Resources
Senior Director, Advertising Sales and Events
Advertising Sales Director
Circulation Director
Art and Production Manager
New Business Manager
Retention Manager
Single Copy Specialist
Dan Hickey
Christine Metcalf
Nicole McGuire
Stephen C. George
Brian J. Schmidt
Sarah A. Horner
David T. Sherman
Scott Redmond
Liz Runyon
Michael Soliday
Cathy Daniels
Kathy Steele
Kim Redmond

SUBSCRIPTION RATE: Single copy: \$6.99; U.S.: 1 year (12 issues) \$42.95; 2 years (24 issues) \$67.95; 3 years (36 issues) \$94.95. Canadian: Add \$13.00 postage per year. Canadian price includes GST, BN 12271 3209 RT, payable in U.S. funds. All other international subscriptions: Add \$20.00 postage per year, payable in U.S. funds, drawn on a U.S. bank. ©2019, Kalmbach Media Co. Title registered as trademark. All rights reserved.



NEW Flags

- Available in Pole or Wall Mount styles in 3 sizes
- Each Flag includes one Just Plug® Spotlight
- Spotlights & Floodlights also sold separately



NEW Rustic Cabin

Built-&-Ready® Landmark Structures®

- Simply plugs into a Just Plug® Light Hub
- Features a covered porch, rocking chairs and wood pile
- Available in N, HO and O scales



The World Leader in Model Scenery

WOODLAND SCENICS®

woodlandscenics.com

Purchase from your local hobby store.

HO scale



General Electric Tier 4 GEVo diesels. ScaleTrains.com offers new road numbers on modern road units decorated for Union Pacific, BNSF Ry., Canadian National, CSX, and Norfolk Southern. The HO scale Rivet Counter line models feature an angled exhaust compartment roof line as appropriate and

factory-installed and painted wire grab irons. Direct-current models with a 21-pin connector sell for **\$154.99**. Versions with an ESU LokSound V5.0 sound decoder with dual cube-type speakers are priced at **\$234.99**. ScaleTrains.com, 844-987-2467, www.scaletrains.com

Walthers announces next name train

Wm. K. Walthers' next HO scale name train will be the *Twin Cities Hiawatha*. Cars and locomotives for the 1953 to 1955 and 1955 to 1971 versions of the train will be released throughout 2020.

Cars for the train include a 63-foot Railway Post Office, a 75-foot express car, and the following 85-foot cars: 498- and 535-series 52-seat coaches, a 48-seat diner, a Pullman-Standard (PS) *Super Dome* (\$94.98), a 26-seat tap lounge, a *Valley*-series 30-seat parlor car, and a *Rapids*-series Skytop lounge (\$94.98). The models, which will be priced at \$84.98 each unless noted, will be offered in standard versions with decals and with factory-printed names or numbers.



In addition, Walthers will offer three deluxe-edition train sets: A 10-car 1953 *Twin Cities Hiawatha* (\$1,230), a nine-car 1960s *Twin Cities Hiawatha* (\$1,105), and a three car 1956-1972 version of *The Cannonball*, which operated between

Watertown, Wis., and Milwaukee (\$375). All of the deluxe-edition sets will include factory-installed Preiser figures.

Power for the trains will be Electro-Motive Division FP7 and F7B diesel locomotives. The locomotives, which will feature period-appropriate details, will be offered in 1950 to 1953 as-delivered orange, 1952 to 1955 modified orange, and 1955 to 1971 yellow.

Single FP7s will sell for \$189.98 (direct current) and \$279.98 (ESU LokSound 5 Digital Command Control sound decoder). FP7 and F7B sets will be priced at \$369.98 (DC) and \$549.98 (ESU LokSound 5 Digital Command Control sound decoder).

HO scale locomotives



- **Reading Co. class T1 4-8-4 steam locomotive.** Chessie System Special (one road number), American Freedom Train (one number), Delaware & Hudson

Centennial locomotive (one number), in-service scheme (two numbers), and "Iron Horse Rambles" excursion (two numbers). Also available painted black but unlettered. Plastic boiler and tender shell, die-cast metal chassis, and dual-mode Paragon3 sound decoder with Rolling Thunder transmitter. \$449.99. Broadway Limited Imports, 386-673-8900, www.broadway-limited.com

- **Norfolk Southern SD60E diesel locomotive.** GoRail (one road number),

Honoring First Responders (one number), and thoroughbred scheme (six numbers). Prototype-specific details; light-emitting-diode headlights, deck-mounted ditch lights, number boxes, and ground lights above front truck; and detailed cab interior. Direct-current model with 21-pin NEM connector for Digital Command Control decoder, \$219.98; with dual-mode SoundTraxx Tsunami2 sound decoder, \$309.98. December 2019. Genesis series. Athearn Trains, 800-338-4639, www.athearn.com

MOBILE UPDATES

Scan the code to access Model Railroader's weekly News & Products updates from your mobile device.



Conducted by Cody Grivno



In Memoriam

Bob Kingsnorth, 1945-2018

Robert "Bob" Kingsnorth of Medford, Ore., died on Oct. 8. He was 73 years old.

Bob's first byline in *Model Railroader* came in the special issue *How to Build Realistic Reliable Track*. Bob also wrote articles on applying freelanced paint schemes to factory-painted models and modeling the sounds of passenger diesel locomotives.

David Bontrager, 1944-2019

David Bontrager of Elnora, Ind., died on Feb. 24. He was 74 years old.

David penned more than 130 articles for the hobby press between 1988 and 2001. Among his contributions to MR were HO scale diesel locomotive articles, including detailing a Burlington Northern General Electric C30-7 and a Denver & Rio Grande Western Electro-Motive Division SD40T-2 tunnel motor.

loading); Canadian Pacific (trailer loading); Trailer Train (HTTX reporting marks [heavy-duty machinery and equipment loading], MTTX marks [general service], and VTTX marks [rebuilt for 20- and 40-foot container loading]); and Wisconsin Central (trailer loading). Two road numbers per paint scheme. Detailed brake gear with piping, 70-ton roller-bearing trucks with 33"

HO scale freight cars

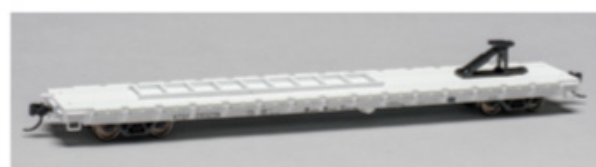


- **Assorted freight cars.** Burlington Northern (1991 scheme) American Car & Foundry 4,600-cubic-foot-capacity three-bay Center Flow covered hopper, \$19.98. Chicago & North Western 40-foot double-sheathed refrigerator car, \$19.98. Chicago, Indianapolis & Louisville 36-foot Fowler boxcar, \$18.98. Data only Pullman-Standard 4,750- cubic-foot-capacity three-bay covered hopper (gray, white, or Mineral Red), \$20.98 each. Denver & Rio Grande 36-foot double-sheathed boxcar with wood ends and straight underframe, \$18.98. Pittsburgh & Lake Erie 40-foot steel boxcars ("Serves the Steel Centers" slogan. Single car, \$18.98; three-pack, \$55.98). Pittsburgh & West Virginia 41-foot steel gondola (single car, \$18.98; three-pack, \$55.98). Injection-molded plastic kits with plastic wheelsets, steel weight, separate brake details, and Accumate couplers. Accurail, 630-365-1173, www.accurail.com



- **Pullman-Standard PS-2CD 4,427-cubic-foot-capacity high-side three-bay covered hopper.** New paint schemes: Landmark (1967 Illinois Grain Association patchout in two road

numbers and 1977 red repaint in two numbers); Elgin, Joliet & Eastern (Rock Island patchout [1980+], one number); Interstate Commodities (Milwaukee Road patchout [2007+], two numbers); Iowa Interstate (Rock Island patchout [1987+], one number); J.W. Flammer, Anaheim, Calif. (1967, two numbers); North American Railcar Corp. (Rock Island patchout [1980+], one number); and St. Louis-San Francisco (Frisco, as-delivered May 1967 scheme, six numbers). See-through running boards, factory-installed and painted wire grab irons, and Kadee scale couplers. \$44.95. Tangent Scale Models, 828-279-6106, www.tangentscalemodels.com



- **Pullman-Standard 60-foot flatcar.** Atchison, Topeka & Santa Fe (trailer

HO scale



Stacking firewood. This new figure set from Preiser (\$21.99) includes three hand-painted figures, logs, individual pieces of split wood, molded stacked wood, and a wood rack. Paul M. Preiser GmbH, www.preiserfiguren.de

HO scale



Fruit Growers Express 50-foot insulated boxcars. Moloco offers these HO scale models decorated for Burlington Northern; Great Northern; Toledo, Peoria & Western (with 10'-1" or 10'-2" centered doors); Atlantic Coast Line (as-delivered 5-65 and 4-67 repaint schemes); Seaboard Air Line (as-delivered 12-64 and 3-65 repaint schemes); and Southern Ry. (4-65 repaint). The insulated boxcars (\$56) are offered in one or two road numbers per scheme and feature an overhanging Stanray roof, prototype-specific cushioning devices, and metal couplers. Moloco, www.molocotrains.com

turned-metal wheelsets, and Proto-Max couplers. \$27.98. Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

N scale locomotives



• **4-8-2 light Mountain steam locomotive.** Nashville, Chattanooga & St. Louis; Louisville & Nashville; Missouri Pacific; and Southern Ry. One road number per scheme. Injection-molded plastic and die-cast metal construction, separate detail parts, traction tires, and dual-mode SoundTraxx Econami sound decoder with multiple bell and whistle options. \$349. Bachmann, 215-533-1600, www.bachmanntrains.com

Looking for DCC related products?

Check out our DCC Product Guide for the latest in Digital Command Control.



WifiTrax

www.wifitrax.com

Wi-Fi/DCC - Drive DCC Locomotives over your Wi-Fi Network

DCC Compatibility!

- Use your favorite Sound DCC Decoder and run it over Wi-Fi.
- Drive your battery-powered DCC locos over Wi-Fi.
- Use Wi-Fi/DCC Trackside to control your whole DCC Layout.
- Use DCC throttles with DCCIP. Read about it on our website.

Wi-Fi/DCC Motherboards for Battery-Powered Locos,

Wi-Fi/DCC Interface for Track-Powered Locos or Large-Scale Battery Locos,

Free Apps - Windows, Android, tablet, phone. Drive your DCC Locos, Control your layout.

and Wi-Fi/DCC Trackside for your whole layout!

Checkout DCCIP - (DCC "over" Wi-Fi) For DCC throttles

From first train set to railroad empire...



CABS • DECODERS • POWER SUPPLIES • ACCESSORIES • WIRING KITS



See your dealer or visit ncedcc.com

NCE CORP. • 82 EAST MAIN ST. • WEBSTER, NY 14580 • 585.265.0230



NCE PRO CAB
#5240010

N scale freight cars



• **Pullman-Standard 2,750-cubic-foot-capacity three-bay hopper.** New road numbers: Great Northern; Alaska RR; Burlington Northern; Clinchfield; Detroit, Toledo & Ironton; and Louisville & Nashville. Four numbers per scheme; also available undecorated (2,750- and 2,960-cubic-foot-capacity). Die-cast metal hopper and center sill construction, optional heap shields, and solid- or roller-bearing trucks as appropriate. \$24.95 (undecorated, \$19.95). Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

• **Assorted freight cars.** Heinz 36-foot double-sheathed refrigerator car, \$29.95. Rock Island depressed-center flatcar with generator load, \$27.90. Monarch Foods 40-foot double-sheathed refrigerator car, \$27.95. New York Central 40-foot boxcar, \$27.80. Norfolk Southern 60-foot excess height double-plug-door boxcar, \$31.95. Soo Line, Union Pacific, and Western Pacific 40-foot double-sheathed 1½ door boxcars, \$19.90 to \$21.95 each. Injection-molded plastic models with plastic wheelsets and Magne-Matic couplers. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com

O scale freight cars

• **Pullman-Standard PS-2 three-bay covered hopper.** New paint schemes: Burlington Northern (gray and black), Chicago & North Western (yellow with

Club offerings



• **American Steel & Wire 52'-6" 70-ton gondola.** Tangent Scale Models HO scale car custom decorated for the South Shore Model Railway Club Inc. Five road numbers. Factory-installed and painted wire grab irons, metal wheelsets, and Kadee couplers. \$34.95 each plus \$8 shipping for one car and \$1.50 for each additional car. Check or money order payable to David Clinton, 52 Bare Cove Park Dr., Hingham, MA 02043; www.ssmrc.org

This revolutionary digital model railway control system makes your life uniquely easy!

Z21® Detector
Part #: 10808

Z21® light Booster
Part #: 10805

Z21® Dual Booster
Part #: 10807

Z21® US Version
Part #: 10822

Z21® Booster
Part #: 10806

FLEISCHMANN **Roco**

available in US stores!

WiFi-MULTIMAUS®

MULTIMAUS®

Part #: 10813 Part #: 10810

Find out more about Z21®: www.z21.eu

Take a look at our websites to find a retailer in your region:
www.fleischmann.de
www.roco.cc

For stores that do not appear on our websites please contact:
Heartland Hobby Wholesale - www.hhwonline.com
1-800-713-8274

Looking for DCC related products?

Check out our DCC Product Guide for the latest in Digital Command Control.



More Fun to Run!

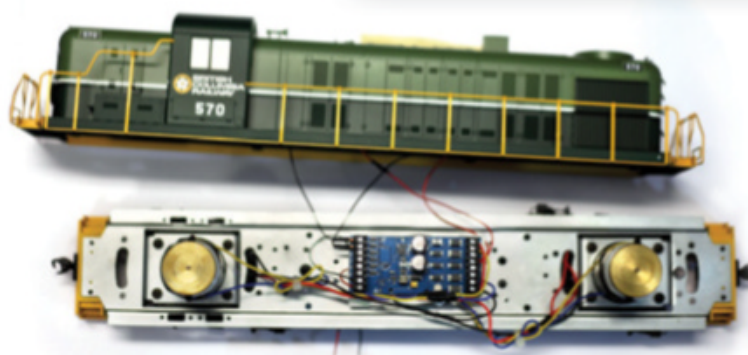
Tsunami2 provides interactive features that give you more control over your trains! Now available for O Scale and larger locomotives, the TSU-4400 provides awesome sound indoors or out!

- 4-amp motor drive
- The best motor control on the market
- Tons of realistic sound effects



Scan the code to watch now!
Or search SoundTraxx on YouTube

SOUNDTRAXX™
www.soundtraxx.com



Model Railroaders in all scales from points all over the world know **READY TO ROLL** is their #1 destination because of our extensive in store inventory.



NICHOLAS SMITH TRAINS
Model Railroading For All Seasons
 VISIT OUR WEBSITE, OR GIVE US A CALL
 For orders only: 1-800-848-9119
 Product Info (610) 353-8585 • Fax (610) 359-9846
 MINIMUM ORDER : \$30.00 • 15% Restocking Fee on Returns
 No P.O. Boxes Please; PA Residents Add 6% Sales Tax

MTH HO	
MTH8520160 BNSF GP38-2 DCC Ready.....	\$79.99
MTH8520200 CSX GP38-2 DCC Ready	\$79.99
MTH8520211 CSX GP38-2 w. PS3	\$109.99
MTH8520231 Indiana Railroad GP38-2 w. PS3.....	\$109.99
MTH8520270 Maryland Midland GP38-2 DC	\$79.99
MTH8520310 NS GP38-2 DCC Ready	\$79.99
MTH8520321 NS GP38-2 w PS3	\$109.99
MTH8520340 P&LE GP38-2 DCC Ready.....	\$79.99
MTH8520351 P&LE GP38-2 w. PS3.....	\$109.99
MTH8520370 UP GP38-2 DCC Ready	\$79.99
MTH8520390 CN GP38-2 DCC Ready	\$79.99
MTH8520401 CN GP38-2 w. PS3	\$109.99
MTH8520430 Chessie/B&O GP38-2 DCC Ready..	\$79.99
MTH8520460 Conrail GP38-2 DCC Ready	\$79.99
MTH8520471 Conrail GP38-2 w. PS3	\$109.99
MTH8520520 Southern Pacific GP38-2 DCC Rdy	\$79.99
MTH8520521 Southern Pacific GP38-2 w. PS3 ..	\$109.99
Other road numbers available for the items above	
MTH8023463 R17 2 Car Dummy Silver/Blue	\$94.99
MTH8023471 R17 4 Car DCC/Sound Silver/Blue..	\$284.99
MTH8023701 R17 4 Car Set Dcc/Sound Red	\$284.99
MTH8023711 R17 2 Car DCC/Sound MOW	\$209.99
MTH8023721 R21 4 Car DCC/Sound Green/Silver	\$284.99
MTH8023723 R21 2 Car Dummy Green/Silver.....	\$94.99
MTH8023751 R21 4 Car DCC/Sound Red/Silver ..	\$284.99
MTH8023783 R22 2 Car Dummy	\$94.99
MTH8023791 R22 4 Car DCC/Sound Green.....	\$284.99
MTH8520541 NS First Responders GP38-2 PS3 ..	\$149.99
MTH85205XX 50/60/70 CSX GP38-2 DCC Ready..	\$99.99
MTH85205XX 51/61/71 CSX GP38-2 DCC/Sound	\$149.99
MTH8199003 Harley Davidson Action Car	\$20.00
MTH8577012 UP 1943 Caboose.....	\$22.99
MTH8577013 NS Caboose #911First Responders..	\$22.99
MTH8577014 NS Caboose #6920 Veterans.....	\$22.99
MTH8577015 GE Evolution Caboose.....	\$22.99

KATO N	
KAT10019 N700 Shinkansen Starter Set.....	\$209.99
KAT101318 Bernina Express 5 Car Set.....	\$219.99
KAT101324 TGV Duplex "Carmillon" 10 Pc Set....	\$249.99
KAT101325 TGV "Lyria Carmillon" 10 Pc Set	\$249.99
KAT101519 Cruise Train "Seven Stars in Kyushu"	\$329.99
KAT10896 Dr. Yellow 3 Pc Powered Base Set.....	\$149.99
KAT10897 Dr. Yellow 4 Pc Add-on	\$99.99
KAT1060017 Amtrak P42 Starter Set	\$209.99
KAT1060042 Amtrak ACS64 Set	\$229.99
KAT1062015 Operation North Pole Set 2015	\$139.99
KAT1065505 Amtrak Enclosed Auto carries (4)	\$69.99
KAT1068001 Amtrak ACS-64 Bookcase Set.....	\$172.99
KAT10680011 Amtrak ACS-64 Set DCC	\$234.99
KAT10680012 Amtrak ACS-64 Set DCC/lights	\$279.99
KAT1068002 Amtrak Amfleet PV VI Coach Set	\$39.99
KAT1068003 Amtrak Amfleet PV VI Coach/Café	\$39.99
KAT1260312 BNSF GS4 4-8-4	\$164.99
KAT137300X 1-3 ACS64 DC Asst. Numbers	\$104.99
KAT137300XDCC 1-3 ACS64 DCC Asst. Nbrs.....	\$147.99
KAT1768404 UP SD70ACe #8444	\$89.99
KAT1768433 UP SD70ACe	\$89.99
KAT1768503 NS/Lackawanna SD70ACe	\$99.99
KAT1768504 NS/New York Central SD70ACe.....	\$99.99
KAT1768520 UP SD70ACe	\$99.99
KAT1768520LS UP SD70ACe	\$264.99
KAT1768922 UP ES44AC	\$89.99
KAT1768929 CSX ES44AC	\$89.99
KAT1769001KBX 5/6 CSX EMD F40PH.....	\$169.99
KAT1769005 Metrolink F40PH (only 1)	\$79.99
KAT176920X 3/4 Amtrak SDP40F Phase 2	\$89.99
KAT1769203LS Amtrak SDP40F Phase 2 w. Snd ..	\$194.99

Hours: M,- TH 10-7 • Friday 10-9 • Sat 10-5 •
 Sun 10-5 (Nov. 1st-Dec. 24th)
 2343 West Chester Pike • Broomall, PA 19008
 (610) 353-8585 • ESTABLISHED 1909
 Prices Subject to Change Without Notice; Not Responsible For Typographical Errors
www.nicholassmithtrains.com
 Model Railroader July 2019

Computer Control

Turn your PC into a Centralized Traffic Control Facility!

Operate your model railroad from a state-of-the-art control console on your PC

- DCC or conventional
- All gauges, Z to G
- Easy-to-use software
- Works on any PC
- Modular hardware
- Just plug & play

Control signals, turnouts, accessories, sound, reversing loops, collision avoidance, and so much more. Have trains obey signals, make station stops, or run according to timetables

All automatically from your PC ...

Introducing "Train-Brain" the fast, easy, and fun way to control your model railroad!

Train-Brain Software



Train-Brain Hardware



The Only Fully Integrated Model Railroad Computer Control System Available Today

System Prices Starting At Just \$99 Learn More At:

www.cti-electronics.com

You're the kid.



Welcome to the candy store.

July 12-14, 2019
Mountain America
Exposition Center
Salt Lake City, Utah

NationalTrainShow.org

Sponsored by



The National
 Model
 Railroad
 Association

© 2019 NMRA

News & Products

Miniature World of Trains new location

Miniature World of Trains

announced that its new, semi-permanent location will be at 455 Congaree Rd. in Greenville, S.C., near Haywood Mall.

The location will eventually house five model railroads. The Christmas Model Train Display is slated to open in November 2019, followed by the Miniature World of Trains in early 2020. A large N scale layout and two other layouts are in the plans for 2021 through 2023.

To learn more about the Miniature World of Trains, visit www.miniatureworldoftrains.com.

Chicago Great Western reporting marks), Illinois Central Gulf (gray and black), and Penn Central (gray and black). New road numbers: Chessie System (yellow and blue with Chesapeake & Ohio reporting marks) and Jack Frost (blue and white). Two numbers per scheme; also available undecorated. Roller-bearing trucks with rotating bearing caps; separate factory-installed ladders, brake wheel, and brake line detail; and metal couplers. \$65.95 (undecorated, \$55.95). Fourth quarter 2019. Master Line. Atlas O, 908-687-0880, www.atlasrr.com

Large scale freight cars



• **Bulkhead flatcar.** Conrail and Denver & Rio Grande Western. Deck with molded woodgrain, truck bolster detail, and removable stakes. \$74.99. PIKO America, 619-280-2800, www.piko-america.com

Z scale freight cars

• **1937 Association of American Railroads 40-foot boxcar.** New paint scheme: Nickel Plate Road. Seven road numbers (single car, two-pack, and four-pack). Murphy raised-panel roof, metal

Lionel Trains of the 1950s

Back by popular demand is

Lionel Trains of the 1950s from our sister magazine *Classic Toy Trains*. The 200-page special issue includes a new, extensive overview of Lionel at mid-century and features many of the company's best-known products.

Print and digital editions sell for \$16.99. To place your order, visit www.KalmbachHobbyStore.com.



wheels, AutoLatch couplers, and 4-5 Dreadnaught ends. American Z Line, 614-764-1703, www.americanzline.com

Scenery



- **Cold frames with lettuce.** Two each .63" x 1.57" frames and .63" x 1.02" frames. \$11.48. Price may vary based on exchange rate. September 2019. NOCH GmbH & Co. KG, www.noch.com **MR**

Rail and Tie Craftsman Kits

Vehicles
Boats
Details
Structures

Order Online

www.interactionhobbies.com

INTER-ACTION
Enterprises

sales@inter-action.ca
Phone: (888) 850-1742

T SHAPES & Z CHANNELS



- Available in a variety of popular sizes
- Packaged in Small Packs, Economy Packs and Bulk
- White Polystyrene

evergreen scale models

visit us at www.evergreenscalemodels.com

Toll Free (877) 376-9099

f /EvergreenScaleModels

HALFPRICEHOBBY.COM

100's of HO and N Scale specials
at 50% off of M.S.R.P. at
www.halfpricehobby.com

Regular Stock items always discounted
from 20 to 50% off with low flat rate
shipping of \$8.99

Featuring products from Athearn and other
quality brands

Special orders and pre-orders accepted at
regular discounted prices.

Please email service@halfpricehobby.com
for pricing and availability.

www.peco-uk.com

PECO STREAMLINE TRULY AUTHENTIC AMERICAN HO TRACK

**SCALED
ACCURATELY**
from A.R.E.A Drawings
& NMRA compliant



CODE 83
Ideal for your
main line routes

CODE 70
Ideal for yards
& branch lines



Photo of Lewis Junction modelled by Roger Epps, taken by Neil Davis.



See the full line of Code 83 Turnouts, Crossings and Accessories in the Peco Catalog – free from your dealer.

NYCSHS Announces a New Exciting Book



Silver Rails

Through the Heart of the Park

New York Central Railroad's Adirondack Division

• The book celebrates the past operation of the New York Central's Adirondack Division (as well as portions of the Ogdensburg and Ottawa Divisions) and the current service being provided by the Adirondack Scenic Railroad. It provides 800 pages of history of the railroad, towns, industries, and people found along the Adirondack Division of the New York Central Railroad.

- 1,720 photographs, with 442 of them in color.
- Written by John Taibi.

Join NYCSHS
Only \$44.00 per year.
Great for fans,
historians & modelers.
Many benefits.
Join Today at
www.NYCSHS.org

• MSRP: \$114.95 / NYCSHS Members: \$91.96. Add \$12.00 for S&H for US buyers. Non-US buyers contact us for shipping cost. Ohio residents must pay 8% Ohio sales tax.

- All proceeds go to the NYCSHS. Expected Summer 2019.
- Limited quantity of numbered & signed copies available at \$250.00 plus \$12.00 for S&H.
- Online Ordering at www.NYCSHS.net



NEW YORK CENTRAL SYSTEM HISTORICAL SOCIETY
P.O. BOX 130
GATES MILLS, OH 44040-0130





A Soo Line extra pulls a string of empty ore cars through Deerwood, Minn., on July 20, 1950. Exterior-post ore cars like those seen here had been on Soo Line rails for 25 years by the time of this photo. Robert Milner photo

How do I renumber a Roundhouse ore car?

Q I have several HO scale Roundhouse (ex-Model Die Casting, now Athearn) kits for Soo Line ore cars. They are all numbered 81714. To make it difficult, the 817 and the 14 are separated by a rib, and there's a line under the number. Have you done an article on how to update these numbers? What are the prototype numbers for the Soo Line? I looked for a few online decal suppliers and didn't find anything specific. How would I know what font and size to look for?

Trent Kohl, Pewaukee, Wis.

A Bear in mind that while those old Roundhouse car kits were usually based on a prototype, they were often used generically and lettered for railroads that owned similar cars, even if they didn't exactly match the car modeled. The Roundhouse cars are modeled after a Chicago & North Western prototype built in 1926 by Pullman Car & Manufacturing Co. A year earlier, Pullman had built a batch of 250 cars for the Soo Line that were very similar, but not identical, to the cars Roundhouse modeled. The Soo numbered them from 81600 to 81849 – the number range of your Soo Line cars. Both the Soo Line and C&NW cars are pictured in the 1930 *Car Builder's Cyclopedia* (Simmons-Boardman). Among the differences between the two: the C&NW car had a stiffening rib around the top rim, like on the Roundhouse model, while the three center posts on the Soo Line cars were concave, unlike on the model. The C&NW car was also 3½" longer than the Soo Line version, but other than those differences, the Roundhouse model makes a very close stand-in for the Soo car. So you could renumber your cars anywhere in the range of 81600 to 81849.

The easiest thing to do would be to replace only the last one or two digits, so you only have to mess with the lettering on one side of that central post. The lettering in the photo I found in the *Car Builder's Cyclopedia* looks like a fairly typical Railroad Roman; similar letter and number sets are available from various hobby decal makers, including Microscale (www.microscale.com, item 90321). That company also makes a set of numbers for Soo Line boxcars that look like they would also work for your hoppers (no. 87-1048).

As for how to remove and replace the lettering, we've run a number of articles on that technique over the years. Take a look at our August 2016 Step By Step, in which Cody Grivno shows how he renumbered and weathered some Southern Pacific 26-foot ore gons.

Q What glue do I use for extruded-foam insulation board?

Vic Pantuso, Denison, Texas

A We use a construction-grade adhesive caulk, like Loctite PL 300 or Liquid Nails for Projects. Other brands will work, too, as long as they say they're "foam-safe" on the label. Generally, they're the kind of adhesive caulk made for wallboard use, not bathroom or window caulk.

Q Our model railroad layouts presently run on 12V. It seems to me that if they ran on 18 or 24V, they would be less susceptible to problems caused by poor electrical contact. What's your take on this? Is it feasible, or asking for trouble?

John Keller, Wellsboro, Pa.

A Increasing voltage to overcome poor electrical contact is a bad idea, for a few reasons. First of all, if you don't have a complete circuit, current isn't going to flow; it doesn't matter what voltage you apply. Second, voltage is a measurement of electrical potential – the difference in charge between two points. The force that makes electricity flow is measured by the amperage. As an analogy, voltage is the amount of water in the reservoir; amperage is the water pressure.

Increasing the amperage might improve electrical flow, but there's a big reason that's a bad idea, aside from the possibility of damaging electrical arcs. That reason is that the electrical components in our model locomotives – the motors, decoders, lights, and wires – are designed to work at a certain amperage. Push too much current through those components and wires, and they heat up. And when electrical components overheat, the magic smoke gets out, and your prize locomotive becomes a shelf queen. So, no, it's not a practical idea. Sorry.

Q I'm looking for an article by Cody Grivno where he was ballasting an entire freight yard. I remember he was using Smith & Son ballast. Can you please help me?

Kimball Kelsey, Paris, Tenn.

A The article you're thinking of is titled "Ballast and scenic yard tracks." It was published in our 2007 special issue *How to Build Realistic Layouts: Freight Yards*.

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

I'm afraid it's out of print, but I'm hoping that since you know about the article, you have this issue in your stash. If you don't, check your local hobby shop, train swap meets, or eBay.

Q I'm designing an N scale layout. I'll be using DCC. My track plan is like a folded dogbone. I want to add a couple of crossovers so I can reverse the direction of my trains. Do I need to use auto-reversing circuits?

Thomas Phillips, Elkton, Md.

A Yes. Any track configuration that lets your train change direction on the same track – a balloon track, a wye, a turntable, or a crossover on a loop or dogbone – will result in a short circuit unless you use an auto-reverser.

Q What's the polarity of the terminals on a Railpower 1300 power pack? I'm looking for the positive and negative terminals, but the screws are the same color and unmarked.

Terry Scheuer, Ballston Spa, N.Y.

A There's no designated positive or negative terminal on a direct-current power pack, since the polarity changes depending on which way the "Direction" switch is flipped. Hook up the track feeders to your power pack's terminals, and if the train doesn't go the direction you want, flip the switch.

Q Hello! I'm a longtime subscriber and also a member of our local model railroad club, Winchester Model Rail Road, a nonprofit organization. Due to circumstances beyond our control, our club is being forced to move to a new home, where we'll have to construct a new layout. Though we don't have the new location yet, we know we want the new layout to be a "donut" shape, where the operators would be in the center while viewers would walk around the perimeter.

I went on the *Model Railroader* Track Plan Database looking for designs larger than 600 square feet and downloaded several that we could probably work with. What I need to

know is, if we choose one of these designs, what do we need to do to obtain permission to use it and comply with copyright law? Specifically, are there fees or documents that need to be executed that would give us permission to use the design?

Bill Whitehead, Cross Junction, Va.

A Our Track Plan Database exists for exactly the purpose you're using it for – to give inspiration to *Model Railroader* readers designing their own layouts. It's unlikely any of our published plans will exactly fit your future club's space, scale, era, and locale needs, so the plan you end up following will be at most inspired by ours. But even if you did decide to follow a plan from the Database exactly as published, you're free to do so, as long as it's not for a for-profit enterprise, like a commercial attraction, or republished in a book, magazine, website, or the like. You are also free to make copies, enlarge them, cut them apart, and tape them together however you want – again, as long as it's for personal use, not profit or



AZL

Z SCALE LOCOMOTIVES / FREIGHT / PASSENGER

Sleepers, Coaches, Dinners, Observation Cars, Dome Cars, Baggage & Mail Cars!

Smooth...

All New Lightweight Smoothside Passenger Cars

American Z Line

AZL

RELIABLE, HIGHLY DETAILED, IRRESISTIBLE.

AZL Distribution | Dublin, OH | 614-764-1703

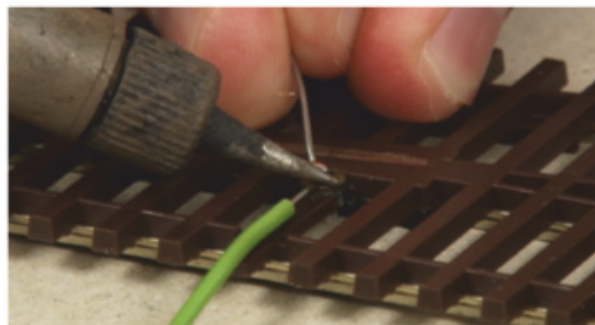
www.americanzline.com | www.azldirect.com

distribution. Subscribers can find more than 500 track plans in all scales, sizes, and shapes at mrr.trains.com/how-to/track-plan-database.

Q Where do I get a control switch for curved turnouts like those from Atlas and Peco?

Perry Ball, North Bangor, N.Y.

A There are a lot of different ways to line your turnouts. One of the oldest, and still most popular, is to make a wire linkage between the turnout's switch rod and a double-pole double-throw (DPDT) micro-switch that is mounted trackside and wired to change the turnout's frog polarity. (Some modelers even make their switches look like switch stands. See "Homemade switch stands" by Skip Luyk on page 31 of our August 2018 issue.) Others use manual ground throws, such as those made by Caboose Industries (www.cabooseind.com), some of which also have internal contacts for powering the frog. For under-the-table solutions, look to manual switch



Model Railroader Video Plus producer David Popp demonstrated how to attach electrical feeders to the pot-metal frog of an Atlas turnout in episode 3 of "Ask MRVP."

machines like the Blue Point from A-Line (www.ppw-aline.com), or powered ones like the Walthers Layout Control System switch machine (www.walthers.com) or the Tortoise by Circuitron (www.circuitron.com). Any of these will work on both straight and curved turnouts of any size.

Q I use Atlas manual turnouts on my layout. This layout is already built and all track is in. My locomotives are hesitating and stopping at some of the

turnouts, so I would like to power the turnouts. Can I do this without removing the turnouts? If so, how?

William Semanko, Junction City, Kan.

A If your turnouts have metal frogs, it's possible. The tricky part is that the "pot metal" Atlas uses to cast its frogs doesn't take solder well. Your electrical connection to the frog will have to be a mechanical one. Look at the frog and you'll see a small loop cast on one side of it. Tap this hole for 2-56 threads, then screw a brass 2-56 machine screw into the hole and solder your feeder wire to that. If you could pull up your turnouts and attach the wire to the bottom, it would look better. But if you must attach the screw and wire from the top, paint over it with Railroad Tie Brown paint and it shouldn't be too obtrusive.

If you're a Model Railroader Video Plus subscriber, you can watch David Popp show how to do this in episode 3 of "Ask MRVP." You can watch it at <http://mrv.trains.com/series/ask-mrvp/2015/06/ask-mrvp-episode-3>. **MR**



Zephyr Express, the Fast Track to Digitrax Complete Train Control

- **3.0 Amp LocoNet Command Station, Booster, & Throttle**
- **Color 2.4" LCD Screen**
- **Large Backlit Keypad**
- **Runs up to 20 Loco addresses and throttles**
- **Integrated USB Computer Interface**
- **Control lights and sound with 29 functions**
- **Simple Set-Up with Easy to read display**

Find out more @ www.digitrax.com/dcs52

Introducing



\$235.00 MSRP

2B In Trains

Model Trains for Beginners to Experts
Buy, Sell, Trade, Repair
HO, N, O/027, S, G
Come See Our Trains
6168 Road 29 • (519) 787-3280
www.2bintrains.com

Downtown Deco

Amazingly realistic structure kits!
When having the same structures that appear on every other layout just isn't good enough anymore, check out Downtown Deco. Kits in HO, N & O Scales.
www.downtowndeco.com
406-821-0181

Pre-Size Model Specialties

We manufacture urethane cast tunnel portals, retaining walls, abutments, culverts, bridge piers, and much more! All scales! Free shipping on US consumer orders over \$25! Check us out!
www.pre-size.com

Aline /Arrow Hobby

You won't believe all the neat stuff!
Buy online
Aline/Arrow Hobby
P.O. Box 2701 • Carlsbad, CA 92018
www.ppw-aline.com

GoodDealsDCC

The Programmer Portable Test Track Features:
All Scales Available • Non-Warping PVC Platform
Soldered Joints • DC & DCC Compatible
Fully Wired • Re-Railers for HO & N
Non-Marring Pads • Built-In Bumpers
224-703-0111 • www.GoodDealsDCC.com

Right On Track Models

Railroad structure kits for the discerning modeler. Check out our website for a great variety of custom designed model railroad structure kits in HO, N, S and O.
www.rightontrackmodels.com

Azatrax

Action!
It starts with smart
infrared train detection.
www.azatrax.com

JB Wheelsets

The finest wheelsets you can buy.
We offer the highest quality wheels and axles available for the serious HO and G scale modelers. Precision machine-turned brass for smoother wheel surface. Made in the USA! Several axle styles available.
www.jbwheelsets.com

STREAMLINED BACKSHOP

Open 24-7-365. Real-time inventory. Affordable shipping. Specializing in DCC Decoders and Command Stations, N and HO scale locomotives and rolling stock, track, scenery products and much more! Check us out!
www.SBS4DCC.com

Blair Line

HO/N/O Laser-cut Structures and Billboards
HO/N Graffiti Decals
HO/N/O Storefront & Highway Signs
Visit our website or request our free catalog
P.O. Box 1136, Carthage, MO 64836
www.blairline.com

Mainline Hobby Supply

Your Model Railroading Headquarters
supplying all scales from the
beginner to expert!
717-794-2860
www.mainlinehobby.com

TICHY TRAIN GROUP

OVER 1000 ITEMS, ALL IN STOCK
Signs, windows, doors, freight car
parts, decals & kits. All scales.
Catalog call 336-329-9038
www.tichytraingroup.com

BPL Brassworks / Railmodel.com

Providing Fine Scale Brass Train models for over 25 years. Call us at 262-375-1107 or email at info@railmodel.com to inquire about your next brass model. We also purchase collections, so let us know about the models you no longer need.
www.railmodel.com

Mianne Benchwork

miannebenchwork.com
Fast Track to Layout Construction.

Train Sets Only

Rolling Stock - Track - Scenery - DCC - Accessories
Athearn, Atlas, Bachmann, MRC, NCE, Soundtraxx,
Walthers, Woodland Scenics, and More!
1000's of products in stock
www.trainsetsonly.com
888-54-TRAIN

YOUR #1 MODEL RAILROADING SOURCE

SUBSCRIBE TO MODEL RAILROADER TODAY!

Go To **http://Subscribe.ModelRailroader.com**

WORLD WIDE TRAIN TOURS

Offering world wide train tours for the railfan and tourist in: North America, Western & Eastern Europe, and South Africa.
VISIT OUR WEBSITE FOR DETAILS
www.traintrips.biz

Nace's Videography, LLC

All New Images!
Now Shipping - Volume 1:
Howard Zane's Piermont Division
Only \$39.95 • 2 Hours • HD 1080p DVD & Blu-ray
Operation • Interviews • Specialty Segments

**We Accept
International
Orders**

Coming in 2019 - Volume 2:
Tony Koester's Nickel Plate Road
Only \$39.95 • HD 1080p DVD & Blu-ray
Operation • Interviews • How To Segments



www.nacesvideography.com • 800-285-8685 • forrest@nacesvideography.com

Dirt: The N scale operator's arch enemy

A locomotive model won't run if current doesn't pass from the rails to the pickup wheels. "Duh," you may say, but that fact isn't necessarily obvious, especially to younger people who haven't tinkered with mechanical or electrical devices to the extent previous generations did.

Filthy track can look clean. The dirt on rails and wheels is usually a mixture of oxidation, lubricants, and dust that isn't particularly visible. And the problem is that this invisible mix is an insulator. And if it gets transferred to the treads of our locomotives' pickup wheels, the problem is compounded.

Tiny footprints. The Achilles' heel in the circuit that powers our locomotives is the tiny footprints between the pickup wheels and the rail. This is true for locomotives in all scales, but even more so for N scale because of its small size. The footprints are about the same in any scale, but the larger scale engines weigh more and so the wheels press down harder, giving better contact. (An HO engine of the same prototype weighs about eight times as much as its N scale equivalent.)

An irony here is that the more realistic a wheel is, the smaller the contact footprint. A prototypically correct model wheel has a tapered tread (the relatively flat running surface of the wheel) and a fillet (a curved surface that completes a smooth transition from the tread to the flange.)

All the wheels in a train have these characteristics, and without them the cars wouldn't be able to negotiate curves smoothly, if at all. On a curve, the outside wheel must travel farther than the inside wheel in the same period of time. It does so by



Jim likes to clean his locomotive wheels on a staging yard track where there's no ballast or painted track to spoil with the isopropyl alcohol. Jim Kelly photo

riding up on the fillet, which in effect makes the wheel radius larger.

Learning the basics. How do modelers learn about this problem and how to address it? They can ask at their hobby shop or ask model railroading friends, if they're fortunate to have either of these precious resources. They can also ask Siri or her ilk on online devices, or they can buy a book or two on model railroading basics. (Ahem, it just so happens that MR's publisher, Kalmbach Media, offers several.) When you're starting out in this hobby, you need a lot of information, and you need it fast.

My friend and fellow N scale layout builder Steve Miazga [See "Missabe Junction revisited" in the September 2018 *Model Railroader* – Ed.] told me that when he was starting, his dealer told him to do nothing but read for six months. I think that was good advice, although probably a few months less might suffice. You might find direction, and you'd almost

certainly learn how to clean wheels and track.

Cleaning track. Many solutions have been offered for keeping track clean, but my go-to over the years has always been the Bright Boy cleaner sold by Walthers. It looks rather like an ink eraser, and you just rub the track with it. Every now and then you need to vacuum the track, as tiny crumbs of rubber tend to fall off onto the roadbed. In N scale these can prevent a switch point from closing completely.

Cleaning wheels. The best way to keep wheels clean is to keep your track clean. Still, you'll find yourself having to clean wheels now and then, especially if you've been working on the layout. Paint, glue, plaster dust, sawdust, and soldering flux all like

to find their way onto locomotive drivers.

I clean drivers with the old tried-and-true paper towel and isopropyl alcohol method. First, you moisten with alcohol a part of the towel near the edge, then lay that wet part across the track and spin one set of drivers on it while powering the locomotive from the truck that's still touching the rails. If the wheels are especially dirty, you may have to scrape some crud off the driver

treads just to get them going.

I then run the wheels on a dry part of the towel so no liquefied gunk will set up and put me right back in the dirty wheel situation.

Once track and wheels are clean, the best part is keeping them clean by running your trains a whole lot, which is a lot more fun than cleaning track and wheels! **MR**



MY FRIEND AND FELLOW N SCALE LAYOUT BUILDER STEVE MIAZGA TOLD ME THAT WHEN HE WAS STARTING, HIS DEALER TOLD HIM TO DO NOTHING BUT READ FOR SIX MONTHS. — JIM

MENARDS.COM/TRAINS



Vetter Sash & Door Company

HO Gauge (279-5018) \$69.99
O Gauge (279-4324) \$109.99

- Prebuilt and ready to go!
- Prelit with four LED yard lights and three red blinking lights on the roof
- Realistically weathered and backlit "Vetter Sash & Door Company" sign
- Two rotating exhaust fans and 25 intricate windows
- Includes three HO scale figures and Jack the German Shepherd, two pallets with doors and windows, four dormers, a dust collector and a dumpster

PREBUILT & PRELIT HANDCRAFTED LIMITED EDITION ORIGINAL DESIGNS!



Menardsville Station

HO Scale (279-5041) \$59.99
O Scale (279-4436) \$79.99



Pepsi® Bottling Plant

HO Scale (279-5014) \$69.99
O Scale (279-3860) \$99.99



Morton® Salt Factory

HO Scale (279-5012) \$69.99
O Scale (279-3847) \$99.99



Dakota™ Cabinet Factory

HO Scale (279-5002) \$69.99
O Scale (279-2678) SOLD OUT



American Materials

HO Scale (279-5043) \$59.99
O Scale (279-4434) \$79.99



American Materials #2

Looks great on all O, S & HO layouts! (279-4425) \$89.99



Menards® Power & Light

HO Scale (279-5004) \$69.99
O Scale (279-3051) SOLD OUT



Wally's Service Station

HO Scale (279-5017) \$59.99
O Scale (279-4431) \$89.99



Farm Supply Building

HO Scale (279-5005) \$49.99
O Scale (279-3389) \$69.99



Fire-Damaged Engine House

HO Scale (279-5006) \$59.99
O Scale (279-3092) \$79.99



Starbucks® Coffee Shop

HO Scale (279-5040) \$59.99
O Scale (279-4325) \$79.99



Sauerkraut Factory

HO Scale (279-5003) \$69.99
O Scale (279-3073) \$99.99



Taco Bell® Restaurant

HO Scale (279-5011) \$59.99
O Scale (279-4451) \$89.99



Watkin's City Block

HO Scale (279-5013) \$69.99
O Scale (279-3971) \$99.99



Menards® Hobby Shop

HO Scale (279-5001) \$59.99
O Scale (279-2677) SOLD OUT



Grandpa's House

HO Scale (279-5007) \$59.99
O Scale (279-3390) SOLD OUT



Red Barn

HO Scale (279-5016) \$59.99
O Scale (279-4430) \$89.99



Multi-Sign/Purpose Bldg.

HO Scale (279-5044) \$69.99
O Scale (279-4452) \$99.99



Red Owl® Store

HO Scale (279-5011) \$69.99
O Scale (279-3472) \$99.99



30-Sign Maintenance Shed

HO Scale (279-5009) \$49.99
O Scale (279-3069) SOLD OUT



Fire Station No.12

HO Scale (279-5015) \$69.99
O Scale (279-3848) \$99.99



Train Station

HO Scale (279-5010) \$69.99
O Scale (279-3846) SOLD OUT

**SIGN UP FOR O & HO GAUGE NEWS
& NEW PRODUCT RELEASES AT
MENARDS.COM/EMAIL**

FOR MORE INFORMATION OR TO ORDER, VISIT **MENARDS.COM/TRAINS**



Replacing cracked gears on a locomotive

The phone rang on a Friday evening. It was my longtime friend, Bill, from Minnesota. He was giving me the latest update on his under-construction HO scale model railroad. While running a test train on some newly laid track, his Life-Like Proto 2000 engines started making a clicking sound. From Bill's description, it sounded like cracked drive axle gears.

Several diesels from the Life-Like era of the Proto 2000 series developed this problem, and my HO scale Great Northern Electro-Motive Division GP9 was no exception [Proto 2000 by Walther and WaltherProto diesels do not have this problem – *Ed.*] The plastic drive axle

gears, which are mounted on metal axle stubs, had cracked since I first acquired the model. Fortunately, there are a few options to remedy this problem.

Some modelers simply replace the cracked parts with Athearn Trains no. ATH60024 or A-Line no. 40005 plastic drive axle gears. Option two, the route I took, was to use WaltherProto replacement geared driver assemblies.

While I had the model apart, I also cleaned out the original oil and grease and applied new oil to the bearings and fresh lubricant to the gearbox.

No matter the route you take, repairing cracked axle gears on Life-Like Proto 2000 HO scale locomotives is an



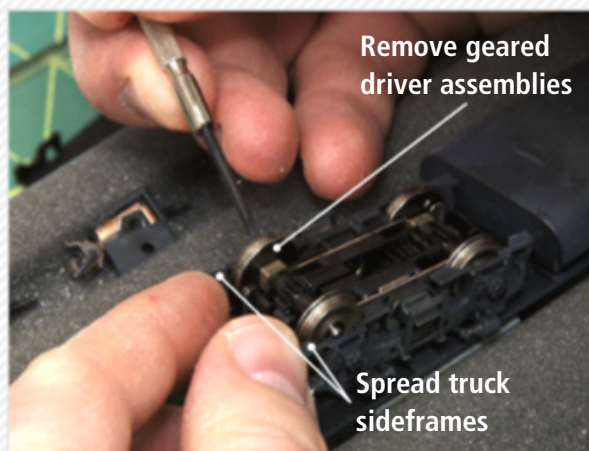
▶ Don't just read about it. Watch Cody replace the gears on this locomotive. Check out the video at MRVideoPlus.com.

easy fix. With new geared driver assemblies and fresh lubrication, my GN GP9 is running better than ever.

STEP 1 OUT WITH THE OLD



I started by removing the draft-gear box on each end of the locomotive and releasing the four tabs that held the shell to the chassis. Then I removed the gear cover on the bottom of each truck with a flat-blade screwdriver.

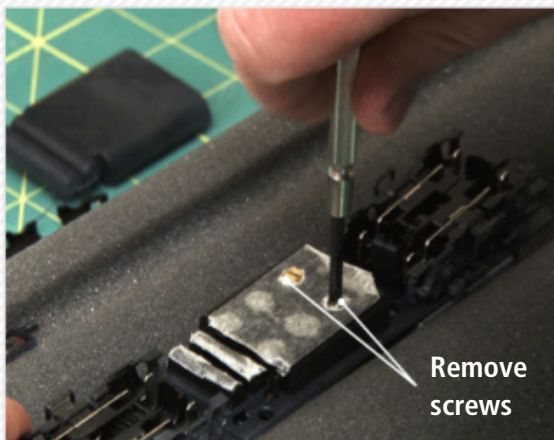


Next, I spread the truck sideframes to lift out the geared driver assemblies. I couldn't get a good grip on the wheels with my fingers. Instead, I used a flat-blade screwdriver to hook the reference groove on the wheel and lift the assembly out.

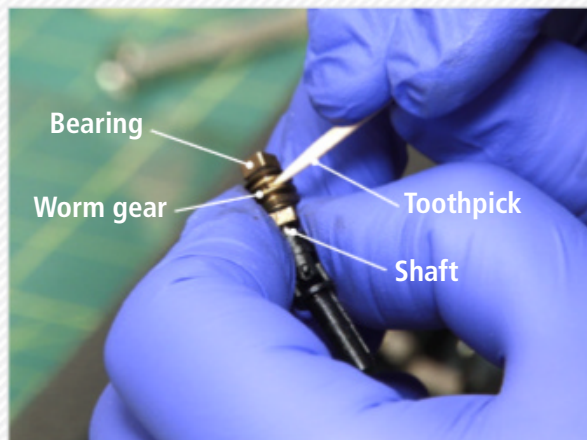


With the geared driver assemblies removed, I thoroughly inspected the plastic gears. In the photo above, the crack is quite obvious. I've seen some gears where the cracks are subtle. All four gears on the GP9 were cracked and had to be replaced.

STEP 2 CLEAN-UP TIME

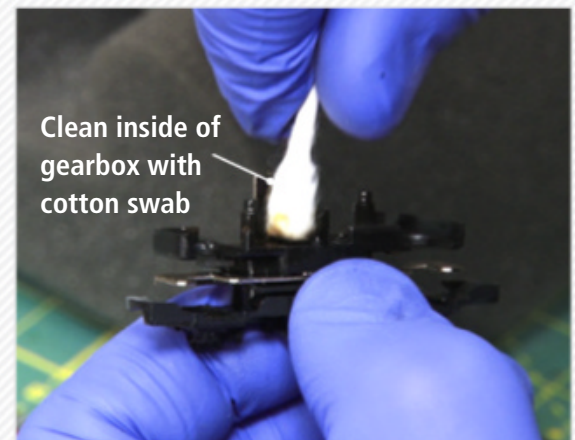


In addition to cracked drive axle gears, I wanted to clean off the excess lubrication. To remove the worm gear clips, I first had to get the weight out of the way. The screws holding the weight are concealed under the plastic fuel and air tank casting.



The brass worm gears and bearings had sticky grease residue. Not wanting to damage the metal parts, I used toothpicks and Microbrushes to clean the worms, bearings, and shafts.

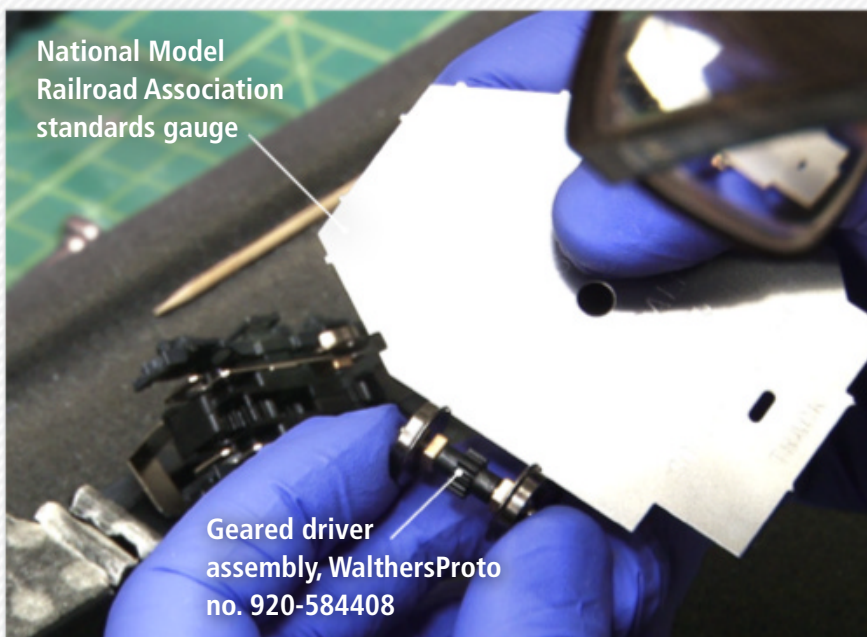
I washed the plastic idler gears in warm water with dish soap added to



remove the old grease. I also checked the idler gears for flash (excess plastic) and chips, as one or both can negatively impact performance.

I also cleaned the inside of the gearboxes and the truck kingpins to remove old and excess lubrication.

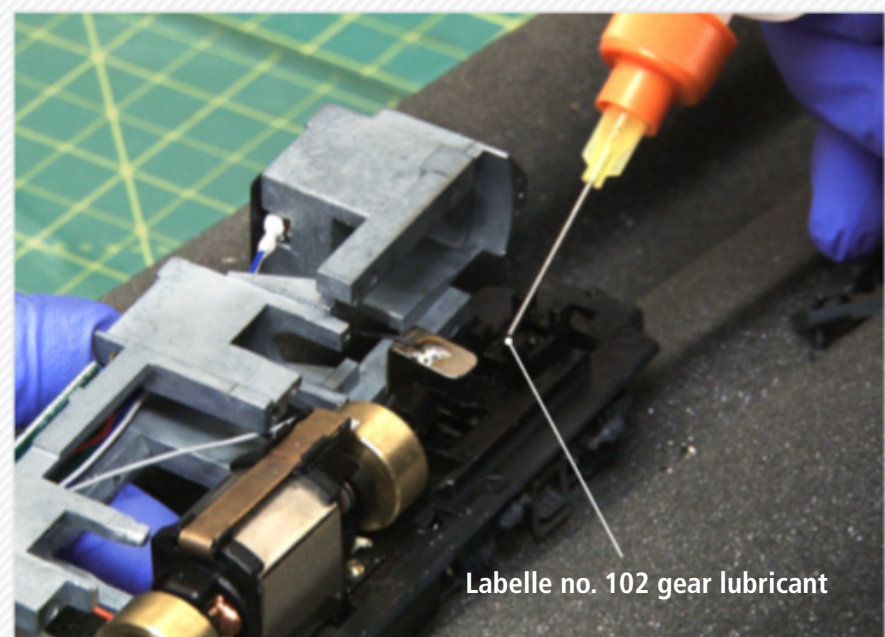
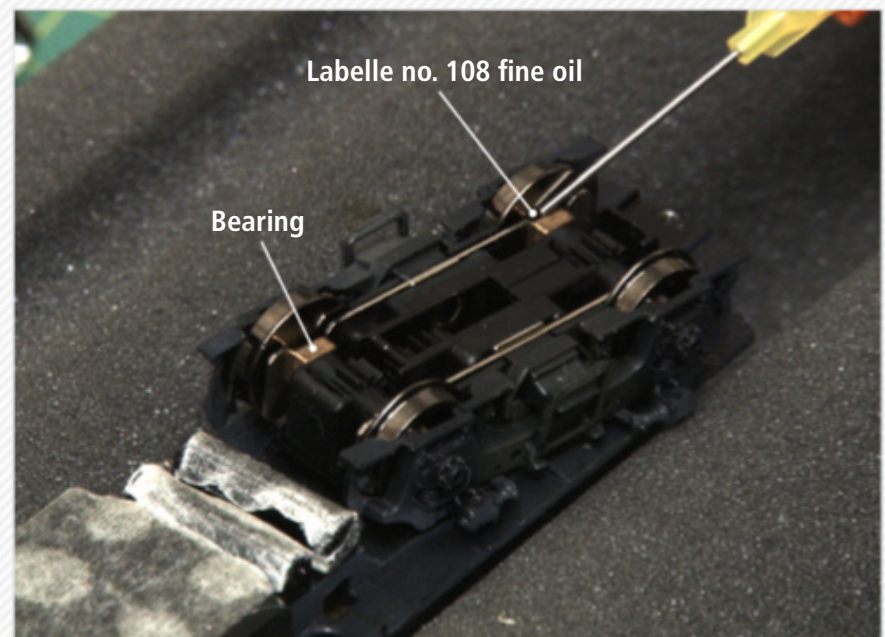
STEP 3 NEW GEARS AND LUBRICATION



I used the WalthersProto replacement geared driver assembly (no. 920-584408) for the GP9. You'll need two packs to complete one four-axle locomotive. Before installing each assembly, I checked the wheels with a National Model Railroad Association standards gauge.

With the geared driver assemblies in place, I added one small drop of Labelle no. 108 plastic-compatible light oil to each bearing. Unless you hear squeaking, don't add any more oil. Then I replaced the plastic gear cover on each truck.

Finally, I applied two drops of Labelle no. 102 gear lubricant (select Labelle lubricants are sold in the Kalmbach Hobby Store) to each truck gearbox and reassembled the locomotive. A quick break-in run confirmed the repairs worked. With that, my HO scale Life-Like Proto 2000 GP9 went from the sidelines to the main line. 



A BUYER'S GUIDE TO DCC SYSTEMS



Associate editor Eric White works the yard with a Model Rectifier Corp. throttle, group technical editor Cody Grivno touches an iPad to stop his Wisconsin & Southern freight, and senior editor Dana Kawala runs the Amtrak train on the Milwaukee Racine & Troy with an NCE cab. The WSOR and MR&T are controlled by MRC and NCE Digital Command Control systems, respectively.

Learn about the latest Digital Command Control starter sets and their key features

By Dana Kawala • Photos by Bill Zuback except where noted

Welcome to the 2019 Digital Command Control (DCC) system roundup. It's hard to believe that it's been more than a decade since the last one. Many of the systems listed back then still hold their own today. We've also seen the development of all-new systems.

The technology has come a long way since *Model Railroader* published "New standards proposed for command control" by Stan Ames and Rutger Friberg in the October 1993 issue. The main advantages of DCC – independent locomotive control and easy walkaround operation – still hold true. However, over the

last quarter-century, DCC has opened up a host of exciting new possibilities for model railroaders, including realistic locomotive sound and performance, layout accessory control, plug-and-play computer interfaces, and Wi-Fi operation.

This roundup focuses on DCC starter sets that include everything needed in one convenient package: command station, throttle, booster, and (most of the time) a power supply. Many systems are also built with expansion in mind, so you can add more power, throttles, or other components as your layout and operating needs grow.

Note that for space reasons, this roundup includes only systems that use DCC technology. It also includes only manufacturers that actively market their systems in North America.

WHAT IS AVAXHOME?

AVAXHOME-

the biggest Internet portal,
providing you various content:
brand new books, trending movies,
fresh magazines, hot games,
recent software, latest music releases.

Unlimited satisfaction one low price

Cheap constant access to piping hot media

Protect your downloadings from Big brother

Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages

Brand new content

One site



AVXLIVE • ICU

AvaxHome - Your End Place

We have everything for all of your needs. Just open <https://avxlive.icu>

DCC in a nutshell

On a direct-current (DC) two-rail layout, track power goes directly to the locomotive motor. More power equals more speed. Every locomotive on that section of rail will respond accordingly. There's no independent control.

On a DCC layout, the rails are used to transmit a signal along with constant track power. Instead of being connected directly to the motor, the power pickups on a DCC-equipped locomotive go to a small computer called a decoder first. Decoders may also be connected to accessories, such as turnout motors.

Each digital signal includes a specific address that corresponds with a particular decoder. If that decoder "sees" its address in the packet, it completes the task accordingly (i.e., start moving, turn on a headlight, line switch points, etc.) If the decoder doesn't see its address, it ignores the packet. This allows true independent control.

It's also easier to run multiple-unit (m.u.) consists with DCC. In simple consisting, two or more locomotive have the same address and run together, but lack independent function control. More realistic control is available with universal and advanced consisting, in which the m.u. information is stored in the command station or decoder, respectively.

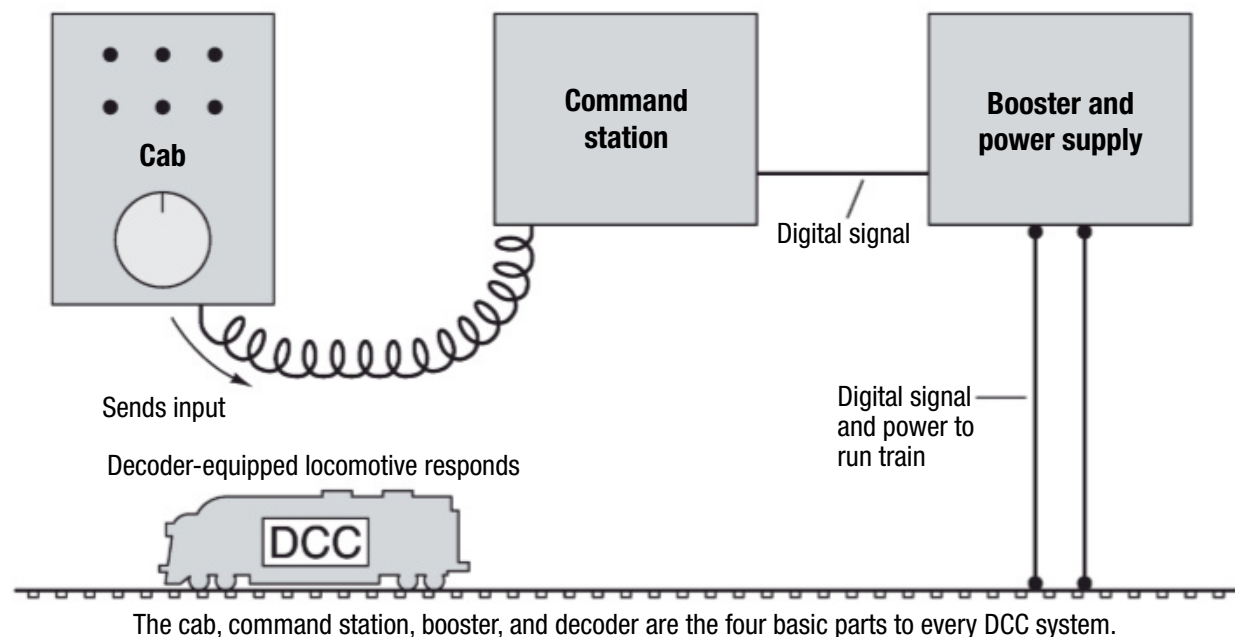
Many aspects of a decoder's performance can be customized by changing values of configuration variables (CVs). Service Mode programming requires an isolated section of track, but allows a decoder's CV values to be read back. Programming On the Main (POM) can be done anywhere on the layout but doesn't provide readback.

For more information on DCC, including consisting and programming, check out *The DCC Guide, second edition* (Kalmbach Books).

System components

The heart of a DCC system is a small computer called the command station. It receives commands from the throttle, which it then translates into the digital packets noted above.

Often built into the command station, the booster combines the packet with enough power to send it down the rails. The 2A to 3A booster included with many DCC starter sets is enough to handle three to five HO or N scale locomotives. Many manufacturers also sell optional power boosters to support larger layouts and modeling scales.



Some DCC command stations have built-in stationary throttles that work well for a train set or small layout.

Handheld throttles, either tethered or wireless, allow model railroaders to take full advantage of the walkaround capability of DCC. Tethered throttles must be plugged into the cab bus in order to operate, usually via plug ports in the command station or in fascia-mounted extension plates. Wireless throttles use infrared, radio, or Wi-Fi signals.

In addition to master throttles that offer full programming capability, many manufacturers also sell more compact and economical utility (also called operator or ops) throttles that provide only decoder control. The latter are convenient for layouts that regularly host multiple operators.

In many cases, DCC throttles, command stations, and other components aren't interchangeable between manufacturers. However, some command stations include connections for multiple command bus protocols, such as XpressNet (developed by European manufacturer Lenz) and LocoNet (developed by Digitrax.) Components that share these protocols can be used together regardless of the manufacturer.

In addition, the National Model Railroad Association (NMRA) has developed DCC standards that most manufacturers follow, especially those for decoder wiring and functionality. NMRA-compliant decoders and systems will work together, even if they don't share the same manufacturer.

High-tech features

Many command stations are available with built-in or optional computer interfaces. These connections allow users to update system firmware themselves, without having to mail (and wait for) electronics to be updated by the manufacturer. A

computer connection also allows users to take advantage of open-source Java Model Railroad Interface (JMRI) software, including DecoderPro and PanelPro.

A Wi-Fi-enabled command station enables train or layout control via a smartphone or tablet, using apps such as Engine Driver or WiThrottle.

Some systems feature more extensive bi-directional communication between the decoder and the command station. Developed by Lenz, RailCom is one such technology adopted by several DCC companies. When used with a RailCom-enabled decoder, the system will read back information, such as the locomotive address or speed, even when on the main track. Digitrax offers a similar proprietary technology called transponding.

You may also find DCC systems or components that support Layout Command Control (LCC) an open-source bi-directional command bus with standards recently adopted by the NMRA. For more information, search LCC at www.nmra.org.

Let's get started!

A DCC system is a major purchase, so take the time to learn what features really matter to you. Check out the online DCC Resources page for more guidance, including Larry Puckett's article, "Selecting the right DCC system" from our October 2018 issue. If possible, try out different DCC systems at train shows, hobby shops, or model railroad club open houses. That's the fun part!

With all the options available, it's a great time to get into DCC.





Bachman Trains photo

Bachman E-Z Command

Price: \$199

Manufacturer:

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

Basic set includes:

command station with
built-in booster and

stationary throttle, 16V 1A
power supply, plug-in wire
with connection for E-Z
Track terminal section

Maximum current: 1A

Optional power boosters:
yes

Additional throttles:
Optional walkaround

throttle discontinued by
manufacturer, but may
be available on secondary
market

Throttle controls

(included): speed control
knob, keypad

**Maximum number of
locomotive addresses:** 10

**Maximum number of
throttles:** 2

Functions: 10

Consisting: simple only

**Accessory/Turnout/Route
Control:** yes

Programming: Service
Mode (only locomotive
address and direction
of travel)

Computer interface: no

Wi-Fi: no

Firmware updates: no

Warranty: One year

Comments: This easy-to-
use system is found in
some Bachmann starter
train sets, including
SoundValue sets, and is
also available separately.
The controller features a

large speed control knob,
similar to those found on a
DC power pack. The unclut-
tered keyboard is simple to
learn and includes helpful
indicator LEDs. The buttons
are also used to trigger var-
ious DCC functions, includ-
ing lights and sound
effects like the whistle,
horn, and bell. The
Bachmann E-Z Command
system remains a straight-
forward and easy way to
get comfortable running
trains with DCC. The addi-
tion of a 5A power booster
(sold separately) allows the
system to be used with
larger layouts and model-
ing scales.



Bachman E-Z Command Dynamis

Price: \$369

Manufacturer:

Bachmann Industries
Basic set includes:
command station/booster,
two-way infrared receiver,
one two-way wireless

infrared throttle, 16V 2.3A
power supply

Maximum current: 2.3A

Optional power boosters:
yes

Additional throttles: sepa-
rate two-way infrared

throttles available (ProBox
required for multiple
throttles)

Throttle controls

(included): joystick, keypad,
liquid-crystal (LCD) display

**Maximum number of
addresses:** 9,999 (locomo-
tive), 2,048 (accessory)

**Maximum number of
throttles:** one (three addi-
tional with Dynamis ProBox;

multiple ProBoxes can be
used together to support
additional throttles)

Functions: 21

Consisting: simple, univer-
sal, and advanced

**Accessory/turnout/route
control:** yes

Programming: POM

(ProBox required for Service
Mode programming)

Computer interface: no

Wi-Fi: no

Firmware updates: no

Warranty: one year

Comments: Developed
with ESU LLC, the
Bachmann Dynamis uses

two-way infrared technol-
ogy. A clear line of sight is
required between the
throttle and receiver.

The intuitive throttle is
oriented horizontally with
a joystick, buttons, and
liquid-crystal display (LCD)
screen, similar to a video
game controller.

A Dynamis ProBox is
required for multiple throt-
tle operation, and more
than one ProBox can be
used together to expand
the system further. The
ProBox also allows the use
of additional wireless
receivers (also sold sepa-
rately) to ensure uninter-
rupted operation on
larger layouts.



CVP EasyDCC

Price: \$279 (basic set),
\$429 (extended set),
\$529 (wireless set)

Manufacturer:

CVP Products
P.O. Box 835772
Richardson, TX 75083
www.cvpusa.com

Basic set includes: command station with two built-in stationary throttles and power supply, ZoneMaster Single 7A booster with 12V to 24V variable power supply. Extended version also includes one XR1300

tethered throttle, plug panel, and two 7-foot cables. Wireless version also includes one T5000E wireless throttle and receiver.

Maximum current: 7A

Optional power boosters: yes

Additional throttles: tethered and wireless radio throttles available

Throttle controls

(included): speed control knobs, keypad, LCD display

Maximum number of addresses: 9,999 (locomotive), 2,048 (accessory)

Maximum number of throttles: 99 (eight wireless throttles per receiver, multiple receivers can be used together)

Functions: 13

Consisting: simple, universal, and advanced

Accessory/Turnout/Route control: yes

Programming: POM and Service Mode, separate programming track outputs

included

Computer interface: via serial port, requires third-party device

Wi-Fi: no

Firmware updates: occasional updates via plug-in chips, available from CVP for free or a nominal fee

Warranty: 30-day trial period, one-year warranty

Comments: The command station of the EasyDCC system doubles as a fascia-mounted control panel with two stationary throttles and programming capability. Operations can easily be expanded with CVP's line of boosters and recently updated tethered and wireless radio throttles. The included 7A booster provides enough power to handle large layouts.



Laptop not included

Digikeijs DR5000 Digicentral

Price: \$199

Manufacturer:

Digikeijs B.V.
Rietmeent 230 / 231
1357CW Almere
Netherlands
www.digikeijs.com

Distributed in the United States by:

Iron Planet Hobbies
5355 West Harrison St.
Springfield, MO 65802
www.ironplanethobbies.com
Basic set includes: command station/booster, variable (15V-24V) 3A power

supply. Requires PC with free computer interface software available for download from Digikeijs website. At this time there is no version for Apple or Linux computers.

Maximum current: 3A

Optional power boosters: yes

Additional throttles:

works with tethered and wireless throttles from several manufacturers (Digikeijs doesn't make its own throttles)

Throttle controls

(included): virtual computer throttle (shown at left) included as part of free software download

Maximum number of addresses: 9,999 (locomotive), 2,048 (accessory)

Maximum number of throttles: 100 plus

Functions: 29

Consisting: simple, universal, and advanced

Accessory/Turnout/Route control: yes

Programming: POM and Service Mode, separate programming track outputs included

Computer interface: built in

Wi-Fi: built in

Other: Supports RailCom

Firmware updates: free download

Warranty: Two years

Comments: With its multiple command bus jacks (including LocoNet and XpressNet) and built-in Wi-Fi, computer, and infrared interfaces, the DR5000 provides users with a lot of options for running trains. The system also works with popular smartphone/tablet throttles apps, including WiThrottle, Engine Driver, and Z21.

Although Digikeijs doesn't sell its own throttles, the firm does offer boosters, feedback modules, and other components to expand the system.



Digitrax Zephyr Express

Price: \$235

Manufacturer:

Digitrax
2443 Transmitter Rd.
Panama City, FL 32404-3157
www.digitrax.com

Basic set includes:

DCS52 command station
with built-in stationary

throttle and booster, PS314
13.8V 3A power supply,
LocoNet cable, and LT1
decoder tester

Maximum current: 3A

Optional power boosters:
yes

Additional throttles:
supports tethered and

wireless radio LocoNet
throttles. Master and
operator throttles available.
All Digitrax handheld
throttles (including
tethered) have wireless
infrared capability.

Throttle controls

(included): speed control
knob and keypad, three-
position (forward, reverse,
and stop) direction lever

**Maximum number of
addresses:** 9,000 plus
(locomotive), 2,000 plus
(accessory)

**Maximum number of
throttles:** 20

Functions: 29

Consisting: simple, univer-
sal, and advanced

**Accessory/turnout/route
control:** yes

Programming: POM and
Service Mode, includes sep-
arate programming track
outputs

Computer interface: built-
in PR4 USB/LocoNet
interface

Wi-Fi: plug-in module sold
separately

Other: Digitrax
transponding

Firmware updates:

Free download

Warranty: one year

Comments: Like previous
Zephyr DCC systems, this
latest update, the Zephyr
Express, combines a com-
mand station, booster, and
stationary throttle in one
unit. It also includes
LocoNet ports, making it
easy to add more throttles
and other components.
Jump ports allow up to two
DC power packs to be used
as DCC throttles. This latest
version also features a
larger, bright display and
an easy-to-use backlit
keyboard.



Larry Puckett photo

Digitrax Evolution Advanced DCC starter set

Price: \$450 (with tethered
throttle), \$660 (with wire-
less throttle)

Manufacturer:

Digitrax
Basic set includes: DCS210
command station/booster,

PS615 15V 5A power supply,
LT1 cable/decoder tester.
Tethered version includes
UP5 plug panel and DT500
Super Throttle. Wireless ver-
sion includes UR92 Duplex
transceiver panel with

power supply and DT500D
Duplex Radio Super Throttle
Maximum current:
5A or 8A (Note: 8A option
requires PS2012E 20A power
supply, sold separately)

Optional power boosters:
yes

Additional throttles: teth-
ered and wireless master
and operator throttles avail-
able. All Digitrax handheld
throttles have infrared wire-
less capability (requires
UR90 receiver panel, sold
separately). Digitrax master
throttles all include dual
controls for running two
locomotives simultaneously.

Throttle controls

(included): speed control
knobs and keypad

**Maximum number of
addresses:** 9,999 (locomo-
tive), 2,000 plus (accessory)

**Maximum number of
throttles:** 100

Functions: 29

Consisting: simple, univer-
sal, and advanced

**Accessory/turnout/route
control:** yes

Programming: POM or
Service Mode. Separate pro-
gramming track outputs
included

Computer interface:
optional (PR4), sold
separately

Wi-Fi: optional, LNW1 plug-
in module sold separately

Other: Digitrax transpond-
ing (transponders and
receivers sold separately)

Firmware updates: free
computer downloads

Warranty: one year

Comments: With its 5A or
optional 8A booster, the
Evolution offers enough
power to bring DCC to
medium and large HO or N
scale railroads. The system is
packed with features includ-
ing an EZ Route button that
simplifies setting up throttle-
controlled turnouts and a
new DT500 master throttle
available in tethered and
duplex radio versions.



MRC Prodigy Express²

Price: \$229.98

Manufacturer:

Model Rectifier Corp.
360 Main St., Suite 2
Matawan NJ 07747

www.modelrectifier.com

Basic set includes: Prodigy Express² command station, Prodigy Express² tethered

throttle, 13.8V 2A power supply, 5-foot cab bus cable

Maximum current: 1.6A

Optional power boosters: yes

Additional throttles: tethered and wireless master throttles available

Throttle controls

(included): speed control knob and keypad

Maximum number of addresses: 9,999

(locomotive)

Maximum number of throttles: 32

Functions: 29

Consisting: simple, universal, and advanced

Accessory/Turnout/Route control: no (yes, if system is used with Prodigy Advance² throttle, sold separately)

Programming: POM or Service Mode. Separate programming track outputs included

Computer interface: optional, cable or wireless interface sold separately

Wi-Fi: optional plug-in module sold separately

Firmware updates: contact manufacturer

Warranty: one year

Comments: The entry-level Prodigy DCC system has enough power for a small

layout and includes a Prodigy Express² throttle with most of the functionality of its more advanced cousin. The 1" x 2" LCD screen features an intuitive display. Either the throttle knob or buttons can be used for locomotive speed control. One handy feature is that a user reference guide is printed on the back of the throttle.

Other MRC Prodigy components, including boosters, computer interfaces, Advance² tethered and wireless radio throttles, and a Wi-Fi module, are fully compatible with the Express² system.



MRC Prodigy Advance²

Price: \$454.98 (basic), \$537.98 (Wi-Fi), \$629.98 (wireless)

Manufacturer:

Model Rectifier Corp.

Sets include: Prodigy Advance² command station/booster, 15V 3.5A power supply. Basic set also includes

tethered Prodigy Advance² throttle, 5-foot cab bus cable. Wi-Fi set (shown above) includes tethered Prodigy Advance² Elite throttle and plug-in Wi-Fi module. Wireless set includes Prodigy Advance² wireless radio throttle and receiver.

Maximum current: 3.5A

Optional power boosters: yes

Additional throttles: works with all MRC tethered and wireless throttles

Throttle controls

(included): speed control knob and keypad with LCD display. Prodigy Advance² Elite throttle includes backlit display.

Maximum number of addresses: 9,999 (locomotive), 255 (accessory)

Maximum number of throttles: 99

Functions: 29

Consisting: simple, universal, and advanced

Accessory/Turnout/Route control: yes

Programming: POM and Service Mode. Separate programming track outputs included.

Computer interface: optional cable or wireless interface sold separately

Wi-Fi: optional plug-in

module supports Engine Driver and WiThrottle smartphone apps.

Firmware updates: contact manufacturer

Warranty: one year

Comments: Model Rectifier Corp.'s flagship Prodigy Advance² system has expanded to include radio wireless throttles, computer interfaces, and most recently a plug-and-play Wi-Fi module that turns smartphones and tablets into operator throttles. In addition to the versions listed, MRC sells a 10A Prodigy Elite system (\$559.98) suitable for large, club-size layouts and larger modeling scales.



NCE DCC Twin

Price: \$189.95

Manufacturer:

NCE Corp.

62 E. Main St.

Webster, NY 14580

www.ncedcc.com

Set includes: DCC Twin command station/booster with two stationary

throttles, 13.5V 3A power supply

Maximum current: 3A

Optional power boosters: yes

Additional throttles: tethered and wireless ProCab master and Cab-06 operator throttles available.

PowerCab (shown below) can also be used as add-on throttle with DCC Twin.

Throttle control (included): Speed control knobs and keypads

Maximum number of addresses: two, 9,999 with ProCab or other NCE throttle (sold separately)

Maximum number of throttles: two, eight with the addition of SB5 Smart Booster, 48 wireless throttles with RB02 Radio Base Station

Functions: 9

Consisting: no

Accessory/Turnout/Route control: no

Programming: no

Wi-Fi: no

Firmware updates: no

Warranty: one year

Comments: Out of the box the DCC Twin is a bare-bones device for running two decoder-equipped locomotives. It's designed to quickly convert a train set

or small tabletop-style layout to DCC. The speed control knobs are reminiscent of a DC power pack. The function buttons make it easy to trigger locomotive lights and some sound effects, such as the horn/whistle and bell.

The DCC Twin system doesn't have any programming capability on its own. However, add an NCE ProCab and the DCC Twin becomes a fully featured system with programming and consisting capabilities. It also supports 29 user-triggered functions. An NCE cab jack allows the system to be further expanded with additional boosters, panel plugs, wireless radio control, and a computer interface.



NCE PowerCab

Price: \$229.95

NCE Corp.

Set includes: PowerCab throttle/command station/booster, plug panel, 7-foot command bus cable, coiled cable (for use with extra throttle, sold separately), 13.8V 1.35A power supply

Maximum current: 2A

Optional power boosters: yes

Additional throttles: tethered and wireless radio ProCab master and Cab-06 ops throttles available. Tethered throttles can also be sent to manufacturer to

be converted to wireless operation.

Throttle controls (included): speed control thumbwheel and keypad

Maximum number of addresses: 9,999 (locomotive), 2,044 (accessory)

Maximum number of throttles: two, six with SB5 Smart Booster, 48 wireless throttles with addition of RB02 base station

Functions: 29

Consisting: simple, universal, and advanced

Accessory/Turnout/Route control: yes

Programming: POM or Service Mode. No separate programming track outputs. AutoSW smart relay board (sold separately) available for setting up dedicated programming track.

Computer interface: NCE USB interface sold separately
Wi-Fi: can be set up with USB interface, requires external computer

and router

Firmware updates:

upgrade chips available for purchase, or equipment can be sent to manufacturer for a fee

Comments: The NCE PowerCab combines a command station, booster, and fully featured master throttle into one handheld unit. Programming, consisting, and other on-screen menus as well as the button layout are intuitive. NCE also sells the Cab-06 utility throttle in tethered or wireless versions. Either provides a convenient option for multiple-operator layouts. For those who wish to expand to a larger NCE PowerPro 5A or 10A system, the PowerCab can be used as an additional master throttle. NCE also offers a service for converting tethered NCE throttles for wireless operation.



PIKO America SmartControl

Price: \$479.99

Manufacturer:

PIKO America LLC
4610 Alvarado Canyon Rd.,

Suite 5

San Diego, CA 92120

www.piko-america.com

Set includes: SmartBox

command station/booster, SmartController Wi-Fi throttle, 16V 2.25A power supply, plug-in charger for SmartController

Maximum current: 2.25A (5.3A with high-output power supply, sold separately)

Optional power boosters: yes

Additional throttles: SmartController throttles also sold separately

Throttle controls (included): speed control knob, touch screen, soft keys

Maximum number of addresses: 16,000 (locomotive), 2,048 (accessory)

Maximum number of throttles: 32

Functions: 29

Consisting: simple, universal, and advanced
Accessory/Turnout/Route control: yes

Programming: Service Mode, limited POM
Computer interface: built in

Wi-Fi: built in

Other: Supports RailCom

Firmware updates: free download

Warranty: Two years

Comments: See below



ESU CabControl

Price: \$499.99

Manufacturer:

ESU LLC

23 Howard St.

Montoursville, PA 17754

www.loksound.com

Same features as PIKO America version above but includes a 7A power supply

Comments: The PIKO

SmartControl and ESU CabControl Wi-Fi DCC systems were developed by a partnership between the two firms. The throttles combine a servo-assisted throttle knob with a touch screen tablet running a proprietary app for train and layout control.



PIKO SmartControl Light

Price: \$194.99

Manufacturer:

PIKO America

Set includes: command

station/booster, tethered throttle with 3-foot coiled cable, and 16V 2.25A power supply.

Maximum current: 2A

Optional power boosters: no

Additional throttles: SmartController light tethered throttles sold separately. Includes LocoNet port that works with Digitrax throttles.

Throttle controls (included): speed control knob and keypad

Maximum number of address: 9,999 (locomotives), 2,048 (accessory)

Maximum number of throttles: 20

Functions: 24

Consisting: simple and advanced consisting

Accessory/Turnout/Route control: yes

Programming: POM and Service Mode. Separate programming track outputs included.

Computer interface: no

Wi-Fi: no

Other: supports RailCom

Firmware updates: no

Warranty: two years

Comments: First sold in several PIKO HO scale European train sets, the SmartControl Light system is now available separately in North America. Unlike the full SmartControl system, SmartControl light uses a tethered cab instead of wireless Wi-Fi. LocoNet ports allow the system to expand beyond the train set oval.



Pi-SPROG One

Price: \$170.95

Manufacturer:

SPROG USA

BBM Group LLC

7840 SW 136th Ave.

Beaverton, OR 97008

www.sprog.us.com

Set includes: Pi-SPROG One board, Raspberry Pi 3B+

with power supply, microSD card with all software, 14V 3A main power supply, plastic enclosure

Maximum current: 3A

Optional power boosters: yes

Additional throttles: SPROG USA doesn't sell

traditional throttles. The system works with Engine Driver (Android) and WiThrottle (iOS) smartphone/tablet apps and PiKO/ESU Wi-Fi throttles

Throttle controls (included): smartphone/tablet touchscreen

Maximum number of addresses: 9,999 (locomotive) 2,048 (accessory)

Maximum number of throttles: 14 plus (nine Wi-Fi throttles)

Functions: 29

Consisting: simple, universal, and advanced

Accessory/Turnout/Route Control: yes

Programming: Computer required, POM and Service Mode supported. No separate programming track output included

Computer interface: built in

Wi-Fi: built in

Firmware updates: free download

Warranty: lifetime

Comments: Combining a single-board Raspberry Pi computer and a SPROG JMRI interface, the Pi-SPROG One is a fully functional command station that allows users to run trains with JMRI-based smartphone/tablet apps. The system includes DecoderPro and PanelPro software but requires an external computer to use those features.



Tablet screenshot



Fleischmann/Roco Z21

Price: \$466.83

Manufacturer:

Fleischmann/Roco

Modelleisenbahn München

GmbH

Kronstadter Strasse 4

81677 München

Germany

www.Z21.eu/en

Distributed in North America by:

Heartland Hobby Wholesale

6929 Seward Ave.

Lincoln, NE 68507

www.hhwonline.com

Basic set includes: Z21 command station, TP Link router with power supply,

18V 4A main power supply, network cable, free app download allows train/layout control via iOS or Android smartphones/tablets

Maximum current: 3A

Optional power boosters: yes

Additional throttles: tethered, wireless, and Wi-Fi throttles available from Roco. System also supports tethered and wireless throttles that use LocoNet and XpressNet/X-Bus protocols.

Throttle controls (included): smartphone or tablet touchscreen

Maximum number of addresses: 9,999 (locomotive), 1,024 (accessory)

Maximum number of throttles: 31 or about 20 via Wi-Fi

Functions: 29

Consisting: simple, universal, and advanced

Accessory/turnout/route control: yes

Programming: POM and Service Mode, includes separate programming track outputs

Computer interface: built in

Wi-Fi: via included TP-Link router

Other: supports RailCom

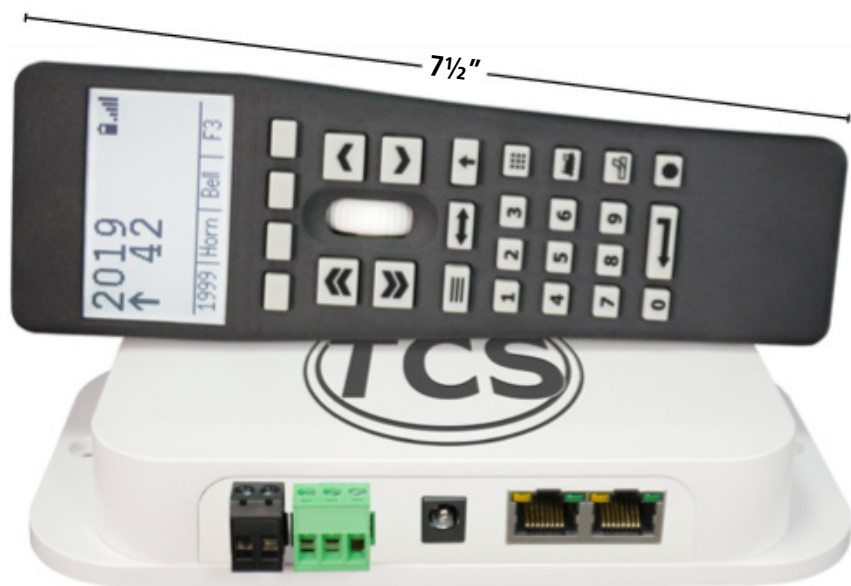
Firmware updates: free downloads

Warranty: two year

Comments: The main interface with the Z21 is a free app downloaded to a smartphone or tablet. In addition to locomotives and m.u. consists, this app allows touch-screen control of turn-outs and other accessories.



Smartphone screenshot



TCS photo

TCS Wi-Fi Command System

Price: TBD

Manufacturer:

Train Control Systems
P.O. Box 341
Blooming Glen, PA 18911
www.tcsdcc.com

Basic set includes:

command station,
universal Wi-Fi throttle,

5A power supply

Maximum current: 5A

Optional power boosters:
yes

Additional throttles:

universal Wi-Fi throttle and
an operator version called
a Mini-Throttle will also be
available. Command

station will ship with connections that support NCE throttles. Support for Digitrax and other command bus protocols is in development

Throttle controls

(included): speed control thumbwheel, keypad, and backlit LCD screen

Maximum number of

addresses: 10,240 (DCC locomotive), unlimited (LCC)

Maximum number of

throttles: 100 (62 NCE)

Functions: 29 (100 plus with LCC)

Consisting: Simple, universal, advanced

Accessory/turnout/route

control: yes

Programming: TBD

Computer interface:

built in

Wi-Fi: built in

Other: supports RailCom

Firmware updates: TBD

Warranty: TBD

Comments: Scheduled for release at the end of 2019,

the Wi-Fi Command System will be fully compatible with NMRA LCC and DCC standards as well as RailCom, enabling consistent bi-directional communication between every device on the layout. The master and mini throttles are also designed to be universal Wi-Fi throttles that work on any layout running JMRI software.

The universal throttle will feature built-in connection modes, making it easy to switch between communication protocols with the touch of a button.



Zimo Elektronik photo

Zimo MX10/MX32 starter set

Price: \$2,350 (with MX32 tethered throttle), \$2,450 (with MX32FU wireless throttle)

Manufacturer:

Zimo Elektronik GmbH
Schönbrunner Strasse 188
1120 Wien, Austria
www.zimo.at

Distributed by:

Nevada Hobby Distributors
1325 Airmotive Way,
Suite 330
Reno, NV 89502
www.nevadahobbydistributors.com
Set includes: MX10 command station, MX32 or

MX32FU throttle (tethered or wireless, respectively) 30V 8A power supply, CAN bus cables. MX10 includes built-in wireless radio receiver.

Maximum current: 20A

(12A main track output, 8A programming track output)

Optional power boosters:

yes (additional MX10 available separately)

Additional throttles: tethered and wireless throttles available; also works with Roco and other throttles that use XpressNet protocol

Throttle controls

(included): Speed control slider and thumbwheel, keypad, and touchscreen

Maximum number of

addresses: 10,239 (locomotive), 2,048 (accessory)

Maximum number of

throttles: 256

Functions: 29

Consisting: simple,

universal, and advanced

Accessory/turnout/route

control: yes

Programming: POM and Service Mode, separate programming track outputs included

Computer interface: built in

Wi-Fi: WLAN socket (router required)

Other: supports RailCom

Firmware updates: free

downloads or via USB stick

Warranty: one year

Comments: The Zimo

starter set has enough

power to handle the biggest

layouts and all model

railroading scales, including

large scale. Zimo throttles

operate via a CAN bus or a

built-in radio receiver to

control all aspects of a

model railroad. The system

also includes an XpressNet

bus that supports several

other manufacturer's

throttles as well as a Wi-Fi

interface for running

trains using the Roco Z21

and other smartphone/

tablet apps. 

AUTUMN IN



NEW YORK

Friends and memories populate this freelanced, compact HO scale layout

By Lou Sassi • Photos by the author



1 Figures depicting George Marshall and his wife, Tracy, enjoy a picnic lunch at Swartout Falls while a Lehigh Valley train crosses overhead. The scene takes place on George's HO scale layout, which depicts upstate New York in fall.



② George likes to portray his friends and family with figures on his layout. Here, Bob Seckler heads upstairs to the pool hall, a Bar Mills kit, while Penn Central Baldwin S-12 no. 8193 works the nearby freight station.

George Marshall's admiration for railroading began in his father's grocery store in Congers, N.Y., when he was a boy. George fondly recalls watching freight trains roll past the store on the New York Central's West Shore right-of-way. He fed this fascination by reading every book about railroading he could lay his hands on.

George's interest in the full-size railroads broadened to include model trains in the late 1960s, when his parents went to the local Sears and gave him his first train set for Christmas. It would be many years before George would build his own model railroad, though. In the meantime, he helped his good friend Bob Robbins build three layouts and continued to read voraciously.

In 2009, George started building the Knickerbocker & Rockland RR, the first layout of his own. Because of his childhood memories, he chose to model the railroads of upstate New York as they were in the 1960s and '70s.



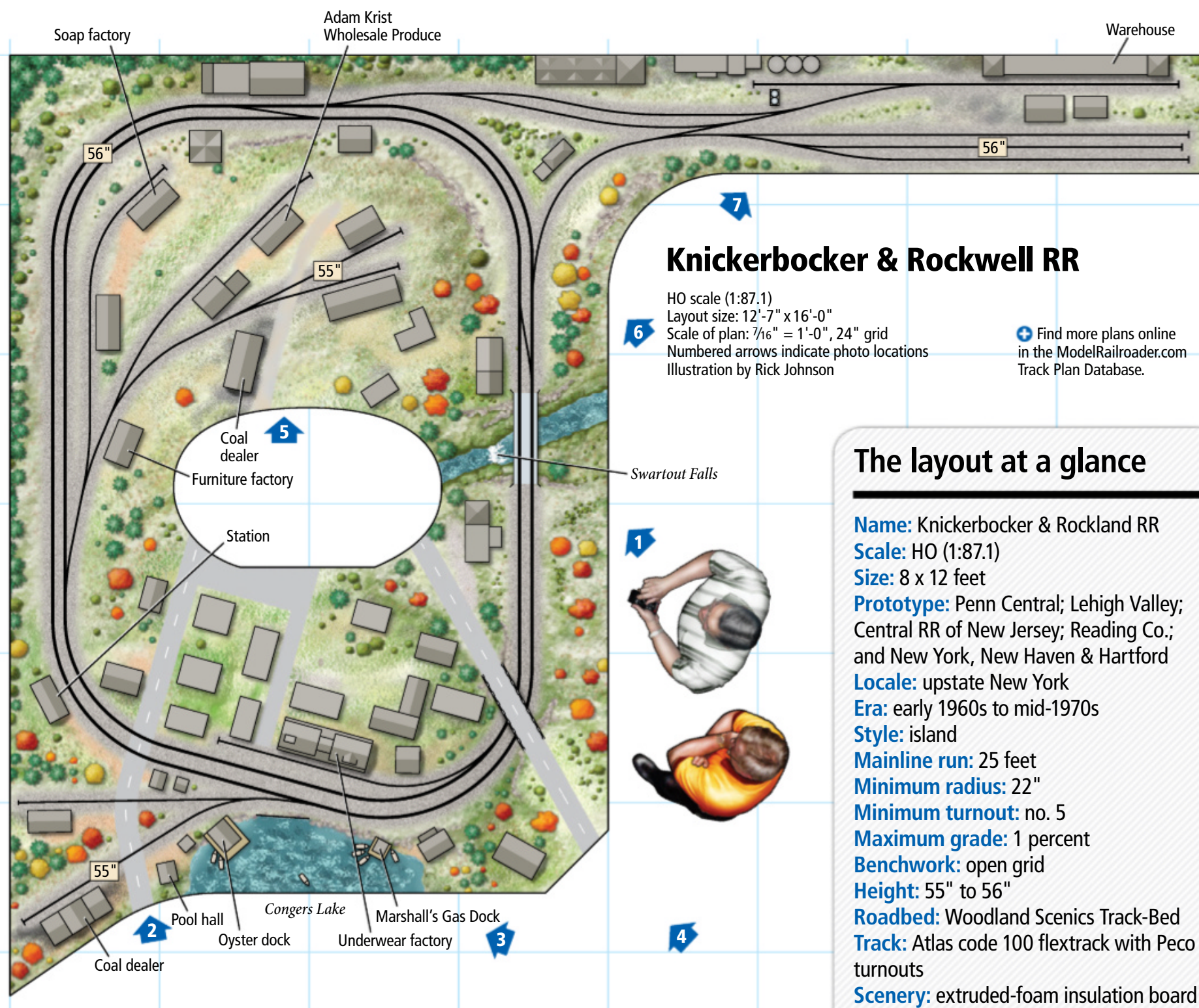
③ Budd Rail Diesel Car (RDC) no. 78 departs the passenger station at Congers Lake. Nearby is Marshall's Gas Dock, which was named after George by his friend, Doug Foscale, owner of Fos Scale Models.

Construction begins

After designing the railroad to fit a room in his basement, George prepared the room by adding a drop ceiling, track lighting, and a backdrop and fascia of tempered hardboard. He built open-grid benchwork upon which he glued sheets

of 2-inch-thick extruded-foam insulation board.

George glued Atlas code 100 flextrack to Woodland Scenics foam roadbed on the main line and sidings. In the yard, he glued the track directly to the foam. The turnouts are Peco, all of which are lined by hand. He airbrushed the ties brown.



The layout at a glance

Name: Knickerbocker & Rockland RR
Scale: HO (1:87.1)
Size: 8 x 12 feet
Prototype: Penn Central; Lehigh Valley; Central RR of New Jersey; Reading Co.; and New York, New Haven & Hartford
Locale: upstate New York
Era: early 1960s to mid-1970s
Style: island
Mainline run: 25 feet
Minimum radius: 22"
Minimum turnout: no. 5
Maximum grade: 1 percent
Benchwork: open grid
Height: 55" to 56"
Roadbed: Woodland Scenics Track-Bed
Track: Atlas code 100 flextrack with Peco turnouts
Scenery: extruded-foam insulation board and Sculptamold
Backdrop: photos on tempered hard-board
Control: NCE Digital Command Control

4 This overall view of George's layout shows how it fits into a corner of his basement.





6 A Lehigh Valley manifest freight train passes a switch tower George built from an Atlas kit. George likes the simple structure because it reminds him of his early days in the hobby.

George created the scenery base by stacking and carving sheets of extruded-foam insulation board and covering them with Sculptamold, a papier-mache-like, plaster-based compound.

After applying a coat of brown latex paint to the terrain contours, George

added grass, shrubs, and trees from Heki, Scenic Express, and Woodland Scenics. He created water effects with Mod Podge gloss medium.

George's rock work is molded from Hydrocal and plaster of Paris, poured into Woodland Scenics rock molds, left

to dry, then brush-painted with Woodland Scenics rock stains. He finished up by brushing them with powdered chalks.

Structures

George says his favorite part of the hobby is building structures. He's worked with many materials, but especially enjoys wood and plastic.

One of his favorite structures is Marshall's Gas Dock. It was built from a kit named after George by Doug Foscale, owner of Fos Scale Models. Every time George looks at the finished kit, he's reminded of the pleasant times he had as a boy fishing with his dad.

Two other favorite structures are H.T. Gordon's and the B. Smith Coal & Ice Co. The former, also a Fos Scale kit, was the first large building kit George tackled. He was thrilled with how it and the surrounding scenery came out. The B. Smith structure was designed and sold by Jimmy Deignan, also a good friend.



5 A Penn Central Baldwin S-12 works Adam Krist Wholesale Produce, a craftsman kit built by Bob Mitchell. The freelanced layout sees Penn Central; Lehigh Valley; Central RR of New Jersey; Reading Co.; and New York, New Haven & Hartford power.

One structure he treasures he didn't build himself. Adam Krist Wholesale was built from a Laser Modeling 3 kit George purchased at a Fine Scale Model Railroad Expo. One night after the Expo, George was hanging around having fun with a group of fellow modelers, including noted modeler and *Model Railroader* author Bob Mitchell. At one point Bob admired the kit and mentioned he had never built a structure from Laser Modeling 3.

George said Bob could construct that model if he liked, so, with George's approval, Bob took it home, built it, and returned the completed building to George. George takes great pride in the fact that he has a Bob Mitchell-built model on his railroad.



7 A Penn Central Alco RS-3 switcher spots covered hoppers at the cement distributor. The Alco locomotive, one of George's favorites, was weathered by his friend Brian Sullivan.

When building structures, regardless of their origins, George always weathers them, primarily by drybrushing until, in his words, "they look real."

Rolling stock and operations

The railroad's equipment reflects the period and location modeled. George's freight cars are from Athearn, Tangent Scale Models, Moloco, and Spring Mills Depot. All are weathered with powdered chalks fixed with Testor's Dullcote.

Motive power consists of more than 20 diesel locomotives. All engines are weathered to reflect their time in service and equipped with Digital Command Control (DCC) sound decoders. Trains are controlled by an NCE DCC system with two hand-held throttles.

Operation is a simple affair, with no signals, fast clock, or sophisticated communication system. A typical operating session consists of a few local freight movements accompanied by the occasional commuter train.

Thanks for the help

George says one thing he has learned building this railroad, his first, is that a typical beginner needs lots of help. For him, being a member of a round-robin

modeling group has been a lifesaver. Without his friends' expertise, encouragement, and hands-on help, he admits he probably wouldn't have the layout you see here. He wants to thank his good friends and fellow modelers Robert Seckler, Bob Robbins, Mark Panzera, Scott Russel, Roger Clytron, and Ken Karlewicz. 



Meet George Marshall

George is a railroad history buff who's been a member of the Penn Central Historical Society and the National Model Railroad Association for over 10 years. George, a U.S. Postal Service carrier, and his wife, Tracy, live in Garnerville, N.Y., where they enjoy their love for animals and gardening.



THE MODELER'S GUIDE TO COVERED GRAIN HOPPERS

"Jumbo" covered hoppers took over
for boxcars in the 1960s

By Jeff Wilson

THE WAY RAILROADS

hailed grain went through a radical change in the 1960s. Virtually all grain was shipped in boxcars in the early 1960s. By 1972, large covered hopper cars accounted for more than half of total grain carloadings (and almost two-thirds of total bushels carried), and by the early 1980s covered hoppers carried almost all grain.

If you model this period, it's helpful to understand how and why this shift occurred. Knowing which specific covered hoppers took over the traffic will make your trains, operations, and scenes more realistic.

Grain traffic history

Boxcars had long been used to haul bulk grain, with temporary wood or cardboard grain doors nailed across the door openings. The system worked



① Southern's aluminum "Big John" cars, built by Magor, were the first jumbo covered hoppers designed specifically to carry grain. This 4,948-cubic-foot car, built in 1962, is from the second batch of cars. It has round roof hatches and four outlet bays. John Ingles photo; J. David Ingles collection

well, but loading – and especially unloading – could be cumbersome and time-consuming.

Covered hoppers had been around since the 1930s, carrying products such as cement, lime, sand, and carbon black, and large cars (3,200-cubic-foot) had been built by the 1950s for sugar, fertilizer, and other products. Covered hoppers were efficient to load and unload. And grain (namely corn and wheat) had long been important traffic items for railroads. So, what took so long for railroads to use covered hoppers for hauling grain?

The main reason was shipping rates. Railroads at the time were limited by the Interstate Commerce Commission (ICC) in setting rates for hauling various products. Also, railroads loved boxcars, as



② Gravity outlets have a rectangular opening covered by a flat plate. A crank (at right) using a rack-and-pinion device slides the plate to the side. The bracket is for an external vibrator that can be attached to free clogs or speed the flow of lading. *Trains* magazine collection

they were general-purpose cars that could carry a wide range of products. A boxcar could carry a load of corn, then be reloaded in short order with cases of canned goods or machine parts.

Covered hoppers dedicated to grain would run empty at least half the time, couldn't be used for other products, and far more would be needed than for other specialized products (such as cement or carbon black). Buying them would require a significant investment, and there was no rate advantage to entice railroads

to invest in fleets of specialized cars, nor to prod shippers into using them.

However, by the late 1950s the boxcar fleet was evolving. Boxcars were becoming more specialized, with new higher-capacity cars with load restraints, hydraulic cushioning, wider doors, and plug doors proliferating. The days of the 40-foot, 50-ton, 6-foot-door, general-purpose boxcar were coming to an end, and car shortages during the annual late-summer/fall grain rush were a problem.

Increased car capacity and load limits were coming, with many 70-ton cars in service and 100-ton cars on the horizon. In 1963, car weight limits were increased, and the 263,000-pound Gross Rail Load (GRL, the total weight allowed for a car and its lading) limit became effective. This would lead to a generation of larger cars of many types.

"Jumbo" cars and new rates

The first true "jumbo" covered hopper arrived in 1960. The Southern Ry., in conjunction with Magor, designed a 100-ton, 4,713-cubic-foot car that featured



③ Pullman-Standard's first true grain car was the 4,000-cubic-foot, three-bay PS-2CD. The design was introduced in 1962; this Chicago Great Western car, built in 1963, has round roof hatches that would soon be rare on grain cars. Jeff Wilson collection



④ The 4,427-cubic-foot PS-2CD is noticeably longer than the 4000. Early versions share the same deep sides and 4-3-4 post pattern. This Northern Pacific car was built in 1966. Jeff Wilson collection

Spotting features

Overall size is a key (length, height, and cubic capacity), along with basic construction (curved sides or posts). For post-side cars, look at the number (and style) of posts and spacing. Check the end platforms for bracing, ladder, and grab iron details, and note whether the side sill continues straight through the end platform or steps downward. Look at the style and number of running-board supports, the style of jacking pad, and the location of brake components.

And don't forget the most-reliable spotting feature: the builder's logo or stencil, along with the capacity stenciled with the dimensional data. – Jeff Wilson

aluminum construction to save weight. Dubbed "Big John" cars ①, on page 40, they were 58'-11" long, 14'-8" tall, and had four compartments with four sets of paired outlet gates. Since the 100-ton car limit wasn't yet effective nationally, the cars were initially for on-line use only.

As an incentive to shippers, upon the cars' arrival the Southern offered customers who used five or more of the new cars a rate that was less than half of the per-ton rate for shipping single boxcars of grain.

Shippers loved the new cars for the ease in loading and unloading ②, and they loved the rates; the railroad benefited from the increased traffic and efficiency (each car could carry the equivalent of about two 40-foot boxcars of grain).

However, trucking and barge lines weren't happy, and filed complaints with the ICC. In 1961 the ICC suspended the Southern's right to use the discounted rate. It took almost two years and

multiple appeals, but the case finally reached the U.S. Supreme Court, which ruled in favor of the discounted rates.

The 1963 ruling – together with the national move to 100-ton cars – made the large grain cars practical. Private owners (especially large grain corporations) invested heavily in them, and car builders' leasing fleets began acquiring them in large numbers (notably Transport Leasing, a division of Pullman-Standard, and Shippers' Car Line, owned by ACF). Railroads began purchasing them, as well.

Boxcars would continue to carry grain through the 1960s, but by the mid-1970s most 40-foot cars – staples of the grain rush – were being retired, and were primarily used on branch lines where light rail didn't allow 100-ton cars. Most of these lines were abandoned by the 1980s, and the shift to covered hoppers was virtually complete by the end of that decade.

The first generation of grain cars was dominated by cars from two major



5 Late versions of the 4427 had 13 side posts and shallower sides. This car, part of the Pullman Leasing fleet, was built in December 1966 and lettered for lessor Louis-Dreyfus. John Ingles photo; J. David Ingles collection



6 This 4,740-cubic-foot PS-2CD, built for Northern Pacific in 1969, has 16 evenly spaced side posts. It's almost 8 feet longer than the 4427. John Ingles photo; J. David Ingles collection



7 The 4,750-cubic-foot hopper was Pullman-Standard's most-popular grain car, and many are still running. Built for North American's leasing fleet in 1974, this one is painted for an individual elevator. R.J. Wilhelm photo; J. David Ingles collection

builders: Pullman-Standard and ACF (formerly American Car & Foundry), but other companies also built significant numbers of cars. Let's look at the evolution of grain cars through the 1970s.

Pullman-Standard

Pullman-Standard's first true grain car was a 4,000-cubic-foot capacity, three-bay, external-post car introduced in 1962 3, on the previous page. The 100-ton car was a revision of the company's popular earlier welded PS-2 design, the 3,219-cubic-foot, three-bay 70-ton car introduced in 1958. The earlier car had proven popular for fertilizer, potash,

salt, and processed agricultural products such as soybean meal.

The new car was taller (by 18") and had three outlet bays. The distinctive new feature was a single gravity outlet in each bay that discharged between the rails. Earlier cars had pairs of gates at each bay (one on each side of the car's center sill), which were more cumbersome and time-consuming to operate.

The new "center discharge" model was called PS-2CD. The 4000 (covered hoppers are known by their cubic-foot capacity) can be identified by its 4-3-4 post pattern, 47'-1" length, and 15'-0" height.

Many 4000s were built with round roof hatches, but the trend for grain cars

was a long center trough opening. These made loading easier and faster at elevators. Some early cars had single hatch covers running the length of the trough, but four separate hinged covers quickly became standard.

Pullman-Standard introduced a larger car in 1964, the 4,427-cubic-foot PS-2CD 4. It looked much the same as the 4000, with a 4-3-4 post pattern, but it was more than 3 feet longer (50'-7"). A less-common variation was the 4,475-cubic-foot car, which was 51'-5" long and had 13 evenly spaced posts.

The 4427 design was revised in 1966. The side walls became much shorter, which saved several hundred pounds of

Available models

Covered grain hoppers are also popular with model railroaders. Many prototypes have been offered in HO and N scales over the years. The chart shows many models of recent production. You may have to search train shows or swap meets to find some of these listed cars.

MANUFACTURER	PROTOTYPE	HO	N
Atlas	ACF cylindrical 3500	X	
Atlas	ACF cylindrical 3950	X	
Bowser	ACF cylindrical		X
Accurail	ACF CF 4600 late	X	
Athearn	ACF CF 4600 early and late	X	X
Atlas	ACF CF 4650 early and late	X	
InterMountain	ACF CF 4650 late (N), early and late (HO)	X	X
Micro-Trains	ACF CF 4650 late		X
ExactRail	Evans 4780	X	
Micro-Trains Line	Evans 4780		X
Walthers	Evans 4780	X	
Athearn	FMC 4700	X	
Fox Valley	FMC 4700		X
ScaleTrains.com	Gunderson 5188	X	X
N. Amer. Railcar Corp.	H-S 4550 cylindrical	X	X
ExactRail	Magor 4750	X	
ExactRail	Magor 4948 "Big John"	X	
Rapido	MI/NSC 3800 cylindrical	X	
InterMountain	NSC 4550 cylindrical	X	X
Walthers	NSC 4550 cylindrical	X	
Atlas (former BLMA)	PS 4000		X
Tangent	PS-2CD 4000	X	
Athearn	PS-2CD 4427 late		X
ExactRail	PS-2CD 4427 early	X	X
Micro-Trains Line	PS-2CD 4427 late		X
Proto 2000	PS-2CD 4427 late	X	
Trainworx	PS-2CD 4427 late		X
Walthers (N scale now Atlas)	PS-2CD 4427 early	X	X
Athearn	PS-2CD 4740	X	
Fox Valley	PS-2CD 4740		X
Tangent	PS-2CD 4740	X	
Accurail	PS-2CD 4750	X	
Fox Valley	PS-2CD 4750		X
InterMountain	PS-2CD 4750	X	
Tangent	PS-2CD 4750	X	
InterMountain	PS-2CD 4785, early, late, and H-100-21	X	X
ScaleTrains	PS-2CD 4785	X	X
Atlas	Thrall 4750	X	X
Athearn	Trinity 5161	X	
ExactRail	Trinity 5161		X
InterMountain	Trinity 5161	X	X



8 ACF's initial Center Flow design was cylindrical. The car has internal slope sheets, but they're covered by side and end sheathing. This 3,960-cubic-foot car was built for Great Northern in 1963. John Ingles photo; J. David Ingles collection



10 The Plate B 4,600-cubic-foot car was another popular Center Flow grain car. It's longer and lower than the 4650. This Iowa, Chicago & Eastern car, built in 1973, shows the later corrugated piece at the roof/side joint. Jeff Wilson photo



9 The teardrop-cross-section 4,650-cubic-foot car was ACF's most popular grain car. Cars built through 1970, such as this Great Northern car, have a single stiffener across the top of each side. R.J. Wilhelm photo; J. David Ingles collection



11 FMC covered hoppers have horizontal grooves running down the center of each side behind the posts. The 16 side posts mark this Burlington Northern car as a 4,700-cubic-foot version. Jeff Wilson photo

tare weight. The new car had 13 evenly spaced side posts and a distinctive look that showed much more of the trucks and bays compared to the early version 5.

Early 4427s became known as "low-side," "tall-side," or "low-hipped" cars, while the late versions became known as "high-side," "short-side," or "high-hipped" cars. The 4427 became one of the most-popular 100-ton grain cars, with about 10,000 early and 13,000 late versions built.

The next major variation was the 4,740-cubic-foot PS-2CD, introduced in 1966 6. It also proved popular, with about 10,000 built until 1972. It was longer (59'-3") than the 4427 and can be spotted by its 16 evenly spaced side posts. A nearly identical car was a 4,785-cubic-foot version, also with 16 posts, built from 1967 to 1972.

Detail variations of these cars during production included the style of ladders and grab irons under the angled end slope sheets, as well as the location of brake gear. Brake wheels moved from a high position to low in 1966 with the elimination of running boards on house cars (even though covered hoppers retained running boards for hatch access).

The 4,750-cubic-foot PS-2, introduced in 1972, would become the most popular

100-ton grain car, with 56,000 built through 1981 7. The car was again longer (60'-0") with 18 side posts. Late cars had an angled strip across the middle 12 side posts.

ACF Center Flow cars

In the early 1960s, ACF completely redesigned its covered hopper line. The new cars had curved sides for strength, eliminating the center sill and side posts of earlier cars. As with the PS design, each outlet bay had a single centered outlet – hence the name "Center Flow."

The first of these, built in 1961, were cylindrical 8. They looked like tank cars, as the curved sides covered the internal slope sheets. They were built with 3,500- and 3,960-cubic-foot

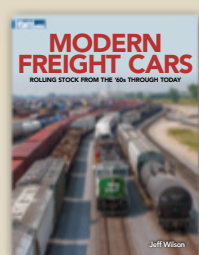
capacities, with three or six compartments and outlet bays. As with PS cars, most initially had round hatches, but trough hatches quickly became popular for grain-service cars.

In 1964, ACF modified the design. To increase the capacity, the side curvature was flattened slightly and the upper ends of the bays were extended over the trucks 9. ACF called this the "teardrop" cross-section, and the new design quickly became more popular than the cylindrical car (which remained available until 1966).

The 4,650-cubic-foot version of this car became popular for grain and was ACF's all-time best-selling covered hopper, with about 16,000 built until 1982. It is 53'-11" long and 15'-6" tall.

Another popular version was the 4,600-cubic-foot Center Flow 10, which was longer and lower (55'-5" long, 15'-1" tall) to match the more-restrictive Plate B clearance (the 4650 is a Plate C car). About 15,000 were built.

Two other versions built in smaller numbers were the 4460 (same length as the 4650 but not as tall) and the 4700, which looked like the 4600 but with shallower end sheets. If in doubt, look at the capacity data on the car or check an *Official Railway Equipment Register*.



Jeff Wilson's most recent book, *Modern Freight Cars: Rolling Stock from the '60s Through Today*, has more on all types of freight cars. It's available now at hobby shops and www.KalmbachHobbyStore.com.



12 Thrall built this 4,750-cubic-foot car for Soo Line in 1971. It has combination gravity-pneumatic outlets, a 6-4-6 post pattern, and the verticals at each end are actually U-channels.

R.J. Wilhelm photo; J. David Ingles collection



14 Canadian railroads acquired large fleets of cylindrical covered hoppers, built to common designs by three manufacturers. This Canadian Pacific car has a 4,550-cubic-foot capacity. Jeff Wilson photo



13 Evans built this 4,780-cubic-foot car for Toledo, Peoria & Western in 1977. These cars have a 5-4-5 post pattern and tall sides. You can see the edges of the corrugated roof panels.

R.J. Wilhelm photo; J. David Ingles collection



15 This 4,750-cubic-foot car was built by Richmond Tank Car, and can be spotted by its 19 unevenly spaced posts. Originally built for North American's lease fleet, it's now owned by Minnesota Prairie Line. Jeff Wilson photo

Other grain cars

Other manufacturers also offered 100-ton grain cars. FMC built grain cars from 1971 to 1981, all of which can be spotted by a distinctive horizontal groove that runs along the center of each side **11**. Three variations were built: 4,526-cubic-foot (4-3-4 post pattern), 4,692-cubic-foot (5-4-5 post pattern), and the most-common, the 4,700-cubic-foot (16 evenly spaced posts).

Thrall's first 4,750-cubic-foot, exterior-post covered hoppers had a 6-4-6 post pattern as on the Soo Line car in **12** (the end posts are U-channels). This eventually evolved to a design with 16 evenly spaced posts, giving them a similar appearance to the PS 4750.

Evans, through its U.S. Railway Equipment subsidiary (a carbuilder and leasing company it acquired in the 1970s), built 4,780-cubic-foot covered hoppers for several buyers. These had a 5-4-5 post pattern, corrugated roof panels, and side sills that continued straight through the end platforms **13**. More than 4,000 were built from the late 1970s to 1981.

Evans and North American also built 4,750-cubic-foot cars from kits supplied by Pullman-Standard. These cars are nearly identical to PS-built cars.

Magor, despite its success with the pioneering Big John cars, didn't become a major covered hopper builder. It did, however, later build two more batches of cars for the Southern and a couple thousand 4,750-cubic-foot aluminum cars for other railroads and private owners through 1969. The cars were characterized by a 5-4-5 post pattern, and many were left unpainted (lettered only).

Canadian railroads (and the Canadian government) began buying 100-ton cylindrical covered hoppers in 1965. At first glance they resemble early ACF Center Flow cars, but they have different end bracing, side sills, and running-board designs. Early versions included 3,400-, 3,800-, and 3,850-cubic-foot cars.

Larger versions began appearing in 1973 **14**, and through 1985 cars were built with capacities of 4,100 and 4,550 cubic feet. These are longer (59 feet, compared to 50 and 52 feet for earlier cars) with trough hatches and four outlet bays on the grain-car versions (similar potash cars typically have round roof hatches). These cars were built by National Steel Car, Marine Industries, and Hawker Siddeley.

Other builders included Richmond Tank Car **15** and Ingalls Shipbuilding – both 4,750-cubic-foot designs

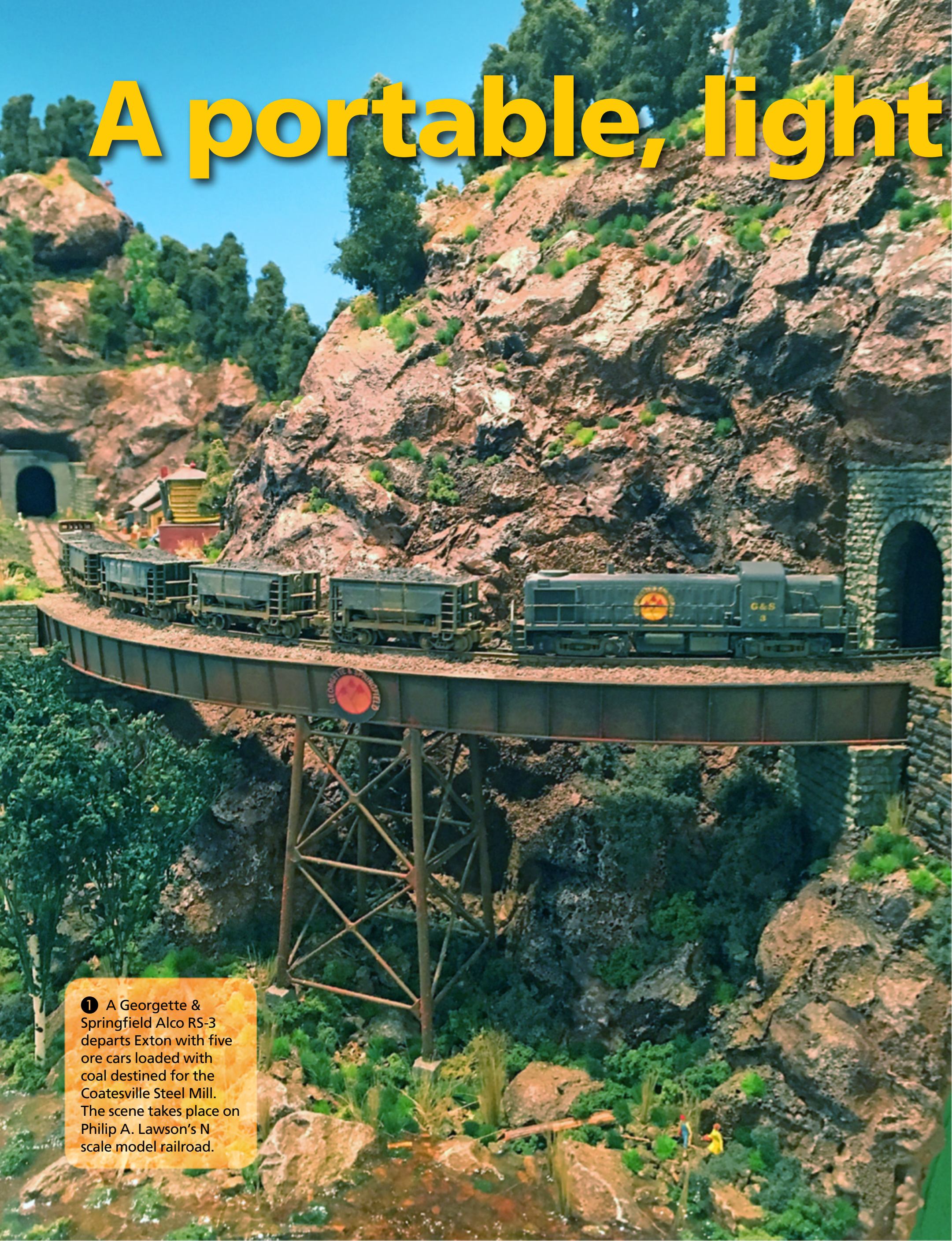
characterized by eaves that overhang the side posts (18 evenly spaced posts for Ingalls; 18 or 19 posts, even or uneven spacing, for Richmond). Trinity built cars similar to PS, which it later purchased. General American, Portec, and several individual railroads also built covered grain hoppers.

The recession of the early 1980s slowed carbuilding (and put several builders out of business). By the 1990s, the coming of 110-ton cars (286,000-pound GRL) led to a new generation of larger grain cars. However, many older 100-ton cars continue in service today.

These cars should be key elements on your layout whether you model the 1960s, where covered hoppers are mixed in with strings of 40-foot boxcars; the 1980s, where long trains of 100-ton covered hoppers were common; or today, when older 100-ton cars can still be found among strings of newer 110-ton cars. **MR**

Jeff Wilson has written more than 30 books on railroads and model railroading. He spent 10 years as an associate editor at Model Railroader magazine and currently works as a freelance writer, editor, and photographer, contributing articles to MR and other magazines.

A portable, light



① A Georgette & Springfield Alco RS-3 departs Exton with five ore cars loaded with coal destined for the Coatesville Steel Mill. The scene takes place on Philip A. Lawson's N scale model railroad.

weight layout

The N scale Georgette & Springfield is 24½ x 49 inches and weighs less than 35 pounds

By Philip A. Lawson • Photos by Georgette E. Lawson

It's hard to believe more than 30 years have passed since my first N scale Georgette & Springfield layout appeared in the December 1988 issue of *Model Railroader*. A lot has transpired in those three decades. I sold the layout for a pool table (but kept the equipment), raised two children, built two small HO scale layouts, got into military modeling and historic diorama building, and retired as a senior vice president at General Electric. Then came version 2.0 of the N scale Georgette & Springfield (G&S).

My goals for the new layout were portability, ease of storage, and operational simplicity. The island-style model railroad measures 24½" x 49" and weighs less than 35 pounds. The layout normally sits on a 44" tall computer printer table with 4" diameter garment rack wheels. This allows me to wheel the layout next to my workbench to work on projects or into another basement room with walls that are painted light blue for photography. If I need the table for something else, I can easily store the layout in a closet.

The G&S version 2.0, like its predecessor, is freelanced. The railroad serves two towns, Goshenville and Exton, that are divided by a mountain range. Tunnels at diagonal corners allow the short trains to go out of sight for a few seconds before appearing in a new scene.

Behind the design

There's only so much track that can be squeezed into a 2 x 4 foot space. An oval enables continuous operation.

Exton has a 13" passing siding. This multi-purpose, double-ended track serves the depot, Frank's Extracts & Syrups, and the locomotive water tank.

The passing siding at Goshenville is 28" long, which is more than enough

room for a train. Most of the rail-served customers are on this side of the layout, so the longer siding makes it easier to work the industries.

Because of the layout's size, I used Peco no. 4 manual Insulfrog turnouts throughout. Though the turnouts are sharp, they can accommodate even the largest 4-6-4 Hudson steam locomotives.

There are no grades on the layout. I was able to attain elevation changes by raising the entire track level 7" with layers of 2"-thick extruded-foam insulation

board. I glued the insulation board with Liquid Nails for Projects, a foam-safe adhesive that doesn't dissolve the construction material.

With the track raised, I modeled a curved trestle spanning a gorge at one corner of the layout [See photo on opposite page. – Ed.] The distance from the water to the track is only 5". However, the top of the highest mountain in the background is 24", providing a great deal of elevation change in a compact space.



2 Georgette Yard is bustling with activity. As an Alco RS-3 leads a coal train in the foreground, a sister unit works the local industries. Phil weathers his structures with paints, powdered pastels, and washes.



3 Georgette & Springfield no. 79, a 4-6-2 Pacific, eases into Exton. Phil airbrushed the locomotive and passenger cars with Floquil paints and applied custom decals.

locomotives primarily burned coal during this era. Other structures are deteriorated and tired looking from the effects of the elements – cold winters and hot, humid summers.

Though the G&S is set in the 1930s, I took advantage of modeler's license to use diesel locomotives from my previous layout. Atlas Alco RS-3 and Electro-Motive Division (EMD) F3 diesels show up on the line.

Being a smaller railroad, the G&S rosters a lot of second-hand equipment. With the exception of an F3, all of the G&S locomotives have the railroad's name and herald.

The freight cars are primarily single- and double-sheathed boxcars. Most of the cars are Kadee (now Micro-Trains Line Co.) kits and Con-Cor cars with Micro-Trains trucks and Magne-Matic couplers added.

Five Atlas ore cars are heavily weathered with dents added with a hot soldering iron. The short-wheelbase cars are equipped with Precision Masters rigid-jaw couplers, as the cars travel as a solid

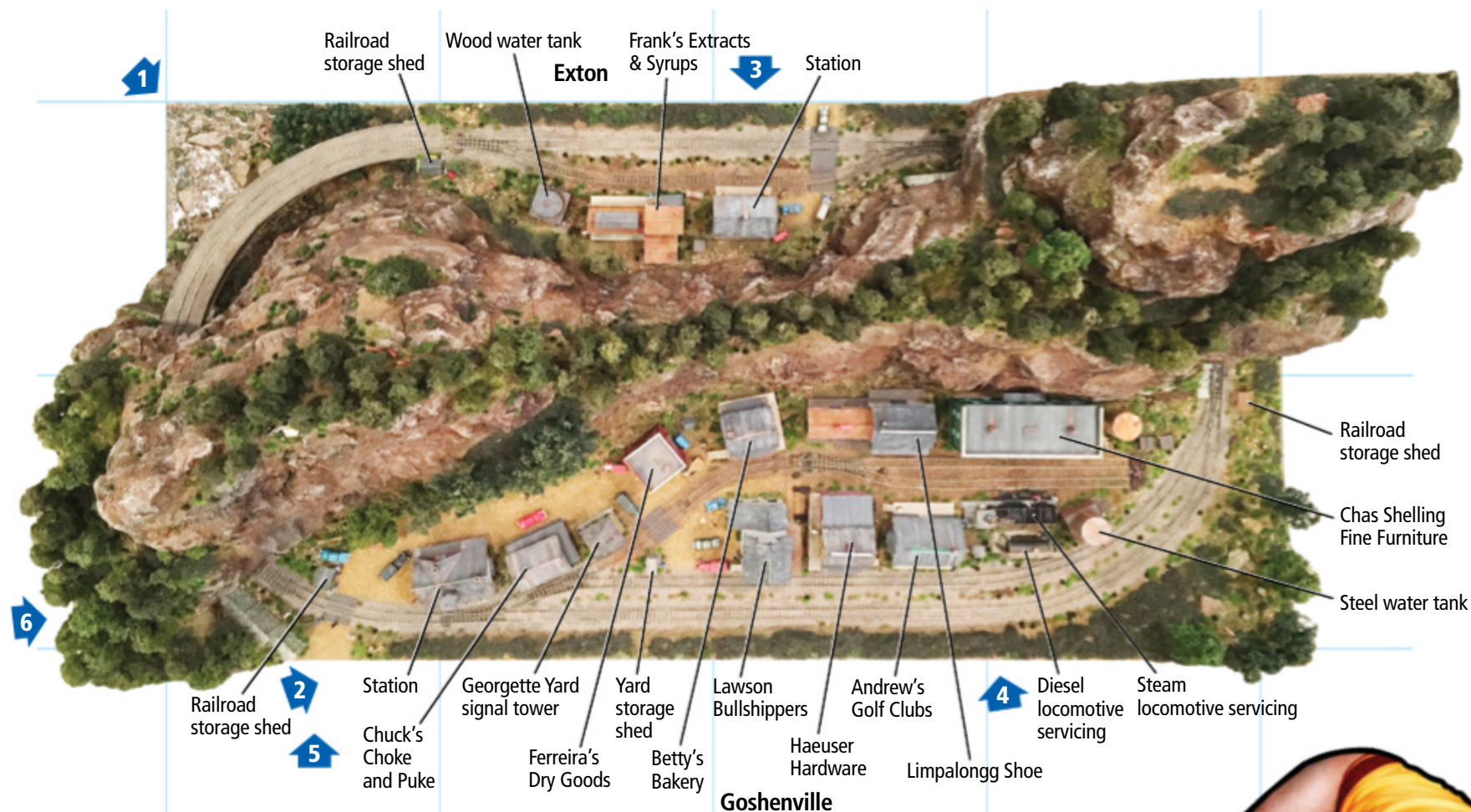


4 Due to space limitations, the structures on the layout have a small footprint. The kitbashed structures are from Atlas, Heljan, Kibri, and Model Power. Phil also scratchbuilt some of the layout's 23 structures.

To give the layout a finished look, I made a fascia from 1/4"- and 1/2"-thick plywood, which I secured with Liquid Nails for Projects. I also screwed the plywood together. The combination of adhesive and screws formed a tight exterior frame.

Reinforcing the theme

The Georgette & Springfield is set in the 1930s. To capture the look of mountain towns during this era, everything is weathered. The buildings are coated in grime, as industries and steam



Georgette & Springfield

N scale (1:160)
Layout size: 24½" x 49"
Scale of plan: 1¼" = 1'-0", 12" grid
Numbered arrows indicate photo locations
Photo by Philip Lawson

Find more plans online in the
ModelRailroader.com Track Plan Database.

block. I added coal loads to these cars, as they're assigned to a small steel mill in Coatesville, Pa., an unmodeled town about 10 miles west of Exton.

The G&S passenger fleet consists of Bachmann and Kato cars. The cars, shown in photo 3, are painted, weathered, and lettered with custom decals from Rail Graphics.

Short trains are the norm on the G&S, due to the layout's size and rural setting. Most trains are a locomotive, two to three cars, and a caboose. Since the locomotive and freight car fleet greatly outnumbers yard and locomotive storage capabilities, I use the "omnipresent gigantic magical hand" to change out equipment.

Mountain scenery

A mountain range runs diagonally across the layout to create separation and distance. I made the basic mountain shape by cutting, gluing, stacking, and rough carving pieces of extruded-foam insulation board. [Cut and sand extruded-foam insulation board in a well-ventilated area and wear personal protective equipment. – Ed.] I formed the hills with smaller pieces of foam glued with Liquid Nails for Projects and rough carved with a coarse steel file.

The layout at a glance

Name: Georgette & Springfield RR version 2.0

Scale: N (1:160)

Size: 24½" x 49"

Theme: freelanced

Locale: southeastern Pennsylvania

Era: 1930s

Style: island

Mainline run: 9 feet

Minimum radius: 7½"

Minimum turnout: no. 4

Maximum grade: none

Benchwork: extruded-foam insulation board

Height: 51"

Roadbed: cork

Track: Peco flextrack

Scenery: Woodland Scenics ground cover, cast and hand-carved foam, and Sculptamold

Backdrop: none

Control: Model Rectifier Corp. direct-current power pack



I used diluted earth-toned latex paint as the base color for the scenery. With the paint still wet, I applied Woodland Scenics fine ground foam in various colors. To hold the scenery material in place, I applied acrylic matte medium mixed with water and dish soap (the latter used as a wetting agent).

While I was in scenery mode, I added small broken sticks, painted and weathered tree stumps, and stones with full-strength white glue. For additional texture, I added pinches of ground oregano and dried leaves.

Once the diluted paint had dried, I brush-painted the rock faces with flat earth-toned acrylics, including raw and burnt sienna, raw and burnt umber, and various shades of brown. I followed that with a black ink and alcohol wash applied with a spray bottle.

I then drybrushed the raised edges of the rock castings with light cream and white acrylic paints, working from darker to lighter, with a stiff-bristled brush. I lightly whisked the brush on the edges of the raised surfaces, which helps the contrasting detail stand out.

Next, I installed various rock castings. I used rubber and aluminum foil molds to make small plaster castings. I made the larger castings by spraying foam insulation into rubber molds.

The sloped and horizontal topography is a mix of Sculptamold and other papier-mache materials mixed with white glue and water into a paste and applied with a palette knife. Real stones from a rock quarry and my backyard were glued in place as appropriate, especially by the lake.



Bridging the lake

With the scenery finished, it was time to add the curved steel trestle. First, I removed the foam slabs supporting the track where the trestle is located and installed Chooch stone walls and other plastic and polyester stone sheets with 5-minute epoxy. I also used epoxy to attach plastic girder bridge plates to the sides of the plywood subroadbed.

Then I glued a girder tower cut from an HO scale water tank to the bottom of the trestle. Plastic footers painted to look like concrete were glued in place.

I airbrushed the trestle with Floquil Grimy Black and Rail Brown and weathered it to look rusty. The G&S herald on the bridge is a computer printout adhered to a piece of black cardstock.

I made the lake below the trestle by pouring a thin layer of plaster. Once the plaster dried, I airbrushed it with flat black and earth-toned paints. I used light

colors close to the shore and feathered in darker colors in the middle to suggest changes in depth. Then I glued small stones, pebble fragments, and plant materials in the lake.

I temporarily attached duct tape to the fascia to serve as a dam. Then I poured Enviro-Tex two-part resin over the lake. Once the resin dried, I swirled acrylic gloss medium over the surface to create the illusion of motion.

Adding the greens

I turned to Woodland Scenics kits for the trees on my layout. I sprayed the foliage with Testor's Olive Drab and other flat, dark green paints.

After the paint was applied, I added various shades of Woodland Scenics turf to give the foliage a variegated appearance with realistic shadows.

Most of the low-growth plants come from a company in England called

5 The train emerging from the tunnel at Goshenville wasn't the one the passengers on the platform were hoping for. The station is a Model Power kit with the freight house end removed.

Serious-Play (www.serious-play.co.uk). The firm offers scenery products in various shapes, sizes, colors, and textures. The self-adhesive bottoms make them fast and easy to install.

I rounded out the scenery with various colors of Woodland Scenics foliage, Clump-Foliage, and field grass.

Structure showcase

There are 23 structures on the Georgette & Springfield, all of which have small footprints. However, the buildings are large enough to create the impression of industry and purpose.

The structures are a mix of kitbuilt, kitbashed, and scratchbuilt. The Atlas

signal tower and Chooch wood and steel water tanks were built straight from kits.

Atlas, Heljan, Kibri, and Model Power were the main sources for my kitbashed structures. The Model Power station at Goshenville shown on the opposite page was cut down by more than half, fitted with a curved platform, and had a cast-metal freight door installed in a new side wall. I modified Model Power's farm house kit in three different ways for businesses in Goshenville.

Frank's Extracts & Syrups, Exton station, and Limpalongg Shoe are scratch-built with scrap box and aftermarket parts added. Ferreira's Dry Goods and Andrew's Golf Clubs were built from scrap box parts with scratch-built roofs and plastic and cast white metal details.

Every structure was painted with flat Floquil and Testor Corp. paints, stained with an alcohol and black ink wash, dusted with powdered pastels, sprayed with Testor's Dullcote, and drybrushed. Since visitors see the tops of buildings first, I paid particular attention to the roofing and rooftop details.

Track and controls

I used 1/2" plywood sheet, cut with a saber saw, for the subroadbed. I attached the wood to the foam with Liquid Nails for Projects.

On top of that I added cork roadbed strips and sheets with Titebond glue. I secured the Peco track with track and wire nails and soldered all of the rail joints. I used epoxy to secure the track in a few locations.

Then I airbrushed the track from a high angle with Floquil Roof Brown and from a low angle with the same company's Rail Brown. [Testor Corp. discontinued the Floquil line. Roof Brown and Railroad Tie Brown are available in the Model Master acrylic line. – Ed.] I brush-painted random ties with various shades of brown paint and stains.

Once the paint had dried, I applied Woodland Scenics fine gray ballast to the main line and fine dark brown ballast to the passing sidings and yard tracks. I used acrylic matte medium to hold the granules in place. Then I applied drops of black ink mixed with alcohol to simulate grease and oil stains in the locomotive servicing area.

Because of the track plan's simplicity, I didn't feel the need for a control panel or Digital Command Control. Instead, I used a Model Rectifier Corp. direct-current power pack to run trains.



6 A tree-lined mountain range cuts diagonally across the layout and serves as a view block between Goshenville (shown) and Exton. Phil used rubber and aluminum foil molds to cast the rock outcroppings.

The wires between the track and power pack are 7 feet long and taped into a single cable. This lets me follow trains around the layout.

Right for any occasion

There's always a trade-off in track plan complexity and operational capabilities versus layout size. I designed the N scale Georgette & Springfield to be a plug-and-play walk-around layout. If I want to stand back and watch trains run, I can do that. But the layout also provides opportunities to run passenger trains or switch local industries. No matter how I run the layout, I know I'm going to have a good time. **MR**



Meet Philip A. Lawson

Philip Lawson, shown here with his daughter, Georgette, lives in West Chester, Pa., with his wife, Georgette. The couple also has a grown son. After a 43-year career in commercial finance, Phil went back to work for a national insurance company.

Handy tools for DCC wiring projects



I talked about soldering irons, solder, heat sinks, and tip cleaners in the August 2017 DCC Corner column. I'm not going to repeat that, but I want to provide an update. Some soldering irons can leak current through their tips if they're not internally grounded. Even in those that are grounded, apparently over time the ground can degrade.

This can lead to damage to decoder parts if the decoder

② Shrink to fit. Heat-shrink tubing comes in a variety of diameters, colors, and shrinkage ratios. Larry usually uses basic black in 3/64" to 1/4" diameter sizes available from All Electronics in 100-foot rolls or 4-foot lengths.

① Internally grounded. To prevent damage to sensitive electronic components, Larry Puckett purchased this Hakko FX-888D soldering station. It has an internal ground for the tip, heats up rapidly, and has a built-in sensor to maintain a constant temperature.

becomes part of the ground path. Be aware that low-cost soldering units may suffer from this problem. This is why working on a special non-conductive work surface can be important.

One reader contacted me about this issue with the Weller soldering iron I showed in the article. With his WLC100 he burned out the audio amplifier on several SoundTraxx decoders.

Upon testing, the soldering iron was found to be leaking current and damaging the components. Since I do a lot

of decoder installations, I was obviously concerned. After discussing this problem with the folks at SoundTraxx, I purchased a more expensive soldering iron that has a grounded tip that won't leak current.

Although I still use the Weller iron for general soldering, I now use a Hakko FX888D **①** for my electronics work (www.hakko.com). With this unit I can set a specific sensor-controlled temperature for the tip, and it heats up quickly, plus it has a reliable internal tip ground.

Another easy safety measure for decoders with removable wiring harnesses is to disconnect the decoder when doing any soldering.

Heat-shrink tubing ② is an important item to have on hand, and I use it on almost all my decoder installations as well as other wiring on the layout. It comes in a variety of diameters and can be ordered in rolls or strips. I purchase 4-foot lengths from All Electronics and then cut them to approximately 6" strips for storage. I keep a selection ranging from 3/64" to 1/4" diameter on hand. It's available in a number of colors, including transparent, but

③ Many uses. In addition to protecting solder joints in wires, Larry's used heat-shrink tubing to cover LEDs and even to provide better grips on coupler picks.

I find basic black is less visible inside models.

The polyolefin version I use shrinks little in length but about 50 percent in diameter, although other shrinkage ratios are available. You can use a dedicated heat gun to shrink it, but I've found that simply holding a hot soldering iron tip near it will do the job.

Don't do this with PVC heat-shrink tubing, as it will melt. Anytime I need to protect a solder joint on wires, I just slip a piece of heat-shrink tubing onto one wire

before soldering, then slide it over the completed joint, apply the heat, and the job is done.

In addition to protecting wire joints, heat-shrink tubing can be used for other purposes. For example, you can cover all of a light-emitting diode (LED) or light bulb except for the very tip to control the direction and spread of the emitted light **③**.




CLIP LEADS MAY NOT SOUND LIKE A TOOL, BUT THEY DEFINITELY BELONG IN YOUR ELECTRONICS TOOL BOX. ... THEY'RE GREAT FOR TEST PURPOSES.
— LARRY





This is especially useful with headlights. In an upcoming article, I'll show how to do this with fiber-optic strands to create several types of locomotive lights.

Another trick is to place a piece an inch or two long on the end of an uncoupling pick to make it easier to grip and manipulate **3**.

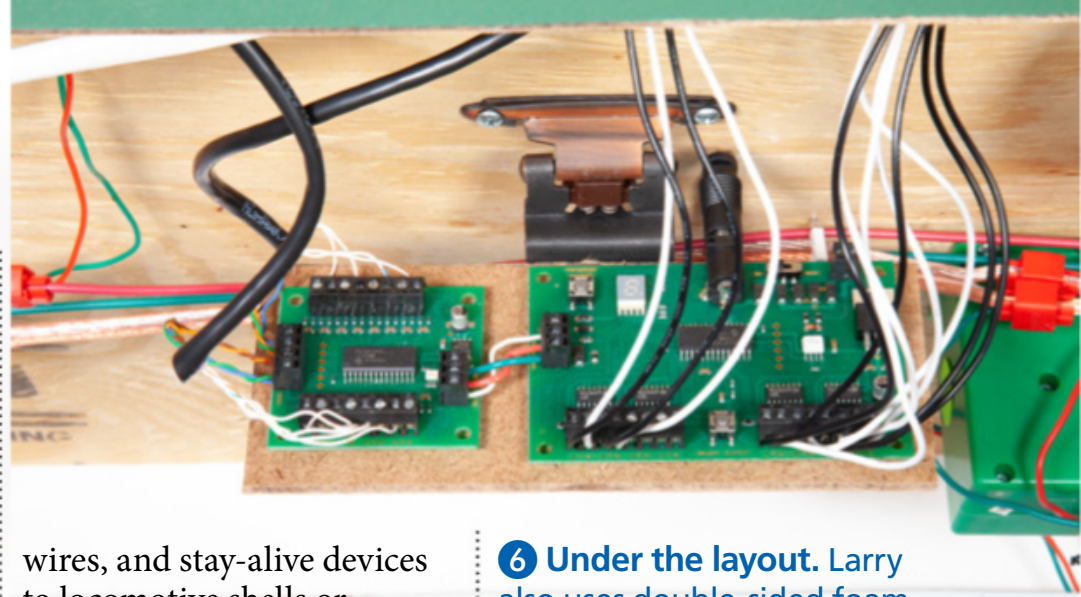
Wire strippers are another essential item for your Digital Command Control (DCC) tool box **4**. These come in a variety of sizes, complexities, and costs. The more expensive versions can strip the insulation back from any place on a wire, making them very useful for adding drops to power buses. However, since I began using various types of suitcase connectors that cut through the insulation, I haven't had to deal with this problem, and I don't own one of these expensive wire strippers.

5 Twice as sticky. Double-sided foam tape is great for attaching small accessory decoders directly to the plastic case of Tortoise switch machines.

4 Wire strippers. Wire strippers are available in a variety of configurations and prices. The larger one shown here has holes sized for specific wire gauges. The smaller stripper has a set screw that allows you to adjust the opening in the jaws for various wire sizes. Larry keeps several around the layout.

Also available are strippers with holes sized for specific wire diameters, making it fairly easy to strip insulation from the end of a wire. The most inexpensive strippers have adjustable jaws. I have several of these preset to the most common wire sizes I use. I've also found that by carefully manipulating the jaws I can strip any size wire without changing the set screw position.

Another product I use a lot of is double-sided foam tape. This is what the name implies, a strip of flexible white plastic foam with adhesive on both sides. It's available in different widths and thicknesses, and because it's flexible, it conforms to uneven surfaces. I use it for attaching decoders, speakers,



wires, and stay-alive devices to locomotive shells or motors. It can be used for attaching accessory decoders to Tortoise by Circuitron switch machines **5**.

It also works well for mounting small circuit boards such as a switch frog power board, auto reverser, occupancy detector, or accessory decoder under the layout **6**. The adhesive on this stuff seems to last forever. I have Tortoises with accessory decoders on them that have been there for about 15 years. A putty knife or chisel blade in a hobby knife will separate the parts, if necessary.

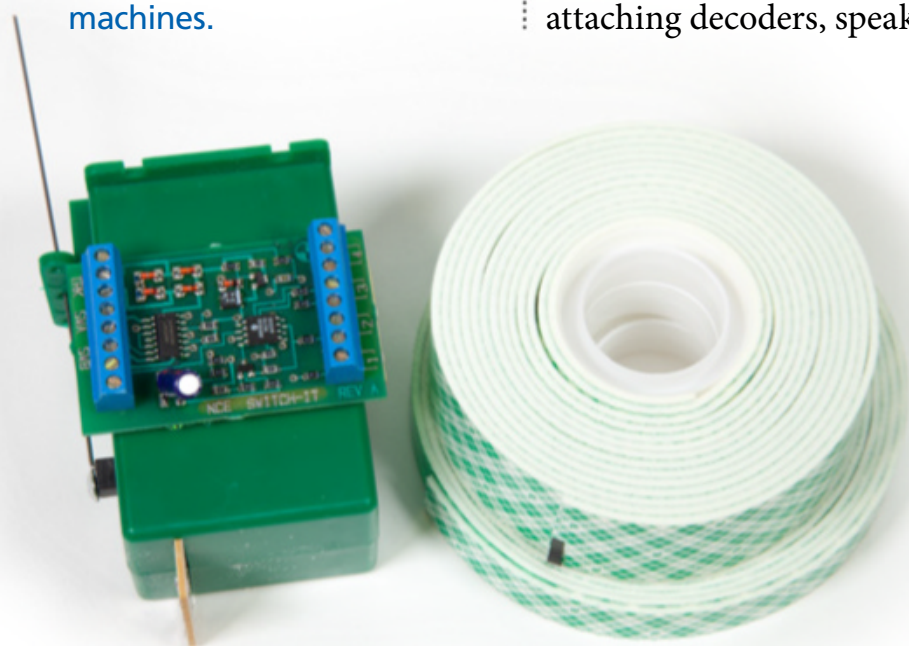
Clip leads 7 may not sound like a tool, but they definitely belong in your electronics tool box. Made from alligator clips attached to the ends of a piece of flexible wire, and available in various lengths, they're great for a quick connection to test an installation. For debugging purposes, they can be used to bypass a suspect solder joint or other connection. While they should never be used for permanent

6 Under the layout. Larry also uses double-sided foam tape to attach circuit boards under the layout. In this case, the NCE Button Board and Switch8 are attached to a piece of hardboard on a spring-mounted cabinet hinge, and can be swung down for making connections and programming, then back up out of the way the rest of the time.

connections, they're great for test purposes.

This isn't a comprehensive list of tools, just those I find most useful for DCC wiring needs. No matter what tools you use, don't cut corners when in a hurry, and be careful about using temporary fixes – they have the habit of becoming permanent. **MR**

7 Check your work. Clip leads come in a variety of colors and are indispensable for testing and making quick temporary connections. Larry likes to keep a large selection on hand.





Athearn Ready-to-Roll HO scale SD40T-2

More prototype-specific detail and a dual-mode SoundTraxx Econami decoder highlight this HO scale SD40T-2 “tunnel motor” diesel from Athearn Trains. The plastic model has many enhancements compared to the previous Athearn Ready-to-Roll SD40T-2 that we reviewed back in the January 2008 issue.

Prototype. In 1972, General Motors Electro-Motive Division and Southern Pacific RR collaborated on the SD45T-2 to work on the railroad’s most mountainous routes. Exhaust gases tended to collect in the ceilings of tunnels and snow sheds, which could cause a diesel locomotive with conventional high-mounted air intakes to overheat. The SD45T-2 “tunnel motor” had air intakes at walkway level to draw in cooler, cleaner air for more reliable operation.

Electro-Motive also applied the tunnel motor concept to its 3,000 hp SD40-2, resulting in the SD40T-2. From 1974 to 1980, 312 SD40T-2s were built. Southern Pacific purchased 229 SD40T-2s, and its subsidiary St. Louis Southwestern rostered an additional 10. The Denver & Rio Grande Western bought the last 73 units.

The tunnel motors worked through the 1990s, with some receiving Union Pacific paint after the SP merged into the UP in 1996. All were removed from the UP roster in the early 2000s, but several found second careers on shortline and regional railroads.



The model captures the prototype’s distinctive air-intake grills.

The model. Our review sample is accurately decorated for SP no. 5387, which was originally built as D&RGW no. 5387 in 1978. In the late 1980s, those two roads merged, and in the early 1990s, no. 5387 received the SP “Speed Lettering” scheme. The locomotive was sold not long after the SP/UP merger. Still wearing remnants of its SP paint, no. 5387 now works the rails for the Alabama & Tennessee River Ry.

The model’s paint is smoothly applied and all lettering is straight, opaque, and faithful to prototype photos from the 1990s, including “DRGW” under the cab numbers. Small warning and maintenance stencils are legible under magnification. Electro-Motive Division builder’s plates are on the side sills under the cab.

The Athearn SD40T-2 also matches prototype dimensions. The short hood length of 88 scale inches is correct for this ex-D&RGW prototype. The plastic body shell has well-defined molded

detail, including engine access doors, grills, and the two radiator hatches on each side of the long hood.

The see-through air intakes are stand-out features. The 2008 review noted that the worm gear assembly was visible inside the hood. Thankfully, Athearn has corrected this on the new release by moving the gearbox farther forward, making it less visible through the grills.

The rooftop dynamic brake fan grills are also see-through, with separate fan detail visible underneath.

Handrails and stanchions are made of flexible acetal plastic. One of the stanchions came loose when I removed the model from the box, but it was easy to press back into place.

Other separate parts include sand filler hatches, windshield wipers, m.u. hoses, and grab irons. Prototype-specific details include a bracket-mounted Nathan P3 air horn, frame-mounted bell, Positive Traction Control cabinet in front of the blower housing, and a nose-mounted Gyalight.

The model rides on blackened metal scale 40"-diameter wheels. The plastic HT-C truck sideframes have separately applied brake cylinders.

Mechanism. After removing the coupler boxes, I removed two additional screws from the underframe at each end of the fuel tank. Then I lifted off the body shell.

The motor and flywheels are mounted in the center of the die-cast metal

PERFORMANCE CHARTS	
DRAWBAR PULL	3.5 ounce 49 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
10 (start)	3.5
11	18
12	28
13	41
14	50
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	4.5
7	35
14	62
21	72
28	74

chassis. Drive shafts transfer power to the truck-mounted gearboxes.

The SoundTraxx Econami decoder is attached to the chassis above the mechanism. The dual-mode decoder works on both Digital Command Control (DCC) and direct-current (DC) layouts. Leads run from the decoder to light-emitting diodes (LEDs) in the body shell. Two leads run to a 1/2" x 1 3/8" rectangular speaker enclosure over the rear truck.

Measured by our workshop force meter, the mechanism produced a tractive effort equivalent to 49 free-rolling HO scale freight cars on straight-and-level track. During a hill climb test, the model pulled 12 HO freight cars up a 3 percent grade. It also negotiated 18" radius curves and no. 5 turnouts.

DCC performance. During speed tests on our DCC test track, the model accelerated smoothly from 4.5 scale mph to a prototypical top speed of 74 scale mph. The decoder supports 128 speed steps for finer slow speed control. Performance

can be further fine-tuned with acceleration/deceleration momentum, three-point or 28-point speed tables, and forward/reverse trim. These and most aspects of the decoder are adjustable via configuration variables (CVs) as described in the free Econami diesel user manual at www.SoundTraxx.com.

The Econami has the same excellent sound and almost all the features of a top-of-the-line SoundTraxx Tsunami2 decoder. These features include Flex Map technology for easy function mapping and button-controlled braking. However, while the Tsunami2 features three braking modes (independent, train, and dynamic), the Econami has only a single braking mode.

Pressing F0 turned on the directional headlights and ditch lights. Pressing F5 turns on the nose Gyalight, while F6 turns on the rooftop beacon.

Other user-triggered effects include the bell, coupler, dynamic brake fan, manual engine notching, and long and short horn blasts. The horn on our sample was correctly set for a Nathan P3, but there are 15 additional horn sounds to choose from.

I easily programmed the locomotive address to its cab number (5387) and set up an advanced consist with another six-axle diesel. The Athearn SD40T-2 supports CVs 21 and 22, which allow function control under the advanced consist address.

DC performance. Like most dual-mode sound-equipped locomotives, the SD40T-2 requires a lot of voltage to get moving. At 7 volts the diesel engine sounds started and the lights

Facts & features

Price: \$199.98 (DCC sound), \$139.98 (DC, no sound)

Manufacturer

Athearn Trains
1600 Forbes Way, Suite 120
Long Beach, CA 90810
www.athearn.com

Era: mid-1970s to present
(mid- to late 1990s as detailed and decorated for SP no. 5387)

Road names (multiple road numbers):

Southern Pacific (speed or Roman lettering), Denver & Rio Grande Western, St. Louis Southwestern (Cotton Belt), and Union Pacific

Features

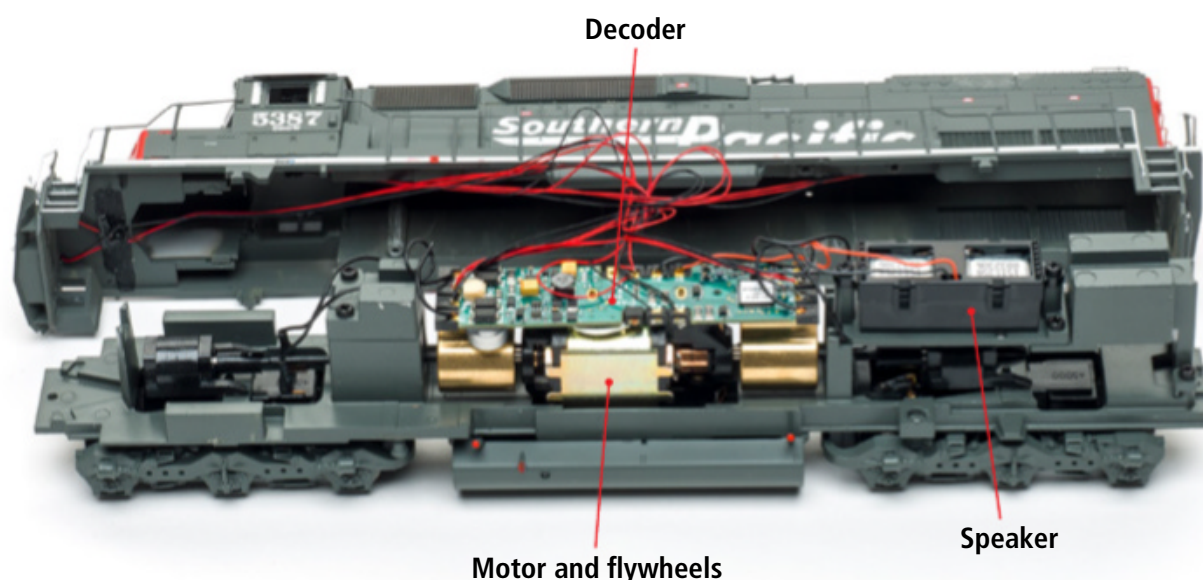
- 21-pin NEM DCC plug (DC version)
- All-wheel drive and electrical pickup
- Five-pole skew-wound motor with dual brass flywheels
- Light-emitting diode (LED) headlights, ditch lights, nose-mounted Gyalight, and rooftop beacon
- McHenry scale knuckle couplers at correct height
- Minimum radius: 18" (22" recommended)
- Roadname/roadnumber-specific short hood length (81", 88", 116", or 123" as per prototype)
- RP-25 contour blackened metal wheels in gauge
- SoundTraxx Econami dual-mode decoder (DCC version)
- Weight: 15.6 ounces

illuminated. The headlights and ditch lights are directional while the beacon and Gyalight are always on.

Once I advanced the throttle to 10V the tunnel motor started moving at 3.5 scale mph. At 12V the model reached 28 scale mph, and at 14V, the power pack's maximum output, the locomotive attained its top speed of 50 scale mph.

The only sound effects in DC mode are the diesel engine rpm, which raise or lower with the throttle setting, and a brake squeal triggered by quickly decreasing the throttle.

With its accurate detailing and realistic sound, one (or more) of these tunnel motors would look and sound right at home hauling tonnage on an HO scale mountain railroad. – Dana Kawala, senior editor



Much of the model's heft comes from its die-cast metal chassis. Mounted in the body shell, LEDs provide the lighting effects.



Atlas N scale GP39-2 diesel locomotive

Sound or no sound has been one of the basic questions when buying new locomotives. If you bought an engine without sound, but later wanted to add a Digital Command Control (DCC) sound decoder, one of the hurdles was finding a place for the speaker, especially in N scale.

Atlas Model Railroad Co. Inc. has another option for you: sound-ready locomotives with the speaker already installed. Our first such sample is a re-issue of Atlas' N scale GP39-2. The model is also available with an Electronic Solutions Ulm (ESU) LokSound Select dual-mode sound decoder with Full Throttle sounds and effects package.

The prototype. Electro-Motive Division (EMD) didn't expect to sell many GP39-2s after having sold only 23 predecessor GP39s. However, an improved turbocharger, better performance at high altitudes than the 2,000-hp GP38-2, and better economy made the 2,300-hp GP39-2 10 times more popular with customers than the GP39.

The Atchison, Topeka & Santa Fe Ry. owned the largest fleet of new GP39-2s, with 106 units purchased in five orders over six years. BNSF Ry. still has some GP39-2s on its roster, and others are still working on short lines.

Atlas's model comes in two versions, Phase I and Phase II. Our sample was a Phase I model decorated for the Delaware & Hudson's 1975 order. These locomotives have EMD's Blomberg Type

M trucks, identifiable by their rubber pads in place of leaf springs in the center of the truck, a single brake cylinder at one end of the truck, and a snubber, or shock absorber, on the other end.

The model has the correct 81" nose of the Phase I locomotive, but the 3,600-gallon fuel tank is about 3 feet longer than that fitted on the D&H engines, which carried 2,900 gallons of fuel. Other dimensions were within scale inches of drawings published in the December 1988 issue of *Mainline Modeler*.

The classic D&H lightning stripe blue-and-gray paint scheme is well executed with sharp color separations and smooth, opaque paint. All the lettering is sharp and clear, with all but the smallest lettering on the General Motors builder's plate legible under magnification.

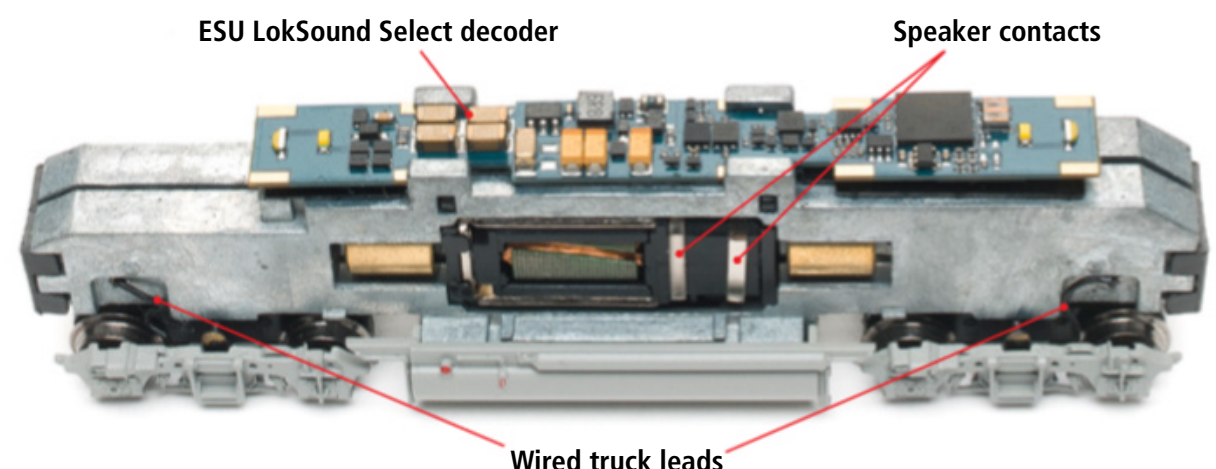
The handrails are painted flexible plastic and appear to be close to scale size. Grab irons and uncoupling levers are molded in place. The walkways feature a

textured tread pattern, and the window frames are trimmed in silver paint. The horn, snowplow, and dynamic brake compartment vent are separate pieces.

Under the hood is a traditional N scale split die-cast metal frame. This one is held together with plastic clips at the ends. Carefully wiggling the body shell allowed it to slip from the frame.

A sugar-cube-style speaker is mounted in the fuel tank area under the motor in both the direct-current (DC) and DCC models. Metal contact strips run from the speaker past the motor to connect to the bottom of the ESU LokSound Select decoder or lighting printed-circuit (PC) board mounted on top of the frame. Surface-mount light-emitting diodes (LEDs) illuminate the headlight, rear light, and number boxes.

The locomotive picks up current from all eight wheels. Fine wires pass the current from the trucks to the frame halves instead of metal wipers.



Atlas follows the typical N scale chassis design with a split frame, but now offers wired truck leads. A speaker is installed in the fuel tank in both DC and DCC models.

On the test track. To test the ESU LokSound-equipped GP39-2 on direct-current (DC), I used a Bachmann power pack. At 6.5V, the engine startup sequence commenced. At 7.5V, the locomotive started moving at 3.5 scale mph. At 12V, the engine reached 76 scale mph, matching the prototype's top speed. Sounds were limited to the engine revving up and down with the locomotive's speed. Headlights were directional.

On DCC, the locomotive was quiet until I pressed function button 8, which triggered the diesel engine startup sequence. The locomotive started moving in speed step 1 at 2.2 scale mph and topped out at 90 scale mph in speed step 28 – a bit fast for a freight locomotive.

All the function buttons can be remapped, making it easy to customize the functions to better suit specific throttles or to create operating standards for your layout. The ESU LokProgrammer software is available as a free download (www.esu.eu/en/start/), which generates the proper configuration variable (CV) values so changes can then be made with a programming throttle. An extra-cost LokProgrammer interface connects a computer to a programming track, allowing changes to be uploaded directly to the decoder.

I took the engine to our Canadian Canyons project layout for real-world testing. I set some cars in place at the two industries on the layout. Using switching mode (function 7) on the LokSound decoder, it was easy to gradually power up and down to shift cars into and out of the sidings.

Even more fun was using the brake function on F10. This allowed me to set a reasonable speed on the locomotive, then start and stop using the independent brake. The engine note increased and decreased automatically as I started, stopped, reversed, and started again.

I tested the Full Throttle effects in the layout's helix. Climbing the helix, I pressed F9, DRIVE/HOLD, to keep the speed constant. I then used the speed control knob to throttle the engine to notch 8. On the way back down the helix, I dropped the throttle to notch 1, hearing the engine rpm lower. Then I pressed F4 to activate the dynamic brake, triggering a fan sound and cycling the diesel engine to the proper notch.

My test bench results said our locomotive should pull 15 N scale freight

Facts & features

Price: \$249.95 (DCC and sound), \$139.95 (DC no sound)

Manufacturer

Atlas Model Railroad Co. Inc.
378 Florence Ave.
Hillside, NJ 07205
www.atlasrr.com

Era: mid-1970s to mid-1980s (as detailed and decorated for D&H)

Road names: Delaware & Hudson; Atchison, Topeka & Santa Fe (blue/yellow warbonnet and "Kodachrome"); CSX (YN2); Guilford (D&H); and Reading Co. (two road numbers each, plus undecorated)

Features

- Accumate magnetic knuckle couplers, at correct height
- Blackened metal wheels, in gauge
- Factory-installed speaker for conversion to DCC sound (DC version)
- ESU LokSound dual-mode decoder (DCC version)
- Weight: 2.7 ounces

PERFORMANCE CHARTS

DRAWBAR PULL	.64 ounce 15 N scale freight cars
---------------------	--------------------------------------

SCALE SPEED (DC)

VOLTS	SCALE MPH
7.5 (start)	3.5
8	14
9	40
10	48
11	61
12	76
14.25	104

SCALE SPEED (DCC)

SPEED STEP	SCALE MPH
1	2.2
7	26
14	70
21	86
28	90

cars on straight and level track. To test things further, I started adding cars to my nine-car local until there were 12 cars tied on the back. This was the limit for the locomotive going up the 1.9 percent grade of the 18½" radius helix.

The GP39-2 wasn't expected to be a big hit, but with more than 200 built over an 11-year period, and with a few still in operation today, these mid-sized locomotives could rightly earn themselves a place on any layout set in the 1970s to the present. – *Eric White, associate editor*

Z-Stuff for Trains

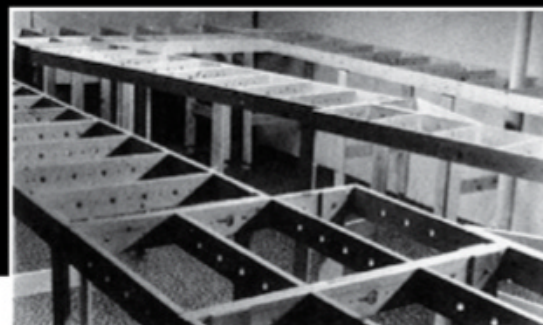
Just connect two wires for a working signal!

www.z-stuff.net S-Scale

- LED lights HO-Scale
- Optical Sensors N-Scale

Orders: ZstuffExpress.com 708-352-9105
Z-Stuff for Trains 585-377-0925

BENCHWORK in a HURRY



Use Our Simple Modular System



You Design Any Size Layout
For Any Gauge Track
We do the Woodworking
Easy to Assemble
Free Brochure

Sievers

BENCHWORK

PO Box 100
Washington Island, WI 54246
920-847-2264

www.sieversbenchwork.com



Walthers Cornerstone N scale bridge kits

Wm. K. Walthers, which added easy-to-build HO scale railway bridges to its Cornerstone line a few years ago, is now doing the same in N scale. The single-track arched Pratt truss bridge kit is the latest in that line. I assembled and painted the bridge along with its matching pier and abutment kits, which are sold separately.

The bridge. The kit's injection-molded styrene parts are made in a single color, a dark gray that simulates steel fairly well. The parts were molded well, with fine rivet and gusset detail and no flash to speak of.

The bridge is assembled in three main sub-assemblies: the two side truss panels and the interlocking girder floor and tie assembly. The side panels are each made from four pieces that are laminated back-to-back for better molded detail on both sides. The two long pieces on each side overlap at the "X"-braced panel in the middle, giving the sides increased strength and easier alignment. This leaves one visible seam on each side, but it's not obtrusive.

Thin inserts with X-shaped texture meant to represent between-girder lacing go on top of the bottom chord of each side. They do the job of hiding the joints between the panel sides, but I wish they were see-through.

The stringer girders on the deck are notched to fit matching notches in the

crossbearers. These parts fit tightly enough that they required minimal cement. I then glued the two tie strips end to end on top of the deck assembly and the bottom X-bracing underneath. If you're building this kit, I advise leaving that piece (parts 19 and 20) until later, as there are alignment tabs that are hard to fit the side panels onto at the same time as tabs on the floor girders. Glue this piece on last.

I assembled the upper superstructure by attaching both side panels using the top laterals, vertical cross braces, and end laterals, but did not yet attach the deck. At this point I airbrushed both subassemblies Grimy Black and sprayed the tie deck Railroad Tie Brown. I then used cyanoacrylate adhesive (CA) to glue Atlas code 55 rail to the ties, glued the superstructure to the deck girders, and weathered the bridge with A.I.M. Products Light Rust weathering powder.

Abutments and piers. These two kits, molded in concrete-colored styrene, are much simpler structures and easy to build. The abutments have separately molded wings that can be placed at any angle to best fit your particular bridge location. The piers have optional cutwaters for use if installing in moving water. Both kits have score lines to guide shortening the parts, if needed; when assembled, the bearing surfaces on both stand $3\frac{1}{8}$ " high.

Facts & features

Price: Single-track arched Pratt truss bridge, \$44.98; Bridge abutment 2-pack or Bridge pier 2-pack, \$19.98

Manufacturer

Wm. K. Walthers, Inc.

5601 W. Florist Ave.

Milwaukee, WI 53218

www.walthers.com

Era: mid-1840s to present

Features

- Cut lines for variable height (abutments and piers only)
- Injection-molded plastic kits
- Meets National Model Railroad Association clearance standards
- Tabs on ties for rail alignment (bridge only; rails not included)

Both kits include parts for single- and double-track abutments or piers. I assembled one of each in about half an hour, counting painting time.

A bridge, not too far. At 14" long, this kit builds into an impressive structure. Associate editor Eric White said he wishes this kit had been available when he kitbashed and scratchbuilt similar bridges for our N scale Canadian Canyons project layout. Maybe it will likewise fill a need on your N scale railroad. – *Steven Otte, associate editor*

QUICKLOOK

Kadee HO scale early PS-1 boxcar

Price: \$39.95

Manufacturer

Kadee Quality Products Co.
673 Ave. C
White City, OR 97503-1078
www.kadee.com

Era: 1947 to 1980s

Road names: Atchison, Topeka & Santa Fe; New York Central; New York, New Haven & Hartford (with 7-foot door); Southern Ry.; and Union Pacific

Comments: Kadee has released an early-production version of its HO scale 40-foot PS-1 boxcar. While the previous version, reviewed in the July 1997 *Model Railroader*, modeled cars built in the 1950s, this new version models cars built in the late 1940s.

The model matches prototype dimensions. The plastic body shell has

well-defined weld seams on the 10-panel car sides and rounded corrugations on the ends with a rivet seam between the two end panels. Separate parts include ladders, grab irons, an Ajax brake wheel, and a see-through Apex running board. The 6-foot wide, 7-panel Superior doors slide open.

Our review sample features clearly printed lettering that matches a November 1947 builder's photo of Atchison, Topeka & Santa Fe class Bx-52 no. 276749. The model is accurately detailed for an early PS-1 with flat end panels on the roof, no rectangular stiffeners on the ends at the roof peak, high-mounted tack boards, and narrow tabs along the side sills.

Correct for an early PS-1, the end grab iron's left side is directly attached to a corrugation rib while the right side is attached with a vertical strap. On later PS-1s this arrangement was changed to straps on both sides.



Our review sample has the same die-cast metal underframe as previous PS-1 releases. While correct for a 1950s PS-1, this underframe has additional stringers and an extra crossbearer that aren't correct for an early PS-1.

The model's weight matches National Model Railroad Association Recommended Practice 20.1. The scale 33"-diameter blackened metal wheels are in gauge and the metal Kadee knuckle couplers are body mounted at the correct height. The car rolled freely through no. 5 turnouts and curves as tight as 18" radius.

Capturing most of the subtleties of an early production PS-1, this superdetailed ready-to-run boxcar would make a welcome addition to any HO scale transition-era roster. – Dana Kawala

SHOP ON-LINE 24/7

We Supply The World

AMERICA'S LARGEST INTERNATIONAL MAIL ORDER DISCOUNT TRAIN STORE

TRAINWORLD.COM

N BACHMANN #68153 SANTA FE NORTHERN 4-8-4 SUPER SALE \$69.99 List \$175.00	Limited Quantities STANDARD DC	HO BACHMANN #65304 PENNSYLVANIA GG-1 SUPER SALE \$79.99 List \$329.00	Limited Quantities DCC & SOUND
N BACHMANN #64258 SEABOARD RS-3 SUPER SALE \$69.99 List \$159.00	Limited Quantities DCC ON-BOARD	HO BACHMANN #63404 UNION PACIFIC S-2 SUPER SALE \$99.99 List \$239.00	Limited Quantities DCC & SOUND

N, HO, ON30
SUPER SAVINGS SALE
 Mention CODE Word **MRJJ19**
 In the User Comment Box.

\$10.00 OFF
 ORDERS OVER \$100.00 OR MORE
 Limit ONE COUPON PER CUSTOMER. SALE ENDS July 31, 2019

\$30.00 OFF
 ORDERS OVER \$300.00 OR MORE
 Limit ONE COUPON PER CUSTOMER. SALE ENDS July 31, 2019

\$50.00 OFF
 ORDERS OVER \$500.00 OR MORE
 Limit ONE COUPON PER CUSTOMER. SALE ENDS July 31, 2019

SIGN-UP FOR OUR E-MAIL SALES 1-800-541-7010 e-mail: ORDERS@TRAINWORLD.COM
HUGE INVENTORY • GREAT SELECTION • FAST SHIPPING 751 McDONALD AVE., BROOKLYN, NY 11218

Buy Tickets Online Now and Save Money!
TrainShow.com

FOR INFO CONTACT:
 280 Carlton Drive Carol Stream, IL 60188
 (630) 290-1962 · Info@TrainShow.com

GREAT TRAIN SHOW TrainShow.com	July 27-28 • Belleville, IL Belle Clair Fairgrounds	GREENLAND'S GREAT TRAIN AND TOY SHOW	July 20-21 • Monroeville, PA Monroeville Convention Center
	August 10-11 • Pomona, CA Fairplex		August 10-11 • Edison, NJ New Jersey Expo Center
	August 17-18 • Columbus, OH Ohio Expo Center		August 17-18 • Chantilly, VA Dulles Expo Center
Sat & Sun 10am - 4pm		Sat & Sun 10am - 4pm	August 24-25 • Oaks, PA Greater Philadelphia Expo Ctr.

Great Midwest Train Show

DuPage County Fairgrounds
 County Farm & Manchester Wheaton, IL 60187

June 2	Aug 11
Sept 8	Oct 13

Don't Sell Your

TRAIN COLLECTION

Without An Offer From

TRAINZ

Trainz.com has purchased thousands of train collections all over the USA. We handle everything from Atlas, Kato, Broadway Limited, Overland, Precision Scale, Key, Sunset, Marklin, Lionel, and more! Trainz knows how important your collection is to you and will treat it with respect. We are looking to purchase Trains all over the USA. Trainz.com will make selling your collection easy. Read about how our cash sale and auction options work at www.sellmytrains.com

CONTACT US TODAY AT
sellyourtrains@trainz.com or at
866-285-5840

OVER 100,000
 model trains &
 hobby products
 now available
 on our website

YES! Help Me Sell My Train Collection!
www.sellmytrains.com
 (Call) 866-285-5840
 (Fax) 1-866-935-9504

Looking for one of the greatest selections of new & previously owned trains in all scales?

Check out our website at
TRAINZ.COM & especially our auction site at
www.trainzauctions.com

QUICKLOOK

Walther's Mainline HO scale Budd 85-foot dome coach

Price: \$39.98

Manufacturer

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

Era: 1954 to present

Road names: Amtrak (phase 3); Atchison, Topeka & Santa Fe; Southern Ry.; Union Pacific; and VIA Rail Canada. Also available undecorated.

Comments: Wm. K. Walther's Inc. has added an 85-foot dome-coach to its Walther's Mainline series of HO scale passenger cars. The model features sides, ends, and a one-piece roof attached to a plastic core; flush-fitting window glazing; and underbody detail.

The Walther's Mainline model is based on Canadian Pacific's Skyline-series

dome-coach-buffet cars (nos. 500-517). The full-size cars were built by The Budd Co. under job number 9646-142. The 18 first-class cars were delivered to CP in 1954 and 1955. VIA Rail Canada acquired the Skyline-series cars in August 1978. Sixteen of the 18 cars are still in service today.

Our sample is decorated in Amtrak's phase 3 paint scheme. The passenger carrier inherited a variety of Budd-built dome-coaches from more than a half-dozen American railroads. The supplied decal sheet includes Amtrak numbers 9490 through 9499. The numbers, unused on full-size cars, are in the correct range for Amtrak's dome-coaches.

The majority of the car's dimensions follow drawings and data published in *The Passenger Car Library Vol. 3: Western Railroads* by W. David Randall (RPC Publications, 2000) and the 1957 *Car Builders Cyclopedia* (Simmons-Boardman Publishing Co.) The proto-

type car has an 8'-6" wheelbase; on the model it's 9'-0".

The car can handle 18" radius curves, but the overhang and gap between cars doesn't look prototypical. The metal Proto-Max couplers are truck-mounted at the correct height. The 36" metal wheels, mounted on plastic axles, are correctly gauged. At 6 ounces, the model is .7 ounce too light according to National Model Railroad Association Recommended Practice 20.1.

I tested the dome-coach on our staff layouts. The car performed without incident and looked great on 30" to 36" radius curves. There's a 1/4" gap between the diaphragms.

With more than a half-dozen cars in the Mainline passenger series, it's easier than ever to build a good-looking passenger train on a budget. — Cody Grivno, Group Technical Editor



Relive the GLORY DAYS

Lionel Trains of the 1950s, a new special issue from *Classic Toy Trains*, celebrates the most innovative and collectible trains and accessories from Lionel's golden age — 1950 through 1959. Featured stories include:

- Streamlined passenger trains for the O-27 line. (1950)
- The greatest year for accessories. (1952)
- Making what was Lionel's finest year. (1954)
- Lionel sets its sights on TV. (1956)
- The Girl's Train, a special set for young ladies. (1957)
- Brand-new extensive overview — Lionel at mid-century.

Plus, you'll find extraordinary full-color photos and seldom-seen historic images of beloved Lionel products.

200 PAGES!

\$1 OFF + FREE SHIPPING



Order now at KalmbachHobbyStore.com/Lionel

Offer expires 6/30/19 at 11:59 p.m. CT. Free standard shipping to U.S. addresses only. Sales tax where applicable.

Take a Break from the Sun.

Watch MR Video Plus this summer for only \$2.25/month!

When you need a break from the heat and humidity of summer, be sure to check out all the great content on MR Video Plus, including our new series, It's My Railroad! Regular-guy model railroader, Steve Brown, brings his enthusiastic approach to building an N-scale layout including his specific plans for a port scene. Escape to the shade and watch some cool videos that will have you daydreaming about getting back into your hobby room!

**Join MR Video Plus today at
MRVideoPlus.com/27join**

Stop the presses!

An e-mail from Harold Krewer, a good friend who frequently feeds me information, hit my inbox right after a deadline. “Stop the presses!” I screamed internally, wondering how much my expression resembled the figure painted by Edvard Munch.

Continuing education is an unexpected dividend of writing for *Model Railroader*. Comments by readers have inspired many of these columns. I enjoy them, especially when they reveal new information. And I don’t mind hearing from readers when I write something wrong, giving me a laugh at my own expense. Let’s have a look in the mailbag.

Harold helped me research June’s column about the origins of Direct Traffic Control (DTC). Louisville & Nashville implemented DTC-like procedures I believed were innovative for 1979. Harold’s e-mail was almost frantic, and very colorfully so. We had overlooked Rock Island’s *Rules and Instructions for the Movement of Trains and Engines by Voice Control*.

The Rock began using this system between Kansas City and St. Louis in 1974. Officially designated Subdivisions 18 and 19 of the Missouri-Kansas Division, the line rarely saw more than one train per day in each direction. It fits the circumstances I described: train order offices closing while radio communications advanced. *Rules and Instructions* specified how to govern train and engine movements

by oral instructions, not train orders. Rock dispatchers relied on an intermediary, a Relay Operator who radioed these instructions to trains and other affected personnel.

Rules and Instructions required dispatchers to track each movement on a magnet board with two magnets, one to indicate the limit to which a train had been cleared and the other to mark the train’s progress as it reported, or “OS’d,” its locations.

For the record, Harold also nominated Toledo, Peoria & Western as another early adopter. The TP&W introduced its Radio-Controlled Block System in 1982. The form on which TP&W recorded movement authorities reads like a cross between familiar train order language and today’s DTC form. Like Rock Island, TP&W dispatchers relayed instructions through a Block Operator.

Several readers wrote in after April’s “Handling less-than-carload freight” column. Gregg Condon remembered his Wisconsin childhood, when he used his red Radio Flyer coaster wagon to trundle parcels from the Milwaukee Road depot to his grandfather’s paint and wallpaper

store. Gregg also remembers a unique LCL car Northern Pacific fashioned for its Grantsburg Branch, which served one of Wisconsin’s cheese-making regions. Northern Pacific modified a wooden reefer, removing ice hatches from one end and replacing its reefer doors with conventional



A Norfolk & Western stationman hangs a mailbag on the hook for pickup by a passing Railway Post Office car at Bedford, Va., in August 1956. This month, Jerry Dziedzic takes a look in his mailbag. William E. Warden photo

boxcar doors. A bulkhead divided the car’s refrigerated cheese compartment from its remainder. Could we call this car anything but a “beef?”

Joe Relation called my attention to John Stilgoe’s book *Metropolitan Corridor* (Yale University Press, 1985), summarizing it concisely: “Rails created a corridor of urban life in rural communities.” Stilgoe argues this well, using numerous examples of American art and literature to show how railroads changed life between 1880 and 1930. I agree with him: Small-town inhabitants began measuring days by depot clocks registering Standard Time determined in a distant location, not by high noon. And they no longer depended on handmade implements and furnishings. Instead, they ordered goods from Sears, Roebuck & Co. and Montgomery Ward catalogs, which were manufactured in far-away factories and delivered by railroads in LCL lots. Ironically, it was Amazon that arranged delivery of the copy of *Metropolitan Corridor*

I sought out after hearing from Joe.

Greg Bitsko explained that he is familiar with a rail-to-trails project near New Egypt, N.J., the depot in the photo in the April column. He worried that local officials mistakenly named it the Union Transportation Trail. The once-obscure line won fame as the last place Pennsylvania RR steam saw action.

Shell-shocked by the Rock Island incident, I fought off another urge to mimic Munch’s painting. I rushed to contact Pennsy experts I know. A quick internet search produced a David Plowden photo essay in the December 1959 *Railroad Magazine* recording the last months of PRR No. 5244, a workhorse 0-6-0 leased by the line.

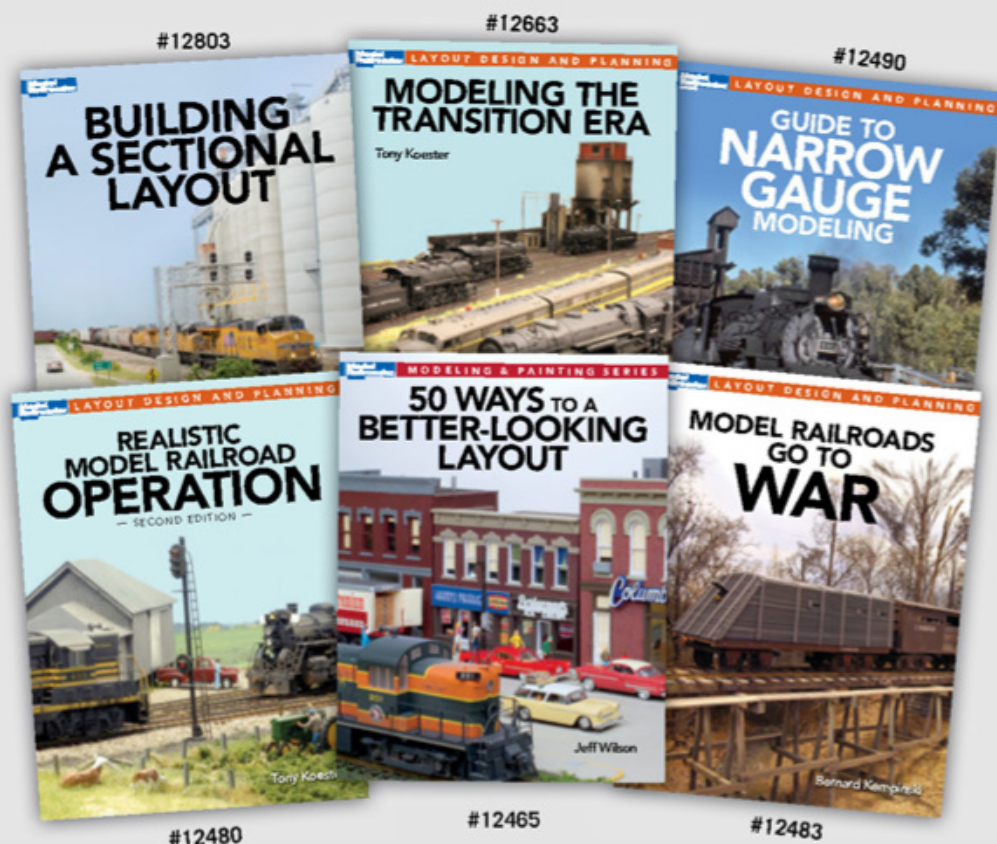
The embarrassing blooper I committed finally dawned on me. Politely, Greg pointed out that my caption names the United Transportation Co., not the Union Transportation Co. I know the difference; why did I scramble the two? Guess this makes me the April Fool! 



**AND I DON’T
MIND HEARING
FROM READERS
WHEN I WRITE
SOMETHING
WRONG,
GIVING ME A
LAUGH AT MY
OWN EXPENSE.
— JERRY**

Design YOUR BEST Layout

Let the experts at *Model Railroader* show you how!



K Kalmbach
Media

Buy now from your local hobby shop!
Shop at KalmbachHobbyStore.com

P33796

Big, Bold, & Beautiful!

Great Model Railroads returns with an extraordinary 2020 edition! From the editors of *Model Railroader*, the latest collection includes 10 spectacular layouts from the hobby's top modelers. You'll find a variety of scales, sizes, and locations that will inspire you to create your own layout.

Featured layout stories include:

- **Sandy River & Rangely Lakes** — A compact Maine narrow-gauge layout.
- **New Haven** — Steam, diesel, and electric HO operations in Connecticut.
- **New York Central** — A big and beautiful O scale layout.
- **Southern Pacific's Placerville Branch** — Steam railroading in the high Sierras.
- **Minneapolis & St. Louis Story City Branch** — Rural Midwest railroading at its finest.
- And much more!

Reserve now at
KalmbachHobbyStore.com/GMR2020

Offer expires 10/3/19 at 11:59 p.m. CT. Free standard shipping to U.S. addresses only. Sales tax where applicable. *Great Model Railroads* 2020 will arrive in October 2019.



P35432

MORE ON THE WEB

➤ Gregory Wiggins' photo of his HO scale Rutland layout is this month's wallpaper. Download it free at ModelRailroader.com

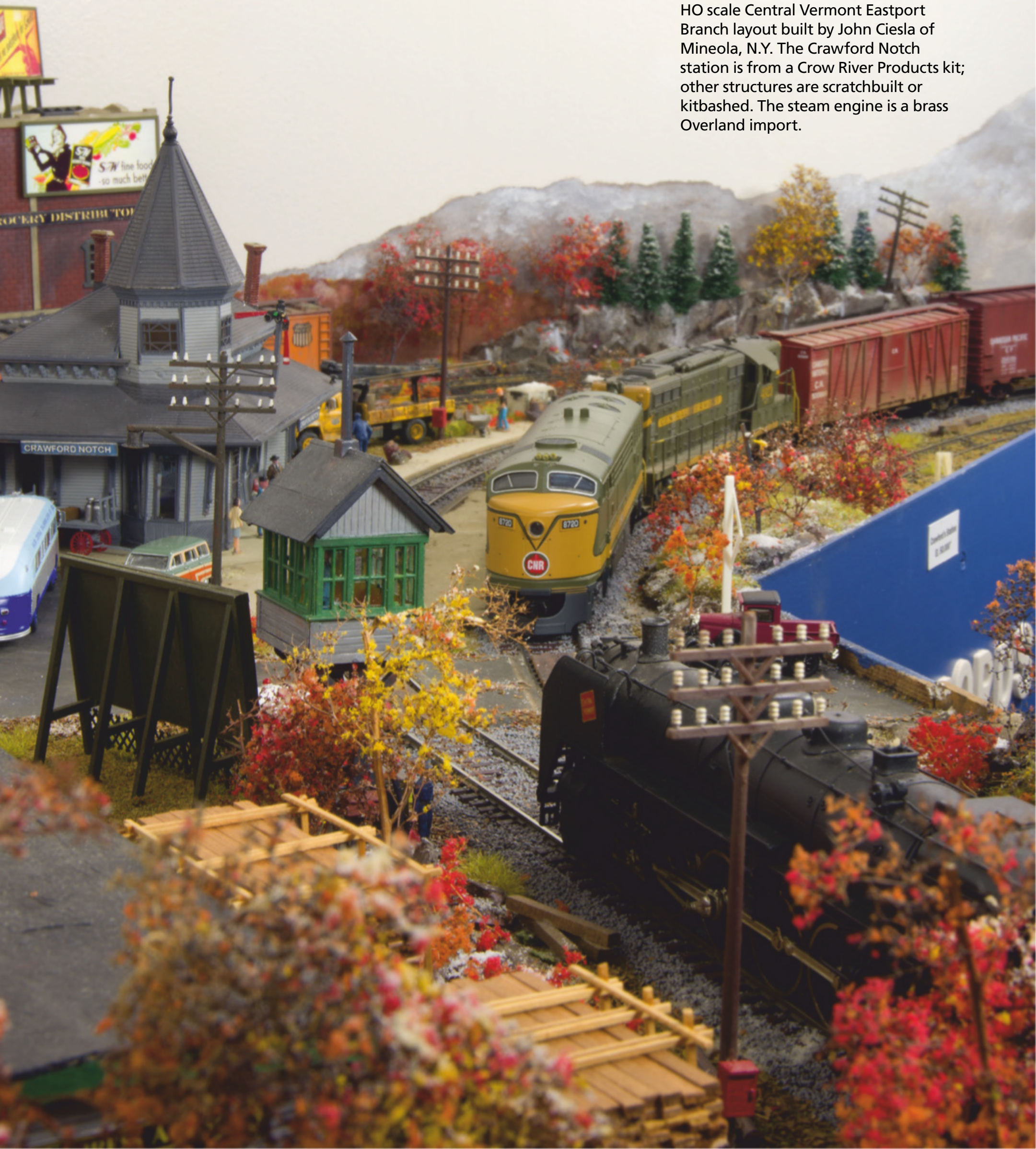


Rutland RR no. 208, an Alco RS-3, passes Duffy's Coal as it approaches the north end of the Rutland, Vt., freight yard. Gregory Wiggins of Plymouth Meeting, Pa., photographed the scene on his HO scale Rutland layout. The locomotive is an Atlas model, and the boxcar is by Funaro & Camerlengo. Duffy's Coal is scratchbuilt.

Send us your photos

Trackside Photos is a showcase for the work of *Model Railroader* readers. Send your photos (digital images 5 megapixels or larger) to: *Model Railroader*, Trackside Photos, P.O. Box 1612, Waukesha, WI 53187-1612; or upload them to <http://fileupload.kalmbach.com/contribute>. For our photo submission guidelines, contact associate editor Steven Otte at sotte@mrmag.com.

At Crawford's Notch, a Central Vermont freight pulled by leased Canadian National power waits in the hole for the eastbound CV passenger train. The scene is part of the modular HO scale Central Vermont Eastport Branch layout built by John Ciesla of Mineola, N.Y. The Crawford Notch station is from a Crow River Products kit; other structures are scratchbuilt or kitbashed. The steam engine is a brass Overland import.





White Pass & Yukon no. 70, one of four Baldwin class 70 Mikados built for the railroad between 1938 and 1947, rumbles through the British Columbia countryside with a northbound passenger train. Mike May of Durango, Colo., photographed the action on his HOn3 WP&Y layout.

Baltimore & Ohio train No. 97, pulled by class Q-4 Mikado no. 4626, has a clear signal as it pulls through the wye at Point of Rocks, Md. The business car on the other leg belongs to the company president, who's fishing in the nearby Potomac River. Bruce Elliott of Green Bank, W.Va., set up and shot the photo on the HO scale Pocahontas County Society of Model Engineers club layout. The structures were scratchbuilt from prototype photos.





102 Realistic Track Plans

Small, medium, and large plans for great layouts

From the pages of *Model Railroader* with COMPREHENSIVE descriptions

HOW TO

Design your own detailed drawings

Build sectional benchwork

Make templates for turnouts

Keep grades from becoming too steep

PLUS

Charts for clearances and turnouts in N, HO, and O scales

How much railroad

P35580

BACK BY POPULAR DEMAND

Designs for Every Size, Shape, & Scale

From the publisher of *Model Railroader* magazine, **102 Realistic Track Plans** organizes the magazine's best layout designs into one spectacular collection. In addition to track plans, the issue features helpful planning articles including:

- Introduction to track planning.
- Curves, turnouts, and track.
- Layout schematics.
- Figuring grades and clearances.
- Structures, scenery, and aisles.
- How to convert track plan scales.

There's something for everyone in various sizes, shapes, and scales!

Order now at
KalmbachHobbyStore.com/MR10

\$1 Off + Free Shipping

Offer expires 6/30/19 at 11:59 p.m. CT. Free standard shipping to U.S. addresses only. Sales tax where applicable. 102 Realistic Track Plans will arrive in June 2019.



Your Source For:

- Craftsman Kits
- Laser-Cut Detail Items
- Custom Scale Structures
- Laser-Cutting Services

Items in All Scales

www.Rail-Scale-Models.com



FIFER HOBBY SUPPLY LLC
 Your Local Internet N Scale Hobby Shop
WWW.FIFERHOBBY.COM



CHOOCH
 Great Scenery
www.ChoochEnterprises.com

Touch Toggles *Elegant*

Run track circuits, Tortoises, twin-coils, servo motors, and more with a touch!



See our website for a video introduction

Made in the USA

www.berretthillshop.com



www.RiverPointStation.com

River Point Station Division of ITI
 115 Maple Street, Warwick, RI 02888-2130 USA
 Tel. (401) 467-6907 rps-info@riverpointstation.com
 Available Worldwide at Hobby Stores
 Dealers may order from IMT or Walthers

ALL ELECTRONICS CORPORATION

Electronic Parts and Supplies for Your Project.

www.allelectronics.com

Ron's Books

The largest railroad book seller with over **6,000** titles and over **475** DVDs!
 Free shipping on orders over \$25 in the U.S. Send \$3 for a catalog.

P.O. Box 714
 Harrison, NY 10528
 914-967-7541
ronsbooks@aol.com

Online catalog at ronsbooks.com

"YOUR DCC SHOP"

Litchfield
STATION

We Carry, Digitrax, NCE, Train Control Systems (TCS), SoundTraxx, ESU LokSound, Speakers, Tam Valley Depot (TVD), & More!

DCC Uncoupler NOW AVAILABLE

www.LitchfieldStation.com
sales@litchfieldstation.com
 623-298-7355

HO & N Scale Model Train Manufacturer



WWW.SCALETRAINS.COM



MODERN Buildings in HO!
(337) 436-8481
www.summit-customcuts.com



MICRO-TRAINS LINE
www.Bradleytrains.com
TERRY@BRADLEYTRAINS.COM
Quality N & Z Gauge Trains
Great Prices, Fast Shipping
SPECIAL DISCOUNT 10% OFF
USE OFFER CODE BTE2018
BTE Bradley Trains & Electronics BTE



DON BLACK WE BUY & SELL BRASS
VISIT US ONLINE
WWW.DONBLACK.COM
HUNDREDS OF PICTURED MODELS TO CHOOSE FROM
Don Black 119A Bernhurst Rd New Bern NC 28560
Toll Free 1-866 HO BRASS

BACKDROPS
HO, O, N Scales
WWW.TRAINJUNKIES.COM
-----Up to 100 Feet Long-----



HO SCALE
Newest!
40-Ton ARA Trucks
Tahoe Model Works
TEL: 775-600-9992 Send SASE for flyers
PO Box 3935 • Carson City, NV 89702
www.resincarworks.com/tahoe.htm



Valley Trains N Hobbies
Specializing in N scale, locomotives, rolling stock, scenery, DCC & decoders! We also have HO!
See us at Greenberg Shows in Edison, NJ.
www.valleytrainsnhobbies.com



Lifeless signals are boring.
We have products to change that!
LOGIC RAIL™
"Sophisticated Model Railroad Electronics"
Order from our online store or call us!
21175 Tomball Pkwy Phone: (281)251-5813
Suite 287 <http://www.logicrailtech.com>
Houston, TX 77070 info@logicrailtech.com

FREIGHT CAR PARTS
80 + PARTS (HO)
300 + DECALS (ALL SCALES)
200 + HO WINDOWS & DOORS
Catalog call 336-329-9038
www.TICHYTRAINGROUP.com



Rix Products Pikestuff
Web site: www.rixproducts.com
Send LSASE for new 20 page catalog.
3747 Hogue Rd. Evansville In. 47712
Phone (812)426-1Rix FAX (812)423-3174
Model Railroad Structures & Accessories



THE TRAINMASTER, LLC
Detailed Craftsman Kits
www.TheTrainMaster.com
Pursuing Excellence

GOODDEALSDCC
www.gooddealsdcc.com
HOME OF THE PROGRAMMER TEST TRACK SYSTEMS
DC & DCC Compatible All Scales Available Custom Orders Dealer Inquiries Welcome
Gary Cohn
106 Center Street
Fox River Grove, IL 60021
gary@gooddealsdcc.com

railroadbooks.biz
has 1,900+ new titles, all at discount!
Domestic shipping FREE over \$63
E-mail for free printable PDF list.
chuck@railroadbooks.biz
www.railroadbooks.biz
ORDERS:
U.S. (800) 554-7463
BUSINESS & INTERNATIONAL:
+01 (812) 391-2664
SEND:
\$2 for paper book list.
International Service.
Book Search.
PO Box 4, Bloomington, IN, 47402-0004 U.S.A.

HO/N/O signs, billboards, laser-cut structures and much more from:
Blair Line, LLC
PO Box 1136, Carthage, MO 64836
www.blairline.com

ALLEGHENY SCALE MODELS
LOCOMOTIVES AND ROLLING STOCK
HO, O, S, N, and Large Scale Out of Production Models
Sales, Consignments, Estates, Appraisals
www.alleghenyscale.com
phone: 908-684-2070
oscale@alleghenyscale.com
470 Schooley's Mtn. Rd.
Suite 8-117
Hackettstown, NJ 07840

Model Scenery & Structure
WINSTON SALEM, NC
Call anytime 24/7
845-797-9533
custom layouts
design build install
www.modelsceneryandstructure.com

Custom Layout Building
Layout Design
By Lance Mindheim
www.shelflayouts.com
301-404-8164



TK TRAINS HOBBY
Phone 740-633-6607
HO, N, O & G Trains, Track, Scenery, Accessories and Much More!
We have Walthers, Athearn, Spectrum, Branchline and many others!
Visit us on line for great savings!
www.tandkhobby.com



LED LIGHTS WITH DCC DECODER
For N & HO Passenger Cars
www.ModelTrainTechnology.com

After You've Looked at the Others...
Progressive pmd Model Design
MUSEUM QUALITY - CUSTOM LAYOUT MODELING SERVICE
WHAT CAN WE BUILD FOR YOU?
WWW.PROGRESSIVEMODELDESIGN.COM
211 RocBaar Drive, Romeoville, IL 60446
(815) 886-9010 FAX: (815) 886-9076
ULTIMATE MODEL MAGIC™

S Scale Trains
22 steam & diesel engines, 25 freight cars, passenger and cabooses. The most realistic track made. 36 year reputation.
Send \$7 for 68 pg catalog.
www.americanmodels.com
Phone 734-449-1100
AMERICAN MODELS
11770 Green Oak Industrial Dr.
Whitmore Lake, MI 48189



Artisan Home Railroads
Building Quality since 1988
ALL PROJECT TYPES FROM BENCHWORK TO SCENERY
drbozanovs@gmail.com
815-883-9173

Classified Advertising

Schedule of Events Rate: \$35 per issue (45 word maximum). Ads will contain the following information about the event: state, city, sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or telephone number and/or email of person to contact for information. Name, daytime telephone number and street address of the person providing the information is also required but need not be included in the ad. Unless otherwise requested, ads will be published in the issue month that the event occurs in. Additional months are available at the \$35 per issue fee. Please specify issue date(s).

Word Ad Rates; per issue: 1 insertion — \$2.03 per word, 6 insertions — \$1.89 per word, 12 insertions — \$1.77 per word. \$30.00 MINIMUM per ad. To receive the discount you must order and prepay for all ads at one time. Count all initials, single numbers, groups of numbers (i.e. 4-6-0 or K-27), names, address number, street number, street name, city, state, zip, phone numbers each as one word. Example: John A. Jones, 2102 South Post St., Waukesha, WI 53187 would count as 10 words.

For MR's private records, please furnish: a telephone number and, when using a P.O. Box in your ad, a street address. *Model Railroader* reserves the right to refuse listing.

All Copy: Set in standard 6 point type. First several words only set in bold face. If possible, ads should be sent typewritten and categorized to ensure accuracy.

Send your submissions to: *Model Railroader* — Classifieds 21027 Crossroads Circle, P.O. Box 1612 Waukesha, WI 53187-1612 Toll-free (888) 558-1544 Ext. 440 Fax: 1-262-796-0126 E-mail: onlineclassads@kalmbach.com

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

CLOSING DATES: Jan 2019 closes Oct. 22, Feb. closes Nov. 8, March closes Dec. 17, April closes Jan. 21, May closes Feb. 18, June closes Mar. 25, July closes Apr. 22, Aug. closes May 17, Sept. closes June 21, Oct. closes July 22, Nov. closes Aug. 16, Dec. closes Sept. 23.

Schedule of Events

CA, SAN CARLOS: European Train Enthusiasts (http://www.ete.org) EUROWEST at Hiller Aviation Museum, San Carlos Airport, 601 Skyway Road, Zip: 94070. July 27-28, 2019, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Layouts, clinics, vendors, raffle. Admission (http://www.hiller.org) includes Air Museum, free parking. Contact Dave Cowl: eurowest@ete.org

FL, DELAND: 68th FLORIDA RAIL FAIR. Volusia County Fairgrounds (Tommy Lawrence Arena), 3150 E. New York Ave. (SR 44 and I-4). Saturday, July 13, 2019, 9:00am-4:00pm. Adults: \$7.00, under 12 free. Operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954, email: rrshows@aol.com

IL, GALESBURG: Galesburg Railroad Days Train Show Galesburg High School Fieldhouse, 1242 W. Dayton St. June 22-23, 2019, Saturday 9:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00, under 12 free. Free parking and shuttle service from parking to entrance. Food & drinks available. Info: 309-221-3909 E-mail: cobra@grics.net

IL, ST. CHARLES: 43rd Annual Kane County Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, June 9, 2019, 10:00am-3:00pm. Admission: \$6.00 w/tax. Tables \$60.00. For information: 847-358-1185, RussFierce@aol.com or www.RRShows.com

IN, FORT WAYNE: Garrett Model Railroad Club & RxR Mania - Model Train & Toy Show and Sale at 2000 N. Wells Street, Zip 46808. (Old YWCA) Saturday October 19, 2019, 9:00am-3:00pm. Adults \$5.00, under 12 free. \$20.00 per table, 5+ tables \$15.00 each. Info: www.RxRMania.com or 260-715-2519.

KS, KANSAS CITY AREA: Turkey Creek Division Train Show/Swap Meet. SM North HS cafeteria, 7401 Johnson Dr. Overland Park, Zip 66202. Saturday, July 27, 2019, 8:00am-3:00pm. Layout tours 3:30pm-8:30pm. Vendors registrants contact Larry Diehl 816-804-0152, ldiehl066@gmail.com or www.tcnmra.org

MS, GULFPORT: 615 Pass Road, Zip: 39507. November 9-10, 2019. Saturday 9:00am-5:00pm, Sunday 10:00am-5:00pm. 2 Days with 20,000 sq. ft. Indoor Display Space, 20,000 sq. ft. of Outdoor Trains. www.MCMRCM.org, 228-284-5731.

NE, DESHLER: Train Show & Open House, June 29-30, 2019. Thayer County Activity Center, 4th & Race St. Hours: Saturday, 9:00am-5:00pm, Sunday 10:00am-4:00pm. Special clinics, layouts, and manufactures. Admission \$6.00, under 12 FREE. Extended hours at Spring Creek Model Trains. 304 E. Bryson Ave. Details: www.springcreekmodeltrains.com

PA, LANCASTER: Brass Expo & Customer Craftsman Models 2019. Wyndham Lancaster Resort & Convention Center (Lancaster Host), 2300 Lincoln Hwy. E (Route 30), Lancaster, PA. November 23-24, 2019. www.brassexpo.com/ 724-285-3090

WA, BREMERTON: Bremerton Northern Model Railroad (100% NMRA Club) Annual All Scale Swap Meet. NEW LOCATION: Kitsap Mall, North End next to Kohl's, 10315 Silverdale Way NW, Silverdale, WA. June 15, 2019, 10:00am-4:00pm. Admission - Donation. POC: Bill Hupe, 360-621-5041, whopay@tscnet.com

WA, PORT ANGELES: North Olympic Peninsula Railroaders' 20th Train Show & Swap Meet. Clallam County Fair Grounds. September 21-22, 2019. Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. FREE Admission & Parking. Several operating layouts. Scales Z to G & beyond welcome. Tables \$20.00 Contact stevenstripp@juno.com

WI, LA CROSSE: Rail Fair, Copeland Park, Rose & Clinton Streets. July 27, 2019, 10:00am-4:00pm. Admission \$5.00, under 12 free. Railroad Show, Sale & Exhibition. Model Toy & Antique Trains & Memorabilia, Railroad Exhibits & Displays. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383

WI, WAUPACA: WAMR 30th Strawberry Fest Model Railroad Show & Model Contest. Waupaca Recreation Center, School/State/Badger Sts. June 15-16, 2019, Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm. FREE. Many layouts/vendors/swap tables. Roger Hildebrandt, 7693 Evergreen Dr. East, Waupaca, WI 54981, 715-258-8218 or check club website: www.wamrltd.com

Schedule of Events

Wanted-N Scale

#1 ESTATE BUYER OF N SCALE COLLECTIONS! We buy all makes and types - including Brass & European! Even Nn3! Call us TOLL FREE: 1-866-462-7277. Don Black 119 Bernhurst Road, New Bern, NC 28560. E-mail: don@donblack.com

BUYING N scale train collections, large or small. Call Tom 630-443-9137.

CANADIAN TRAIN COLLECTIONS AND ESTATES: Buying entire collections anywhere in Canada or the USA. Brass, plastic, engines, cars, buildings, memorabilia - everything! Call Don 403-585-2772. E-mail: modeltrains@shaw.ca

Wanted-HO Scale

#1 A+ ESTATE BUYER OF ALL TRAIN ESTATES- Brass Pieces & Collections wants your material. Including all types of Brass, old trains, kits, plastic, diecast, buildings, etc.- we buy it all. Buildings and estates included. We seek better items for personal collections. Call us before you sell for our offer as we pay the highest prices. Call Don Black toll free 1-866-462-7277. Don Black, 119 Bernhurst Road, New Bern, NC 28560. E-mail don@donblack.com

\$1,000,000 CASH AVAILABLE- For your collection! Brass, Plastic, Memorabilia, we buy it all. Call us 352-292-4116 or mail your list to: BRASSTRAINS.COM, 10515 SE 115th Ave., Ocala, FL 34472. E-mail: dan@brasstrains.com

BRASS PASSENGER CARS; Craftsman's kits; LIRR brass and plastic. Challenger Broadway Limited; Coach Yard PRR. Please call Bob 212-874-6569 or e-mail grandt7@yahoo.com

BUYING HO train collections, large or small. Also brass. Call Tom 630-443-9137.

CANADIAN TRAIN COLLECTIONS AND ESTATES: Buying entire collections anywhere in Canada or the USA. Brass, plastic, engines, cars, buildings, memorabilia - everything! Call Don 403-585-2772. E-mail: modeltrains@shaw.ca

MUSEUM QUALITY HO SCALE: Model of Tom Thumb, early Steam Locomotive located in the B&O Railroad Museum Located in Baltimore MD. You ship to my address at your cost, will pay up to \$200.00 US dollars for finished product in my hands. Call Don at 815-477-9513 late AM., for more details and shipping arrangements.

Wanted-O Tinline

BUYING O and Standard gauge collections. Lionel, Flyer and all others. Call Tom 630-443-9137

Wanted-Large Scale

BUYING G SCALE: and Large Scale Train collection. Call Tom 630-443-9137.

Wanted - Miscellaneous

ALL SLOT CARS WANTED. Any kind, any condition. Top dollar paid. PAUL at 586-752-3675. E-mail: slotcarguy@slotcarguy.com

ALL TRAIN COLLECTORS & MODELERS- We need more trains to supply our ever expanding group of interested buyers. We buy HO & N Scale Trains - Brass, Marklin, Rivarossi, Atlas, Kato, MicroTrains, etc. as well as better trains in all scales. We also purchase store inventories. We also can auction your trains with rates starting as low as 15%. We travel extensively all over the US and Canada. Send us your list today or for more information see www.trainz.com/sell Trainz, 2740 Faith Industrial Dr., Buford, GA 30518. 866-285-5840, Scott@trainz.com Fax: 866-935-9504

MODEL AUTOMOBILE AND TRUCK KITS WANTED- unbuilt or built, any size collection. Fred Sterns, 48 Standish, Buffalo, NY 14216. 716-838-6797. email: fsterns@aol.com

Custom Painting & Building

CUSTOM BUILDING & PAINTING, kit building, kit-bashing & scratchbuilding. Locomotives, rolling stock, structures & more. 12 Penny Lane, Newark, DE 19702, 302-229-6010, www.tmbcustommodels.com

CUSTOM LAYOUT BUILDING & LAYOUT DESIGN. Specializing in fine scale and prototype based projects. The Shelf Layouts Company, Inc. www.shelflayouts.com 301-404-8164

KIT BUILDING-SCRATCH BUILDING: Engines, structures, rolling stock, quality work. Reasonable. 585-319-5530 or email: valhow4aol.com

LEADING MODEL RETAILERS

Retail Directory spaces are sold on a year's basis at \$654 per year (payable in advance) or at \$60 per month (billed to established accounts for one year minimum); also for six months at \$353 (payable in advance). Ads will be set in standard listing typography. All insertions must be consecutive and may be invoiced if you have credit established with us. No mention of mail order business permitted. CLOSING DATES are listed in the "Schedule of Events" section. For more information call 1-888-558-1544, ext. 440.

ALABAMA • Enterprise
Southern Alabama's largest train store. We carry most major manufacturers in N, HO, HOn3, O & G scales. Tues - Fri 10am to 5pm and Sat 10am to 2pm.
highcountryhobbies@gmail.com
www.highcountryhobbies.com
HIGH COUNTRY HOBBIES
206 South Main St. 334-489-4558

ALASKA • Anchorage
www.anchoragelhouseofhobbies.com
Alaska's best hobby supplier since 1964.
Two stories, 6,300sf, 1st floor all R/C,
2nd floor general hobbies, plastics, trains,
slot cars, telescopes & more!
ANCHORAGE HOUSE OF HOBBIES
2803 Spenard Rd. 907-277-7778

ARIZONA • Apache Junction
New Store! Arizona's premier hobby shop.
Full scale, all service hobby shop. Trains,
planes, cars, boats and R/C. Special orders.
Open Mon - Sat
OBIES TRAINS
2114 West Apache Trail #11 480-203-1796

ARIZONA • Avondale
DCC Systems, Decoders, Layout Supplies
Professional Installations G to Z scales
Mon - Fri 8:00-5:00, Sat 8:00-Noon
Online Store: LitchfieldStation.com
E-mail: Sales@LitchfieldStation.com
LITCHFIELD STATION
1412 N. Central Ave., Ste. D 623-298-7355

ARIZONA • Phoenix
Narrow gauge almost exclusively.
On3 - Sn3 - HOn3 - On30.
Kits, parts, brass & books.
Mon-Fri 8-12, 1-5, Sat 8-12.
CORONADO SCALE MODELS
1544 E. Cypress St. 602-254-9656

ARIZONA • Tempe
Family owned, full service. Special orders
welcomed. Athearn, Lionel, Bachmann, Digitrax
& Soundtraxx dealer. Plastic models, books,
magazines, paints, building materials, scenery,
& more. Free classes and clinics.
HOBBY DEPOT
216 W. Southern Ave. 480-968-1880

ARKANSAS • Jacksonville
Headquarters for scale hobbies. Models;
N-HO-O trains; tools; paint, etc.
Discounts & special orders.
Open 10-6, closed Sundays and Wednesdays
RAIL & SPRUE HOBBIES
1200 John Harden Dr. 501-982-6836

CALIFORNIA • Atascadero
All scales G to Z. Special orders welcome. Midway LA & SF. US 101-US 41, easy access.
Open Tue - Sat: 10-5, Sun - Mon: By Appointment.
E-mail Anita at: anita@cctrains.com
Web site: www.centralcoasttrains.com
CENTRAL COAST TRAINS
7600 El Camino Real # 3 805-466-1391

CALIFORNIA • Bellflower
Friendly Hobby Store! We carry N, HO, HOn3,
S, Sn3. RailMaster, Athearn, Scaletrains.com
and more. DCC: Soundtraxx, LokSound,
Digitrax dealer. Special Orders Welcomed!
www.railmasterhobbies.com
RAILMASTER HOBBIES
9812 Belmont St. 562-867-5627

CALIFORNIA • Burbank
All scales G through N, collectibles old & new.
Authorized LGB, Lionel, MTH & Märklin dealer.
One of the most complete train stores in
So. Calif. UPS worldwide shipper.
Visit our website at www.trainshack.com
THE TRAIN SHACK
1030 N. Hollywood Way 800-572-9929

CALIFORNIA • Concord
Largest selection in the East Bay. 93 foot HO
layout. Buy - sell - trade - consign - repairs -
detail parts in all scales. Lionel.
Discount prices & friendly service.
Website: www.just-trains.com
JUST TRAINS
5650 Imhoff Dr. 925-685-6566

CALIFORNIA • Costa Mesa
Lionel, AF, LGB, HO, N, & Z Gauge.
New, used, & collectibles.
Buy, sell, trade & repair.
Tue - Fri 12-7, Sat 9-5, Sun 11-3.
THE TRAIN CROSSING
1113 Baker Street, Ste. F 714-549-1596

CALIFORNIA • Hemet
We carry Lionel, MTH, HO, N, Atlas, Walthers,
Ross switches, Gargraves & Peco.
45' long in-store layout. Open 7 days.
www.dynamicohobbies.net
DYNAMIC HOBBIES
811 East Florida Avenue 951-925-9331

CALIFORNIA • Hollister
Model planes, car, ships & figures. Model train
scales: Z, N, HO, O & G. Paints, tools. R/C &
parts, incl. service. Craft & educational kits,
supplies, products. ESU Lok Sound Dealer -
clinics available. Tue - Sat 11-6; Sun 12-4
B.C.T. HOBBY & CRAFTS
201-C McCray St. 831-635-0537

CALIFORNIA • Lodi
Z - N - HO - HO_{N3} - O27 - On30
Locos - Rolling Stock - Digital - Structures
Landscaping Material & more.
www.Rogersrailroadjunction.com
See website for virtual tour.
ROGER'S RAILROAD JUNCTION
105 S. Sacramento St. 209-334-5623

CALIFORNIA • Pasadena
Model rail specialists since 1951.
LGB, Lionel, O, S, On3, HO, HO_{N3}, N, Z.
Complete stock of brass imports, new & used.
Books, tools, structures, detail parts.
Open 7 days. www.thewhistlestop.com
THE ORIGINAL WHISTLE STOP INC
2490 E. Colorado Blvd. 626-796-7791

CALIFORNIA • Roseville (Sacramento)
Exclusively model trains since 1989.
Athearn, Kato, MDC, Lionel, Atlas, LGB,
Märklin, Brass Imports, books, detail parts.
Everyday low prices. Open 7 days.
www.rhobbies.com
RAILROAD HOBBIES
119 Vernon St. 916-782-6067

CALIFORNIA • San Diego (La Mesa)
Exclusively trains. Craft kits,
detail parts, scratch supplies, books.
Ride the trolley to Reed's.
Open Mon through Sat 10-6; Sun 12-4
reeds@abac.com www.reeds-hobbies.com
REED'S HOBBY SHOP
8039 La Mesa Blvd. 619-464-1672

CALIFORNIA • Santa Clara
100% trains. Discount prices. Super selection
Monday 9:30am-3:00pm
Tuesday - Saturday 9:30am-6:00pm
Closed Sunday, Dennis Cole E-mail:
dcole4449@att.net.
THE TRAIN SHOP, LLC
1829 Pruneridge Ave. 95050 408-296-1050

CALIFORNIA • Westminster (Orange Co.)
World Famous
Model/Toy Trains Only
7,000 sq. ft. Super Center
www.arniestrains.com
ARNIE'S MODEL TRAINS
6452 Industry Way 714-893-1015

CALIFORNIA • Yuba City
A full service model train store. Large
inventory, HO, N, O & O27 Tinplate.
Books, videos, collector & gift items.
Repair service. We buy old toy trains.
www.westerndepot.com
THE WESTERN DEPOT
1650 Sierra Ave. #203 530-673-6776

COLORADO • Denver (Lakewood)
Caboose, sharing our passion for trains
since 1938. North America's largest full-
service train store, and your go-to source for
everything model railroading. Open Daily or at
MyCaboose.com
CABOOSE
10800 W Alameda Avenue 303-777-6766

CONNECTICUT • Cos Cob
HO, N, Lionel. Lionel authorized dealer
& repair. Plastic, wood kits, rockets,
tools, structural & diorama supplies.
Special orders welcome.
ANN'S HOBBY CENTER
405 E. Putnam Avenue 203-869-0969

CONNECTICUT • Manchester
All scales Z, N, HO, O, O-27, G, #1, MTH,
Lionel, Märklin, LGB, Walthers, Aristio, Trix, etc.
Digital Sales-Install. Large operating layouts.
Mon-Wed 10-6 Th-Fri 10-9 Sat-Sun 10-6
www.timemachinehobby.com
TIME MACHINE HOBBY - NEW ENGLAND HOBBY SUPPLY
71 Hilliard St. 860-646-0610/Fax-645-0504

CONNECTICUT • Winsted
A hobby shop for modelers by modelers.
From hard to find to latest & greatest.
Free classes & clinics / multi scales.
Large store of quality products @ fair prices.
Friendly service: www.rhobbysupply.com
RR MODEL & HOBBY SUPPLY
100 Whiting Street 860-379-3383

CONNECTICUT • Wolcott
Exclusively brass models. One of the
largest selections in the country. All scales.
Buy, consign, trade - entire collections bought.
Mon - Fri 9 - 4
www.thecaboose.com
THE CABOOSE
5 Mohawk Drive 203-879-9797

DELAWARE • Ocean View
No sales tax at the Delaware seashore.
Lionel new & used . . . also Atlas, Bachmann,
MTH. We buy used trains. Auth. Lionel repairs.
Large inventory of used HO trains.
Open Tues - Sat 11-4:30, Closed Sun & Mon
SEASIDE HOBBIES
15 Daisey Ave. 302-539-1601

FLORIDA • Cape Canaveral
Lionel, American Flyer, MTH
on the internet.
www.traincity.com
www.choochooauctions.com
TRAIN CITY, INC. - CHARLES SIEGEL
387 Imperial Blvd., Ste. 2 321-799-4005

FLORIDA • Ft. Myers
N, HO, O scale model railroading.
Paint, tools, scenery, accessories,
& plastic models.
Mon - Sat 10:00am-6:00pm; Closed Sun
www.metrotrainsandhobbies.com
METRO TRAINS & HOBBIES
12951 Metro Parkway 239-332-0422

FLORIDA • Melbourne
The Space Coast's Model Train Shop.
Z thru G scales. N scale our specialty!
Digitrax, Kato, Lionel & Walthers Dealer.
Atlas, IM, BWL, Piko, LGB & Rokuhan.
Mon-Sat 10am-5pm Email: trftrains@cfl.rr.com
TRF TRAINS & MNT HOBBIES
2715 N. Harbor City Blvd., #10/11 321-241-4997

FLORIDA • Miami
Shop "Warehouse Style" for N to G.
MTH, Lionel, Kato, LGB, Broadway Ltd., Atlas,
Walthers at discount prices. Open Mon - Sat
10am-5pm, Open Sunday Nov - Jan 10am-
1pm. Email us at rtrtrains@aol.com
READY TO ROLL
831 NW 143rd Street 305-688-8868

FLORIDA • Ocala
HO, N trains & accessories
Visa, MC, AX, Discover
Open Mon - Fri 10-5:30, Sat 9-4
Call for Sunday hours.
ROB'S HOBBY WORLD
8585 SW Hwy. 200 352-854-2799

FLORIDA • Pensacola
Competitive prices, friendly service.
All makes & models, trains & accessories.
Tue-Sat, 9:00am-5:00pm.
www.trainbyjohnson.com
Old Palafox St. at 10 Mile Rd.
TRAINS BY JOHNSON
10412 N. Palafox Hwy. 850-478-8584

FLORIDA • Pinellas Park
Same Great Store, New Location!! Huge
inventory! Running Layouts! Your one-stop
shop for trains, toys and other modeling needs.
Daily 10-6, Sat 10-6, Sun 11-5. www.hrtrains.com
HR TRAINS & TOYS
7900 49th St. N 727-526-4682

FLORIDA • Port Orange (Daytona Beach)
Your Southern Connection for Quality Products!
Featuring O, HO, N, Woodland Scenics, MTH
MegaStation & National Service Center. Breyer
Horses. Mon - Fri 9:30-5;
Sat 9:30-4. www.roundhousesouth.com
ROUNDHOUSE SOUTH
4611 S. Ridgewood Ave. 386-304-7003

FLORIDA • Tampa Bay - Pinellas Park
2600 sq. ft. Showroom. Lionel & MTH Dealer
NEW, USED, BUY/SELL * All Gauges Z thru G
Over 6,000 Parts. Repair Services. Trains,
Track, Sets, Scenic Supplies. Tues - Sat 10-6
www.zitniktrains.com
ZITNIK TRAINS
5193 73rd Ave. N. 727-201-9668

GEORGIA • Atlanta (Lilburn)
HO, Atlas, Bachmann, MTH
Complete scenery supplies.
Operating HO layout and 400 sq. ft. layout.
HUGE selection in a 11,000 sq. ft. store.
www.legacystation.com 800-964-8724
LEGACY STATION TRAINS
4153 Lawrenceville Hwy., #12 770-339-7780

GEORGIA • Buford (Atlanta)
Quality, Selection & Service.
Discount pricing in all scales.
Mon - Sat 11-6, Sun 1-6
Across from NS Mainline in Downtown Buford
Web store at: www.trainmastermodels.com
TRAINMASTER MODELS
601 East Main St. 678-546-3600

ILLINOIS • Des Plaines
N, HO, S, O, G Std. & Narrow gauge too.
Lots of scratchbuilding parts and stuff too.
Brass books & DVDs. Close to O'Hare.
M, T, W, F 10-6; Th 10-8; Sat 9:30-5; Sun 11-5
Web Store: www.desplaineshobbies.com
DES PLAINES HOBBIES
1524 Lee St. (Mannheim Rd.) 847-297-2118

ILLINOIS • Downers Grove
HO and N Scale Model Trains and Accessories
Two Blocks South of Metra Station
at Maple Ave.
www.timberlinetrainshop.com
TIMBERLINE TRAIN SHOP, LTD.
5228 Main St 630-324-6136

ILLINOIS • Elgin
HO & N Scale
Scratch building supplies, paints, tools and
much more. We special order. Digitrax dealer.
www.bgtrainworld.com
B & G TRAIN WORLD
829 Walnut Ave. 847-888-2646

ILLINOIS • Geneseo
Scale Trains, Models & Hobby Supplies
Specializing in Midwest Roads
Visit our website at GRHobbies.com
or call for directions and hours.
GREEN RIVER HOBBIES
119 W. Exchange St. 309-944-2620

ILLINOIS • Marion
Full-Line Hobby Shop.
HO & N scale locomotives, scenery,
plastic models, R/C, tools, paints, and more.
Open Tue - Fri 1:30-6:30pm, Sat 10am-4pm
CHUCK'S DEPOT
1913 W. Rendelman St. P/F 618-993-9179

ILLINOIS • Maryville
Large 60' x 70' customer operated DCC
HO layout. Located 17 miles from St. Louis
near I-70/I-55 exit 15B. For shop hours/maps
pictures, layout construction times, train
running see www.k-10smodeltrains.com
K-10'S MODEL TRAINS
19 Schiber Court 618-288-9720

ILLINOIS • Mundelein
Specializing in trains, HO, N, O, G, Lionel.
Books and videos. Northern IL railfan
headquarters. Closed Monday. Please call for
other hours. Fax 847-949-8687.
ronhobby@aol.com
RON'S MUNDELEIN HOBBIES
431 N. Lake St. (Rt. 45) 847-949-8680

ILLINOIS • Springfield
HO / G / N.
Special orders / discount prices.
Display layouts / clinics / assistance.
Call for hours.
CASTLE TRAINS & TREASURES
4782 Old Jacksonville Rd. 217-793-0407

INDIANA • Bremen
Small town, Large shop, O, HO & N scales.
Discounts. Operating HO & N layouts.
Large selection- since 1961.
Mon, Tues, Thur, Fri 10-6; Sat 10-4.
BREMEN HOBBIES
308 N. Bowen Ave., SR 331 574-546-3807

INDIANA • Indianapolis
"An old fashion train shop." HO, N, O27.
Brass, books, magazines, detail parts, paints &
accessories. West of
Shadeland Ave. on E. Washington St.
Mon-Sat 10:30-6. www.waynestrains.biz
TRAIN CENTRAL
1651 N SHADELAND AVE 317-375-0832

IOWA • Urbandale
N, HO, & O
Lionel, MTH, Atlas
Exit #129 I-80/I-35, 2 miles south
Iowa's premier Model Railroad store
Open 7 days a week.
HOBBY HAVEN
2575 86th Street 515-276-8785

KANSAS • Overland Park (KC Area)
O, S, HO, N, Z & G Scale
Lionel, MTH, A/F, Märklin, LGB & more!
New, Used & Vintage. Extensive scenery line.
Repair, custom work & layouts.
www.fredstrainshop.com
FRED'S TRAIN SHOP
9322 W. 87th St. 913-383-3500

MAINE • Yarmouth
Specializing in HO trains. Custom weathering, painting,
DCC, scenery, diorama building, structure building.
Between Falmouth and Freeport on Route 1. Tues, Thur,
Fri 10-5, Wed. 10-7 Sat. 9-4 (Call ahead Mon) www.
mainemodelworks.com
MAINE MODELWORKS
374 US Route One, Unit 2 207-781-8300

MAINE • York
Model trains & slot cars. Most scales available.
Accessories & services. New, pre-owned &
vintage. Working layout! Open 7 days 10-5
www.yorkvillagemarketplace.com
YORK VILLAGE MARKETPLACE
891 U.S. Route 1 207-363-4830

MARYLAND • Annapolis
If we don't have it, we'll get it! LGB, Woodland
Scenics, Walthers Dealer, Pola, Lionel,
Bachmann, Spectrum, Piko and USA Trains.
Mon - Sat 10-6
Full line Kalmbach! shopstarhobby.com
STAR HOBBY
1564 Whitehall Rd. 410-349-4290/4291

MARYLAND • Baltimore/Cockeysville
Model RR headquarters since 1913.
Huge selection HO & N Trains & accessories;
Lionel & MTH O Gauge. All at discount prices.
Mon - Fri 9:30-5; Sat 9-5.
www.modeltrainstuff.com
M.B. KLEIN
243 Cockeysville Rd., Ste. A 410-229-9995

MASSACHUSETTS • Ashburnham
Specializing in New England road names, HO/N
Scale, Micro-Trains, Walthers, Horizon, Special
orders discounted. Tu & Th 10-4, Wed &
Fri 11-6, Sat 10-6 www.halfpricehobby.com
service@halfpricehobby.com
SHEPAUG RAILROAD COMPANY
23 Westminster St. 978-537-2277

MICHIGAN • Flint
G (LGB & 1:20.3), O (Lionel & MTH), On30, HO,
N, & Z. Locos, cars, figures, buildings, track,
kits, scenery supplies, details, books & videos.
Digitrax Dealer. Repair service. VISA/MC.
Mon-Fri 10-8, Sat 10-6, Sun 12-5
RIDERS HOBBY SHOP
2061 S Linden Rd 810-720-2500

MICHIGAN • Fraser
Full line hobby shop.
Open Mon - Fri 10 - 8, Sat 10-6, Sun 12-5
www.pdhobbyshop.com
P & D HOBBY SHOP
31280 Groesbeck Hwy. 586-296-6116

MICHIGAN • Grand Rapids
LGB, O (Lionel, MTH & Scale), HO, N & Z
Locos, cars, figures, buildings, track, tools,
kits, scenery supplies, details, books, videos.
Digitrax Dealer. Repair service VISA/MC
Open Mon - Fri 10-8, Sat 10-7, Sun 12-5
RIDER'S HOBBY SHOP
2055 28th Street SE 616-247-9933

MICHIGAN • Traverse City
Let your imagination run wild!
Z to G, Lionel, scenery, tools,
structures, scratchbuilding supplies,
special orders, ships, armor, cars, more...
TRAINS & THINGS HOBBIES
210 East Front St. 231-947-1353

MICHIGAN • Troy
FORMERLY MERRI-SEVEN • NEW LOCATION
All scales Z thru G, new and used
Complete selection of RR equipment/supplies
BUY • SELL • REPAIR • PARTS
Tues - Fri 11-7, Sat. 11-6
EMPIRE TRAINS & HOBBIES
3278 Rochester Rd. 248-680-6500

MICHIGAN • Wyoming
HO, N and Marx bought and sold
American Flyer and Lionel also
Tuesday thru Friday 12-6, Saturday 10-5
Other hours available by appt. Please call.
HOBBY RECYCLING
2313 Lee St. SW 616-257-7155

MONTANA • Billings
Model railroading headquarters for the
Northern Rockies. HO, HO_{N3} & N scale. Kits,
parts, tools, books. Tues-Fri 10-5:30; Sat 10-3.
Closed Sun & Mon. trains28@jimsjunction.com
www.jimsjunction.com
JIM'S JUNCTION
811-B 16th St. West 406-259-5354

NEBRASKA • Deshler
Largest HO/N scale inventory from Denver
to Chicago. Stop in and say WOW! All
major brands plus books, videos, tools
& scenery. Mon-Fri 10-6, Sat 9-3. www.
springcreekmodeltrains.com
SPRING CREEK MODEL TRAINS, LLC
304 E. Bryson Ave. 402-365-7628

NEBRASKA • Omaha
Trains & supplies for all scales Z-G. We are
DCC ready & installation service available.
Service work, repairs, technical support. Family
owned since 1936. www.houseoftrains.com
HOUSE OF TRAINS
8106 Maple St. 402-934-RAIL (7245)

NEVADA • Las Vegas
While in Las Vegas,
check out our train selection.
Close to the Las Vegas strip.
Hours: Mon - Fri 10-7, Sat 10-6, Sun Noon-5.
HOBBYTOWN USA
4590 W. Sahara Ave., #103 702-889-9554

NEVADA • Las Vegas
Electric trains & accessories
N, HO, S, O
Lionel/American Flyer Dealer
TRAIN EXCHANGE
6008 Boulder Hwy. 702-456-8766

NEVADA • Las Vegas
Big selection of HO, N and Lionel O Gauge
trains. Only 7 miles west of the Las Vegas strip.
www.westsidetrainslv.com
WESTSIDE TRAINS
2960 S. Durango #117 702-254-9475

NEW JERSEY • Bellmawr
A complete Train Store. Repairs & Decoders
Installed. N, HO, S, O. DCC Specialists
Authorized Dealer. Digitrax ESU-Loksound,
NCE Soundtraxx, TCS. www.yankeedabbler.com
YANKEE DABBLER INC
101 W KINGS HWY, 08031 856-312-8084

NEW JERSEY • Kenil
Full service hobbies, a full line of
HO, N, 3-Rail, military, cars, boats,
planes, dollhouses, scratchbuilding
supplies, plus details-details-detail!
KENVIL HOBBIES
590 Rt. 46 973-584-1188

NEW JERSEY • Mountain Lakes
Direct dealer for LIONEL and MTH. The
largest train store in Northern NJ since 1974!
4 showrooms plus Operating Layout. WE BUY
OLD TRAINS ~Lionel Service Station #556
www.TRAIN-STATION.COM
THE TRAIN STATION
12 Romaine Road 973-263-1979

NEW JERSEY • Piscataway
Serving hobbyists since 1933.
Large selection of HO, N, & O scale
Railroad books - complete repair service
www.themodelrailroadshop.com
THE MODEL RAILROAD SHOP, INC.
290 Vail Ave. 732-968-5696

NEW JERSEY • Point Pleasant Beach
A Complete Model Railroad Store • Over 600
Engines in Stock • N • HO • O DCC/DCS/TMCC
Authorized MTH & LIONEL Dealer. Walthers •
Atlas • Atlas O. Open Daily 10-6.
www.thetrainroomnj.com
THE TRAIN ROOM
715 Arnold Ave. 732-892-5145

NEW JERSEY • Westmont
Athearn, Atlas, Bowser, Walthers.
Structures, books.
Exclusively trains since 1955.
HO and N.
SATTLER'S HOBBY SHOP
14 Haddon Ave. 856-854-7136

NEW YORK • Hurley
Trains- Z, N, HO, S, O, G scale, models,
rockets, hobby supplies. Lionel & MTH
authorized dealer. 4 working layouts. Repairs,
buy/sell. Open 7 days. An old fashioned
general store. www.hurleycountrystore.biz
HURLEY COUNTRY STORE INC
2 Wamsley Pl. (Old Hurley) 845-338-4843

NEW YORK • Wellsville

HO, N & O Accurail, Bowser, Atlas, Walthers, Williams & Kadee. Scenery & modeling supplies. Plastructs, magazines & building kits. Old local lines like WAG, Erie & EL.
Tues. - Fri. 12-5, Sat. 10-3

EAST DYKE DEPOT
332 E. Dyke St.(Rt. 417E) 585-593-0005

NORTH CAROLINA • Arden

HO, N, Model Trains and accessories. Broadway Limited, Kato, Walthers, Digitrax, Atlas, Athearn, and more. Mon - Fri 9:00am-5:00pm. Order by phone 24 hours. www.factorydirecttrains.com

FACTORY DIRECT TRAINS
7 Glenn Bridge Rd. Ste. B 800-990-3381

NORTH CAROLINA • Spencer

Across from NC Trans Museum. Big selection of trains in all scales. Digitrax Dealer, RR videos/books & children's toys Tue-Sat: 10-5:30. www.littlechoochoochooshop.com or info@littlechoochoochooshop.com

LITTLE CHOO CHOO SHOP, INC.
500 S. Salisbury Av. 704-637-8717/800-334-2466

OHIO • Alliance

HO & N scale trains. Athearn, Walthers, & Kadee. Accessories, detail parts, scratch-building supplies. Digitrax, TCS, & SoundTraxx dealer. Tue, Thu, Fri: 12-8pm, Sat: 10-3pm. www.robstrains.com

ROB'S TRAINS
333 E. Main St. 330-823-7222

OHIO • Columbus

Exclusively trains. LGB, Lionel, O, HO, N scales. Books, Thomas, videos. Mon - Thur 10-6, Fri 10-8, Sat 10-6, Sun 12-5. www.trainstationohio.com

THE TRAIN STATION
4430 Indianola Ave. 614-262-9056

OREGON • Beaverton

Complete full line hobby shop. Z, N, HO, O, Lionel, and LGB. Open Mon - Fri 10-8, Sat 10-5, Sun 12-5.

TAMMIES HOBBIES
12024 SW Canyon Rd. 503-644-4535

OREGON • Portland

HO, N, Z, Lionel, DCC, brass. Reservation discounts, new, used, Consignments, 16 minutes from Airport. www.hobbysmith.com

THE HOBBY SMITH
1809 NE Cesar Chavez Blvd. 503-284-1912

OREGON • Portland

Your complete model railroad store. Gauges Z through G. Mon - Fri 10-6, Sat 10-5, Closed Sunday. www.wsor.com

WHISTLE STOP TRAINS
11724 SE Division St. 503-761-1822

PENNSYLVANIA • Blue Ridge Summit

The Exclusive model railroad store. From N to G, we stock it all. OPEN 7 days a week. Only minutes from Frederick, MD. www.mainlinehobby.com

MAINLINE HOBBY SUPPLY
15066 Buchanan Trail E. 717-794-2860

PENNSYLVANIA • Bristol

We carry most major brands and accessories for N - G gauge. SELL - BUY - REPAIR. Hours change seasonally so please call or see website. www.trainpops.com trainpopsattic@gmail.com

TRAINPOPS ATTIC
400 Mill St. 215-788-2014

PENNSYLVANIA • Broomall

Lionel, American Flyer, LGB, Atlas & MTH HO, N, ON30, Standard, O & S gauges bought, sold & traded. Auth. service station. Mon, Wed, Fri 10-9, Tue & Thu 10-7, Sat 10-5. www.nstrains.com

NICHOLAS SMITH TRAINS
2343 West Chester Pike 610-353-8585

PENNSYLVANIA • Hatboro

Lionel, American Flyer, LGB, MTH, Märklin, Bachmann, Williams. HO, N & Z. We buy, sell & repair. Mon-Fri 12-8; Sat 10-5. www.JoesTrainStation.com

JOE'S TRAIN STATION
283 E. County Line Rd. 215-322-5182

PENNSYLVANIA • Jeannette

Trains exclusively. Lionel, MTH, HO & N. Supplies and accessories at discount prices. Open daily 9:30-5, Mon & Fri 9:30-7, Sat 9-4. Closed Tue. Expanded hours Nov. and Dec. www.needztrains.com

NIEDZALKOSKI'S TRAIN SHOP
214 South 4th Street 724-523-8035

PENNSYLVANIA • Landisville (Lancaster)

Model Trains New & Used Supplies, Paint, Tools. Rockets, Slot Cars, Lionel/MTH Trains Tue, Thur & Fri 10-5, Wed & Sat 10-2. We buy train collections large & small.

COOLTRAINS HOBBIES
106 W. Main Street 717-898-7119

PENNSYLVANIA • Montoursville

Mon - Fri 9-5:30, Sat 9-5 except May thru Sept. 9-4. Extended weekday & Sun hours in Nov. & Dec. E-mail: englishsmode@gmail.com www.englishsmode.com

ENGLISH'S MODEL RAILROAD SUPPLY
201 Streibigh Lane 570-368-2516

PENNSYLVANIA • Strasburg

From trains to diecast to scenery, everything for the layout builder. Open 7 days a week. N, HO, O, Lionel, LGB. Buy, sell, trade used trains. Located adjacent to the Choo Choo Barn. www.etrainshop.com

STRASBURG TRAIN SHOP
226 Gap Road 717-687-0464

RHODE ISLAND • Warwick

HO trains & acces., detail parts, plastic & craftsperson kits. Hobby supplies, tools. Tue - Fri 12-6, Sat 10-5 Sun (Nov - Dec) 12-4 1/2 mile west of airport. E-mail: aahobbies@gmail.com

A. A. HOBBIES, INC.
655 Jefferson Blvd. 401-737-7111

SOUTH CAROLINA • Greenville

Model Trains Only - ALL AT DISCOUNT PRICES! 130,000+ items in all scales available online 24/7 at: www.BlueRidgeHobbies.com Retail Store features HO-N-O Wed-Thur-Fri 10am - 2pm.

BLUE RIDGE HOBBIES
2327 N. Pleasantburg Dr., Ste. H 800-988-2125

SOUTH CAROLINA • West Columbia

All scales, all major brands of model railroad equipment. We buy & sell used Lionel trains. Open daily 10-6. Closed Sun.

NEW BROOKLAND RR & HOBBY SHOP
405 State Street 803-791-3958

TENNESSEE • Knoxville

Located in Knoxville's premier shopping destination. We are the area's most diverse hobby store with a large selection of HO, N, and O. Open 7 days a week. Turkey Creek Area.

HOBBYTOWN USA
11145 Turkey Dr. 865-675-1975

TEXAS • Athens

Specializing in HO, HO3 & Brass. Blackstone • Tsunami • InterMountain • Kadee Digitrax Dealer • Walthers • Coach Yard Decoder installs & custom painting. jack@harrishobbies.com www.harrishobbies.com

HARRIS HOBBIES
9323 County Rd 1127 903-489-2646

TEXAS • Dallas

Official Lionel Layout Builder Since 2001. Traingineer shop/showroom includes; Custom Layouts, Modulars, Model Stations, Bridge Kits...come see...there's always something new!!! www.TrainWorxStore.com

TW TRAINWORX
2808 McGowan St. 877-881-4997

TEXAS • Dallas (Addison)

Great discounts on thousands of G to Z scale items. Monday - Saturday 10-6

DISCOUNT MODEL TRAINS
4641 Ratliff Lane 972-931-8135

TEXAS • Houston

HO & N, Lionel trains. Complete line of plastic kits, military and architecture supplies. Open Mon - Fri 11am-6pm, Sat 10am-5pm. www.gandgmodelshop.com

G & G MODEL SHOP
2029 Southwest Fwy 713-529-7752

TEXAS • Houston

All trains, all scales. Magazines, Books, Vid-eos, Repairs, Brass, Consignments. Discount program, will ship. papabenstrains@gmail.com M,Tu,Th & F 10-6; W 10-7; Sat 10-5; Closed Sun. Open Sunday's Oct, Nov, and Dec. Major Credit Cards. www.papabens.com

PAPA BEN'S TRAIN PLACE
4007-E Bellaire Blvd. 713-523-5600

TEXAS • San Antonio

Model railroading our specialty. Märklin, G, HO, N, O, Z. Superdetailing parts & tools. Books, structures, figures and tools. Tuesday - Saturday 10am-6pm

DIBBLE'S HOBBIES
1029 Donaldson Ave. 210-735-7721

UTAH • Orem

Where it's always cheaper than therapy. Trains all scales, LGB, Broadway Limited, Atlas, Lionel, Micro-Trains, Athearn. Just north of the other Arby's by Maceys.

HOBBY STOP, LC
934 N State St #101 801-226-7947

VERMONT • Rutland

Exclusively Model Railroading. Most major lines. Brass, custom painted models. Competitive prices. Personal service. Open by appt. Eves 6-10, Sat 10-10.

THE STEAM SHACK
14 Engrem Avenue 802-775-2736

VIRGINIA • Ashland (Richmond)

On CSX tracks, Open 7 Days. All Gauges, Spec Orders & Repairs. I-95, exit 92, west 1.2 miles.

TINY TIM'S TRAINS & TOYS

104 S. Railroad Ave. 804-368-0063

VIRGINIA • Roanoke

Lionel, LGB, G, AF, HO, N & MTH. Buy, sell, trade, repair. Mon-Fri 10-6; Sat 10-5. Two minutes off Exit 146 on I-81.

RAIL YARD HOBBY SHOP
7547 Williamson Rd. 540-362-1714

VIRGINIA/MARYLAND • Chantilly, VA

Full service storefront & online store. All makes & scales. New/used trains sales, service, repair & upgrades. Retail Store - www.traindepot.biz. Authorized Lionel Service Station & Digitrax dealer. Online Sales Visit www.JTTrains.com

TRAIN DEPOT
13944 Willard Rd., Suite I 703-953-3767

WASHINGTON • Burien (Seattle)

Close to SEA-TAC airport - short drive from downtown Seattle. New & vintage electric trains in all scales. Tues - Sat 11-6. www.electrictrainshop.com

THE ELECTRIC TRAIN SHOP
625 SW 152nd St. 206-244-7077

WASHINGTON • Kirkland

Lionel, American Flyer, LGB, HO, N. Buy, sell, and repair. Supplying all your railroading needs. Open Mon-Sat. www.eastsidettrains.com

EASTSIDE TRAINS, INC.
217 Central Way 425-828-4098

WEST VIRGINIA • Inwood

One Stop Shop. In Tri-State Area. Trains-R/C - Models. Competitive Pricing.

LOCO JOE'S HOBBIES
357 Middleway Pike 304-229-8220

WISCONSIN • Bay View (Milwaukee)

Specializing in HO, N, Books, DVD's, DCC. Special Orders Welcome. Discount Prices. Tue-Wed 11-5, Thur 11-6, Fri 11-5, Sat 9:30-3. www.southsidetrains.com

SOUTH SIDE TRAINS
3979 S. Howell Ave. 414-482-1566

WISCONSIN • Green Bay

Exclusively trains, specializing in DCC, N, G, & HO. DCC installation and award winning custom painting and building available. WWW.ENGINEHOUSESERVICES.COM

ENGINEHOUSE SERVICES, LLC
2737 N. Packerland Dr. 2H 920-490-4839

WISCONSIN • Milwaukee

Exclusively Model Railroading since 1932. One-stop shopping from Z to G. 800-487-2467 walthers.com

WALTHERS SHOWROOM
5619 W. Florist Avenue 414-461-1050

WISCONSIN • Monroe

N & HO scale trains & accessories, plastic kits. Books, videos & tools. Summer hours: Tues - Fri 10-5 Sat 10-4, Sun 12-4 Winters only. Always closed on Monday! Call ahead to be sure we're open!

THE HOBBY DEPOT
835 17th St. 608-325-5107

WISCONSIN • Waukesha (Pewaukee)

Märklin • Lionel • MTH • AF • LGB • Z to G • buildings • scenery • detail parts • books • scratchbuilding supplies • special orders • NMRA discounts • Mon - Fri 11-8 • Sat 10-5 Sun 12-5. www.hiawathahobbies.com

JETCO'S HIAWATHA HOBBIES
2026 Silvernail Rd. 262-544-4131

CANADA-BC • Savona

Model trains in G, O, S, HO, N, Z. Old toy trains, railway antiques, art, books, DVDs, souvenirs and Thomas too. Canadian road names a specialty. 20 min. west of Kamloops. www.kellyskaboose.ca

KELLY'S KABOOSE, THE RAILWAY STORE
6648 Savona Access Rd. 250-377-8510

CANADA-BC • Summerland

Specializing in European Model Trains, Märklin, Trix, Roco, LGB, Brawa, Fleischmann & many more. Huge selection of trains, kits, & access. HO-N-Z-1-O-G Scales. www.EuroRailHobbies.com

EURO RAIL HOBBIES & MORE INC
9901 Main St. 866-799-6098

CANADA-BC • Vancouver

Large selection of model RR supplies including Min. by Eric, Athearn/MDC, Atlas, Peco, Shiohara, Rapido, SoundTraxx, brass, etc. Special orders. www.central-hobbies.com. Open 11-6, Friday til 9. Closed Sundays.

CENTRAL HOBBIES
2825 Grandview Hwy. 604-431-0771

CANADA-ON • Dundas

Your full line hobby shop. Open 7 days a week. N, HO, AF, Lionel, LGB. Scenery and scratchbuilding supplies. Walthers dealer, Kato products. Special orders welcome! E-mail us at: sales@dundasvalleyhobby.ca

DUNDAS VALLEY HOBBY
15 Cootes Dr. 905-628-9156

CANADA-ON • Fergus

Model Trains for Beginners to the Experts. Buy, Sell, Trade, Repair. HO, N, O/O27, S, G. Come See Our Trains. www.2bintrains.on.ca

2B IN TRAINS
6168 Road 29 519-787-3280

CANADA-ON • London

Complete Canadian trains & more N, HO, G, Athearn, Hornby, Peco, Walthers. Special orders, plastics, parts, supplies, books, DVD's. Mon - Fri 10-6, Sat 9-5. sales@rrhobby.ca

BROUGHDALE HOBBY
1444 Glenora Drive 519-434-0600

CANADA-ON • Mississauga

6,000 sq. ft. All Trains! Premier Selection & Service! In store clinics and layouts! Railfan Headquarters! Quick special orders! www.cvrco.com

CREDIT VALLEY RAILWAY COMPANY, LTD
2900 Argentia Rd. Unit #24 1-800-464-1730

CANADA-ON • Mount Forest

45 Min North of Guelph. Fax# 519-323-3809. Authorized Lionel value added dealer. One of Canada's largest Lionel retailers. Full line HO & N dealer. Closed Mon. Open Sun. 11-3. www.tctrainscanada.com

THE TRAIN CELLAR
130 Main Street North 519-323-3935

CANADA-ON • Paris

Full line hobby shop. Large stock N, HO. Special orders weekly, all scales. All accessories, scenery and supplies. www.parisjunctionhobbies.com

PARIS JUNCTION HOBBIES
300 Grand River St. N. 519-442-5800

CANADA-ON • Toronto (Markham)

North American Train Specialists since 1962. HO, N, O, G and DCC. Railfanning beside CNR Mainline. Closed Mondays. www.georgestrains.com

GEORGE'S TRAINS LTD.
550 Alden Rd., Unit 101 905-470-6200

CANADA-ON • Windsor

Model Railroading since 1970. Operational in-store layout. HO & N trains, bits & pieces. "Simplified Wiring & Trackwork" by Fred Stainer.

WINDSOR HOBBIES LTD.
3895 Tecumseh Rd. East 519-945-5471

GERMANY • Kaarst

Europe's best known address for US Railroads. We carry N, HO & G scale for all road names, Atlas to Walthers.

Mon - Fri 10-6:30, Sat 10-2. Overseas orders with VS & MC. **ALL AMERICAN TRAINS** www.aat-net.de E-mail: info@aat-net.de

When traveling, bring *MR*,
look up a shop
and stop in.

QUESTIONS about your account?

- Pay your bill.
- Renew your subscription.
- Give a gift.
- Change your address.
- Add the digital edition.
- And much more!

Visit subscribe.modelrailroader.com/help

Model MAGAZINE
Railroader



Next Issue

Streamliners through the Southwest

The club-sized Sunset Route models 1950s scenes in southern California and Arizona. This freelanced HO scale layout includes transition-era passenger and freight trains and a 733-foot-long main line.

Rolling on the river in central Wisconsin

"Museum quality" truly applies to the Fox River RR, a 12 x 12-foot N scale layout that showcases a town's industrial and railroad heritage.

Plus more:

- Adding depth to your backdrops
- Detailing a building's interior
- Building a steel arch bridge

Subscribe today!

1-877-246-4879

www.ModelRailroader.com

Display Ad Index

We believe that our readers are as important as our advertisers. If you do not receive your merchandise or a reply from an advertiser within a reasonable period, please contact us. Provide details about what you ordered and the amount you paid. If no action is obtained after we forward your complaint to the advertiser, we will not accept further advertising from them. *Model Railroader* magazine, 21027 Crossroads Circle, Waukesha, WI 53187

102 Track Plans	68	Mianne Benchworks	19
2B In Trains	19	Micro-Mark	7
A-Line/Proto Power West	19	Model Railroader Books	63
American Z Line	17	Model Railroader Video Plus	61
Atlas Model Railroad Company	5	Modelleisenbahn München GmbH	13
Axian Technology	7	Modeler's Marketplace	68-69
Azatrax	19	Nace's Videography LLC	19
Bachmann Industries Inc	76	National Train Show	14
Blair Line	19	NCE Corp.	12
BPL	19	Nicholas Smith Trains	14
CTI	14	Ny Central System Hist. Soc., Inc.	15
Caboose	7	Peco Products	15
Circuitron	7	Pre-Size Model Specialties	19
Custom Model Railroads	7	Ready To Roll, Inc.	14
Digitrax	18	Right On Track Models	19
Downtown Deco	19	SBS4DCC.com	19
Evergreen Scale Models	15	Showcase Express	7
Good Deals Dcc	19	Sievers Benchwork	57
Great Midwest Train Show	59	SoundTraxx	13
Great Train Expo	59	Tichy Train Group	19
Greenberg Show	59	Train Collector's Association	7
Great Model Railroads 2020	63	Train Sets Only	19
Halfpricehobby.com	15	Trains & Travel	19
Inter-Action Enterprises	15	TrainWorld	59
International Toy Train Expo	2	Trainz.com	59
JB Wheel Sets	19	Wifitrax Model Science	12
Kato Usa Inc.	75	Wm. K. Walthers	3
Lionel Trains Of The 1950s	60	Woodland Scenics	9
Mainline Hobby Supply	19	Yankee Dabbler	7
Menard, Inc.	21	Z Stuff For Trains	57

The Display Advertiser Index is provided as a service to *Model Railroader* magazine readers. The magazine is not responsible for omissions or for typographical errors in names or page numbers.

Up on the high iron

We often read or hear the term “high iron” when referring to railroad main lines. It means that the main line (or lines) is usually about a foot higher than adjacent passing tracks or sidings. It also suggests that the railroad was built with the three most important principles of engineering in mind: drainage, drainage, drainage!

Elevating the main track a scale foot or providing drainage ditches on either side of it hasn’t been a priority for many layout builders. When I built the Allegheny Midland in the 1970s, I didn’t give much thought to ensuring that the main track was noticeably higher than adjacent tracks. I assumed that ballasting the main with limestone and everything else with cinder fill would provide a visual cue as to which track was the high iron.

However, I did take time to superelevate the outer rail on curves by about $\frac{1}{16}$ ". I also created easements so that trains barreling down the main line wouldn’t, like a toy train, suddenly confront a sharp curve – and all model curves are relatively sharp by prototype standards. The superelevation started at zero at the beginning of the easement and tapered up to full height about where the constant-radius curve began about 18" later.

A quarter of a century later, when I decided to start anew and build a prototype-based flatlands railroad, I had several lessons learned tucked away in my tool



Louisville & Nashville 4-8-2 no. 407 on Cincinnati-Birmingham train No. 7 passes 2-8-0 no. 1212 on a northbound freight on double track 10 miles south of Louisville, Ky., in November 1948.

C. William Streit photo

kit. One of them was to use smaller rail; the code 83 on the AM was fine for representing the 132-pounds-per-yard main line of a typical Appalachian coal hauler but too heavy for the Nickel Plate’s Frankfort, Ind.,-to-East St. Louis, Ill., track standards.

(When I was choosing rail size for the AM, I called the chief engineer of the Clinchfield RR and asked what the weight of the main-line rail was. “A hundred and thirty-two pounds,” he replied. “And what is the weight of

the rail you use in sidings?” “How much less do you think a loaded coal train weighs when it’s in a siding?” he replied. Before I could react, he laughed and said they did use lighter rail off the main, as train speed and therefore dynamic wheel-rail interactions were much less there.)

Another upgrade was to raise the high iron a scale foot, or about $\frac{1}{8}$ ", compared to adjacent tracks.

Such enhancements can present tricky design and construction problems. For example, where a busy street crosses the main line and one or more tracks adjacent to it, the lower-grade tracks are usually raised to avoid having vehicles encounter a sudden drop or rise as they cross the tracks.

Model locomotives and cars aren’t as proportionally heavy as their prototypes, and their ability to stay on the rails can suffer. This is especially true when we ask them to negotiate a sharp curve, as in most model turnouts, and encounter a vertical curve at the same time. That’s exactly the case where a diverging route leaves a turnout and descends to the elevation of the secondary track.

When we add crossovers between the main and an adjacent track, we need to follow the prototype’s example

and keep both turnouts at the main’s elevation with ballast under their ties. Only after a car or locomotive has negotiated the crossover’s S curve should we consider ramping down to the unballasted secondary track.

Err on the side of building too long of a ramp.

In the July 2013 issue of *Model Railroader*, I wrote an article titled “Dig those ditches!” This showed both the elevated main – $\frac{1}{4}$ " of unbeveled milled Homasote topped with $\frac{1}{4}$ " of beveled milled Homasote (available online from Cascade Rail Supply) – and $\frac{3}{8}$ " foam panels on the field side of each ditch. This created a noticeable ditch and, at the same time, ensured that the high iron stood well above the surrounding terrain. In some locales, I had the main sit atop a fill to create an effect similar to that shown in the photo above.

Even at a glance, the main line does indeed appear to be the high iron. **MR**



THE THREE MOST IMPORTANT PRINCIPLES OF ENGINEERING [ARE] DRAINAGE, DRAINAGE, DRAINAGE! – TONY



The El Capitan and Super Chief

The Perfect Pairing!

Revisit the golden age of The Atchison, Topeka & Santa Fe with the latest releases of the "El Capitan" and "Super Chief" Classic Name Train sets from Kato USA! Painstakingly reproduced, these sets capture these trains in miniature in a way that is designed to excite the senses and bring memories flooding back - whether they're of the luxurious accommodations of the *Super Chief's* first class sleepers, the unprecedented view of passing scenery from the upper deck of the *El Capitan's* double decker lounge, or the sight of a combined *Chief's* polished corrugated steel car bodies glinting in the midday sun as it streaked by.

Available to pull these named train sets are the classic Santa Fe Warbonnet equipment - both F7's and, for the first time since 2004, ALCO's signature PA-1's - Also available in a **special release** Gold Bonnet paint scheme, a real scheme worn by the engine in 1946!



Item#	Description	MSRP
106-083	NEW N Santa Fe "Super Chief" 8-Car Base Set (2019 Release)	\$225
106-084	NEW N Santa Fe "El Capitan" 10-Car Base Set (2019 Release)	\$280
106-6003	N Santa Fe "Super Chief" 4-Car Add-on set (2019 Re-issue)	\$110
106-7117	NEW N Santa Fe "El Capitan" 2-Car Add-on Set (2019 Release)	\$55
176-053L	NEW N ALSO PA-1 Santa Fe "Gold Bonnet" #53L (Special Edition Release)	\$120
176-4120	NEW N ALSO PA-1 Santa Fe Warbonnet #70L	\$110
176-4121	NEW N ALCO PA-1 Santa Fe Warbonnet #74L	\$110
176-4122	N ALCO PB-1 Santa Fe Warbonnet #70A	\$100
176-2121	N EMD F7A Santa Fe Warbonnet #300/301/304 (2019 Re-issue)	\$90
176-2211	N EMD F7B Santa Fe Warbonnet (2019 Re-issue)	\$85
176-053L-DCC	NEW N ALSO PA-1 Santa Fe "Gold Bonnet" #53L w/ Pre-Installed DCC	\$180
176-4120-DCC	NEW N ALSO PA-1 Santa Fe Warbonnet #70L w/ Pre-Installed DCC	\$170
176-4121-DCC	NEW N ALCO PA-1 Santa Fe Warbonnet #74L w/ Pre-Installed DCC	\$170
176-4122-DCC	NEW N ALCO PB-1 Santa Fe Warbonnet #70A w/ Pre-Installed DCC	\$160
176-2121-DCC	NEW N EMD F7A Santa Fe Warbonnet #300/301/304 w/ Pre-Installed DCC	\$150
176-2211-DCC	NEW N EMD F7B Santa Fe Warbonnet w/ Pre-Installed DCC	\$145

See Kato's latest Amtrak offerings and more at our youtube channel!

[youtube.com/KatoUSAInc](https://www.youtube.com/KatoUSAInc)

Stay updated on all of the latest Kato News - Follow us on Twitter and Facebook!

[@KatoUSAInc](https://twitter.com/KatoUSAInc)

[/officialkatousainc](https://www.facebook.com/officialkatousainc)

KATO
PRECISION RAILROAD MODELS

100 Remington Road
Schaumburg, IL 60173

www.katousa.com