

SPECIAL ISSUE! STRUCTURES AND DETAILS

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**Kato's N scale
Hiawatha p.68**

March 2018
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Building bonanza!

- **Model a cold storage building** p.46
- **Assemble a modern lumberyard** p.28
- **Build this depot and steal your wife's hairspray to weather it** p.24



PLUS

**Visit a rural New York
branchline layout** p.58

Mining and logging in the Rockies p.40

Designs for a pair of passenger shelters p.37

Model a small-town brick storefront p.34

**BONUS
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CONTENT
CODE PG. 4**

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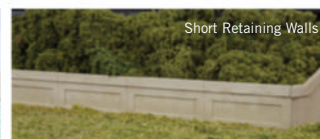


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BUILDING BONANZA!

Features



28 How to model a modern lumberyard

This low-relief structure is loaded with exterior details
by Thomas Klimoski

34 Scratchbuild a small-town storefront

These techniques will work in any scale
by Pelle Søbørg

37 Scale drawings for a pair of passenger shelters

These small shelters were built for an inter-urban line in New York
by Harold W. Russell

• Online bonus ModelRailroader.com

40 A tale of two railroads

This Wild West-themed layout is designed for train watching
by Dave Rickaby

46 Cold storage for the Tar Branch **MRVP**

Part 3: Digital modeling using 3-D printing and computer-aided drafting helped create the structures for our project layout
by Eric White

• Online bonus ModelRailroader.com

54 Shake your own shingles

A homemade tool makes cutting paper roofing easy
by Frank Sele

58 Third time's the charm **MREXTRA**

The Chester Ridge & Pennebrook is the culmination of a lifetime of model railroading
by Lou Sassi

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In every issue

6 Model Railroader Video Plus

Check out the latest videos

8 On the Web

The latest features on our website

10 From the Editor

It started as a simple project

12 News & Products

Hobby industry news

18 Ask MR

What's the reason for lead and trailing trucks?

22 N Scale Insight

A signature N scale truck for Tehachapi

24 Step by Step **MREXTRA**

How to model a weather-beaten depot

• Online bonus ModelRailroader.com

66 DCC Corner

A cheaper alternative to capacitors



68 Product Reviews **MREXTRA**

Athearn HO scale SDP40F, SDF40-2; N scale *Olympian Hiawatha* by Kato; and more

76 On Operation

Using steam sounds prototypically

• Online bonus ModelRailroader.com

78 Trackside Photos

89 Index of Advertisers and Cartoon

90 Trains of Thought

Seeing and modeling what's there

68



On the cover: A Rock Island freight passes a boarded-up depot that's now used by maintenance-of-way crews.
Bill Zuback photo



Next issue

In April, Cody Grivno builds a wooden caboose model, and Steven Otte wraps up our Winston-Salem Southbound layout with scenery and details, and more!

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Link. Look. Learn more!

When this month's featured project layout concludes in print, the story continues on Model Railroader Video Plus! Visit MRVideoPlus.com to find more than 60 step-by-step videos covering all aspects of building and operating the Tar Branch. Not an MRVP subscriber yet? Watch the FREE VIDEO to see what you've been missing!

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Stunning scenery and switching action

This month's online extras include two layout tours. Paul Tartaglia's New York Central Putnam Division is featured on page 58. Subscribers can watch video of trains running through the detailed scenery. In addition, Thomas Klimoski, who wrote about building a lumberyard on page 28, shot video of switching the industries on his modern-era Georgia Northeastern RR (inset). Find both videos under Online Extras at www.ModelRailroader.com.



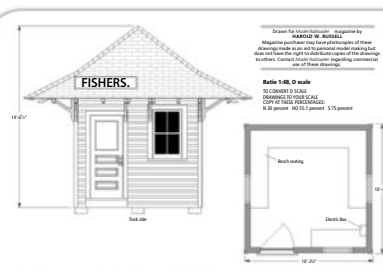
New layout ideas

Looking for a favorite plan or inspiration for your next model railroad? Don't miss the exclusive Model Railroader Track Plan Database. Search for plans by scale, size, and type, then download a printable copy of any track plan. Click on the link on the MR home page.



Athearn HO SDP40F

Athearn Trains HO scale SDP40F models an early Amtrak passenger locomotive. It's also the first locomotive that we've tested with the new SoundTraxx Tsunami2 decoder. See and hear the locomotive in action by clicking on the link under News & Reviews.



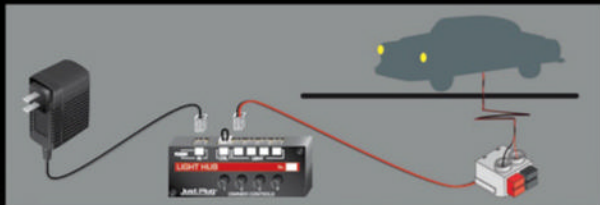
Project plans

The prototypes for these small lineside structures served as passenger shelters along an interurban line in New York. They would also work well for flagstop shelters along a larger railroad. Click on the link under Online Extras to download scale drawings of the shelters.

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It started as a simple project



Cody sweats the details on the diorama for this month's cover photo. Go behind the scenes at MRmag.com for a closer look.

Associate editor Cody Grivno said he'd build and weather a wood-sided depot for this month's Step by Step story on page 24.

I told him the theme of the issue is buildings and structures, and that the depot might make a good cover photo. Of course we'd need a diorama for it. I told him we'd just Photoshop in the details behind it. Easy as pie.

He was having none of it, and embarked on a quest to

find a prototype photo showing the right depot in the correct time frame.

That set off a chain of events that I think many of us can relate to all too well.

Cody located the photo – actually a pair of them, taken in the 1970s at the same spot in Missouri – one in summer and one in winter.

He disappeared into the workshop for a few weeks, between bouts of editing.

I'd walk down periodically

to check progress. The depot got built. Then the passenger platform to go with it. Then we mocked up the picture.

Then he convinced me we needed a grain elevator. After a few days, that was built and weathered, too.

Then there was an out-building. And trucks. And people. And of course, the scenery, which included laying and ballasting track, contouring the landforms on the diorama, putting down roads and static grass, and building a cattle fence.

Then he told me, "The depot doesn't look quite right, I'm going to repaint it." And he did. Then he weathered the locomotive, too.

This is the kind of stuff that truly makes model railroad-ing fun: having a vision or inspiration in your head that drives you, and bringing it to



your reality in whatever scale you model.

Sometimes we get carried away, and there's nothing wrong with that. Especially when it produces just the right scene, or building, or piece of rolling stock.

So the next time your mind tells you, "You need one or two more details," just go with it. You might create something outstanding.

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HO scale



General Electric ES44DC diesel locomotive. Athearn offers this Genesis series model decorated for CSX (as-delivered and primer gray), Norfolk Southern (as-delivered and primer gray), and BNSF Ry. (Heritage II and III schemes) in four road numbers per scheme (primer gray in two numbers each). The HO

scale models have a detailed cab interior, factory-painted wire grab irons, and railroad-specific details. Direct-current models retail for **\$199.98**. Versions with a dual-mode SoundTraxx Tsunami2 sound decoder list for **\$299.98**. Athearn Trains, 800-338-4639, www.athearn.com

HO scale locomotives

- **Montreal Locomotive Works M630 diesel locomotive.** British Columbia Ry. (multiple schemes and detail combinations); CP Rail (multiple schemes and detail combinations); Delaware Lackawanna (red and gray and new repaint, one number each), Minnesota Commercial (one number); Pacific Great Eastern (two-tone green with lightning stripe and short-hood-mounted ditch lights, four numbers); and Western New York & Pennsylvania (ex-Minnesota

Commercial, one number). Three numbers per scheme unless noted. Factory-installed and painted wire grab irons, can motor with flywheels, and RP-25 contour nickel silver wheelsets. Direct-current model, \$209.95; with sound decoder, \$309.95. August 2018. Bowser Manufacturing, 800-327-5126, www.bowser-trains.com

- **Electro-Motive Division E8A diesel locomotive.** Illinois Central, New York Central, and Southern Ry. Prototype-specific details, die-cast metal underframe, light-emitting-diode headlights,

and Proto-Max couplers. A unit with dual-mode ESU LokSound Select sound decoder (two numbers per scheme), \$329.98. A-A sets: direct current, \$399.98; with dual-mode ESU LokSound Select sound decoder, \$599.98. Walther's Proto. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale freight cars

- **Assorted freight car kits.** American Refrigerator Transit 40-foot hinged-door steel refrigerator car, \$17.98. Chesapeake & Ohio 36-foot double-sheathed boxcar with metal ends and straight underframe, \$17.98. Chicago, Burlington & Quincy United States Railway Administration two-bay hopper (single car, \$16.98; three-pack, \$49.98). Lehigh Valley 36-foot double-sheathed boxcar with wood ends and fish-belly underframe, \$17.98. Southern Ry. 50-foot riveted-side boxcar with Superior doors, \$17.98. Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Accurail, 630-365-6400, www.accurail.com

- **40-foot boxcar with Superior doors.** Chicago & Illinois Midland (dark green with red stripe); Chicago, St. Paul, Minneapolis & Omaha (yellow and green with "Route of the '400'" lettering); Delaware, Lackawanna & Western ("Route of the Phoebe Snow" slogan); Elgin, Joliet & Eastern (dark green with "Around - Not Thru - Chicago" slogan);

N scale



Electro-Motive Division GP35 diesel locomotive. Atlas offers new road numbers on GP35s decorated for Burlington Northern; Atchison, Topeka & Santa Fe; Denver & Rio Grande Western; and Pennsylvania RR. The N scale model is offered in two numbers per scheme and features directional golden white light-emitting-diode headlights and Accumate couplers. Direct-current models retail for **\$119.95**. Versions with a motor-only decoder are **\$154.95**. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



Maine Central (dark green with “The Pine Tree Route” slogan); and St. Louis Southwestern (“Blue Streak Fast Freight” slogan). Three road numbers per scheme. Solid-bearing trucks with 33” metal wheelsets and body-mounted McHenry scale couplers. \$28.98. October 2018. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com



• **Trinity 5,660-cubic-foot-capacity Pressure Differential covered hopper.** Archer Daniels Midland (leaf logo), ConAgra (“Feeding America” slogan, six road numbers), First Union (SCYX reporting marks), and Norfolk Southern. Twelve numbers per scheme unless noted; also available undecorated. Injection-molded plastic model with separately applied grab irons and uncoupling levers and etched-metal crossover platforms. \$52.95 (undecorated, \$47.95). A donation for every ConAgra “Feeding America” car will be made to the Community Food Bank of New Jersey. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



• **American Car & Foundry 30-foot refrigerator cars.** HO_{N3}. Denver & Rio Grande Western (Flying Grande

lettering in four road numbers and Moffat Tunnel herald in two numbers). Kadee no. 714 couplers, prototype-specific lettering and detail placement, and built-in speaker housing and openings in underbody for Tsunami SoundCar digital sound decoder (sold separately). \$64.95. Release date to be announced. Blackstone Models, 970-259-0690, www.blackstonemodels.com

• **Bethlehem 3,737 four-bay hopper.** New road numbers: Missouri Pacific (5/79 and 6/79 delivery). Six road numbers each. Wire uncoupling levers, grab irons, brake rods, and lever hangers; American Steel Foundries 100-ton Ride Control trucks with 36” metal wheelsets; and Kadee no. 158 scale couplers. \$38.99. Platinum Series. ExactRail, 866-945-1701, www.exactrail.com



• **American Car & Foundry 11,000-gallon insulated tank car.** New paint scheme: Fuelane Corp. Full-platform car with two-piece self-centering trucks and no. 158 couplers. \$44.95. Kadee Quality Products Co., 541-826-3883, www.kadee.com

• **American Car & Foundry 50-foot exterior-post boxcar.** New paint schemes: Atchison, Topeka & Santa Fe (Railbox patchout); Detroit & Mackinac (“Yes Michigan” slogan); Missouri Pacific (Armour Yellow with Union Pacific herald and “Building America”



Fred's One Stop. Showcase Miniatures' laser-cut wood kit features tab-and-slot construction, peel-and-stick backed windows, pewter metal castings, high-resolution graphics, and waterslide decals. The HO scale kit measures 9" x 6" and sells for **\$94.75**. Showcase Miniatures, 334-750-3276, www.showcaseminiatures.net

N scale



Atchison, Topeka & Santa Fe

heavyweight sleepers. Lowell Smith has launched a new line, the Pullman Park Series. The first two cars in the series are Santa Fe sleepers *Death Valley* and *Grand Canyon* in the shadow-line paint scheme. The N scale models feature an injection-molded plastic interior, body-mounted Magne-Matic couplers, and clear window glazing. The cars, produced by Micro-Trains Line Co., retail for **\$54** each. Lowell Smith, www.lowellsmith.net

slogan); Providence & Worcester; Montana Rail Link (modern scheme); and Wisconsin & Southern. Two road numbers per scheme. Plate B dimensions, 33" turned-metal wheelsets, and Proto-Max couplers. \$27.98. Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

• **United States Railroad Administration double-sheathed express boxcar.** Northwestern Pacific (1949 version). One-piece resin body; plastic steam, air, and signal hoses; and Yarmouth Model Works etched-bronze corner steps, but no couplers. Kit only (no trucks), \$46; with Tahoe Model Works no. 112 trucks with code 110 wheels, \$52; with Tahoe Model Works no. 212 trucks with code 88 wheels, \$53. Westerfield Models LLC, 303-658-9343, www.westerfieldmodels.com

H0 scale train sets



• **Missile Force train set.** Electro-Motive Division F2A diesel locomotive, five military-themed freight cars,

bay-window caboose, 36" x 45" oval of Bachmann track with molded roadbed, and Model Rectifier Corp. Railpower 1300 power pack. \$279.98. Model Power line. Model Rectifier Corp., 732-225-2100, www.modelrectifier.com

N scale locomotives

• **Electro-Motive Division F40PH diesel locomotive.** Amtrak (phase 3 paint scheme, pre-ditch light version). Three road numbers. Golden-white light-emitting-diode headlights, illuminated number boxes, all-wheel electrical pickup, and body-mounted couplers. Direct-current model, \$115; with Digital Command Control motor decoder, \$155. Kato USA Inc., 847-781-9500, www.katousa.com



• **Electro-Motive Division FP7 diesel locomotive.** Chesapeake & Ohio; Amtrak; Atchison, Topeka & Santa Fe; Canadian National; Canadian Pacific; Northern Pacific; Pennsylvania RR; Soo Line; Southern Ry.; Union Pacific; U.S. Army; and Western Pacific. Metal body and chassis, prototype-specific details, light-emitting-diode headlight and Mars light, can motor with dual flywheels, eight-wheel drive and electrical pickup, and body-mounted couplers. \$159.98. Model Power line. Model Rectifier Corp., 732-225-2100, www.modelrectifier.com

N scale freight cars

• **Assorted freight cars.** BNSF Ry. 100-ton three-bay hopper (post-2005 herald, two road numbers), \$25.30. Burlington Northern 50-foot Airslide covered hopper, \$29.95. Canadian National 50-foot welded-side boxcar, \$25.90. South Dakota Soybean Processors 56-foot general-service tank car, \$33.80. Reading Co. 50-foot boxcar, \$27.60. Union Pacific 50-foot welded-side boxcar, \$31.80. Injection-molded plastic models with plastic wheelsets and Magne-Matic couplers. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com

N scale passenger cars

• **American Car & Foundry 60-foot passenger car set.** Reading, Blue Mountain & Northern. Four coaches and one 60-foot observation car. Separately applied window glazing, diaphragms, and roof vents. Observation car has separately applied end railing details and a drumhead. \$174.95. Second quarter 2018. Trainman line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

• **Amtrak Amfleet II equipment.** Two-coach set and cafe and baggage car two-pack. All models are decorated in phase 3 paint scheme. \$55 each. Kato USA Inc., 847-781-9500, www.katousa.com

N scale structures



• **Shaw's Ridge Supply.** Wood kit includes signs and detail castings. \$49.95. Bar Mills Scale Model Works, 207-929-3400, www.barmillmodels.com

O scale freight cars

• **NE-6 caboose.** New paint scheme: Family Lines (Cinchfield patchout, Seaboard reporting marks). New road numbers: Cinchfield (red and black); Conrail (blue); Norfolk & Western (red

Showcase



1 Derrick car. This Bachmann On30 model (\$99) is decorated for maintenance of way. Bachmann Trains, www.bachmanntrains.com

2 Weathering washes. This Life Color set (\$34.99) includes five factory-mixed washes and remover. Kalmbach Hobby Store, KalmbachHobbyStore.com

3 Assorted trailer homes. Grillin' & Chillin' and Sunny Days are HO scale structures



from Woodland Scenics. The models retail for \$74.99 each. Woodland Scenics, www.woodlandscenics.com

4 Paint brush set. Flex-I-File produces this four-brush set (\$26.99). Brush sizes are 0, 1, 2, and 3. Kalmbach Hobby Store, KalmbachHobbyStore.com

5 Electro-Motive Division FP7 diesel locomotive. A

Burlington Northern (ex-Northern Pacific) passenger unit is in Athearn's HO scale Genesis series. Direct-current models sell for \$189.98. Versions with a SoundTraxx Tsunami2 sound decoder list for \$289.98. Athearn Trains, www.athearn.com

6 Acrylic airbrush paint. Select colors from the Modelers Decals and Paint acrylic line are available at



the Kalmbach Hobby Store. The multi-surface hobby paint dries to a satin finish. A 1-ounce bottle is \$3.95. Kalmbach Hobby Store, KalmbachHobbyStore.com

7 FMC 5,077-cubic-foot-capacity double-door boxcar. City of Prineville Ry. is one of four road names on this boxcar. The N scale car (\$23.95) has an X-panel roof and body-mounted couplers. Atlas Model Railroad Co., www.atlasrr.com

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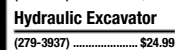
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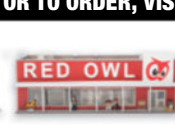
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N scale



Pattersons Pickle & Brine. The N Scale Architect has released a new structure. Pattersons Pickle & Brine features a laser-cut micro-plywood support system with peel-and-stick stonework; more than 60 window, door, and resin detail castings; and a color sign sheet of various pickling brands. The N scale structure measures 8" x 9" x 4½". It sells for **\$199.95**. The N Scale Architect, 607-746-8416, www.thenarch.com

and white); Monongahela (green, black, red, and white); and New York, New Haven & Hartford (orange, black, and white). Die-cast metal chassis, positionable doors, illuminated interior, separate ladders and running boards, and solid-bearing caboose trucks. \$81.95. Second quarter 2018. Atlas O, 908-687-9590, www.atlasrr.com

Z scale locomotives

• **Electro-Motive Division GP38-2 diesel locomotive.** New paint scheme:

Kansas City Southern. Three road numbers. Traction tires, optional plows and pilot, and directional light-emitting-diode headlights. Designed for Digitrax and TCS drop-in Digital Command Control decoders. American Z Line, 614-764-1703, www.americanzline.com



Z scale freight cars



• **40-foot single-sheathed boxcar.**

New paint scheme: St. Louis-San Francisco (Frisco). Etched-metal running boards, positionable doors, blackened metal wheels, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

• **Gunderson 60-foot hi-cube boxcar.**

TTX (TBOX reporting marks). Twelve road numbers. AutoLatch couplers and metal wheelsets. American Z Line, 614-764-1703, www.americanzline.com

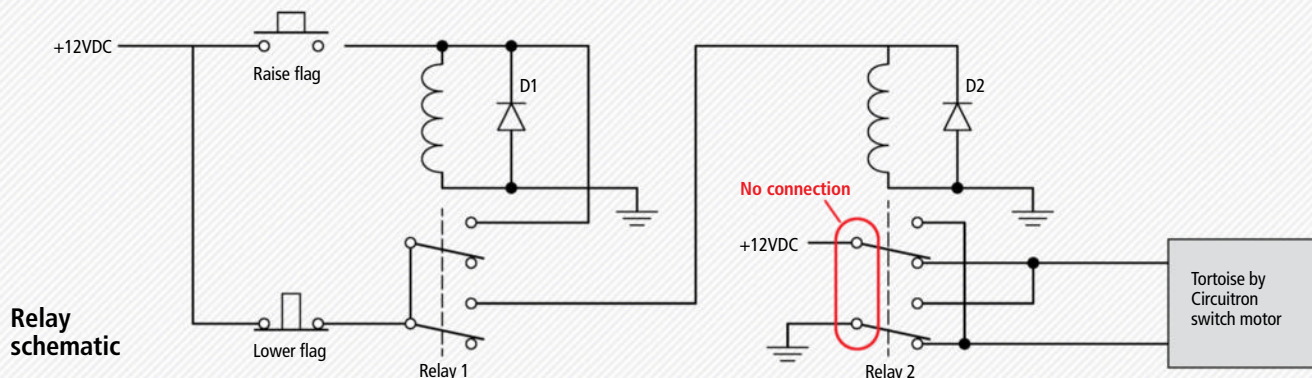
Tools

• **Xuron 860 two-ounce polyethylene dispensing bottle.** Includes three stainless steel capillary tubes (.010", .020", and .040" inside diameter). \$6.75. Xuron Corp., 207-283-1401, www.xuron.com

Software

• **TrainPlayer version 6.6.** Features YardMaster 3 freight forwarding system, AnyRail import fixes, and script additions. Free upgrade for users of versions 6.0-6.5, \$19 upgrade for users of versions before 6.0, and \$88 for new users. TrainPlayer Software, 707-320-4246, www.trainplayer.com

Correction



Correction. The wiring diagram with Don Ball's article "A signal for flag stops" in the January 2018 *Model Railroader* contained an error. The corrected diagram is shown above.

Club offerings



- **Keith Tank Line tank car.** Tichy Train Group HO scale United States Railroad Administration-design kit produced for the Susquehanna Division, Mid-Eastern Region of the National Model Railroad Association. Depicts car leased to Publicker-Ward Distilling Co. in Philadelphia ("Manufacturers of Cologne Spirits and Alcohol"). Updated to the transition era. Includes decals for up to six car numbers. \$18.95 plus \$6.95 shipping. Check or money order to Susquehanna Division, MER/NMRA, 206 Stoevers Dr., New Holland, PA 17557



- **The Orrville Railroad Heritage Society Inc. 40-foot Association of American Railroads boxcar.** Accurail HO scale kit custom-decorated for The Orrville Railroad Heritage Society Inc. to commemorate the Orrville Union Depot Sesquicentennial. \$39.95 at the Depot Gift Shop. Mail order \$47.95 (includes shipping to U.S. addresses). Ohio residents add 6.5 percent sales tax. ORHS-BC, P.O. Box 11, Orrville, OH 44667; www.orrville railroad.com/news.html



- **Western Maryland 50-foot Airslide covered hopper.** Walther's Mainline HO scale model decorated for the Western Maryland Railway Historical Society Inc. Unnumbered model includes water-slide decals. \$37 (one or two cars), \$34 (three or more cars). Shipping \$11 (one or two cars), \$15 (three to five cars). Maryland residents add 6 percent sales tax. Check or money order payable to WMRHS. Please allow up to six weeks for delivery. WMRHS, c/o Paul C. Buscemi, 2413 Haight Ave., Sykesville, MD 21784-6808

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What's the reason for lead and trailing trucks?

Q Most steam engines have both pilot and trailing trucks. What's their purpose, and what's the reason behind their configuration? For example, compare a 4-6-2 Pacific with a 4-6-4 Hudson. Same size engine, different arrangement. Why?

Dick Sears, Bucklin, Kan.

A Lead and trailing trucks both have two distinct purposes: to help guide the engine into turns, and to support the weight of the locomotive. The drive wheels of a steam locomotive have to be mounted fairly rigidly to translate the push-pull motion of the pistons into rotational motion without binding or shaking apart. This means that the longer the drivers' rigid wheelbase is, the harder it is to negotiate turnouts and curves. So as locomotive builders designed engines with larger boilers, the lead truck was invented. It helped support the smokebox and the front of the boiler while being more free to pivot than the drivers.

To some extent, the trailing truck serves the same function while backing. But its primary purpose was to



Note how much longer the firebox is on New York Central 4-6-4 Hudson no. 8210, top, compared to NYC 4-6-2 Pacific no. 8484, below. That larger firebox provided more power, but also necessitated an extra trailing axle to carry it.

support the firebox. Larger cylinders required more steam, which required a larger firebox with a larger grate. But the width of the firebox was limited by the gauge of the wheels. The answer was to mount it behind the drivers and support it with a trailing truck.

On the trailing truck, the number of axles is simply a function of the size of the firebox. As railroads demanded higher powered engines, their designers needed more trailing axles to support those larger fireboxes.

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Q Can you equate the number of an HO turnout (no. 4, no. 5, etc.) to the radius of the turnout?

John Kreider, Lancaster, Pa.

A Track planning guru John Armstrong published a table of approximate turnout substitution radii in his book *Track Planning for Realistic Operation* (Kalmbach Books). For example, an HO scale no. 4 turnout corresponds to a 29" radius, Armstrong says. But these numbers are approximate, because there really isn't a direct equivalence between the figures.

Most turnouts designed to work with flextrack are designated with a frog number. This number refers to the units of distance from the frog the rails extend until they are 1 unit of distance apart. On a no. 6 turnout, for instance, the tracks will be 1 inch apart 6 inches from the frog. However, since the diverging rails straighten out after the frog, the turnout doesn't really correspond to a particular curve; the radius given is just the radius of a curve with endpoints that match those of the turnout's diverging

route. Shortening or extending these rails effectively changes that radius.

Some turnouts, most often included in train sets, are designed with a diverging route that curves continuously away from the main route. These turnouts are designed to take the place of specific sectional track components, so they do have a real substitution radius. What they don't have is a real frog number. While some manufacturers may give a frog number for their curved-route turnouts, that number is somewhat arbitrary, since the diverging route keeps curving away from the main the farther you go.

Q What does it mean when it says that a locomotive model is "deskirted"? Does that mean the model has less detail than others?

George, last name and city not given

A No. Some early diesel locomotives (and lightweight passenger cars) had "skirts," that is, streamlined metal panels extending the sides downward between the trucks. These hid the underbody

equipment – like brake gear, fuel or water tanks, and air conditioning equipment – from view, giving the locomotive or car a sleeker appearance (and, arguably, better aerodynamics). However, the skirts made getting at that underbody equipment for maintenance difficult, and at the urging of engineering departments, cars and locomotives started being built without the skirts. Sometimes, during a refit, skirts were permanently removed from a locomotive or car that originally had them. That's what "deskirted" means: a locomotive or car that had skirts but has had them removed. Since it's important to some modelers that their models reflect how the prototype appeared during the time they model, it's important to know if the model comes with its original skirts.

Q What would I use to make wood look like concrete blocks? I know I need to scribe grooves to make individual blocks. I'm just not sure what I would use to get that rough-textured look.

Ken Peters, Pocatello, Idaho



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A In most modeling scales, the texture of a concrete block would probably be too fine to see. However, in our modeling, we often trade off absolute scale fidelity in the interests of making a model "look right." (The mortar grooves between those concrete blocks, for instance, would likewise be too shallow to see or paint if they were modeled at actual scale depth.)

Here's something you can try to give your wood siding a concrete-block-like texture. After thoroughly sealing and sanding the wood to eliminate any traces of wood grain, try laying a sheet of coarse (60-grit or so) sandpaper face-down on the wood sheet. Then use a roller on the back of the sandpaper to impress its texture onto the face of the wood. Don't press too hard; you want the effect to be subtle, unless you're modeling in large scale. Start with moderate pressure and increase until you've made just enough dents and dimples to register on the eye. The same technique would work on styrene, but you'd need more pressure.

Q I've always liked long trains of open-top hoppers, so I'm planning to include an industry to use them on my layout. However, to help me in planning my track plan and scenery, can you tell me if large industries that use hoppers typically reside down in valleys or up in mountains? My layout will be freelanced, and I haven't yet decided whether the industry will be ore, coal, gravel, or something else.

Lee Hartman, Houston

A Where your industries are located depends on what the commodity is and how it's produced. Possibilities include iron ore, taconite, bauxite, sand, gravel, ballast, or wood chips, any of which will require research to model accurately.

For instance, coal is one of the most popular loads for open-top cars on model railroads, and coal mines for the most part are situated in the mountains. However, destinations for those cars — power plants, coke plants, neighborhood coal dealers, rail-marine transloading piers, coal-gas plants, and steam

locomotive coaling towers, for instance — can be anywhere, including mountains, valleys, and waterfronts. If you bring loaded coal trains in from staging, you can have a bustling coal-hauling operation without modeling a single mine (or mountain) on your layout.

Q I want to replace the wheels on my SD40-2. (It's an old Athearn model that I converted to DCC.) What diameter wheels should I use?

Richard Hiss, Las Cruces, N.M.

A The SD40-2 has 40" wheels. Northwest Short Line makes replacement wheels for many locomotive models, including 40" half-axle drive wheels for Athearn diesels.

Q Long ago, I was going to build a walkaround throttle with memory from an article in MR, but I never did. Now my layout is wired for Digital Command Control. I still have a 4A, 12V transformer left over from that project, and I want to use it to build a filtered DC



Bill Walthers (L), founder of Wm. K. Walthers and Al Kalmbach (R), founder of *Model Railroader*, sharing Vol. 1, Issue 1, 1934.

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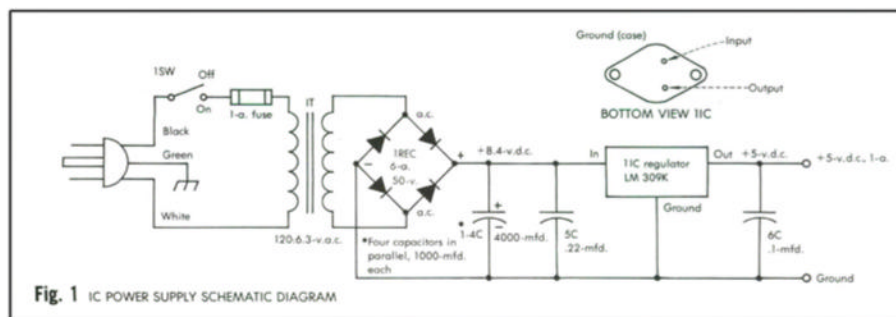
power supply for accessories. I built a smaller one from another MR article or projects book, but I can't find that now. Do you have a resource for such a project? The recent DCC Corner article got me motivated about this, and I want to do this project now.

Jim DeBenedet, Roseville, Minn.

A With so many off-the-shelf power supplies and electronic components available now, it's been a long time since we've printed such an article. Luckily, how electricity works hasn't changed since then, so the circuit diagram we printed with the article "Applying modern electronics technology to model railroading" in December 1975 is still valid.

The article discusses building a regulated 5VDC power supply to drive integrated circuits, but the circuit diagram is almost identical to those we've published in articles on power supplies for other applications, so it's probably pretty much

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



Long ago, model railroaders had to build their own direct-current power supplies, following circuit diagrams like this one from our December 1975 issue.

universal. If this back issue isn't in your collection, sign up for the MR Archive at www.ModelRailroader.com/Archive. Good luck on your project!

Q I read with great interest the Step by Step article "How to weather without an airbrush" [December 2017 -Ed.]. For me it lacked one detail. How does one disassemble the locomotive? Was this the subject of an article I missed? Is there a video somewhere?

Andrew Kiely, Clifton, N.J.

A How one disassembles a locomotive is a technique specific to each locomotive. It can involve removing coupler boxes, unscrewing hidden screws, prying the sides apart to release locking tabs, or some combination of the above — it all depends on the manufacturer. So if we made an article or video on that topic, it would apply to only the readers who own that exact model. Look for an exploded-view diagram of your locomotive, either in your model's original packaging or on the manufacturer's website, for help.



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A signature N scale truck for Tehachapi

This photo of a cattle truck at Caliente, Calif., existed in my mind for perhaps 10 years before it finally came to fruition, and it was spurred by buying a Road Apples N scale stock trailer kit.

The kit had two things going for it. First, I thought the photoetched metal sides were really neat, and it turned out, they were. Second, it was the first model I'd ever seen of a modern livestock trailer.

I've often seen trucks like these serving ranches near the Tehachapi Loop. This was cattle country, and a truck like this would be a signature vehicle for my layout, one that would help the viewer understand what I'm trying to accomplish.

If we want to represent a particular place and time, then everything on the layout should contribute to that theme, or at least not detract from it. It begins with the railroad equipment and carries right on through to the structures and all the details.

Where we place vehicles can matter a lot. If we see a stock truck on a freeway, it might just be passing through, but if we see one on a rural road, then it's probably on its way to or from a local ranch.

History affects everything we model. I model 1985, and if you go back some 40 years before that, you would've seen lots of livestock being hauled to market in stockcars, often headed for the great and often faraway stockyards of Chicago, Kansas City, and Sioux City, Iowa. The big yards were there because the big packers were there, but transporting animals by rail was a slow and costly business.

All that changed as smaller, regional meat packers began appearing in the 1960s and animals traveled to market in less than a day on trucks.



A stock truck on a local road near Tehachapi, Calif., is an indicator that this is cattle country. Jim Kelly was pleased to find this Road Apples kit, until he had to build it. Roen Kelly photo

Transporting processed meat was far more efficient than hauling livestock on the hoof.

The Road Apple line. I suspect many of you have never heard of Road Apples. It was an extensive line of N scale vehicles, many from the 1970s and 1980s. They met a major need for modelers like me.

Road Apples autos and trucks were solid chunks of cast resin. They were a little rough, with considerable flash and occasional tiny air bubbles, but clean them up and give them a decent paint job with an airbrush and they looked pretty good.

I probably have a dozen Road Apples models on the layout and another dozen I'll get around to building some day. In the meantime, Road Apples has changed hands and the vehicles are now sold under the Lineside Models name. [The Lineside Models website (www.linesidemodels.com) notes that the line is now offered by Richard Plantz Hobbies (www.rphobbies.com), but the RPH site is being updated. — Ed.]

Building the model. I'll keep this brief because I'm guessing very few of you will build this kit. I've not been able to locate another anywhere.

The instructions said this kit was difficult, and they weren't kidding. For each side I had to laminate one etching over another. I found that cyanoacrylate adhesive did the job, but not very well.

If I were to build another kit, I would spray the back of the top piece with a rattle-can adhesive like 3M Super 77, let it set for a minute, then apply the part. The alignment would have to be all but perfect, and you'd get only one shot at it.

The floor of the trailer was warped, but I straightened it as best I could with my fingers and it was usable. I replaced the top with one made from styrene.

The hardest part of building

the kit was freeing the wheels from the flash across their backs. This I did by sanding them against a sheet of coarse sandpaper laid flat on the workbench. The flesh on my fingertips came off at about the same rate as the flash. Maybe work gloves or Band-Aids would've been helpful.

The state of things. Since Road Apples stock trailers aren't available, I looked for alternatives and found several

3-D printed N scale stock trailers on Shapeways. They looked good.

Not too long ago Trainworx released a fabulous injection-molded tractor and trailer set called the Bull Hauler. It must have been a success, because it's been sold out everywhere I've looked. That would've been an elegant signature indeed. **MR**



IF WE WANT TO REPRESENT A PARTICULAR PLACE AND TIME, THEN EVERYTHING ON THE LAYOUT SHOULD CONTRIBUTE TO THAT THEME.
— JIM

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A Rock Island bay-window caboose rumbles past a weather-beaten depot in this mid-1970s scene. Cody Grivno used a variety of techniques to make this Blair Line HO scale structure look like it was in its last years of service. Photos by the author and Bill Zuback

BUILDINGBONANZA!

How to model a weather-beaten depot

For decades, depots were the focal point of rail-served communities large and small throughout the United States. As passenger service declined in the 1960s, and railroads began centralizing agents in the 1970s and '80s, the need for depots in nearly every community declined. Some depots were razed immediately, while others served out their last years as bases for maintenance-of-way crews. The latter was the look I was after with this HO scale Rock Island depot.

For the project I used Blair Line's Gerald Depot kit. The laser-cut wood kit is based on a prototype structure in Missouri. It features a hip-roof design typical of many Rock Island depots.

After studying prototype photos

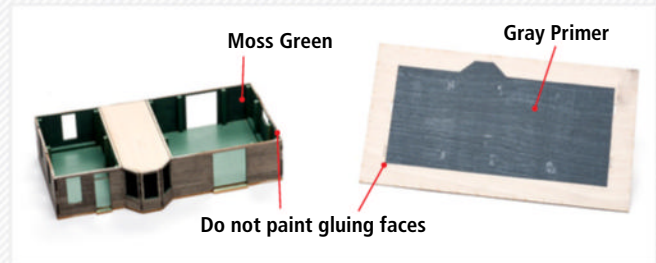
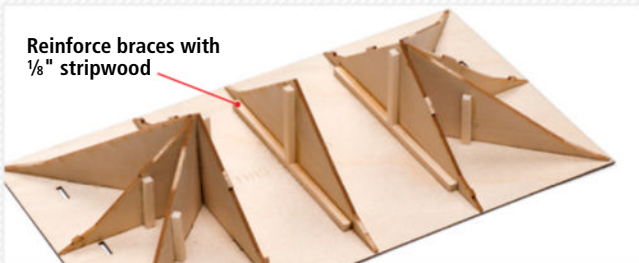
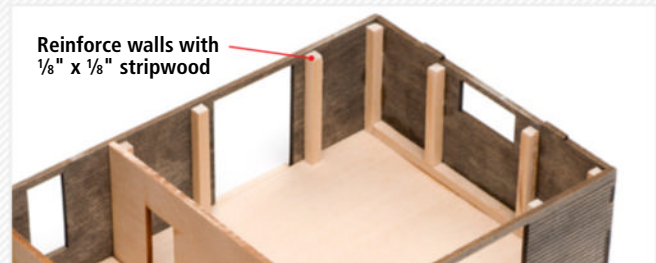
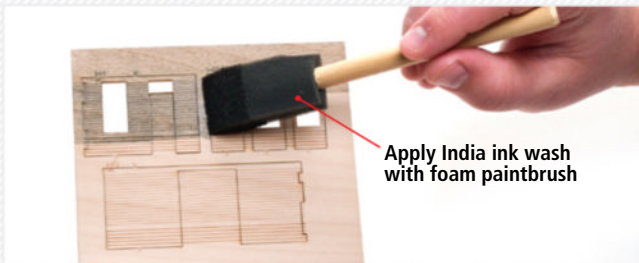
online and in books, I noticed several depots had peeling white paint, revealing the original tan and Rock Island Maroon paint underneath. A tattered roof and boarded-over windows would further reinforce the structure was on its last legs.

Even if your layout doesn't have passenger service, you can still justify a depot along the right-of-way by modeling it as a maintenance-of-way building. You can still find examples on Class 1, regional, and short line railroads today.

MORE ON THE WEB

Get an exclusive behind-the-scenes look at the photo shoot for this month's cover at our website, ModelRailroader.com

STEP 1 WEATHERING AND SEALING WOOD



Weathering wood is easy with an India ink wash. Since I wanted the wood to look old, I mixed 2½ teaspoons of ink in one pint of 70 percent isopropyl alcohol. If you want your building to have a less-weathered look, reduce the amount of ink to ½ or 1 teaspoon.

I applied the ink with a 1"-wide foam paintbrush while the parts were still on the carrier sheet. If you apply the wash after the parts are assembled, stray glue on the parts will seal the wood, preventing the ink wash from soaking in.

To prevent the wood parts from warping (remember, isopropyl alcohol

penetrates wood even more than water), I set the parts on paper towels and put several heavy books on top for weight.

Once the ink wash had dried (I let the parts sit over the weekend), I assembled the walls per the kit's instructions. Knowing I'd be airbrushing the exterior with acrylic paint and using a weathering technique that involved water, I generously reinforced the walls with 1/8" x 1/8" stripwood, as shown in the upper right photo.

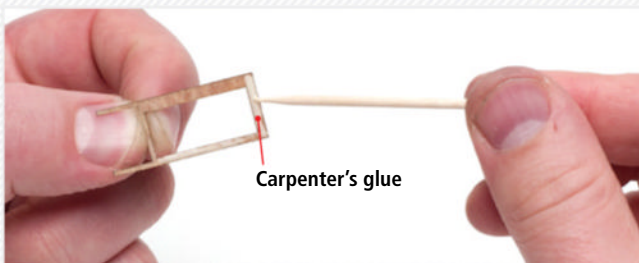
The roof has nine triangle-shaped braces. Though the laser-cut wood is strong with the grain, it's flexible

across it. To prevent the braces from warping over time, I added lengths of 1/8" stripwood.

Wood expands and contracts with changes in humidity. To minimize the effects of humidity on the depot, I masked the exterior of the walls and spray painted the interior with Rust-Oleum Painter's Touch 2X Moss Green (no. 249071). I used this color because I'd initially thought about leaving a few windows uncovered.

I masked the bottom of the roof and sprayed it with Rust-Oleum Painter's Touch 2X Gray Primer (no. 249088). To ensure strong glue joints, do not paint the gluing faces.

STEP 2 APPLYING TRIM AND PAINT



The depot features peel-and-stick trim. However, the hairspray weathering technique I used (**step 4**) requires water. To make sure the trim wouldn't lift off, I applied carpenter's glue to the sticky side of the parts.

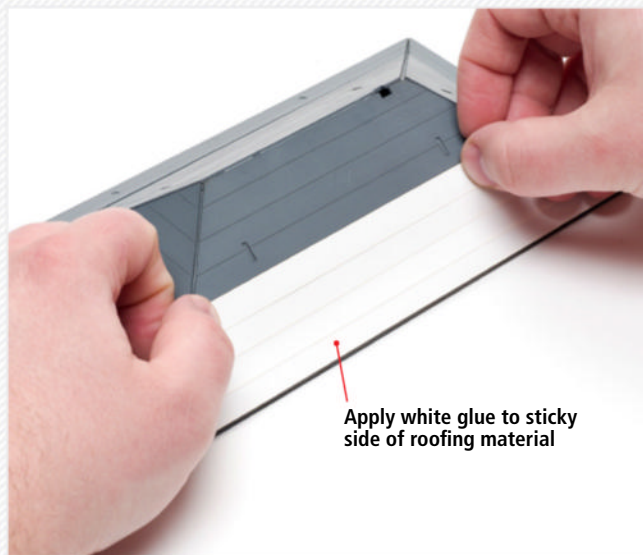
With all of the trim, windows, and doors in place, I airbrushed the depot Polly Scale Sand (no. 414302). I airbrushed the freight doors, personnel door, and wainscoting Rock Island Maroon (no. 414248).

Both of these colors have been discontinued by Testor Corp. Model Master Skin Tone Tint Base Light (no. 4601) is a reasonable stand-in for Sand. Rock Island Maroon is available from Tru-Color paint as item TCP-260.

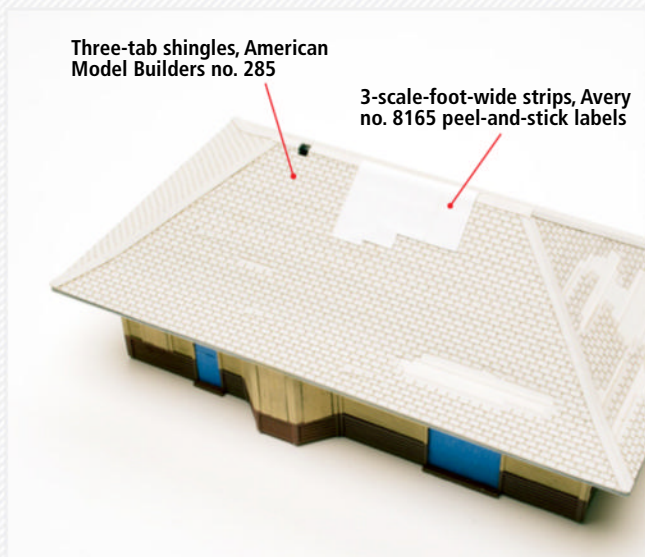
STEP 3 UP ON THE ROOF



Mask gluing faces on roof

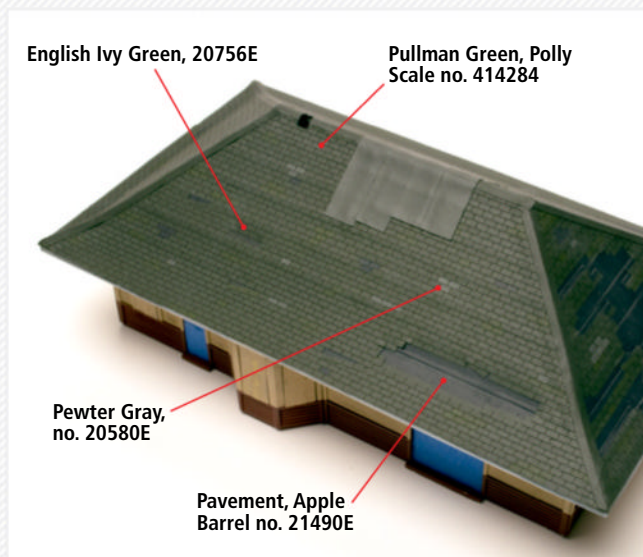


Apply white glue to sticky side of roofing material



Three-tab shingles, American Model Builders no. 285

3-scale-foot-wide strips, Avery no. 8165 peel-and-stick labels



English Ivy Green, 20756E

Pullman Green, Polly Scale no. 414284

Pewter Gray, no. 20580E

Pavement, Apple Barrel no. 21490E

I **spray painted** the front and back of the roof panels with Rust-Oleum Painter's Touch 2X Gray Primer, masking the gluing faces on the bottom of the roof. As before, this seals the wood and reduces the effects of changes in humidity.

Next, I applied the peel-and-stick rolled roofing material supplied with the kit. Continuing with my "belt and suspenders" approach, I applied white glue to the sticky side of the roofing material to make sure it wouldn't lift off later.

To give the depot a sense of history, I applied American Model Builders no. 285 three-tab shingles over the rolled roofing. I left some gaps in

the shingles, revealing the rolled roofing underneath. I also cut and randomly installed individual three-tab shingle slabs to suggest they'd popped loose.

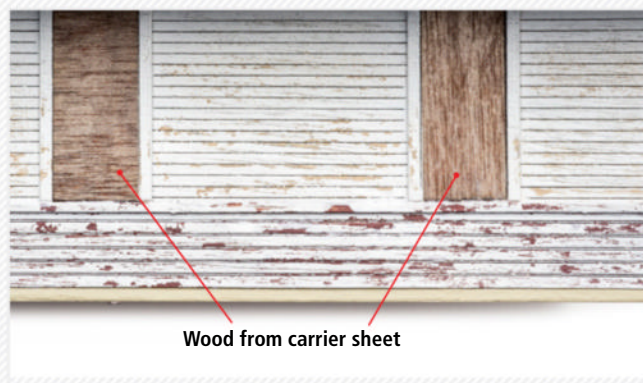
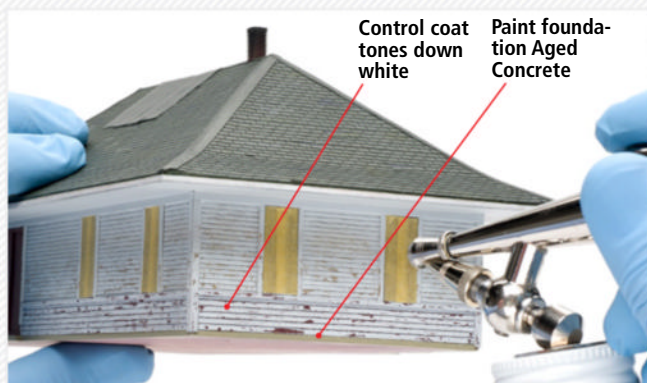
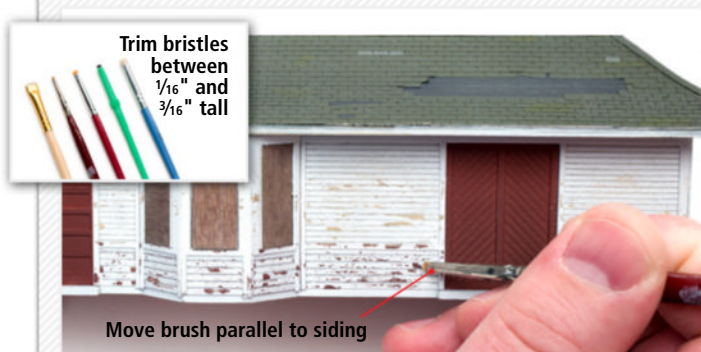
The three-tab shingles looked OK, but I felt the roof needed something more. I found a prototype photo online that showed a rolled roofing patch hastily applied over three-tab shingles. I replicated that look by cutting 3-scale-foot-wide strips of Avery peel-and-stick shipping labels (no. 8165). I applied glue to the adhesive side of each strip before installing it.

I airbrushed the roof Polly Scale Pullman Green (no. 414284). Once the

paint had dried, I turned to Apple Barrel matte acrylic craft paint to do the highlight painting. I painted the exposed rolled roofing Pavement (no. 21490E) and random three-tab shingles English Ivy Green (no. 20756E) and Pewter Gray (no. 20580E). I used the latter to paint the rolled roofing patch straddling the top of the roof.

I drybrushed streaks of Model Master Reefer Gray (no. 4886) on the shingles and rolled roofing, keeping the brush parallel to the edge of the shingles. I then applied thinned Engine Black (no. 4888, 1 part paint to 9 parts 70 percent isopropyl alcohol). This acts as a control coat, blending the weathering together.

STEP 4 HAIRSPRAY, THE WEATHERING TECHNIQUE



I masked the personnel and freight doors. I found a prototype photo of a Rock Island depot painted white with maroon doors. I thought this was a nice look and added some needed spot color to the building. I used a wire brush to remove some of the paint, revealing the weathered wood underneath. I applied thinned Engine Black to tone down the original colors.


I struggled finding a realistic way to cover the windows. Then it dawned on me that the wood from the carrier sheet containing the depot's trim would be perfect (it's already cut to size). I should have installed the wood after I'd completed the weathering. Instead, I had to mask it twice.

The secret to realistic chipped paint starts with hairspray. I applied two coats of Aqua Net to the depot (any cheap, unscented hairspray will do the trick). Once applied, the depot will have a smooth, shiny appearance, similar to that of a semi-gloss finish. I let the hairspray dry overnight.

Next, I painted the depot Model Master Reefer White (no. 4873). Ten minutes after the last coat of paint had been applied, I used a variety of short-bristled (trimmed between $\frac{1}{16}$ " and $\frac{3}{16}$ " tall, as shown in the inset image) brushes to remove the white paint. After dipping the brush in water, I applied firm pressure and moved it parallel to the siding.

Sometimes too much paint is removed using the hairspray method. In those cases, I used a 10/0 paintbrush to apply more Reefer White. It's a good idea to refer to prototype photos to see what looks right.

I masked the wood window covers again and applied a thinned Engine Black control coat over the chipped paint. This tones down the white paint and helps the wood grain detail stand out. I followed that with a coat of clear flat acrylic.

One of the goals of a layout is to create a sense of time. This weather-beaten depot certainly captures the flavor of the 1970s, when the Rock Island was in its final years. 

How to model a modern lumber



This low-relief structure is loaded with exterior details

By Thomas Klimoski • Photos by the author

My HO scale Georgia Northeastern RR (GNRR) models a modern-era short line that runs from Marietta, Ga., to Copperhill, Tenn. I wanted to include a building materials company on my layout to replicate one on the prototype in Marietta. The industry receives a large number of shipments by rail and is one of the main customers of the prototype GNRR. Supplies shipped by rail include drywall, lumber, and an

assortment of other goods. A majority of these items arrive on standard and center-beam bulkhead flatcars, as re-created in the photo above.

While the facility I built isn't an exact model of the prototype, it captures the key components and services of a building materials company. Follow along as I describe the steps I took to build the structure and other components.

Paving the yard

One of the key features of any building materials company is a large paved storage yard. When I laid the track to the facility, I left 3½" of space between the backdrop and the siding so that a 1" thick low-relief enclosed storage building could be installed. This left a 2½" clear area between the building and any cars on the siding.

yard

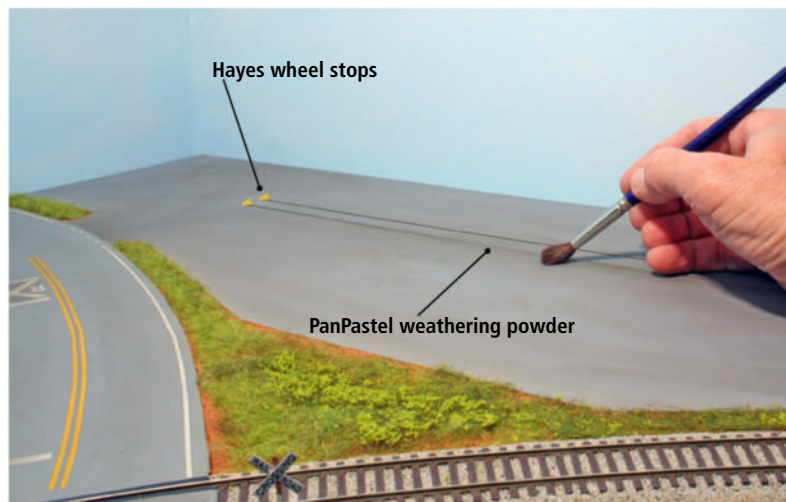


Crews unload a center-beam bulkhead flatcar at a building materials company on Thomas Klimoski's HO scale Georgia Northeastern layout. This storage yard provides plenty of room for exterior details.

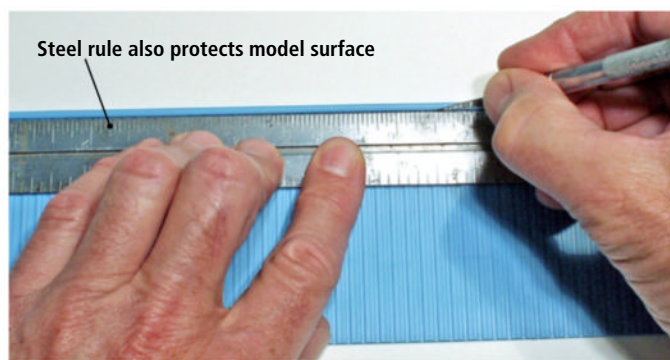
The unobstructed area between the building and the siding is important so forklifts can remove the building products from both sides of the railcars. Most rail sidings at building supply companies are embedded in the pavement so vehicles can easily drive over the rails when moving around the yard.

I modeled the paved area with a large sheet of .060" styrene. Before I cut the styrene, I used thin sheet cork to define the storage yard area and bring the ground level up to the tops of the ties. I used foam-safe adhesive to attach the cork to the layout's extruded-foam insulation board base.

After carefully measuring and making a template, I cut the styrene sheet in one piece to fit the area except for the gauge of



1 Weathering the lot. With a soft paintbrush, Tom applies PanPastel weathering powders to the unloading area. Here he's applying powders where trucks and forklifts operate.



2 A straight cut. Tom cut off the rain gutter portion of the long wall with a sharp no. 11 blade, using a steel rule to keep the cut straight. The rule also protects the plastic surface.

the rail. It took several adjustments to get the styrene to fit snug against the rails and the existing roadway outside the complex.

The .060" styrene mated against the code 70 track perfectly, leaving the railhead slightly above the lot's surface. I used the same styrene for the area between the rails, making sure to leave a small gap on each side for the flangeways.

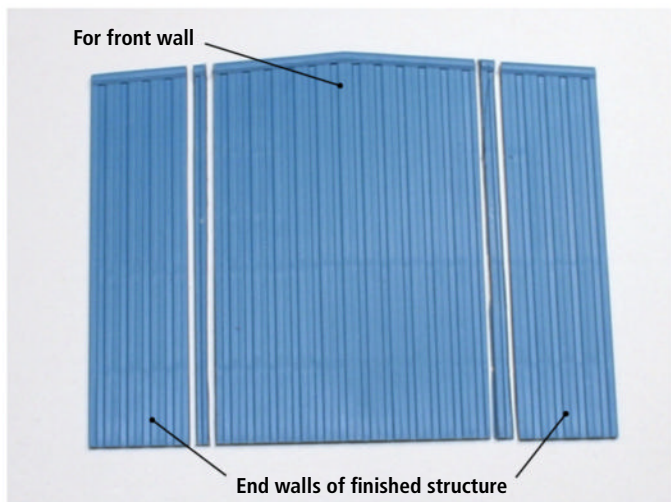
Once I was satisfied with the fit, I painted the styrene with Rust-Oleum Light Gray automobile primer. [Do this in a well-ventilated area and wear personal protective equipment. – Ed.] After the paint had dried, I applied a coat of Model Master Lusterless Flat. I used an India ink wash (1 teaspoon ink to one pint of 70 percent isopropyl alcohol) as a final wash that I applied using an airbrush.

With the painting complete, I installed the paved area using clear adhesive caulk. I used a roller to eliminate air pockets and evenly distribute the caulk. A final coat of weathering was applied with a soft paintbrush and PanPastels weathering powders. See **1**.

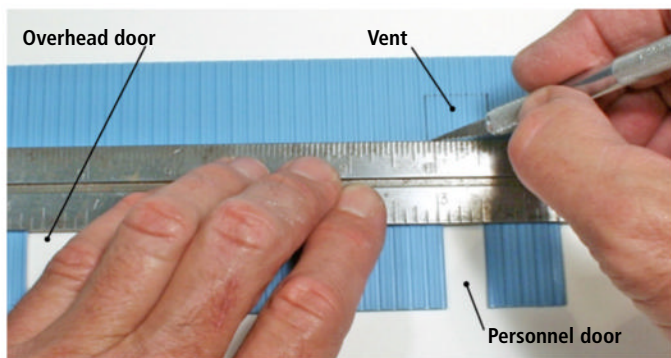
Enclosed storage building

I used Pikestuff's motor freight terminal (no. 5001) and two-story office building (no. 5002) kits for this project.

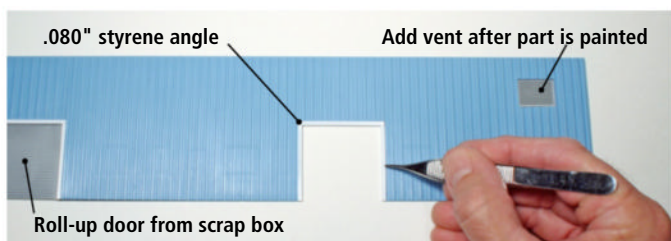
The area I planned for the building materials company was L shaped, measuring 28" wide by 7" deep. I wanted to leave a little room for a driveway on one side and an air-conditioning unit on the other, so the finished structure measures 26" by



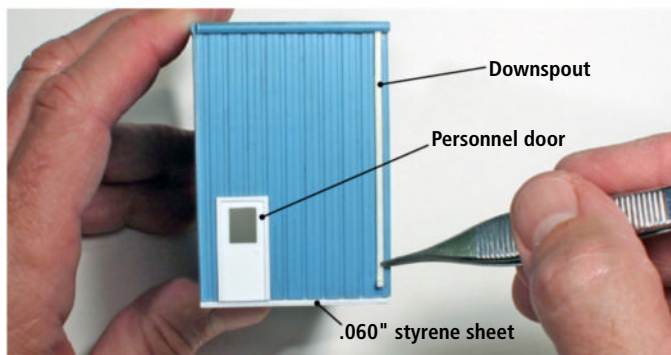
3 Dissecting the walls. Tom cut the side wall from the truck terminal kit. The end pieces are $\frac{13}{16}$ " wide; the middle piece will be used to extend the front wall.



4 Doors and vents. The Pikestuff plastic walls are thick, so Tom made several light passes through the material when cutting the door and vent openings.



5 Framing the opening. After installing the header trim, Tom added the side trim. He set the vent in place for the photo but didn't add the part until it was painted.



6 Office addition. After cutting the side wall of the office down to $1\frac{3}{4}$ " wide, Tom added a personnel door and downspout. The walls are attached to .060" styrene sheet.

$\frac{1}{4}$ ". By keeping the footprint of the building relatively shallow, I was able to have a little more room for the storage yard.

I began construction of the enclosed storage building by removing the molded rain gutters from the top of the two long wall sections. The kit instructions indicate to just remove the upper portion of the rain gutter, but I removed the entire gutter, leaving the wall section flush at the top. It took several passes of the knife to cut through the styrene, but I took it slow and used a steel rule to maintain a straight cut line, as shown in **2** on the previous page. I saved the gutter sections, as they will be used on the edge of the roof in a later step.

Next, I began work on the side walls. I took one of the short side walls from the truck terminal kit and cut a section $\frac{13}{16}$ " wide from each end. These will be the end walls on the finished structure. See **3**. I didn't cut the gutters off these two pieces.

The remaining piece is $2\frac{3}{8}$ " wide. I used it to provide additional length to the main front wall section after cutting it to the same height and trimming it to $2\frac{1}{4}$ " wide.

I replaced the overhead doors with two 12-scale-foot-square doors from another kit. I planned to use three overhead doors, with one open, so two doors were sufficient.

I equally spaced the three doors on the front wall. Using a hobby knife with a sharp no. 11 blade, I cut down the middle of the raised panel on the molding at the proper locations to make the door openings. The personnel door is from the motor freight kit. I put it at the right end of the structure.

I also found in my scrap box a set of louvered vents and positioned them above the personnel door. Again, I took my time and made several passes with the knife to cut through the styrene, as shown in **4**. I cleaned up the edges of the vent opening with a file, as there's no trim around the vent.

Next, I joined the two long wall sections from the truck terminal together end to end with Plastruct Bondene. I reinforced the butt joint by adding a small piece of styrene to the back, as the wall edges are tapered at a 45-degree angle.

I added the short wall section that was cut from the side wall and glued it to the front wall section and reinforced the joint again with a piece of styrene. The final measurement for the front wall is $24\frac{1}{4}$ ".

With the overhead door openings cut and the front wall assembled, I added .080" styrene angle around the openings. I cut a small notch on one side of the L angle at each end of the header trim piece so it would overlap the side trim pieces.

Once I had all the pieces cut to length, I glued them to the edge of the door opening and installed the doors in the frames from the back. See **5**. The personnel entry door from the kit has trim around it, so I glued it into the opening from the front after assuring a tight fit in the opening. I double-checked the fit of the louvered vent but didn't install it until after it was painted.

I attached the side wall to the right side of the enclosed storage building's front wall and added triangular styrene brackets on the inside corners to keep the wall square.

On to the office

Then I began work on the Pikestuff two-story office building. I only assembled the left half of the structure because I was joining it to the enclosed storage building. For the office structure, I removed the top portion of the rain gutter on the front wall piece. I reduced the side wall to $1\frac{3}{4}$ " wide by removing the left side of the wall. I also cut an opening for a personnel door.

I beveled the cut edge of the wall to a 45-degree angle using a piece of sandpaper taped to a piece of glass. This allowed for a tight joint to the rear wall section.

I assembled the office wall sections and added a piece of .060" sheet styrene to the bottom of the assembly for a floor. I installed the personnel door and a downspout on the side wall, as seen in 6, opposite.

Next, I added the $\frac{13}{16}$ " side wall section from 3 to the office wall. For the front wall of the office, I used the kit's two-story windows and cut out the appropriate openings. I lined up the entry door assembly with the edge of the building that would attach to the enclosed storage area wall, then marked and cut out the opening. I installed the windows and front door assembly in the openings. See 7.

To bring the height of the office walls up to that of the enclosed storage building, I added a frame to the perimeter of the floor using .125" square styrene rod, as shown in 8 on the next page. This created a foundation that raised the office above the level of the yard and looked more prototypical.

After masking the structure, I spray-painted the foundation with Testor's Light Aircraft Gray. I added a piece of .060" styrene to the interior between the first and second floor to reinforce it and create a view block. I left the office portion unattached for now to make painting easier.

I painted the structure with spray paint. I used Rust-Oleum Painter's Touch 2X Flat White on the doors and windows and Metallic Aluminum on the vent. I turned to Valspar Premium Finish Gloss Lovely Bluff for the walls.

I let the spray paint dry thoroughly before spraying the entire structure with Model Master Lusterless Flat. I added the window glazing with canopy glue after the clear flat was applied.

Bring on the reinforcement

One of the problems when constructing a long, narrow, low-relief building is determining a way to attach the roof to the structure and stiffen the entire assembly. The answer was to use 1"-thick extruded-foam insulation board and attach the roof and structure to it using a foam-safe adhesive.

First, I cut a piece of 1" foam to the inside dimensions of the building and the full height of the structure. Once I determined the roof angle, I clamped a long steel rule to the foam at the proper height. I attached a second steel rule to the top of the foam and used a Stanley Surform shaver to shape the foam to the correct angle. I cut away a section in the foam around the location of the open overhead doorway to give some depth to the opening and allow me to place a photo backdrop inside the structure.

I assembled the two structure components with thick cyanoacrylate adhesive. Then I attached the structure to the foam with Loctite clear Power Grab, a foam-safe adhesive.

The final step in assembling the structure was to add the roof. I cut the roof panels from the truck terminal kit into two $1\frac{3}{8}$ " wide pieces. I used the roof sections from the two-story office structure to make a roof for that part of the structure. Once the pieces were cut to the proper dimensions, I added stiffeners to the back and glued them together using solvent cement. I attached the L-shaped roof gutters from the kit on the outside corners of the roof after trimming them to the correct length.

I added the gutter sections that I cut off in 1 to the remainder of the roof edge and cemented them in place. Once the roof assembly was completed, I spray-painted it with Rust-Oleum Painter's Touch 2X Flat White, followed by a coat of Lusterless Flat once the white was dry.

I attached the roof to the structure with CA and used clear Power Grab to secure the



7 Doors and windows. The front wall of the office uses the kit's two-story windows and front door assembly. Tom aligned the door with the right edge of the wall.

Add an operating gate

I used a Lego Technic gear-reducer mechanism to operate the gate for my building supply company. The mechanism takes a horizontal rotating action and converts it to a vertical shaft that can spin in either direction.

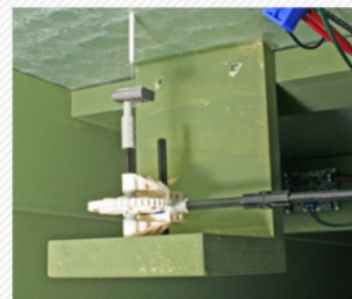
Though the Lego gear set that I used has been discontinued, I found a similar mechanism on eBay by searching "Lego gear reducers." Additional connection pieces can be purchased online through various websites and direct from Lego.

I built a small shelf to hold the mechanism at the proper height and lined it up under the long leg of the gate. I mounted the mechanism to the shelf, then extended the input shaft through the fascia and attached a crank handle to the end.

After drilling a hole in a small lead weight, I slipped it onto the long leg of the gate from below to act as a counterweight. I then bent the long leg of the gate at a 90-degree angle and then 180 degrees back to create an upside down T at the proper height to connect it to the mechanism. I cut the excess wire off after I was satisfied with the location and height. I used a shaft connection bracket from the Lego set to extend the output shaft and connect it to the gate leg.

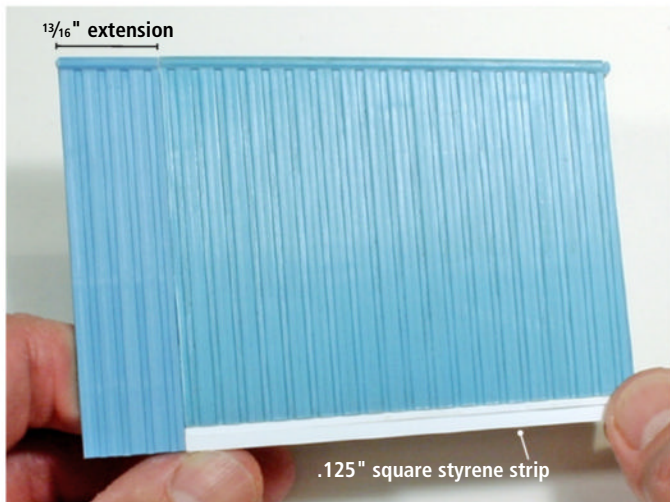
To prevent the crank handle from being bumped, I covered it with a hinged exterior electrical outlet cover that crews open when they need to open the gate.

This simple system operates smoothly and reliably and adds a realistic step that crews have to perform as they switch the industries. – Thomas Klimoski

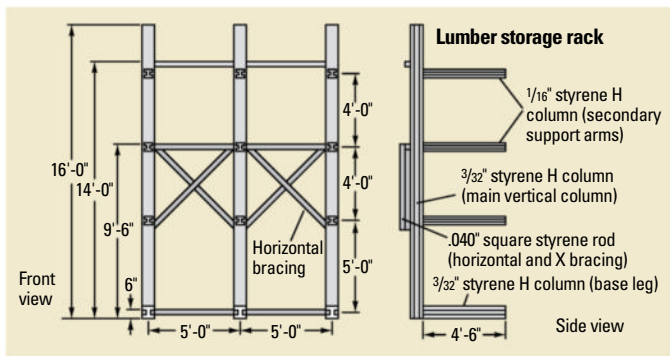


A Lego Technic gear-reducer mechanism turns the shaft that opens the gate at Tom's building supply company.

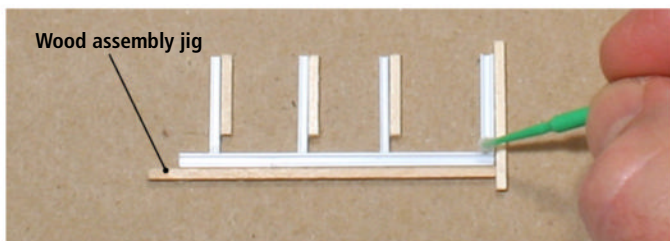




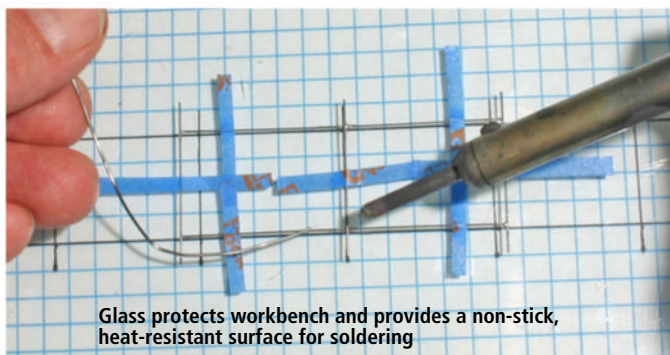
8 Extra lift. To raise the foundation to the proper height, Tom added a frame to the perimeter of the office portion using .125" square styrene strip.



9 Lumber storage racks. This illustration shows how Tom constructed the lumber storage racks using styrene strip. Rick Johnson illustration



10 Gluing the racks. Tom used a Microbrush to apply plastic cement to the lumber storage rack parts. The jig holds the pieces in position while the glue dries.



11 Building a fence. Tom soldered the fence rails to the posts with a soldering iron and .032" diameter solder, using glass-covered graph paper as a guide.

roof to the foam. I added downspouts at appropriate locations and weathered the structure and roof with PanPastels.

Rack it up

Lumber storage racks at building material companies vary in design. While each may be different, they also share similar construction features that can easily be modeled. Plans for a lumber rack are shown, **9**.

I began construction of the lumber storage racks by building a jig to aid in assembly. I glued two strips of HO scale 6 x 6 basswood to a sheet of cardboard at a 90-degree angle. Additional pieces of wood were positioned below where the support arms attached to the main beam.

The secondary support arms are a scale 5'-6", 9'-6", and 14'-0" from the bottom. This spacing replicates those found on the prototype, with the lowest level storage area having more room so materials can more easily be reached.

I used $\frac{3}{32}$ " styrene H column for the main vertical post and lower support leg assembly. Using a NorthWest Short Line Chopper, I cut the vertical pieces 16 scale feet long and the lower support leg a scale 4'-6".

The secondary support arms were made with $4\frac{1}{2}$ scale foot lengths of $\frac{1}{16}$ " styrene H column. Once all the pieces were cut, I began assembling them in the jig, using a Microbrush and styrene cement to attach the pieces, as shown in **10**.

I positioned the completed support assemblies 5 scale feet apart and glued .040" square styrene rod horizontally in three locations, scale 6", 9'-6", and 14'-0" from the bottom on the rear of the racks to hold them vertically. I used a square to make sure the vertical posts remained plumb.

Once the glue dried, I added X bracing using .040" square styrene strip running diagonally from the first to the second smaller support arms.

The X bracing is a scale 6'-6" long and fits into the channel on the side of each H column. I made sure that the X bracing crossed in the same manner on each assembly.

Once all the storage racks were assembled, I painted them with Rust-Oleum Flat Brown spray paint. Lumber racks are painted different colors, so consult prototype images before spraying your styrene parts.

Lumber stacks and wraps

No building supply yard is complete without numerous stacks and racks full of lumber. I used several different sizes of scale lumber to make my stacks of lumber. I used the Chopper to cut the wood into standard lumber lengths.

I stained the pieces with a light brown stain left over from a home improvement project prior to assembling them into stacks. I used Aleene's Tacky Glue to glue the individual pieces into stacks 4 scale feet deep by 3 scale feet high. On some of the stacks I used fine chart tape to simulate banding.

I created lumber wraps in various sizes using photo-editing software. I printed the wraps on 32-pound acid-free laser paper. This paper has a slight sheen to it and simulates the look of plastic lumber wraps used to protect full-size loads. Using high-quality paper also reduces the chances of the graphics fading over time.

I used two pieces of $\frac{3}{16}$ " x $\frac{1}{2}$ " x 24" basswood glued together on the $\frac{3}{16}$ " dimension to create a core for the wraps. Using a saw, I cut the wood into standard lumber lengths. Then I covered the wood with the wraps, which I secured with clear tape.

Fencing it all in

Most building supply companies are surrounded by chain link fences for security reasons. I scratchbuilt the fence using .020" music wire and tulle, a fabric used in bridal veils. I purchase the tulle with the finest mesh for use as my fencing material. I cut the tulle into 1 $\frac{1}{8}$ " wide strips, making sure to note the orientation of the diamond pattern, which I chose to run in a vertical pattern.

I determined the fence post spacing by dividing the distance in scale feet by 10, which is the standard distance between fence posts. I adjusted the distance between the posts slightly so I'd end up with even spacing on each section of fence. I cut the music wire using wire cutters into 1 $\frac{1}{2}$ " lengths for the posts (make sure to wear eye protection).

With the posts cut, I assembled the fence. I cut the rails to the proper length and used a sheet of graph paper underneath a thick piece of glass to aid in keeping the fence straight and square. The top and bottom fence rails are spaced 1" apart, leaving $\frac{1}{4}$ " at the top and the bottom of the post. I used blue painter's tape to hold the posts and rails in position as I soldered them. See 11, opposite.

Once I had the fence framework completed, I evenly distributed CA on the rails and posts with a Microbrush and carefully attached the tulle. I used tape to hold the tulle in position while the glue dried.

I spray-painted the fence Metallic Aluminum. The paint will slightly shrink the tulle and tighten it up on the fence frame as it dries.

I installed the fence by inserting the bottom of the posts into holes filled with Aleene's Original Tacky Glue. I kept the fence vertical as the glue dried.

The upper $\frac{1}{4}$ " of the fence posts represent brackets that hold the barbed wire. I used fine white EZ Line by Berkshire Junction to simulate the barbed wire. I ran three strands of line evenly spaced at the top of each post.

One final detail I wanted to include with the fence was an operating gate. [See "Add an operating gate" on page 31. – Ed.] I constructed the gate similar to the fence frame, except I used .025" music wire to make the assembly more rigid.

I didn't extend the middle and end posts below the bottom rail. This allowed the gate to swing freely over the track. I cut those two posts 1 $\frac{1}{4}$ " long. I made the post on the hinge side of the gate 6" long and added diagonal supports to the frame. I attached the tulle, spray-painted the gates, and added EZ Line.

I inserted a 4" piece of $\frac{3}{32}$ " styrene tubing through the foam base where the hinge side of the gate would be. This tubing is used to adjust the height of the gate and provide a conduit for the shaft that operates the gate. I inserted the long leg of the gate through the tubing. It exits the bottom of the tube on the underside of the layout. I adjusted the height of the gate using the styrene tube so that the bottom of the gate would clear the tracks when it opened and closed. See 12.

Final touches

I installed the structure and placed the lumber storage racks around the perimeter of the yard. Other details were placed throughout the property, including cars and trucks, forklifts, pallets of materials, an air-conditioning unit, and a Dumpster.

I hope you'll consider modeling your own building materials company using these steps as a guide. After all, those loaded center-beam bulkhead flatcars need a place to offload their products for the local construction industry. **MR**



12 Fenced in. Tom added an operating gate to the building supply company. Diagonal braces help strengthen the gate.

Materials list

Aleene's

15600 Aleene's Original Tacky Glue

Berkshire Junction

white fine EZ Line

Evegreen styrene

186 .125" square rod
223 $\frac{3}{32}$ " tube
292 .080" angle
9060 .060" styrene sheet

K&S Precision Metals

499 .020" music wire
5005 .025" music wire

Loctite

clear Power Grab
all-purpose interior construction adhesive

Miscellaneous

extra thick cyanoacrylate adhesive
fine chart tape
tulle

Northeastern Scale Lumber

HOSCAL4411 HO 4 x 4
HOSCAL6611 HO 6 x 6
HOSCAL3811 HO 3 x 8
785337 $\frac{3}{16}$ " x $\frac{1}{2}$ " x 24" basswood

Pacer Technology

PT56 Formula 560 canopy glue

Pikestuff

5001 Motor Freight Terminal
5002 modern two-story office building

Plastruct styrene

BOND-2 Bondene
90541 $\frac{1}{16}$ " H column
90542 $\frac{3}{32}$ " H column
90740 .040" square strip

Rust-Oleum spray paint

2081 Light Gray automobile primer
214085 Flat Brown
249126 Painter's Touch 2X Flat White
249128 Painter's Touch 2X Metallic Aluminum

Testor Corp.

1233 Light Aircraft Gray
19003 Model Master Lusterless Flat

Valspar spray paint

85004 Premium Gloss Finish
Lovely Bluff

Thomas Klimoski and his wife, Diane, live in the Northeast Georgia mountains. His Georgia Northeastern model railroad was featured in Model Railroad Planning 2016. A video of his layout in action can be found at our website, www.ModelRailroader.com.



SCRATCHBUILD A SMALL-TOWN STOREFRONT

Contributing editor
Pelle Søeborg
scratchbuilt this
building for his HO
scale layout.

These easy-to-use techniques will work in any scale

By **Pelle K. Søeborg** • Photos by the author

There was a vacant lot in the town on my HO scale Union Pacific layout. Since no commercial building kits would fit the space, I scratchbuilt a structure from styrene. My building, which measures $4\frac{11}{32}$ " x 6" x $3\frac{15}{64}$ ", doesn't follow a prototype. Instead, it's based on storefronts found in small Midwest towns.

Why scratchbuild? The obvious reason is to make a structure that fits the space. A secondary benefit is having a structure not found on other layouts.

If you have some vacant real estate on your model railroad, try scratchbuilding. Styrene is easy to work with, takes glue well, and it's easy to paint.

Materials list

Acrylicos Vallejo
70520 matte varnish

Grandt Line
5291 front door

Humbrol paint
70 Brick Red matte
237 Desert Tan matte

Model Master enamel paint
1723 Gunship Gray

1732 Light Gray
1790E Chrome Silver
2002 Skin Tone
Dark Tint

Evergreen styrene
100 .010" x .020" strip
103 .010" x .060" strip
105 .010" x .100" strip
121 .020" x .030" strip
133 .030" x .060" strip
142 .040" x .040" strip
9005 .005" clear sheet

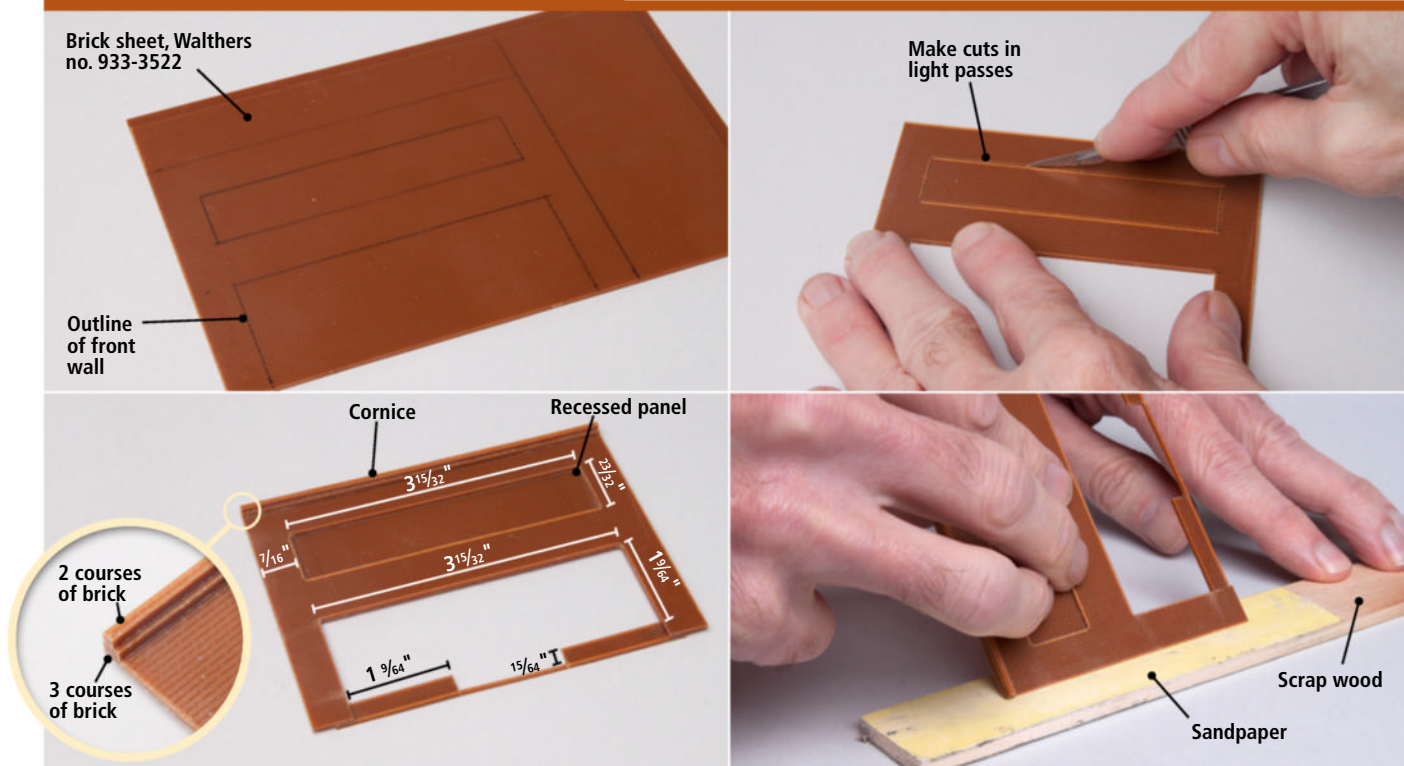
9010 .010" sheet
9020 .020" sheet
9040 .040" sheet

Miscellaneous
Self-adhesive paper

Pikestuff
2101 sliding window

Wm. K. Walther's Inc.
933-3522 brick sheet
933-3733 roof detail kit

STEP 1 CUTTING THE BRICK SHEET



I used **Walthers Cornerstone** styrene brick sheets for the walls (933-3522). I started by outlining the various wall sections with a pen, making sure the brick pattern matched where the sections joined. The outlined section shown in the upper left photo is the front wall.

Next, I cut the styrene with a hobby knife. The styrene proved difficult to

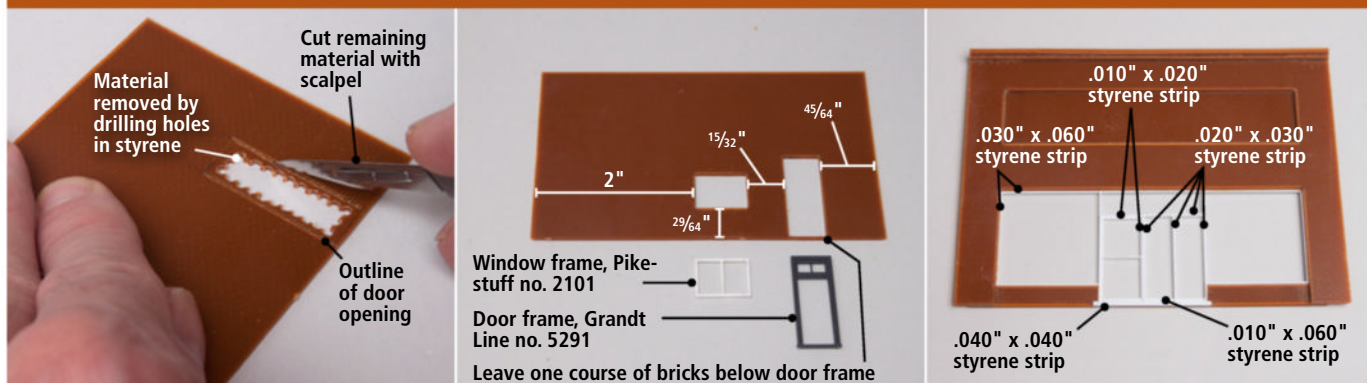
cut. It took several passes to cut through the material. I made the first cuts using a steel rule as a guide. Then I finished the cuts freehand, as shown at upper right. I smoothed the edges with fine-grit sandpaper.

The front wall consists of several pieces glued together with liquid styrene cement. I made the cornice by gluing three courses of brick to the

main wall. Then I glued two courses of brick on top of that, as shown at lower left.

I trimmed the styrene to roughly a 45 degree angle with a hobby knife. Then I smoothed the edges by running the styrene over a piece of sandpaper attached to a scrap piece of wood. This technique is shown in the lower right photo.

STEP 2 DOORS AND WINDOWS



I made the door and window openings for the back wall by first drilling a series of holes inside the area to be removed. This made the remaining material easier to cut with a blade, as shown at left.

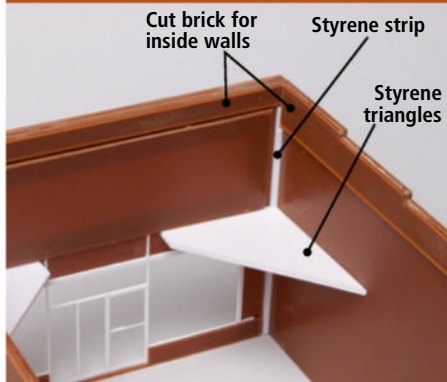
The middle photo shows the back wall section with the openings for the

door and window completed. The door frame is from Grandt Line (no. 5291) and the window frame is from Pikestuff (no. 2101). I left one course of bricks below the door frame.

I made the storefront window and door section from assorted styrene

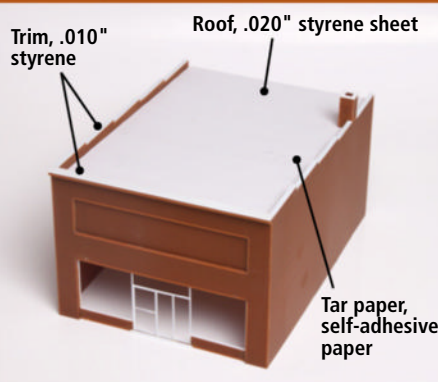
strip, as seen in the photo at right. I first glued the four vertical strips in place, followed by the horizontal strips. After that I attached the two vertical strips next to the door. Then I made the door frame. Handle the wall with care, as the door and window assembly is delicate.

STEP 3 ASSEMBLING THE WALLS



Since the Walthers brick sheet is plain on the back, I had to cut strips of brick for the inside walls above the roof line, as shown in the image at left.

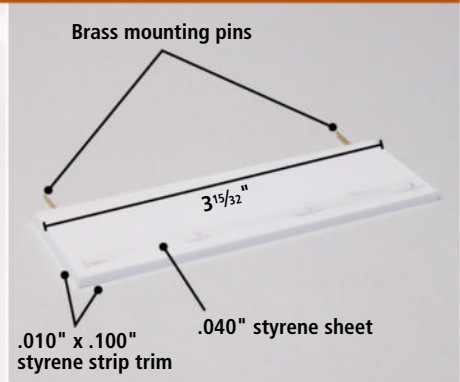
Then I assembled the four walls with liquid plastic cement. I reinforced the corners with square styrene strip. I also installed styrene triangles to keep the corners at 90 degree angles. [City Classics produces injection-molded plastic corner braces for building interiors. Item



no. 209 includes 12 braces for regular corners and four braces for reversed corners. – Ed.]

As you can see in the middle photo, I applied .010" styrene trim to the tops of the walls to suggest cap tiles. I made the roof from .020" styrene sheet.

To simulate tar paper, I applied self-adhesive paper cut in 4-scale-foot-wide strips to the roof. To make the roofing material look realistic, I staggered the seams between rows.

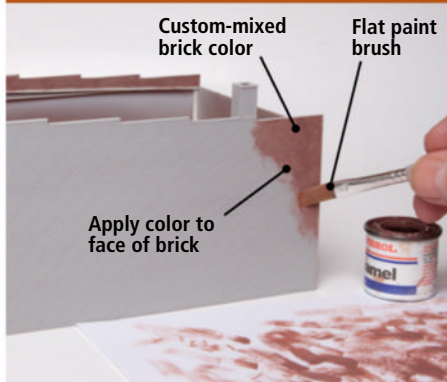


I finished the roof by adding the chimney, which I made from pieces of brick sheet. The crown is .010" styrene strip.

The awning, shown at right, consists of .040" styrene sheet with .010" x .100" styrene strips attached to the edges.

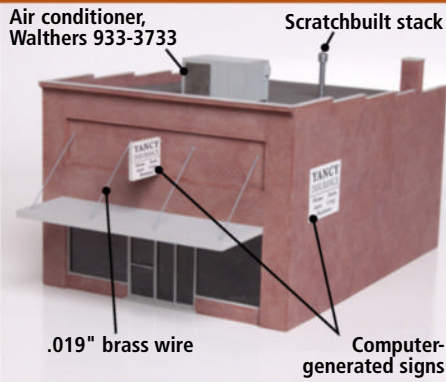
I drilled two holes in the back of the awning and installed brass mounting pins with cyanoacrylate adhesive. The pins fit into corresponding holes in the storefront.

STEP 4 PAINTING AND WEATHERING



I first painted the building and awning light gray. Then I drybrushed the bricks with a custom-mixed Humbrol enamel color I made from Brick Red and Desert Tan, as shown in the photo at left. I don't follow a specific mixing ratio. I just use what looks right.

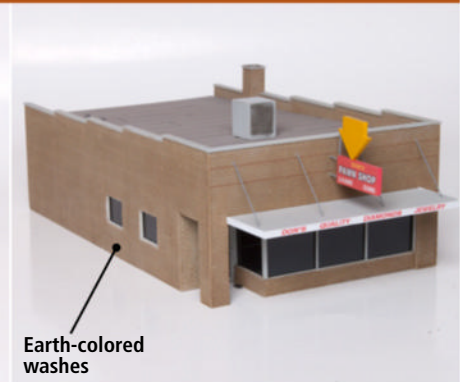
Drybrushing is a technique where you wipe most of the paint off the brush before touching it to the model. I find a flat brush works best for keeping the paint on the brick faces and out of the mortar lines. I left the trim and window frames light gray. After the bricks were painted, I gave the walls a coat of flat varnish with an airbrush.



I airbrushed the roof with a mixture of three parts Model Master Gunship Gray and one part Skin Tone Dark Tint. The air conditioner is from a Walthers roof detail kit (933-3733). I made the stack from pieces of styrene rod and tube. These details are shown in the middle photo.

I applied window tinting material, available at most well-stocked auto parts supply stores, to the glazing before I attached it to the model with Microscale Kristal Klear.

The four supports for the awning are .019" brass wire. I made the signs for the front and side of the building on my computer and printed them on self-adhesive paper.



The scratchbuilding and painting techniques I've shown here are quite versatile. A key difference between Yancy Insurance (middle photo) and Don's Pawn Shop, shown in the photo at right, is the color of the bricks.

To achieve the look of beige bricks, I used a slightly different painting method. I started by painting the walls light gray. Then I drybrushed the bricks a light beige color.

The light beige bricks looked too clean. To tone down the beige, I applied a couple of earth-colored washes to the wall. The washes give the bricks a weathered and variegated appearance. **MR**



New York Museum of Transportation interurban no. 162 passes the restored passenger shelter from the Rochester & Eastern Rapid Ry. as it returns to the trolley barn after a run. This is the smaller, 8 x 8-foot, design.

Scale drawings for a pair of **PASSENGER SHELTERS**

These small structures were built for an interurban line
in New York, but could also serve as flagstop
stations on a larger railroad

By Harold W. Russell • Photos by the author

The Rochester & Eastern Rapid Ry. was incorporated in 1901 as a high-speed interurban line. It ran from Rochester, N.Y., to Geneva, N.Y., and opened for operation in June 1904.

Cars ran on an hourly schedule. Freight service was also provided for local industries. To accommodate passengers, many shelters of two standard

designs were constructed. These were located at the line's intersection with the main streets of the many communities it served.

The shelters were two sizes, nominally 8 x 8 feet and 10 x 10 feet. Today, only three shelters are known to exist. Plans for the two sizes are presented here. Each was field-measured. The smaller one, referred to as no. 125, is now at the New

York Museum of Transportation (south of Rochester in the town of Rush). It was originally located at Johnson's Crossing near Canandaigua, N.Y.

The larger, no. 116, is in Fishers, N.Y. Buildings were numbered consecutively as the line headed east from Rochester, starting with 100.

In addition, photographs are presented of another located on Algerine Street, in

Stanley, N.Y., east of Canandaigua. Note that the main difference between the shelters, with the exception of their size, is the type of windows on their sides.

The 1930 Receivers' Report, Vol. 3, page 101.1, states that the Fishers shelter was built about 1904 or 1905, while the

Johnson's Crossing shelter dates from 1912 to 1913. The Algerine Street shelter has been restored and rests near its original site on private property. The old right-of-way with its poles is nearby. All of the shelters were used until the line closed in 1931.

During their lifetime, the shelters were painted several colors. The final scheme was orange and blue as shown on the one at the New York Museum of Transportation's trolley line.

For additional information, consult the websites for the New York Museum

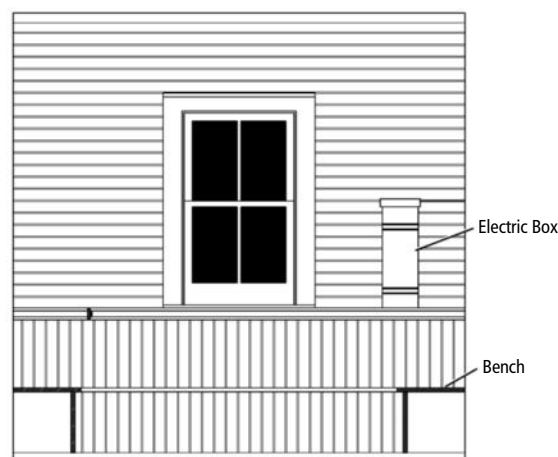
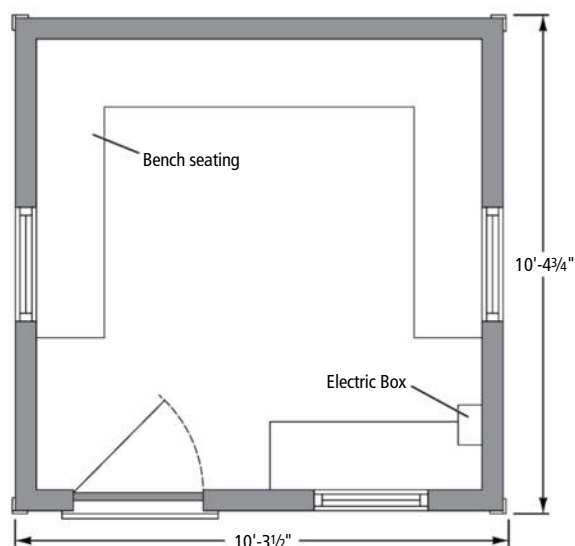


Drawn for *Model Railroader* magazine by
HAROLD W. RUSSELL

Magazine purchaser may have photocopies of these drawings made as an aid to personal model making but does not have the right to distribute copies of the drawings to others. Contact *Model Railroader* regarding commercial use of these drawings.

Ratio 1:48, O scale

TO CONVERT O SCALE
DRAWINGS TO YOUR SCALE
COPY AT THESE PERCENTAGES:
N 30 percent H0 55.1 percent S 75 percent



of Transportation (www.nymt-museum.org) and the Rochester & Eastern Rapid Ry. (www.rochester-and-eastern.com).

For a photograph of Rochester & Eastern Rapid Ry. car 157 and more history, see www.friendsoftherailroad.org/the-rochester-eastern-rapid-railway/.

Modeling the passenger shelters

While these shelters were designed for interurban use, they can also be modeled for conventional steam- and diesel-powered lines. Having several along your track will provide additional stops for your local passenger trains. The shelter should be located at a road intersection and have adjacent parking for vehicles.

The models, either large or small, should be built with clapboard siding and asphalt roofing. The sides may have various window designs. You can paint them your railroad's standard colors or choose the R&E's standard orange and blue. **MR**

Harold W. Russell is a prolific draftsman who has produced hundreds of drawings for Model Railroader and other modeling publications.



Located on Algerine Street in Stanley, N.Y., this shelter is on private property. It's the larger 10 x 10-foot design. It appears to be similar to the one in the drawing of the station at Fishers, and is believed to be in its original location.



The roof bracing of the Fishers station is visible in this photo taken during renovations. The bracing is painted blue to match the window and door trim. Modeling its complexity would be a challenge.



The corner bracing for the roof of the Fishers station is made of 2 x and 3 x stock.



The interior of the Fishers passenger shelter was covered with siding painted a medium gray with blue window trim.

Philly-area interurbans in upstate New York

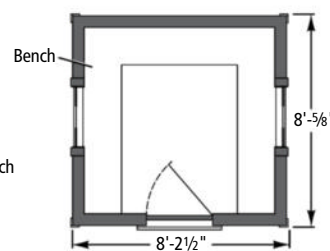
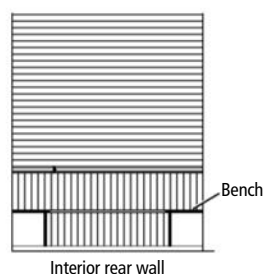
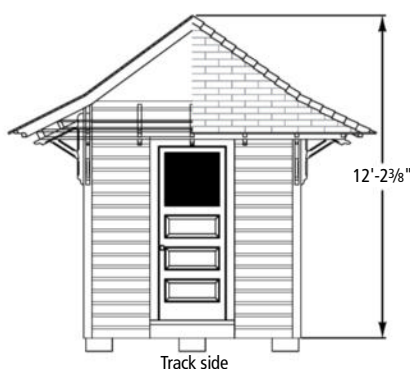
The passenger shelter at the New York Museum of Transportation frequently sees interurban traffic. Thanks to James Dierks, we have the following information: The museum has two interurban trolleys that originally were built by Brill in 1927 and 1928 and were last run by the Southeastern Pennsylvania Transportation Authority (SEPTA). These cars were originally known as "Stafford" cars and served on SEPTA and predecessor

line Philadelphia & Western from Stafford, Pa., to Upper Darby's 69th Street Terminal, just outside Philadelphia's western border.

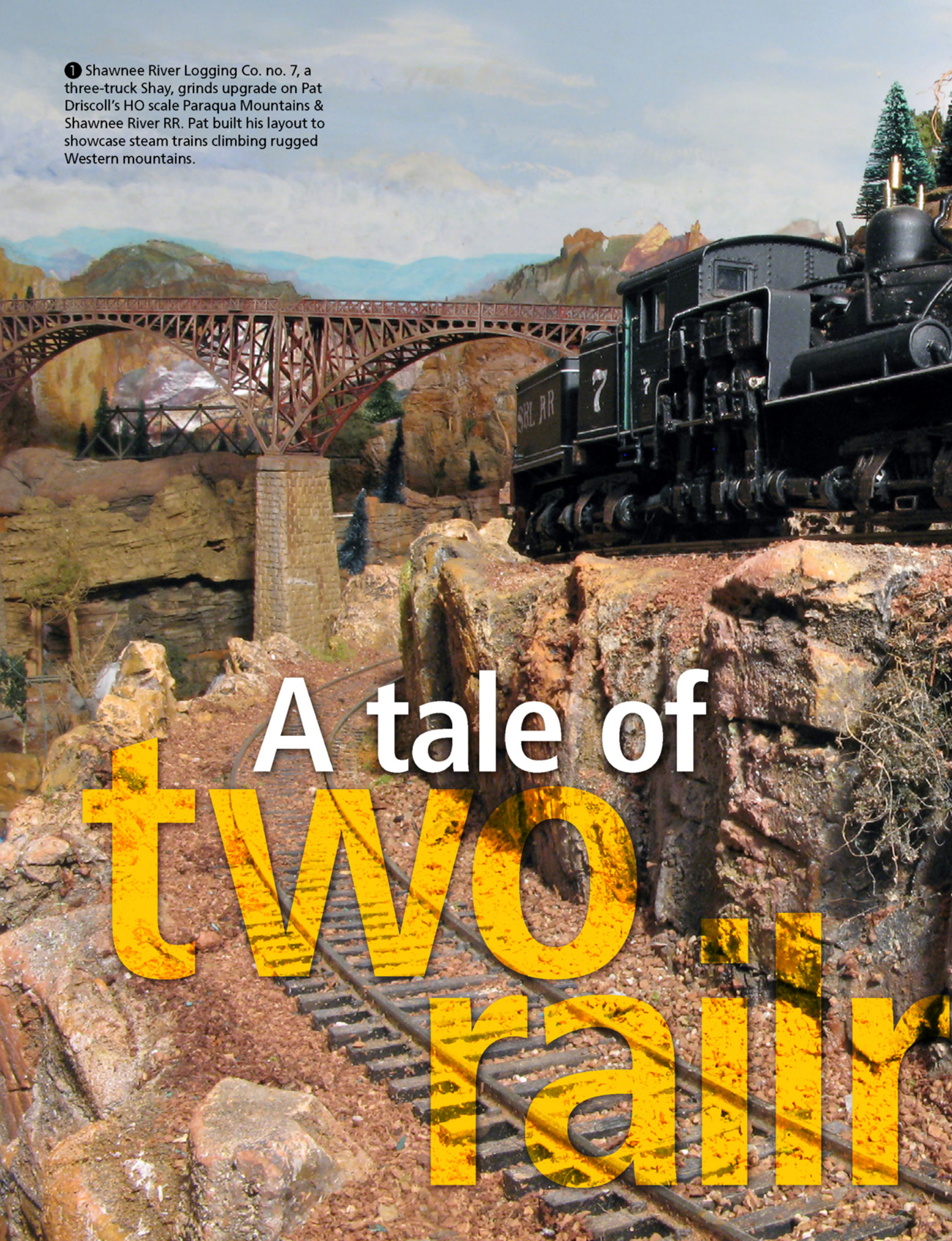
The museum can thank Charles Lowe and his group of dedicated volunteer workers, who built the a 600-volt direct-current substation, erected the poles and overhead wire for the trolley's operation, and now maintain the equipment. – *Harold W. Russell*

Ratio 1:87.1, HO scale

TO CONVERT HO SCALE
DRAWINGS TO YOUR SCALE
COPY AT THESE PERCENTAGES:
N 54.4 percent S 136.1 percent O 181.4 percent



① Shawnee River Logging Co. no. 7, a three-truck Shay, grinds upgrade on Pat Driscoll's HO scale Paraqua Mountains & Shawnee River RR. Pat built his layout to showcase steam trains climbing rugged Western mountains.



A tale of two rail



This Wild West-themed layout is designed for train watching

By Dave Rickaby

Photos by the author

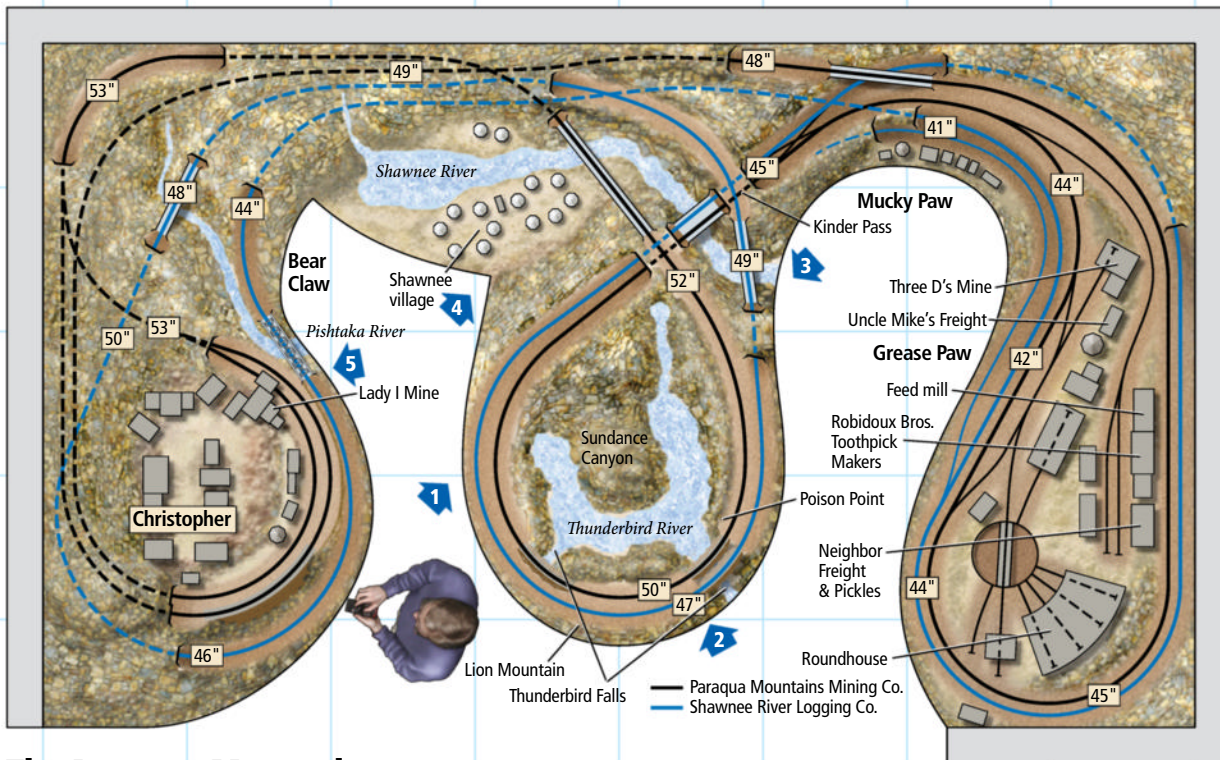
A journeyman bass player, Pat Driscoll played with several bands and traveled coast-to-coast in a music career spanning more than four decades. As an experienced musician, Pat thinks model railroading has a lot in common with music.

In his heart Pat hears the fierce roar of the waterfalls blending with that of the snort of fire-breathing iron horses. The gentle clickity-clack rhythm of wheels on the towering wooden bridge melds with the sound of the tom-tom emanating from the Native American village far below. The shriek of the eagles soaring above harmonizes with the screech of wheels upon steel. This is Pat's song.

Pat's journey

Pat was introduced to the hobby at a young age. When he was 5 years old, his dad bought him a small HO scale tabletop layout. Pat fell in love with steam locomotives, since he grew up when they were plentiful. A motorcycle tour through Arizona in the early 1990s introduced Pat to the southwestern United States. Subsequent trips took him through Colorado and New Mexico, where he rode the narrow gauge Durango & Silverton RR. Rolling along the Anamis River and the San Juan Mountains left a lasting inspiration that would be reflected in his modeling.

Pat aspired to modeling the mining and logging industries and the railroads



The Paraqua Mountains & Shawnee River

HO scale (1:87.1)
Layout size: 16'-0" x 9'-6"
Scale of plan: 3/8" = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Rick Johnson
Find more plans online in the
ModelRailroader.com Track Plan Database.

that served them. He admired the pioneers of the Old West as a tough and rugged breed, eking out a living in an inhospitable land. He could only imagine what it took to conquer the rugged mountains and span the deep canyons. His imagination fired, he set out to build his dream layout.

Thus were born the fictional Paraqua Mountains Mining Co. and the Shawnee River Logging Co. Both railroads first laid track in the late 1800s, in the Paraqua Mountain range and the Shawnee River valley, respectively. The railroads wind their way through the mountains via tunnels and passes, crossing swift rivers. Though they are separate entities, they share a roundhouse at the town of Grease Paw, because neither could afford to build such a facility alone.

Although his ancestry is mostly Irish, Pat also

embraces his one-quarter Blackfoot descent, and paid tribute to Native Americans on his layout. Most locations on the Paraqua Mountains & Shawnee River layout were named by the Shawnee, who have a village along their namesake river. Places like Bear Claw, Lion Mountain, and Sundance Canyon, with its deep chasm carved by the Thunderbird River, attest to their heritage.

The railroad men named the rest. The town of Christopher was named after a dear departed friend of Pat. Poison Point, high above the Thunderbird River, was so called because, the locals say, "one drop will kill you."

The layout

Pat built his first layout in the 1980s as a 4 x 8, but soon wanted more space. His second model railroad was square, with the operator's bay in the middle. But ducking under the layout to get in got old quickly. Pat started work on his current layout in 1993 and still considers it a work in progress.

The present layout fills a 9'-6" x 16'-0" space in his basement. Built in the shape of an E, the layout is surrounded by three walls and has a peninsula in the middle. The open-grid benchwork is constructed from 2 x 4 and 2 x 6 lumber.

The track plan was designed so the two railroads are separate, meeting only at Grease Paw. Trains traverse a mainline run of 165 feet, rising from an elevation of 43" at Grease Paw to 53" behind the town of Christopher. The maximum grade is a grueling 7 percent. The era spans the late 1800s to early 1900s.

The track is Atlas code 83 flextrack, with turnouts from Atlas and Micro Engineering. It's laid on Homasote roadbed, which is attached to 1/2" plywood subroadbed. The minimum radius is 20".

The layout is illuminated with track lighting and ceiling-mounted incandescent can fixtures.

The layout at a glance

Name: Paraqua Mountains & Shawnee River
Scale: HO (1:87.1)
Size: 9'-6" x 16'-0"
Prototype: freelance
Locale: southwestern United States
Era: late 1800s to early 1900s
Style: walk-in
Mainline run: 164 ft.
Minimum radius: 20"

Minimum turnout: no. 5
Maximum grade: 7 percent
Benchwork: open grid
Height: 43" to 53"
Roadbed: Homasote
Track: code 83 flextrack
Scenery: extruded-foam insulation board
Backdrop: painted on drywall
Control: direct-current block control



❷ A logging train crosses a bridge at Poison Point in this wider view of the layout. The central peninsula is at right and the town of Christopher is at back left.

Scenery

The scenery reflects geographical areas stretching from the Southwest to the Pacific Northwest and is built from the floor to the ceiling. Pat was greatly influenced by the work of John Allen and subsequent articles and books about his Gorre & Daphetid RR. The detail of Allen's modeling caught Pat's eye, as did the vast mountain scenery and many bridges.

To create his scenic landforms, Pat used extruded-foam insulation board. He estimates 90 percent of his scenery base is foam, with the rest being plywood.

Pat used a Buck knife and several steak knives to hand-carve all of his rockwork and mountains from the extruded-foam insulation board. He claims the secret is to use a

sharp knife. He says he starts with a piece of foam and removes anything that doesn't look like a mountain. He also carves footpaths along the mountainsides.

He's received a lot of positive comments about his rock carving, but most visitors to the layout are amazed at how simple Pat's techniques are. After carving the foam, he paints directly on it without a cover of plaster, resulting in rockwork that looks real. He paints his rocks with washes of acrylic and watercolor paints including Raw Umber, Yellow Ochre, Burnt Umber, Raw Sienna, and many washes of India ink. The rockwork panels that reach to the floor were also carved from sheets of foam board. They were made to be removable for storing things under the layout.



❸ Deep in a shadowed canyon, Paraqua RR Shay no. 3 emerges from a tunnel. Pat hand-carves his rock formations from extruded-foam insulation board.



4 A pair of 2-6-6-2 Mallets double-head a train over the Shawnee River bridge, above a village of the Native American tribe who gave their name to the river. Pat built the scene to honor his own Blackfoot heritage.

His base ground cover is real sand, while the few grassy areas and bushes are materials from Woodland Scenics. Though his pine trees are commercial products, he cuts them into new forms with a pair of scissors before planting them on the layout. Pat models deciduous trees with dried roots and sedum, coating the armatures with hair spray and then sprinkling on ground foam.

To make his rivers, he first prepares the river bottom with rocks and debris. He then paints the bottom in shades of blue, feathering it out with lighter shades toward the edges. He also uses white to represent the froth and foam of fast-moving water. To make

ripples, he rolls modeling clay and presses the rolls onto the river bottoms, painting these white as well.

Pat finishes his rivers by coating them with water-based Minwax Polycrylic Protective Finish Clear Gloss. He pours it directly from the can, building up multiple layers of $\frac{1}{16}$ " at a time.

The layout features several dramatic waterfalls. Both Thunderbird Falls and Shawnee Falls stretch to the floor. To model these, Pat used several different methods. The first used twisted cellophane, which he hot-glued to the scenery. For others, he laid out strips of hot glue on sheets of wax paper. Once the glue cooled, he peeled the strips off and

applied them to the scenery. Another method was to model the waterfalls as he did the rivers, painting blue directly on the scenery, then adding several coats of the clear gloss finish.

With one exception, Pat scratchbuilt his bridges. At first, he built them from balsa, but later switched to basswood. The exception is a three-span steel arch bridge that's a model of a European prototype manufactured by the French company Jouef. Pat built the piers and abutments for this bridge out of extruded-foam insulation board. He cut the pieces on his table saw, scribed the blocks, and painted them.

Pat's first backdrop was made of photos of mountain

scenes cut out of calendars and pinned on the wall to see how they would look. Then, using both oil and acrylic paints, he painted mountains directly on the drywall, using the colors he saw in the photos. He kept some of the calendar photos in place, finding the combination let him create a more convincing illusion of distance. The clouds are also hand-painted.

Operation

Pat's locomotives are primarily from Mantua and Bachman Spectrum, with a smattering of Model Die Casting (now Athearn), Life-Like (now Walther's Proto), and United Scale Models. His period rolling stock is a mix



5 The "O'Malley," a Weyerhaeuser 2-6-6-2 Mallet, pulls its train over the Pishtaka River in Bear Claw. Pat scratchbuilt his bridges from balsa wood before switching to basswood.

of Mantua, MDC, and Athearn products.

Pat runs his layout with a direct-current power pack from Model Rectifier Corp. He would like to switch to Digital Command Control, but hasn't yet decided which manufacturer's system best suits his needs.

Pat built his layout to be run with an operating crew of one – himself. He says that it's his hobby, his creation, and his style of running a layout. Pat admires those who are into simulating prototypical operation, but says his layout is designed to let him simply admire the trains moving through the western scenery, trekking out over the bridges, and clinging to the sides of the mountains. He did include some spurs on the layout, primarily at the towns of Christopher and Grease Paw, that enable him to

dabble in switching when he feels like it.


Pat's philosophy

One of the things Pat enjoys the most about the hobby is how many different activities it encompasses – carpentry, electronics, scenery, painting, operations, and more. Modelers can focus their efforts on the parts of the hobby they most enjoy. Pat would advise someone new to the hobby to think about his or her interests. Is he or she looking for a relaxing pastime or something more involved?

Personally, Pat loves the artistic side of the hobby and creating realistic scenes. He feels that learning comes from experimenting, and advises modelers to approach mistakes as learning opportunities. The hobby keeps one

young, Pat believes, and one has to have a certain number of things that bring pleasure to life. The hobby offers Pat a tremendous amount of relaxation and teaches him patience, he says.

Though Pat has seen a lot of years go by and has a lot of great memories of the hobby, he feels he can't live in his memories, and has to keep moving forward. On his layout, he still sees a lot that needs to be done. He needs to finish the Grease Paw yard and the town of Christopher, and would like to upgrade his layout to DCC to control his trains and turnouts.

Pat loves it when someone walks into his layout room for the first time and the first word out of their mouth is "Wow!" He feels blessed to have a hobby that keeps a spring in his step and a song in his heart. 



Meet Pat Driscoll

Pat Driscoll was born and raised in Milwaukee. He and his wife, Delores, raised three children. Now a widower, Pat and his fiancée, Irene, live in Muskego, Wis. Pat is semi-retired from his appliance repair business. Besides model railroading and music, Pat also enjoys riding his Harley-Davidson motorcycle, pontoon boating, and driving his 1953 MG automobile.



COLD STORAGE FOR THE TAR BRANCH

PART 3: Digital modeling using 3-D printing and computer-aided drafting helped create this and other structures for our project layout

By Eric White

Photos by Bill Zuback, unless noted

On an industrial layout such as the Winston-Salem Southbound Tar Branch, *Model Railroader's* 2018 project layout, the buildings make up much of the scenery. Although it's a rather small model railroad, there are 11 structures of various sizes.

We used a number of techniques to model the customers at the end of the Tar Branch. David Popp, *Model Railroader* Video Plus producer and designer of the layout, built the majority of the buildings, populating the center of the layout with a series of kitbashed structures.

At either end of the layout are “found” buildings from previous projects – the contractor’s supply warehouse on the left and a railroad supply shed on the right.

The last two buildings were scratch-built. *Model Railroader* Video Plus associate editor Ben Lake took on the Southbound’s freight house. (See “3-D printing and kitbashing” on page 52).

The cold storage building next door to Ben’s building was my project. Like Ben’s, it has a styrene core laminated with patterned sheet, simulating concrete block in my case. Follow along as I explain how I built it. If you’re an MRVP subscriber, you can watch a four-part series on this project. Just click on **SOUTHBOUND** on the Project Layouts page at www.MRVideoPlus.com.

Googled, but gone

Ben found reproductions of the architectural drawings for the freight house in our WSS bible, *The Winston-Salem Southbound Railway* by Jeff Miller and Jim Vaughn (Jeff Miller, 1996). That book also had all of the information I would initially get to construct the cold storage building: one picture showing an end of the building in ❶ on the next page, and another showing a



The Winston-Salem Southbound cold storage building was scratchbuilt for the layout. Associate editor Eric White takes you through the project, and offers insights on the other structures.

The Tar Branch series

January: Going Southbound; meet *Model Railroader's* Winston-Salem Southbound project layout

February: Benchwork and track

March: Structures

April: Backdrop, lighting, and scenery

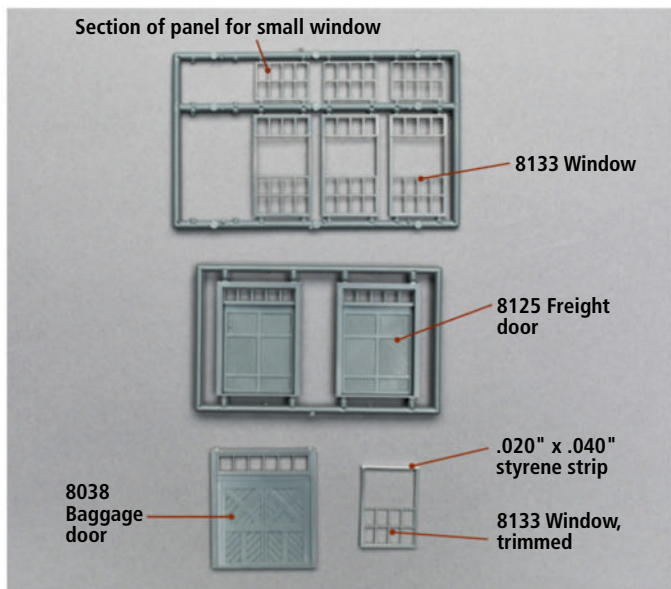


portion of the same end and a little more of one side.

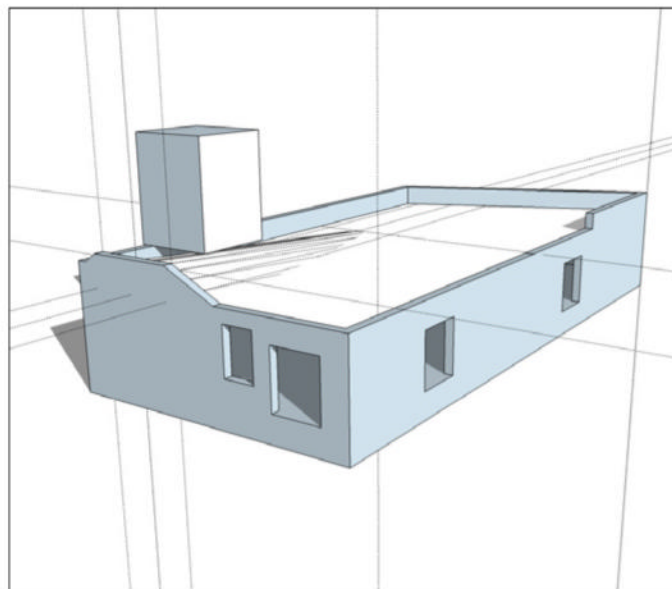
We knew where the building was located, but a quick search of Google Maps came up empty – the building is gone. But there are other places to look on the web, such as www.historicaerials.com,



1 Inspiration. A grainy copy of this photo appears in the book *The Winston-Salem Southbound Railway* by Jeff Miller. It started a search for enough information to build a model. We received this copy to illustrate this story after the model was built. Photo courtesy Forsyth County Public Library photograph collection, Winston-Salem, N.C.



2 Windows and doors. Eric found the windows and doors he needed from Tichy Train Group. The windows were modified to fit the openings.



3 Modeling with pixels. Eric used Sketch-up, a 3-D modeling program available as a free download online at www.sketchup.com, to help plan the structure.

one of my go-to research websites. As the URL suggests, it has historic aerial photos. I was able to find our missing building in a 1948 photo. Now I knew what its overall shape was.

Obviously, I couldn't measure a building that no longer exists, but by this time David had laid all the track, including the spurs that bounded my building site.

Ben's freight house was far enough along that I could use his building to size mine. The cold storage building was about two-thirds as long as the freight house, so I marked a line to show how far along the spur my building should go.

David told me he wanted space to spot two reefers, so I collected a couple from the Beer Line (January through April 2009, and January through June 2017 *Model Railroader*), set them on my spur, and marked where their doors would be. I knew the side of the building with the rail-served doors would be tight against the tracks – there wasn't any loading dock on this building.

The other side needed clearance for the traffic heading to and from Ben's freight house. I also noted a pipe along the outside of the cold storage building leading to what appeared to be a wooden tank on the roof. I had to leave room for that detail as well. With all of these things in mind, I was able to plot the footprint of my building.

How high?

Now that I knew how much space the building would take, I needed to

figure out how tall to make it. I set the floor line to match that of the reefers, about 4 feet off the ground. Then I looked for freight doors I could use on the project. The door height would help me set the height of the walls.

I chose two styles from Tichy Train Group. The taller doors serve the reefers and are 10 feet high. The shorter door is 9 feet high. The parts I used, with the Tichy part numbers, are shown in **2**.

Armed with the dimensions of the windows and doors, I set the wall height at 16 feet. This gave me 4 feet to the bottom of the loading doors along the track, plus about two courses of block above the doors.

On the long wall near the backdrop there's a step in the wall. I made this three courses high, which should equate to 24", as concrete blocks are 8" x 16" on their faces. However, The N Scale Architect 50005 concrete block styrene

sheet I used scales to about 10" high courses, so the step is about 2'-6" high.

Draw it up

Next, I turned to an online program called SketchUp (www.sketchup.com), which is available as a free download. SketchUp is a 3-D modeling tool I'd used to create rapid prototype parts for a freight house (see "Scratchbuild with help from 3-D printing" in the September 2015 *Model Railroader*).

In addition to the four walls, I was able to draw a rooftop structure, likely a cooling tower for the cold storage building's refrigeration system **3**. This 3-D rendering gave me an idea of the overall shape and mass of the building. It's much easier to tweak a few pixels than it is to reshape styrene, not that I'd be able to avoid that completely.

Of course, a few sketches on a notepad would've worked as well. If I'd done that, I likely would've built a cardboard mock-up to check the size and shape.

Score and snap

With drawings in hand, it was time to start cutting plastic. I made the walls in layers. The N Scale Architect material is about .020" thick. I backed this with .040" sheet styrene from Evergreen. The four walls and their dimensions are shown in **4** on the next page.

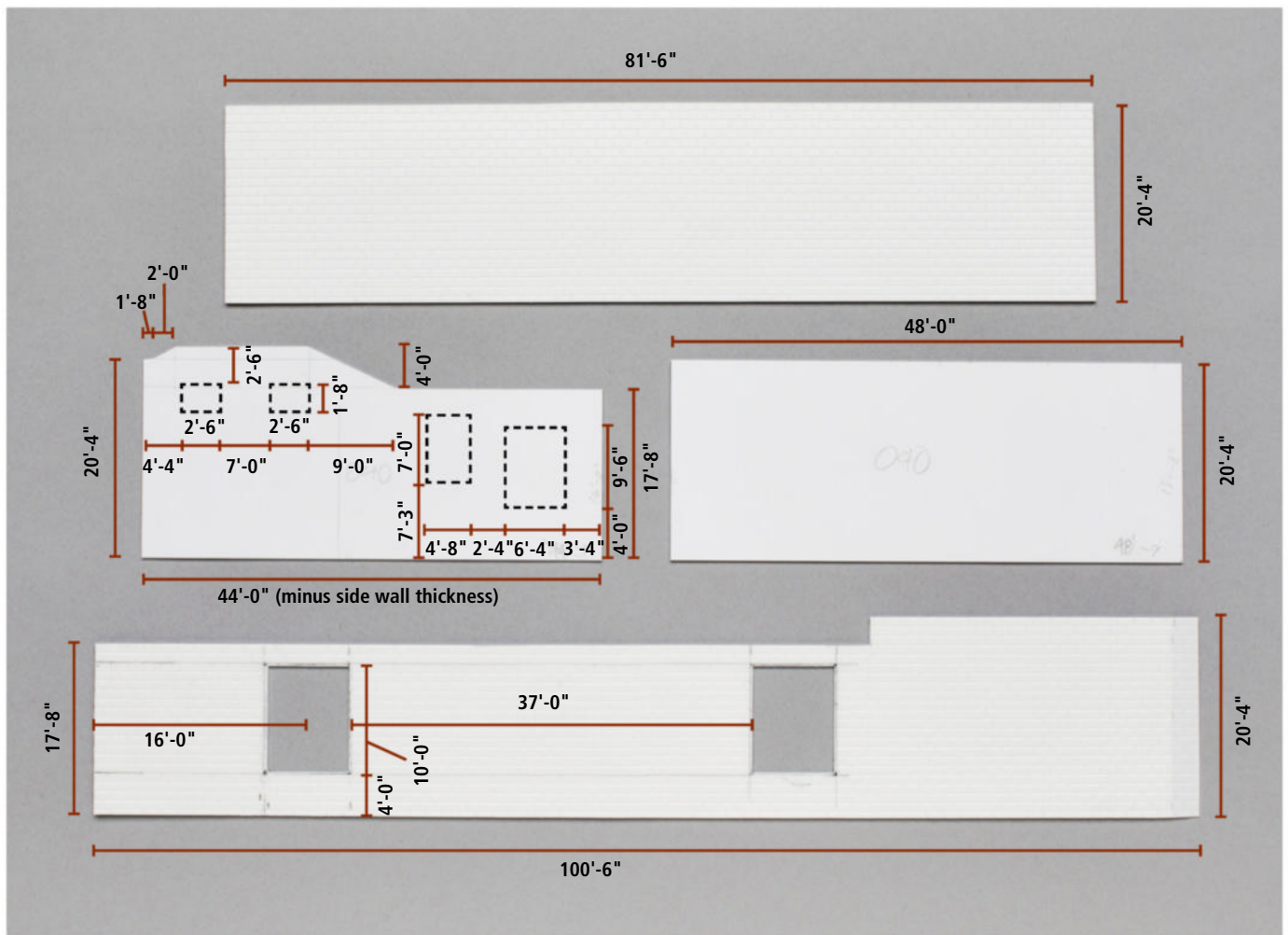
Once the .040" sheet was cut, I used styrene solvent cement to laminate

WATCH THIS ON



▶ Not a subscriber yet?

Click on the free videos page at MRVideoPlus.com to view episodes of the Winston-Salem Southbound series.



4 We have walls. Eric cut subwalls from .040" styrene sheet, then laminated that to The N Scale Architect 50005 Concrete Block sheet. The width of the end wall with the bumps was shortened to account for the thickness of the long walls. Dimensions shown are the finished sizes after the extensions (not shown here) were added.

sheets of The N Scale Architect's concrete block building sheet to the .040" styrene subwalls, doing just the long sides at first. I worked to keep courses lined up at the corners and the openings, knowing that masons prefer to work in full- and half-block increments.

With the concrete block laminate in place, I framed the inside of the openings for the freight doors in the long wall with .060" x .100" strip styrene to build up the thickness of the wall. I glued the no. 8038 baggage doors to the inside of the walls when it was time to assemble the building. At the top of the openings I added strips of .040" x .125" strip styrene to represent steel lintels.

The door on the end, a Tichy no. 8125 freight door, had a frame that recessed it in the wall, so I was able to glue the door molding right to the inside of the sub-wall. The windows don't sit as deeply in the wall, so I didn't need to add thickness there, either.

The top of the end door opening got a strip of .040" x .060" styrene as a lintel.

Materials list

Evergreen styrene

100 .010" x .020" strip
122 .020" x .040" strip
124 .020" x .080" strip
128 .020" x .188" strip
143 .040" x .060" strip
145 .040" x .100" strip
146 .040" x .125" strip
148 .040" x .188" strip
149 .040" x .250" strip
153 .060" x .060" strip
155 .060" x .100" strip
167 .080" x .156" strip
175 .100" x .100" strip
186 .125" x .125" strip
212 .080" rod
4041 .040" clapboard
8606 HO scale 6 x 6
8408 HO scale 4 x 8
9007 .015" clear sheet
9020 .020" sheet
9040 .040" sheet

9060 .060" sheet

Grandt Line

5046 1 $\frac{3}{4}$ " square nut-bolt-washer castings

Model Master

4873 Reefer White
4875 Aged Concrete
4876 Concrete
4885 Railroad Tie Brown
4886 Reefer Gray
4887 Grimy Black

Polly Scale

414197 Delaware & Hudson Gray
(Substitute Model Master 4746 Medium Gray)
414364 St. Lawrence Blue
(Substitute Model Master 4612 Cobalt Blue)

Rust-Oleum

249088 Painter's Touch 2x Gray Primer

Tichy Train Group

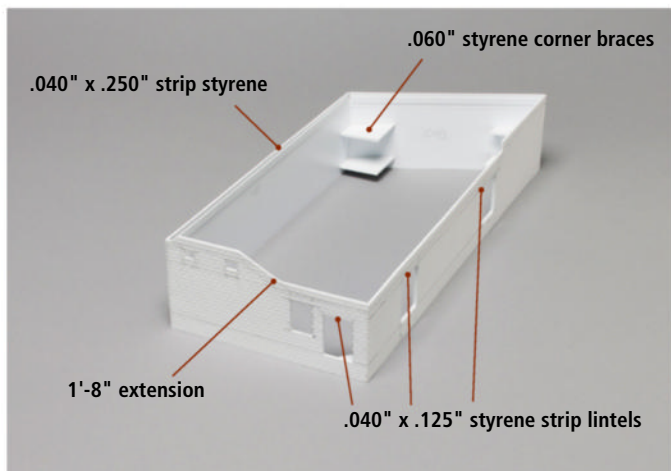
8038 baggage doors with transoms
8125 freight door with transom
8133 25 pane tilt out window

The N Scale Architect

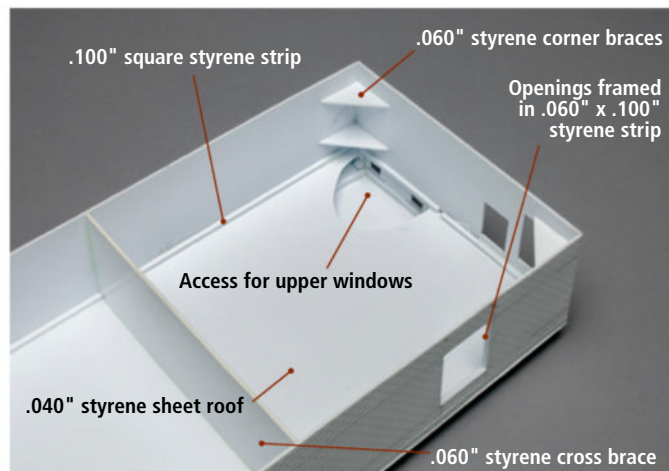
50005 concrete block styrene sheet

Miscellaneous

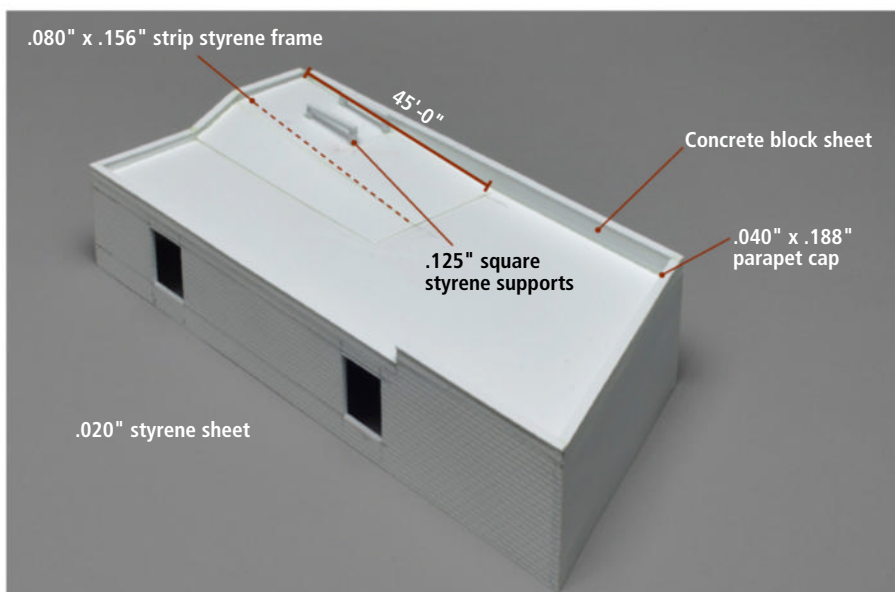
7 $\frac{1}{2}$ pound lightweight tracing paper
Factory window and roll-up door from Walther's
American Hardware Supply



5 Adding extensions. The walls as designed turned out to be too short, so Eric added a scale 1'-8" extension, equal to two courses of The N Scale Architect concrete block.



6 Hold up the roof. A .100" square styrene lip holds up the .040" sheet styrene roof. You can also see the .060" styrene cross brace and corner braces in this photo.



7 Finishing the roof. Eric cut two strips of .080" x .156" styrene to frame the hump in the roof, then covered it with .020" styrene sheet. He added .125" square styrene supports for the cooling tower.

I made all of the door sills from .020" x .080" strip styrene; the larger window has a sill made from .020" x .040" styrene.

Next I assembled the four walls. Three of the walls meet at right angles. They're reinforced with triangles of .060" styrene sheet to hold the angle.

The third wall is set at about a 65 degree angle. I copied the angle onto more .060" styrene sheet to make more corner braces, shown in 5. With all of the walls together, I added the final layer of concrete block sheet on the short end wall. All of these steps were shown in more detail in *Cold Storage Scratchbuild – Part 1, Walls* at www.MRVideoPlus.com.

I now had a box that needed a roof. As I looked at the relationship between the door openings and the tops of the

walls, I realized I'd made my walls too short. There wouldn't be enough space to fit roof framing and a parapet wall in the two courses above the door openings if this were a full-sized building.

So much for making changes while the building was still in pixel form. Two more courses of block would leave me the space I needed, so I measured the distance, about a scale 1'-8" to match the block courses, and cut strips of styrene to match.

I used .040" x .250" strip styrene as a reinforcement to my splices, also seen in 5. This material would do double duty, as I knew I needed to make the walls thicker at the top to represent the concrete block parapets. I cemented the .250"-wide strips to the back of the subwalls, then added my .040"-thick subwall

extensions. The extensions were covered with a layer of concrete block sheet, two courses high.

Put a roof on it

With the extensions finished, I turned to the roof. I glued .100" square strip styrene around the inside of the walls at the height I wanted my roof, about two courses down from the stepped-down part of the walls. The roof is a sheet of .040" styrene cut to fit.

I planned to install the windows after they were painted. The windows high on the short wall would've been inaccessible once the roof was finished, so I cut an opening in the roof to provide access 6.

With the roof in place, I cut a sheet of .060" styrene, seen in 6, to fit between the walls about halfway down the long side of the building to act as a brace.

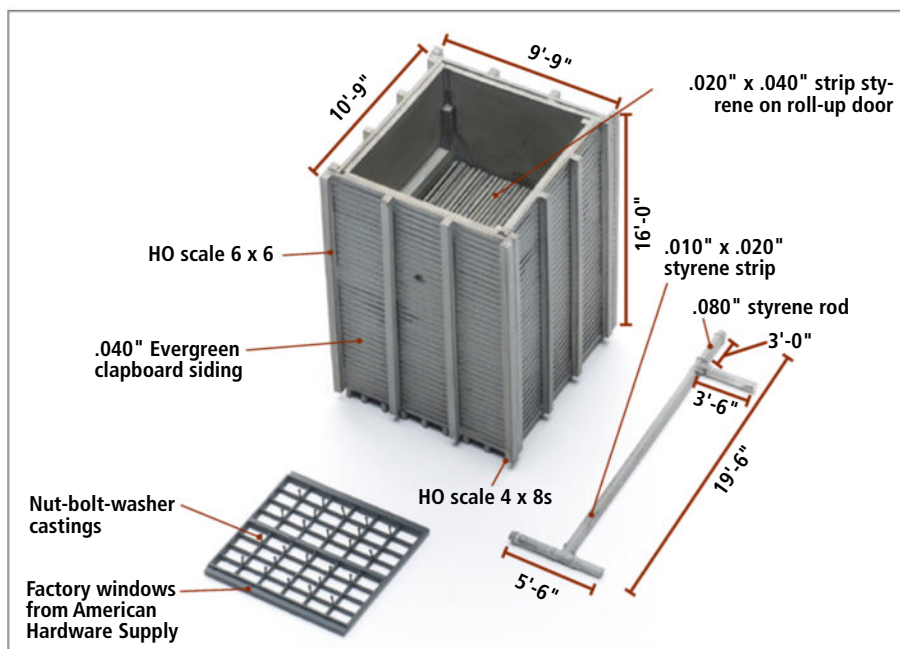
The inside of the parapet walls are covered in more concrete block sheet laminated to another layer of .040" x .250" strip styrene to thicken the wall. The wall would be a scale 12" thick once I added strips of concrete block material.

A final touch was a parapet cap made from .040" x .188" styrene strip. This left just one more task to finish the roof, a hump that likely covered the cooling coils for the refrigeration equipment. To simplify construction, I made the hump from flat planes, instead of what appeared to be a gentle curve in our grainy photo.

The hump is a scale 45 feet long, and it's framed with pieces of .080" x .156" strip styrene. With the strips cut and installed, I measured for the .020" styrene sheet I used for the roof surface. I used the thinner styrene so it would flex to meet the flat roof on the angled

The wonders of refrigeration

On the bottom of the cooling tower, I added nine evenly spaced joists of HO scale 4 x 8. All of these parts are shown in **8**. They rest on supports made from



Strip of paper 3 scale feet wide

Draw parallel lines about 3 scale feet apart

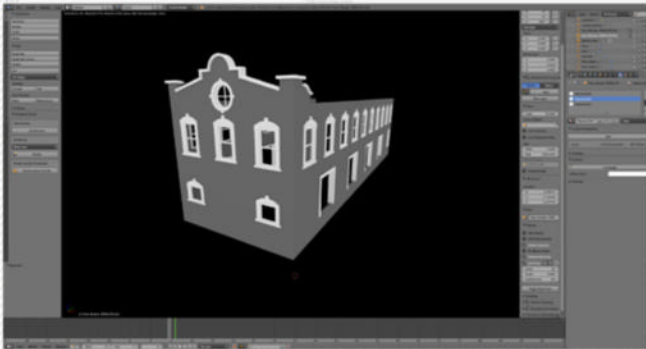
Strip of paper 3 scale feet wide

Finishing the roof

Paints and washes

The walls are painted with Model Master's Reefer White. The roof is the

3-D printing and kitbashing



11 Does it Blend? Ben Lake used Blender to design the architectural details for his freight house in preparation for 3-D printing.

Ben Lake's Winston-Salem Southbound freight house was the other major scratchbuilding project on the layout. Jeff Miller's *The Winston-Salem Southbound Railway* had drawings of the structure that Ben used to create Adobe Illustrator files for his project.

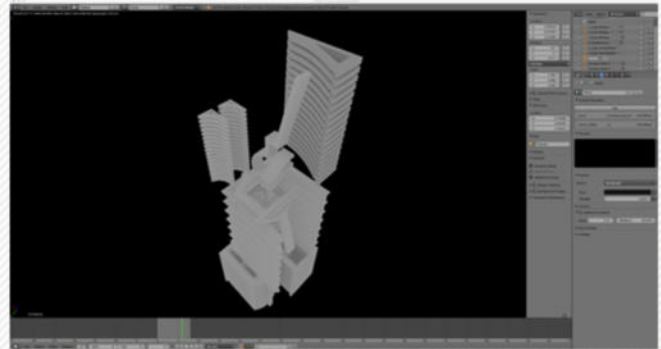
The Illustrator files were used to make paper templates, which Ben copied onto sheet styrene to construct a core for the building. Once he was happy with the overall shape of the structure, Ben laminated brick pattern sheet from The N Scale Architect over the core to finish the walls.

Since he had architectural drawings of the building, Ben knew exactly what the windows and doors should look like. But how did he get these parts? Was it magic?

Almost. Ben is a skilled 3-D modeler. He focused those skills on creating the architectural details for the building with a program called Blender **11**, 3-D modeling software that's available as a free download at www.blender.org.

Once Ben created the 3-D models, he uploaded them to Shapeways (www.shapeways.com), an online purveyor of 3-D-printed parts. In addition to the windows and doors, Ben also had brackets for the loading dock awnings, capstones for the parapet walls, and corbels for the eaves printed. With the 3-D printed parts, Ben built a more accurate version of the freight house than he could have otherwise.

There's no volume discount for 3-D parts, but each "print" has an associated set-up charge. Ben linked parts together in a logical manner to make the most of the printer's capabilities. To keep costs down, Ben grouped the parts together to maximize usage of the printer's work area, or "bounding box," for printing **12**.



12 Stacked tight. To economize, Ben stacked all of his parts into a single print, sized to fit the maximum volume Shapeways could print in Ben's chosen material.

David Popp handled the bulk of the structures and recorded videos of the kitbashing techniques he used to build the three small buildings in the center of the layout.

Two of the small warehouses are built from City Classics' Carnegie Street Manufacturing Building, kit no. 109. Its concrete block walls and steel sash windows were good candidates to represent a row of flat-roofed buildings seen in photographs of the area.

He started the projects by photocopying the kits' flat walls, then cutting the images out and rearranging them to fit the space on the layout **13**. This is a great trick that saves time and plastic, as it gave David a chance to try different shapes without creating a lot of waste.

Once he had the wall sections sized on paper, he cut the plastic pieces he needed for the buildings and assembled them with solvent cement.

He made the flat roofs from .040" styrene sheet, supporting them with .125" square strip styrene. A quick detail David added to the roofs were rafter tails **14**. David glued sections of .040" x .100" strip styrene to the bottom edge of the roof. To save time, he used segments about 2" or 3" long, then trimmed them to fit once the cement was dry using flush-cutting nippers.

Leftover wall sections were used to make loading docks on the flat-roofed buildings **15**. Save those scraps!

After priming the structures with Rust-Oleum Painter's Touch 2X Gray Primer, David used an assortment of Model Master and Polly Scale paints to finish the buildings. A Microbrush came in handy to pick out details around the doors and windows, and paint washes added the final touch of weathering. – *Eric White*



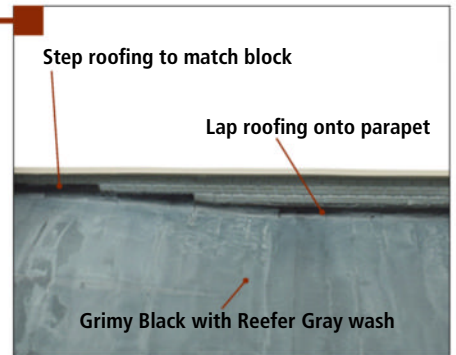
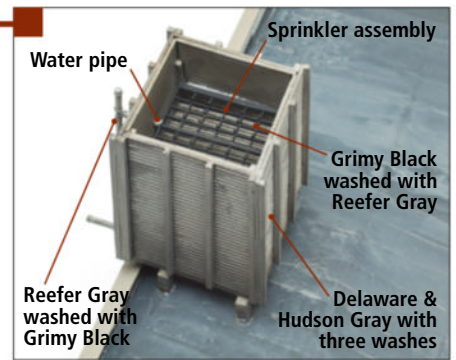
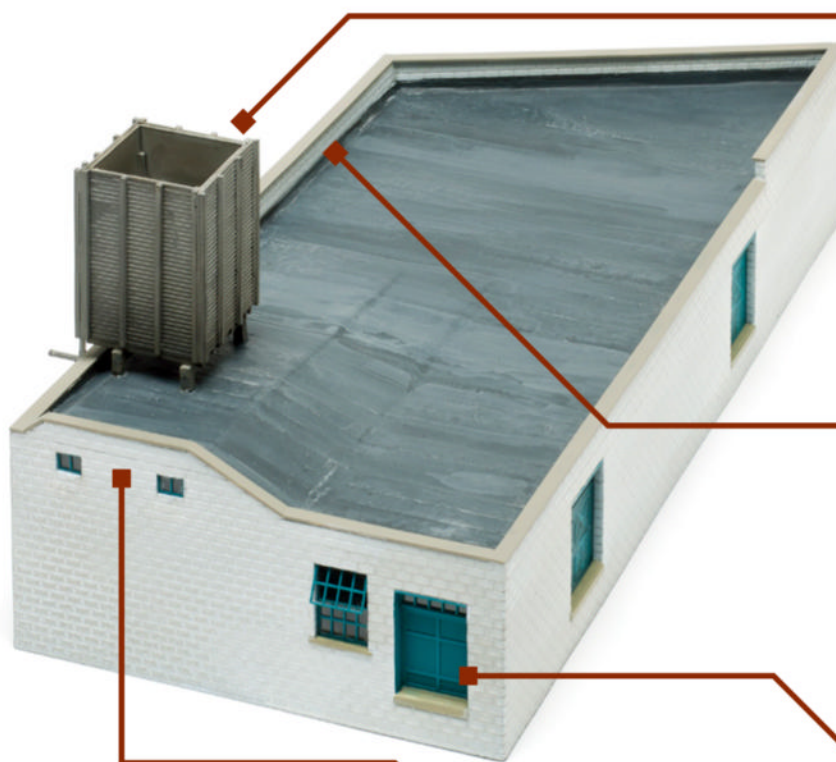
13 Paper mock-ups. Photocopies of wall sections are much cheaper and easier than cutting up kit parts.



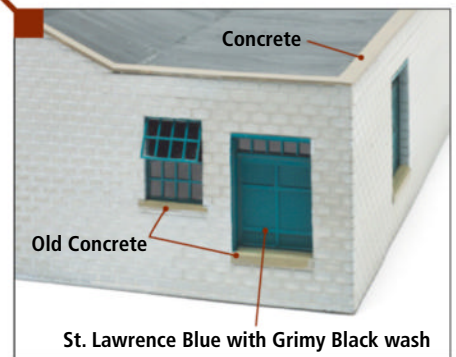
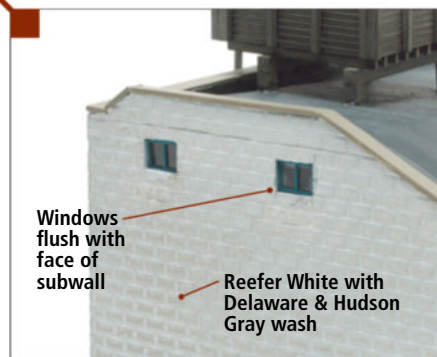
14 Quick details. David made rafter tails from styrene strip. He cut the pieces long, then trimmed them to fit.



15 Use those scraps. David used scraps of wall sections to make loading docks.



10 Together at last. Final assembly involved attaching glazing to the windows and transoms, gluing in the doors and windows, and assembling and attaching the cooling tower. The paints are from Model Master and Polly Scale; the latter is out of production.



same firm's Grimy Black, and the cooling tower and supports were painted with Polly Scale Delaware & Hudson Gray. Model Master Medium Gray is a good substitute. Detail colors are shown in **10**.

Once everything was painted, I went back and applied various washes to different parts. The washes were all thinned Model Master or Polly Scale paints, chosen to be a little lighter or darker than the base color. I used tap water to thin the paints. There's more on my painting and weathering techniques on *Winston-Salem Southbound Series: Cold Storage Scratchbuild – Part 4, Paint & final assembly*, at MRVideoPlus.com.

Final assembly

Once everything was painted, it was time to bring it all together **10**. I used .015" Evergreen clear styrene to glaze

the windows and transoms over the freight doors.

The doors and the large window were cemented to the inside of the subwalls. I made sure to scrape any paint off the mating surfaces for a good bond.

I finished the cooling tower by installing the sprinkler grid. Then I cemented the tower in place on the roof on the .125" square supports. The side facing the freight house is even with the wall below it, and the adjacent side is 12 feet back from the end wall. I installed the water supply pipe to the cooling tower, and the cold storage building was complete.

Final surprise

While gathering materials to finish this article, David acquired a high-resolution print of the photo that had started this project. There were a couple of surprises.

First, we learned the building was made of brick, not concrete block. Oh well, there are several brick buildings on the layout already, so the concrete block adds another texture.

Second, the cooling tower was built right on the corner of the building, so it shouldn't have been set back 12 feet from the end wall. It also may have been rectangular, instead of essentially square.

This goes to show there's always more research that can be done. And there's likely someone somewhere who knows more about the subject, who you won't meet until the model is finished. But that's OK. Every layout is full of compromises, and these were acceptable to us.

So don't let the lack of every bit of information keep you from adding a structure to your layout. A couple of glimpses can be enough to inspire a project that fills a need on the layout, and completes a satisfying scene. **MR**



ACME ROOFING SUPPLIES

SHAKE YOUR OWN SHINGLES

A homemade tool makes cutting paper roofing easy

By Frank Sele • Photos by the author

BEFORE RETIREMENT gave me enough time to actively pursue modeling. I accumulated piles of *Model Railroader* magazines. While perusing them for ideas, I ran across some articles on modeling paper shingles. These suggested using a hobby knife to slice individual notches in paper shingle material.

This seemed to me to be a very time-consuming and tedious process. I came up with a simple shingle-slitting tool (try saying that four times fast) that can cut paper shingles quickly and efficiently. In the process, I also came up with some other variations for making shingles out of paper.

The shingle splitter

I built the shingle-slitting tool with items I had lying about. The main ingredient was a package of single-edge razor blades. I found that a 4-40 machine screw would fit through the oblong holes in the blades perfectly.

Some razor blades have slightly smaller openings, but I found that these can be enlarged by clamping the razor blade in a vise and using a motor tool with a cone grinding wheel. Don't try to drill the hole larger, as drill bits won't work on the hardened steel blade.

I placed a washer and a blade on the screw, then added two washers, another blade, more washers, and so on. I varied the number of washers from one to three to achieve random shingle spacing. If you want uniform spacing between

shingles, use the same number of washers between each blade.

I built up 10 blades with spacers on the 1½" screw, then put a washer and nut on the end. I glued a piece of scrap wood to the assembly with two-part epoxy to make a handle. See the tool in ①.

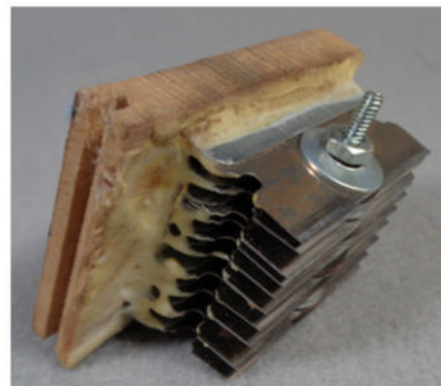
To use the cutter, I place the paper shingle material on a self-healing cutting mat. I align the end of the blades about 1 scale foot inside the edge of the shingle material and draw the cutter toward me, slicing 10 shingles at once. I repeat this until the edge of the shingle material is completely sliced. See the results in ②.

Later I found that tapping the wooden block with a hammer allowed me to cut the notches with much less arm strain. This technique can also slice through several layers of paper at once, slitting my shingles that much faster.

The ragged edge

To create a random, ragged edge on the end of the shingles, I use a pair of scissors I found at a craft store ③. Mine came in a pack of several such scissors, each with a different cutting profile. The profile most useful for shingles is called the "deckle edge," which produces the profile shown in ④ on the next page.

Other scissors that came in the package might be useful for more of a



① **The tool.** A row of single-edged razor blades, bolted together with washers to maintain spacing, forms Frank's shingle-slitting tool.



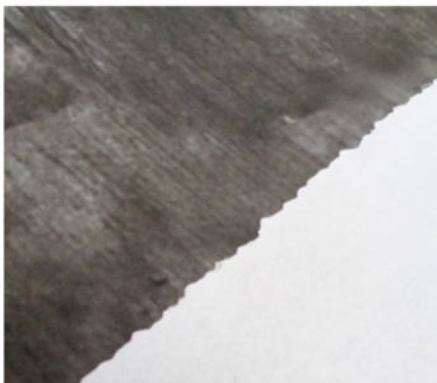
② **Random widths.** Varying the number of washers between each blade results in shingles with random widths.



③ **Deckle scissors.** A pair of craft scissors cuts a ragged edge that makes more rustic-looking shingles.

Frank Sele roofed this wood structure with shingles he cut from paper using a custom tool. In this article, Frank shares his techniques and ideas for quickly and easily making paper shingles.

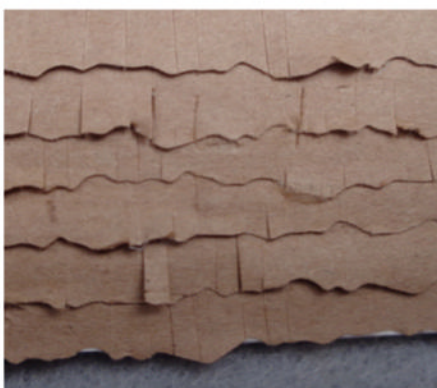




4 Deckle edge. The wavy edge cut by deckle scissors works well for wood shake shingles.



5 Slice and dice. Use a straightedge and a hobby knife to cut the shingles into strips.



6 Lift and separate. Randomly lifting the edges of some shingles makes a more visually interesting surface.

Victorian “gingerbread” look. If you use edging scissors, do so before using the slitting tool. Cutting the notches first may produce frayed edges when using the scissors.

The procedure is to cut the deckle edge, then cut the notches, and finally cut the horizontal strip of shingles from the shingle stock with a sharp hobby knife and straightedge **5**. Make this cut about 2 scale feet back from the edge, or approximately 1 scale foot from the end of your notches. Any narrower, and

you risk the strip coming apart during handling. The final result is seen in **6**.

Materials and fastening

I found that there are several options available in both the material used for the shingles as well as how you attach them to the roof. Using the slitting tool, you’re probably limited to some sort of paper or cardstock – something that the tool will cut easily. I found that a file folder is a bit thick. A 3 x 5 file card, bond paper, or cover stock works well, and may come in appropriate colors and textures. Check at an art supply store, scrapbooking store, or paper company. The shingle material can be painted before cutting the shingles or after they’re fastened to the roof.

Drawing horizontal guidelines on your subroof can help you keep the shingle strips straight. The shingles can be attached using your preferred glue. I like to use a glue stick, since it’s less messy.

Starting at the bottom, place the shingles in slightly overlapping layers until your roof is covered. Finally, to add texture and make the roof look more weathered, use the tip of a hobby knife to slightly lift up random shingles.

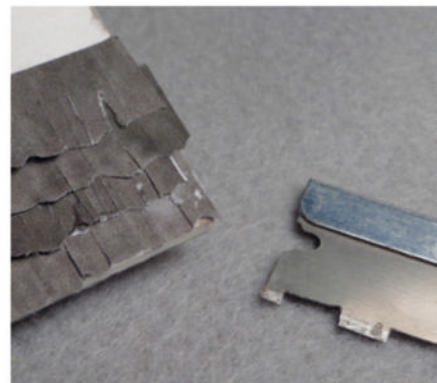
For this step, I made another custom tool, seen in **7**. I used a motor tool with a grinding disk to grind off portions of a razor blade to form, in effect, several blade tips. I can slide these edges under the shingles and lift up several at once.

Another material that makes good shingles is brown kraft paper packing tape (non-reinforced). Cut the shingles as above and then moisten the tape with a dampened cotton ball to activate the adhesive and apply. The color of the tape is a good base color, onto which I brush an alcohol-based India ink wash.

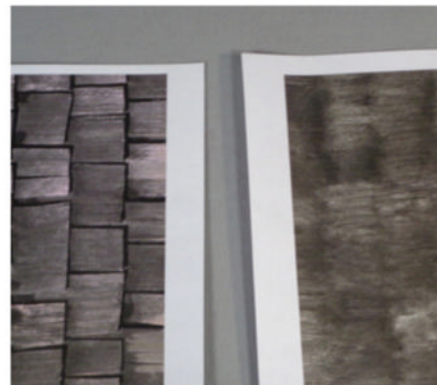
Printing wood texture

Instead of painting the shingles, I sometimes let my computer and printer do the work for me. An Internet image search for “weathered wood shingle texture” came up with hundreds of examples. I selected one I liked and enlarged it to nearly fill an 8½ x 11-inch sheet of paper. This image had very dark and wide shadows between shingles that would not have worked well in a small scale. So I used photo-editing software to retouch these areas, producing a nicely variegated field of color, seen in **8**.

I printed this texture on full-sheet shipping label material **9**, which has a self-stick backing. Once printed, I used



7 Lifting tool. Frank cut notches in another razor blade to let him lift several shingles at once.



8 Found texture. After some digital image editing, a photo of wood shingles becomes a random, weathered texture.



9 Self-stick shingles. Printing an appropriate texture on self-stick shipping labels makes peel-and-stick shingles.

the deckle edge scissors and shingle slicing tool as before. The backing can then be peeled off with a fingernail, hobby knife, or razor blade, and the shingles applied to the subroofing.

I like the look of weathered wood shingles on old structures, and using these methods can reduce the tedium involved immensely. **MR**

Frank Sele lives in Los Angeles. This is his first byline in Model Railroader.

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Third time's





The HO scale
Chester Ridge &
Pennebrook is the
culmination of
a lifetime of
model railroading

By Lou Sassi

Photos by the author

Paul Tartaglia finally has a “finished” model railroad in his basement. His detailed HO scale Chester Ridge & Pennebrook fills a beautifully finished 12½ x 20-foot basement train room with idyllic town and country scenes inspired by a New York Central branch line. Getting to this point was a long, but rewarding, journey.

Like many model railroaders Paul got hooked on trains at an early age. He remembers being 6 years old and watching his dad run Lionel trains around the Christmas tree. He also built some 4 x 8-foot O gauge layouts, but his interests eventually turned to girls and other teenage pursuits.

Then in 1972 at age 25, Paul returned to the hobby. Married and a new father, he started building an HO scale railroad in the basement of his home on Ridge Street in Port Chester, N.Y. He named the layout Chester Ridge in honor of the town and the street.

In 1982, the layout was 90 percent complete when the family moved to a new house in Mahopac, N.Y. None of the

1 On Paul Tartaglia’s HO scale Chester Ridge & Pennebrook, New York Central and New York, New Haven & Hartford freights head north and south, respectively. In the background a New Haven coal train crosses the High Line.



② The layout is located in a beautifully finished train room complete with a suspended ceiling, ample lighting, and a carpeted floor. Paul painted the backdrop directly onto the drywall and used stencils for the clouds.



③ A New Haven gondola doubles as a camera car to provide a track level view from Brewster Yard. The camera transmits its image to the monitor on the wall.

benchwork and scenery could be saved, but Paul reused most of the structures and equipment on a new layout. Adding his new street name to the old layout name, the new railroad was dubbed the Chester Ridge & Bayberry Hill.

The last move occurred in 2001. Although its scenery wasn't finished, the layout was operational. Paul cut out the

railroad in sections, using a chainsaw for much of the work. He took the sections to his new home as the foundation for an improved model railroad.

The layout sat in pieces while Paul finished the basement, including adding a bar, TV lounge, wine room, bathroom with shower, and a pool table. After this work was complete in 2004, Paul built a

The layout at a glance

Name: Chester Ridge & Pennebrook

Scale: HO (1:87.1)

Size: 12'-6" x 20'-0"

Prototype: freelanced, inspired by the New York Central RR Putnam Division

Locale: southeastern New York State

Era: 1947 to 1965

Style: walk-in

Mainline run: 150 feet

Minimum radius: 22"

Minimum turnout: no. 4

Maximum grade: 2.5 percent

Benchwork: L-girder and open-grid

Height: 44" to 56"

Roadbed: cork over plywood

Track: codes 83 and 100 flextrack

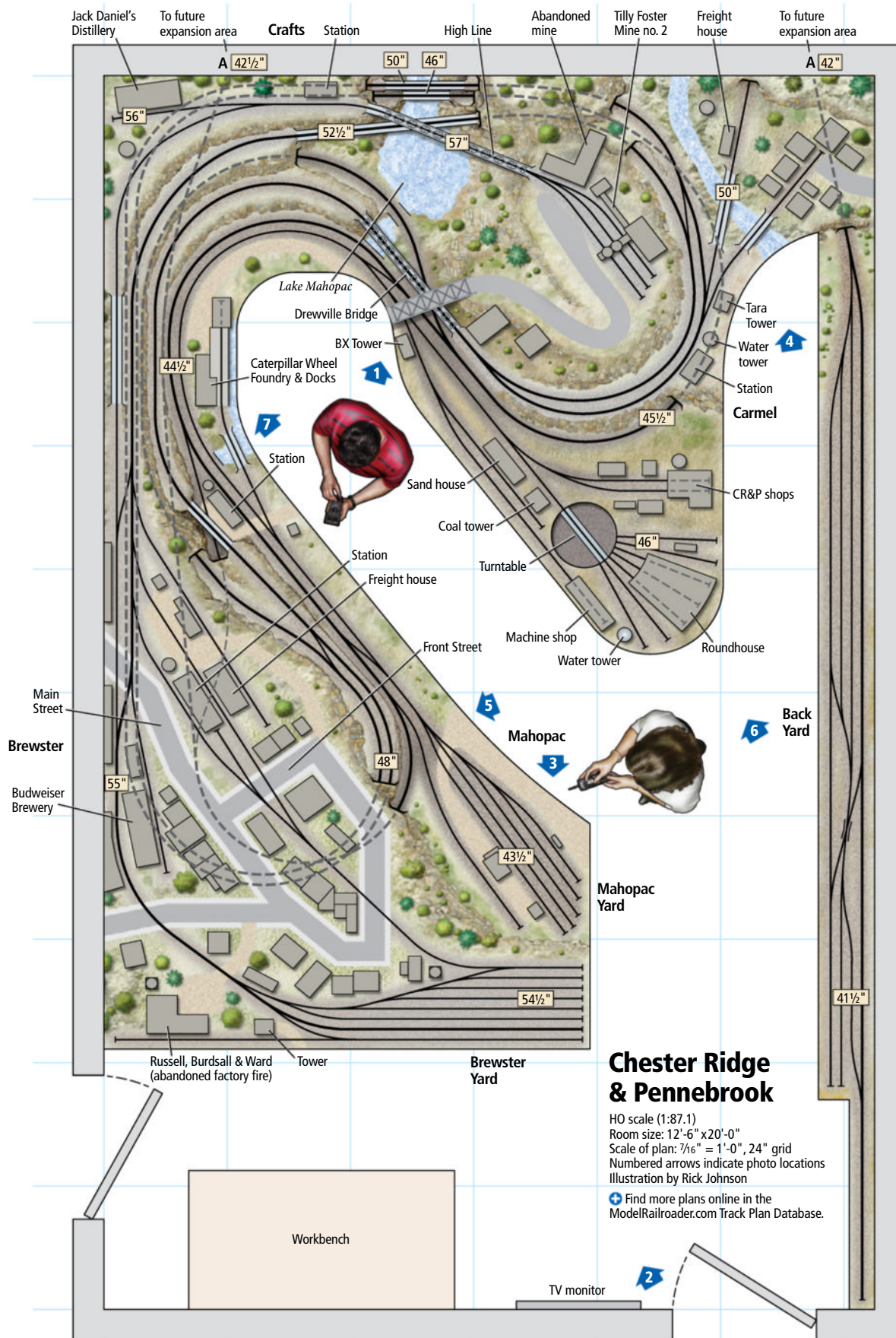
Scenery: Plaster cloth and Hydrocal over aluminum screen

Backdrop: painted drywall

Control: NCE Digital Command Control, optional direct-current cab control

12½ x 20-foot train room with finished walls, ceiling, three overhead lighting fixtures, and a carpeted floor. He also painted a sky backdrop on the drywall.

After finishing his train room, Paul began reassembling the old L-girder





4 New York Central GP9 no. 6069 picks up two boxcars at Carmel. The freelanced layout is inspired by towns along the NYC's Putnam Division.

benchwork sections. He also planned several alterations and additions. Now that he lived on a new street, Paul added "Pennebrook" to his layout's name. Work on the Chester Ridge & Pennebrook went ahead full steam.

Planning the new line

Paul's previous layouts were completely freelanced with no specific prototype in mind. That changed after Paul learned about the New York Central RR Putnam Division. He read several books, including *The Old Put* by John Schiavone, *The Putnam Division* by Daniel R. Gallo and Frederick A. Kramer, and *Forgotten*



5 New Haven SW1200 no. 657 works the industries in Brewster. The town structures include craftsman kits and refurbished train show finds.



Railroads through Westchester County by Robert A. Banh, George W. Kowanski, and Otto M. Vondrak.

The Putnam was an NYC branch that ran 53 miles north from Sedgwick Avenue in the Bronx in New York City to Brewster, N.Y. On the way the line ran through many towns in Putnam and Westchester counties. Much of the right-of-way still survives as a bike trail, and Paul has attended several walking tours hosted by John Schiavone.

Paul's layout is inspired by the last 9 miles of the Putnam Division from Mahopac to Brewster. Although the prototype ended passenger service in 1958 and freight service north to Mahopac in 1962, both freight and passenger trains flourish on Paul's HO scale railroad.

The purpose of the Chester Ridge & Pennebrook is to move freight and

A rolling workbench for your layout

When working on a layout, have you ever wondered where you set down that screwdriver? Or have you ever had to walk across the train room to search for a tool or part? Make things easier for yourself with a rolling workbench, loaded with all the tools and materials needed for a particular work session.

My rolling workbench is a Sears service cart (part no. 80035C) that I bought for less than \$60. The cart measures 16" wide by 31" long. Its four wheels make it easy to maneuver in my train room's aisles.

On the cart's top shelf I keep my most-used tools, such as hobby knives, screwdrivers, electrical parts, rolling stock parts, and miscellaneous hardware. I use the cart's bottom space for scenery material, such as various ground cover, glues, and plaster. I also keep a volt meter and soldering iron on hand.

When the cart isn't needed I store it in an open area under the layout that I call "the garage." The bottom of my benchwork is 34", so the cart's 32¾" height is an easy fit.



6 A rolling service cart makes it easy to have tools and materials on hand anywhere on the railroad. When not in use, the service cart fits under the layout benchwork.

The service cart has proven a simple way to keep me more organized and efficient during layout work sessions. — *Paul Tartaglia*

passenger trains from Mahopac to Brewster. Station stops include Mahopac, Carmel, Brewster, and Crafts, which were all stops on the prototype. Freight trains work the yards and industries between Mahopac and Tilly Foster Mine.

Paul models a broad time period between 1947 and 1965. This approach gives him greater flexibility for running equipment. "I can run both steam and diesel locomotives and various passenger and other rolling stock," Paul said. "It isn't uncommon for me to run older or more modern equipment as I desire."

DC or DCC or both

The layout trackwork is codes 83 and 100 flextrack from various manufacturers. Turnouts are from Atlas, Peco, and Shinohara. Of the 58 turnouts, 34 are remote controlled using Kemtron or NJ International twin-coil switch machines. The other 24 are controlled manually with Caboose Industries ground throws. There are also operating signals used as direction indicators for the turnouts.

Paul considers wiring one of his hobby strengths, mainly because he's

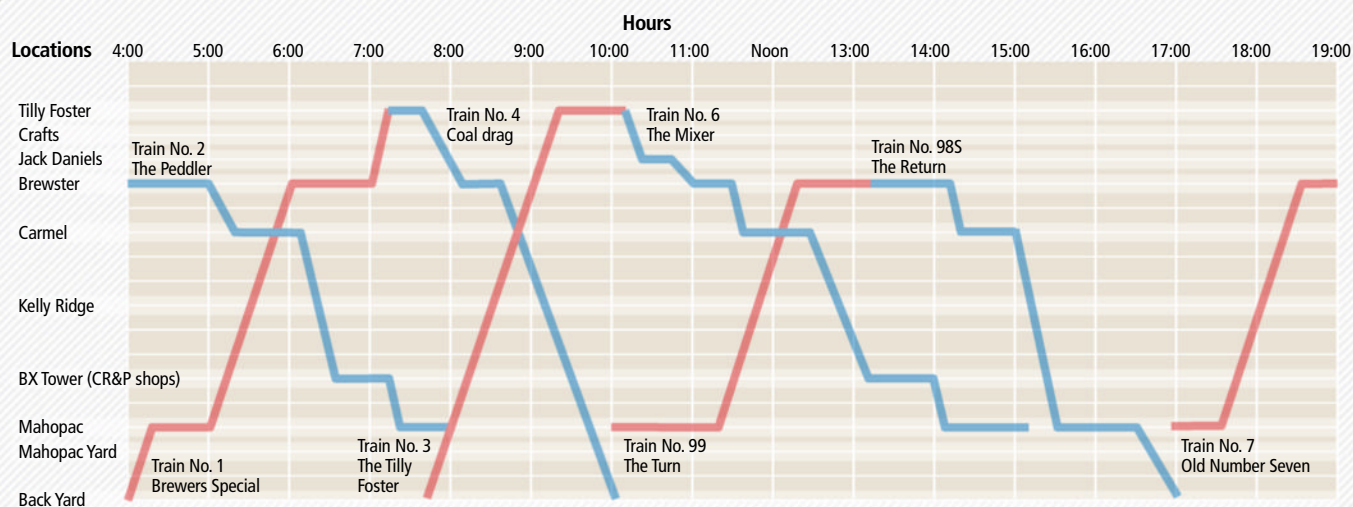
rigorous about documenting everything, and believes that neatness counts.

The layout was originally wired for direct current (DC) using dual cab control. However, Paul has converted the layout to Digital Command Control using an NCE Powercab DCC system with four plug panels located along the layout fascia.

"I had avoided converting to DCC because I thought that I'd have to rewire the entire layout," Paul said. "However, with only minor modifications, when I finally did convert to DCC, I had the layout up and running within an hour."

The layout can now be toggled between DCC and the original DC cabs. This allows Paul and his visitors to run older non-DCC locomotives whenever they want.

Paul's more recent locomotives include DCC sound decoders. However he also uses two Model Rectifier Corp. Sound Station modules; one features railroad sounds and the other features city and country sounds. The Sound Stations each have a separate wireless remote to trigger various effects from speakers mounted under the layout.



Developing an operating scheme

The operating scheme for my layout is inspired by the article “Adding operations to a model railroad” by Brooks Stover from the May 2009 *Model Railroader*. The author describes how to use a straightline graph to help visualize operations on a model railroad. The switch lists I developed are also loosely based on the conductor’s orders shown in the article.

I wanted to run many trains over the given schedule, but to have only two trains operating simultaneously: one northbound and one southbound. This would keep two train crews working with the option of adding another one- or two-man yard crew.

My condensed straightline graph above shows only the first 16 hours of the timetable and eight scheduled trains. My full timetable and schedule has 22 hours of operation with 10 scheduled trains. In the graph, time is on the horizontal axis and town locations are on the vertical axis. Northbound trains are indicated in red with odd train numbers. Southbound trains are indicated with blue lines and even train numbers. Flat line sections within a scheduled train indicate switching time. Points where a red and blue line cross indicate a meet.

In the graph above Train No. 6, “The Mixer,” departs Crafts Station at 10:15 a.m. to switch the Jack Daniel’s distillery. It will then travel southbound to Brewster Yard for pickups at 11 a.m. Departing Brewster at 11:45 a.m., it continues south to switch Carmel at noon. At this point No. 6

meets No. 99N, “The Turn.” After the meet, No. 6 should depart Carmel at 1:45 p.m. heading south toward Mahopac, where it will make setouts at the CR&P Shops and then complete its scheduled run in Mahopac Yard at 3:15 p.m.

To create my operating scheme and accurately make the straightline graph, I had to run each of my scheduled trains. I carefully recorded the actual time it took to run between the stations and complete all switching tasks. After using the times to complete the straightline graph, I then filled out individual switch lists for each train.

I make each switch list on an 8½ x 11-inch sheet of paper. [Visit www.ModelRailroader.com to download a sample switch list. – Ed.] In addition to train information, the switch list includes the stations in sequence along with each car that needs to be picked up or set out (called a “Drop-Off” on the list). Special orders are also noted.

An operating session using my straightline graph timetable and schedule would last about 4 hours using a 4:1 fast clock. However, an operating session can be stopped at any time and started back up without any additional setup. The remaining two trains, one northbound and one southbound, not shown on the abbreviated schedule above would complete the operating day and reset all the rolling stock back to the beginning of the schedule.

The timetable and schedule has given the trains a purpose on the Chester Ridge & Pennebrook and has added a lot of fun to my model railroad. – Paul Tartaglia

Balanced scenery

Paul made the layout’s basic landforms using aluminum screen covered with Hydrocal-soaked paper towels or strips of plaster-impregnated cloth. He then applied a layer of Perma-Scene modeling compound. Since this material is no longer manufactured, he also mixed his own “ground goop” for some of the scenery base. [For more information on how to make and use ground goop, see the March 2015 issue or check

out the video under Online Extras at www.ModelRailroader.com. – Ed.]

Then he applied zip-texturing (plaster mixed with powdered pigments) as well as various paint washes using powdered paint pigments and Woodland Scenics Earth Colors liquid pigments. To build up the ground cover, Paul applied a variety of natural materials, including dirt, sawdust, and ground-up leaves. All the water scenes on the layout, including Lake Mahopac, were modeled with Woodland Scenics Realistic Water.

For the exposed rock formations, Paul cast plaster rocks using homemade and commercial molds. He also installed Cripplebush Valley Models rubber rocks.

The trees on the layout are from a variety of manufacturers. The majority of his ready-made trees are from Little Joe’s Trees, a vendor that sells products at local train shows. Paul’s wife also made many of the layout’s trees using natural plant material and ground foam.

Paul follows the “Good Enough” modeling philosophy. He’s most

interested in building the entire model railroad as one scenic impression with just enough detail to convince the viewer that it's realistic. He strives for consistency and balance. He doesn't want the finished layout to be overshadowed by a single, superdetailed model.

Train show surfing

Paul calls himself a train show "surfer." He enjoys scouring local shows, looking for used structure models that he can repair, modify, or kitbash for use on his railroad. He wonders if any readers may spot one of their own buildings in this article's photos.

Along with his train-show finds, Paul has built several craftsman kits. He also scratchbuilt loading docks, outhouses, bridges, and other structures. One of Paul's favorite scenes is the Royal Burtse & Ward factory. The building appears to be on fire thanks to randomly blinking red, yellow, and orange light-emitting diodes installed inside. Paul completed the scene with fire trucks built from Jordan white-metal kits and fireman figures from Preiser.

Paul's wife, Ellen, also likes attending train shows. While walking a show floor, she spotted a Roundhouse Trains Electro-Motive Division Model 40 switcher that she had to have. "It was so cute!" added Ellen. Her NYC "critter" can be seen working the Caterpillar Wheel Works in the photo above.

Most of the other locomotives and rolling stock are models of New York Central prototypes. Paul also likes to run New York, New Haven, & Hartford equipment. As of this writing, most of his rolling stock remains unweathered. However Paul plans to focus on weathering projects in the near future.

One of Paul's most interesting freight cars is a gondola with a miniature closed-circuit television camera from SJT Enterprises. He purchased the camera several years ago at the Amherst Railway Society Railroad Hobby Show in West Springfield, Mass. When Paul runs the camera car, visitors get a first-person view of the railroad by watching a wall-mounted monitor.

Running trains

Operation on the Chester Ridge & Pennebrook consists of local freights and scheduled passenger trains. Movement is governed by a timetable-schedule and manually



7 Passing the tug *Ellen T*, NYC no. 503, an Electro-Motive Division Model 40, works the Caterpillar Wheel Works. Paul's wife, Ellen, found the switcher at a train show.

generated switch lists, as described by Paul in "Developing an operating scheme" on the previous page.

A typical operating session can last from 2 to 4 hours of real time, while the train movements follow a 4:1 fast clock (15 minutes equals 1 hour). Two trains are usually run at the same time, one northbound and one southbound. Depending on the number of operators, trains are run with either one- or two-man crews. The two main yards could also each merit their own crew. Paul's role is usually that of dispatcher and general troubleshooter.


Whether for operating sessions or open houses, adding Plexiglas proved a big help in protecting the layout scenery from errant fingers. He bought a sheet of 1/8" thick Plexiglas from his local hardware store and had it cut into strips.

Lessons learned

Paul feels that up-front planning is the most important part of building a successful model railroad. "Don't get stuck in planning paralysis, but realize that you must have a plan," Paul said. "I learned this the hard way." He knows that taking extra time to plan and get a task moving in the right direction is a lot easier than simply barreling ahead and having to deal with a series of unexpected changes. In the end, a little planning saves a lot of time.

Even with a finished layout, Paul believes in being prepared. He keeps a special rolling service cart, described

on page 63, to make routine maintenance an easier task.

It's been more than 45 years since Paul built his first HO scale Chester Ridge, and he continues planning projects and perfecting his current layout. However, the goal of his model railroading hobby is the same. In his travel-filled working years, his hobby provided much needed stress relief. These days, the hobby remains an important part of his retirement. "Model railroading has given me hours of enjoyment," Paul said, "It's relaxing, satisfying, and just plain old fun." 



Meet Paul Tartaglia

In 2008, Paul Tartaglia retired from a 31-year career at IBM. He's also served for more than 40 years as a volunteer fireman for the Harry Howard Hook & Ladder in Port Chester, N.Y.

Paul lives with his wife, Ellen, in Carmel, N.Y. They have three grown children and two grandchildren. In addition to model railroading, Paul and Ellen enjoy traveling, entertaining, and boating.



More wheels equals better power pickup

With most manufacturers now offering some version of power protecting capacitor circuits for Digital Command Control (DCC) decoders, there's been a lot of interest in the circuits among model railroaders. Capacitor circuits help locomotives negotiate areas where there is poor electrical pickup, commonly the result of dirty track, but also due to unpowered frogs or uneven rails. Capacitors store a small amount of energy, allowing operation for a few seconds without track power.

I came up with a simple method to handle the problem of power loss almost 30 years ago, back in my CTC-16 command control days. [CTC-16 was an analog command control system described in *Model Railroader* beginning with the December 1979 issue. – Ed.]

I call my solution a “poor man’s keep alive” because it’s an inexpensive trick using extra wiring to get over a patch of rough or dirty track. This method is useful for small models such as pairs of switchers that may not operate reliably on dirty, rough track, or over dead frogs, and don’t have room for traditional capacitor circuits.

Basically this method involves running a pair of wires between two locomotives, connecting their track pickup wires. This doubles the number of wheels picking up power, over twice the distance, and hopefully onto cleaner rails.

This approach is essentially the same as having electrical pickup on all the drivers of a steam locomotive plus all the tender wheels with connecting wires running between locomotive and tender. Let me show you one recent installation I did for use on my HO scale Piedmont Southern layout.

I started with a pair of Life-Like Proto 1000 RS-2 models. After removing the

Larry’s “poor man’s keep alive” helps improve multi-unit operation on dirty or uneven track. This month he shows you how to use a little wire and some connectors to improve performance on smaller locomotives.

original printed-circuit (PC) light boards, which were held in place with small screws, I installed SoundTraxx Econami PNP decoders ①.

I mounted the new decoders on pads of double-sided foam tape atop the motor. I also placed some Kapton tape on the underside of the decoders so they wouldn’t short out on the metal screw posts for the old PC boards. I reused the original light bulbs.

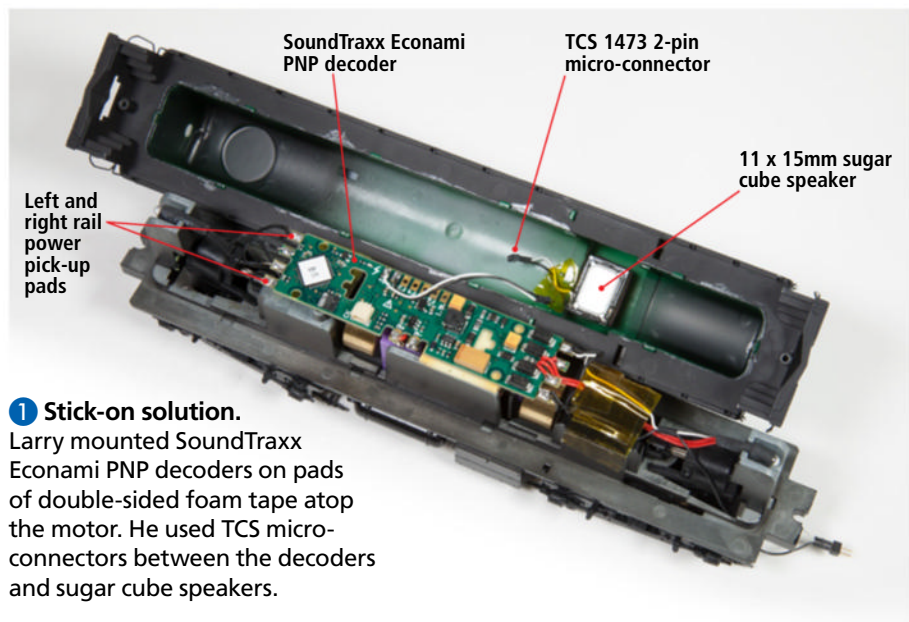
I installed a Streamlined Backshop (www.sbs4dcc.com) 11 x 15mm sugar cube speaker in the cab of each locomotive, sticking it to the inside of the roof with more double-sided foam tape.

Instead of running wires directly from the speaker to the decoder, I used a TCS 1473 2-pin micro-connector (www.tcsdcc.com). The micro-connector makes it easy to completely separate the shell from the chassis for installation and maintenance.

With the decoder, speaker, and lights installed, I moved on to making the locomotive interconnections. Using the slightly larger TCS 1301 2-pin mini-connector, I ran the wires through the truck opening in the chassis, passing the black and white wires on either side of the truck tower ②. I then soldered the black and white wires to the track pickup pads on the decoder circuit board.

On boards that have power pickup connections at each end, like the Econami PNP, I prefer to run a wire between the front and rear power pickups on each side. With this method, the circuit traces on the circuit board don’t have to serve as an electrical path to the second locomotive. I ran these underneath the board for protection.

Since the Southern Ry. designated the long hood on RS-2s as forward, I set up this pair with the connectors on the short hood ends, giving me a



① Stick-on solution.

Larry mounted SoundTraxx Econami PNP decoders on pads of double-sided foam tape atop the motor. He used TCS micro-connectors between the decoders and sugar cube speakers.

Power management follow-up

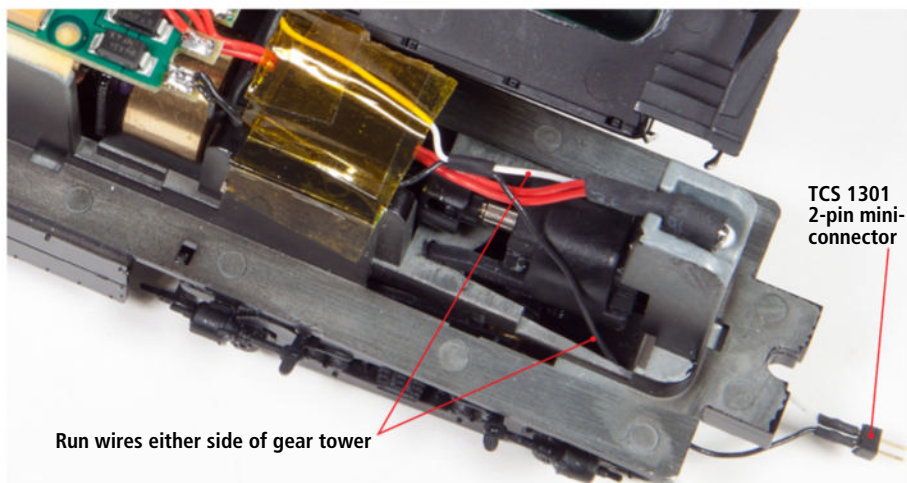
In my October 2017 article “The ABCs of power district management,” I showed a command station and booster in an enclosure as part of the sidebar on page 53. Eagle-eyed reader Mike Rozanski noticed that for the photo I had mixed an 8 amp DCS200 and a 5 amp DB150. His question was, can you mix boosters of different amperages like that? To get the full technical answer on this I posed the question to the electrical engineers at NCE and Digitrax.

Basically, the answer is you’re probably better off not mixing boosters of different amperages or from different manufacturers. There are scenarios during short circuits across block gaps where the higher amperage unit can feed back into the lower amperage unit and damage it. However, it’s possible to get away with it for a long time under the right circumstances.

First, the boosters would need to be set so they are all putting out essentially the same voltage. Second, the modeler must have done the wiring properly so that both units’ short-circuit protection shuts down as designed, and then there may be no problems.

Also, the use of ancillary circuit breakers like the NCE EB1, Digitrax PM42, or DCC Specialties PSX series may help prevent problems should shorts occur.

In most cases, if a sustained short occurs across power district gaps due to a derailment, the wiring in the locomotive will likely burn out before any damage to the boosters occurs. This is why you may hear folks say they’ve been doing this for years without any problem. However, remember the DCC version of Murphy’s Law – if it can happen, it eventually will happen. – *Larry Puckett*



2 Neat routing. Larry ran the TCS mini-connector wires through the opening in the chassis, routing the black and white wires on either side of the truck tower.

bidirectional consist. Make sure to install the wires so that when the locomotives are connected end to end, the wires connected to the right rail pickups will be connected to one another, and the same for the wires to the left rail pickups. Failure to do this will result in a dead short and probably a blown decoder.

The best way to avoid mix-ups is by placing the models end to end in the orientation in which they will be connected while installing the wires.

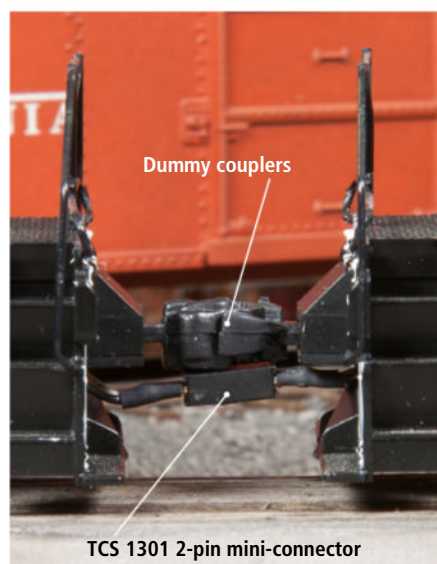
With some models it may be possible to use wires without connectors, particularly if the shell can be installed on the chassis without disturbing the wires. My RS-2s have a solid pilot, so I passed the wires through the coupler opening. I find it greatly simplifies things to use the connectors, making it quick and easy to disconnect the models for trips to the programming track, the local club, or for maintenance.

In addition, having the white and black wires makes it easier to prevent cross wiring, creating a short circuit. The white wire is hidden when in use, so it isn’t objectionable. I used dummy couplers to connect the locomotives and ran the wires below the couplers, hiding their presence **3**.

I do have a couple caveats. First, consider these models permanently coupled. Trying to operate them individually with the connector just dangling may result in a short if the male pins bump against a metal coupler, pilot, or rail.

Second, you don’t want to leave these, or for that matter any other, locomotives parked across rail gaps or places like turnouts where polarity shifts may create shorts. If there’s a sustained short, it’s possible for the current to burn out some wires, or at least melt insulation. But if your short circuit detection is working properly, the power will shut off if it does happen.

Consequently, make sure your power bus wiring is adequate so the short detection circuits actually “see” shorts and do their job. The best way to test your track is the quarter test. Lay a quarter across the rails at various points on your layout, and if the short circuit protection doesn’t trip, start looking for the reason. **MR**



3 Hidden connection. Larry used dummy couplers between these locomotives, and ran the wires with their TCS mini-connectors below the couplers, disguising their presence.



Kato N scale *Olympian Hiawatha* train

Hiawatha is the name the Chicago, Minneapolis, St. Paul & Pacific, also known as the Milwaukee Road, used for its first streamlined passenger trains in 1935. By the late 1940s, there were *Hiawathas* providing fleet passage between many cities of the upper Midwest and the Pacific Northwest.

The *Olympian Hiawatha* was the Milwaukee Road's high-speed connection between Chicago and Seattle-Tacoma, Wash. This orange-and-maroon streamliner offered full dome service and the CMStP&P's signature Sky Top observation cars. Now for the first time as a plastic model, Kato USA has introduced an N scale version for passenger train modelers.

The prototype. The streamlined *Olympian Hiawatha* was inaugurated on June 29, 1947. Much of the train was home-built, but production backlogs at Pullman-Standard meant the first 18 months of service included older, heavy-weight equipment. By January 1949, Pullman-Standard-built 10-roomette, 6-bedroom sleepers and eight double-bedroom Sky Top lounge cars had been added, creating a fully streamlined train.

For the 1952 Christmas holidays, the Milwaukee Road debuted the Super Domes, the first full-length dome cars. These were also from Pullman-Standard.

The home-built cars included a baggage-dormitory car, 48-seat coaches, a diner, and a Touralux sleeper. The

Touralux cars offered an intermediate-priced ticket with 14 sections containing upper and lower berths.

The consist of the *Olympian Hiawatha* varied with demand. An RPO-express car that was part of the original consist was eventually dropped, and coaches were often added to accommodate Chicago-to-Minneapolis traffic on weekends and around holidays.

The trains were pulled by a variety of diesel-electric and electric locomotives. In 1950, EMD FP7s joined the power pool. Diesel locomotive types were mixed and matched as needed.

In 1957, the Milwaukee Road started painting its passenger equipment yellow and gray after entering into an



The Kato FP7s and F7B both have flywheel-equipped motors and die-cast metal frames. The locomotives have more than enough power to pull a full *Olympian Hiawatha* consist. The FP7s come with alternate numbers for their number boxes.

agreement with the Union Pacific to handle UP's *City* streamliners from Omaha to Chicago. The Armour Yellow was found to wear better than Milwaukee's Harvest Orange and Royal Maroon.

By 1961, competition from highways and airlines had made it plain that rail passenger travel was not going to rebound, and the Milwaukee Road petitioned the Interstate Commerce Commission to drop the train. The *Olympian Hiawatha* made its last run on May 21, 1961.

The six Sky Top lounges and 10 Super Domes built for the train went to Canadian National in 1964. The home-built cars were either reassigned or converted to another use, such as diners 115 to 119 becoming storage cars in 1964.

The models. Kato USA's nine-car set includes a baggage-dormitory, two 48-seat coaches, a Super Dome, a diner, a 14-section Touralux sleeper, two 10-6 sleepers, and a Sky Top lounge car.

Pulling the train is an FP7-F7B two-unit set. An additional FP7 is available to create a three-unit consist. All units are powered. The FP7s are new for this train. The FP7s and F7B are decorated in the Milwaukee Road's as-delivered maroon, orange, and black scheme. The paint is opaque and color separations are sharp. Railroad-specific details include winterization hatches over the fourth radiator-fan housing on each unit.

All details are molded in place. Kato magnetic couplers are truck-mounted on the rear and frame-mounted on the front of the FP7s. Couplers are truck-mounted on the F7B.

The upper and lower headlights and the number boxes are illuminated on the FP7 when the locomotive is moving forward. In normal operation, only the lower light would be illuminated. The upper light is a signal light.

The mechanism is the same as in the Kato F3 we reviewed in the November 2014 MR, except it's longer to match the longer frame of the FP7. All dimensions on the model match drawings published in *General Motors 1500 H.P. "Lead" Unit FP7 Diesel-Electric Locomotive* (General Motors, 1948).

The passenger cars in the set are all new. I was able to compare the Pullman-Standard cars with drawings in *The Official Pullman-Standard Library, Vol.*

PERFORMANCE TESTS	
DRAWBAR PULL	.64 ounce 15 N scale passenger cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
1.5 (start)	2
3	31
6	103
9	178
12	248

15: *Western Railroads* (RPC Publications Inc., 1994) by W. David Randall. Dimensions and room layouts all matched. The only deviation I found was the truck wheelbase. The book states the four-wheel trucks had an 8-foot wheelbase, but the model trucks measure 8'-6", which is a more common size for passenger trucks.

Three of the four home-built cars are illustrated in the 1949-51 *Car Builder's Cyclopedia* (Simmons-Boardman, 1949). Dimensions and layout for the baggage-dormitory, coaches, and diner match the drawings in the book.

The Milwaukee Road's signature porthole and oval windows tie all of the cars together. All paint is opaque and sharply masked, and the lettering is clear and legible. One window on each of the 10-6 sleepers and on the Sky Top car has a silver frame, depicting the hinged sash that allowed the loading of stretcher-borne patients onto the train.

All of the cars are equipped for electrical pick-up. Kato offers a light board, no. 11-211/212, for modelers who wish to light their cars. The rear marker lights are illuminated on the Sky Top lounge.

On the test track. The DC-powered Kato FP7 started moving at 1.5V at 2 scale mph. It reached 103 scale mph at 6V, and hit 248 scale mph at 12V. The top speed of an FP7 with optional gearing was 89 mph.

Train Control Systems makes a drop-in Digital Command Control decoder for the FP7, no. K0D8-F. Decoder K0D8-D fits the F7B. According to a Kato rep, Digitrax plans to offer a drop-in decoder for the FP7, as well. A Digitrax DN163K0B fits the B unit. Kato also offers DCC-equipped locomotives.

The F-unit's drawbar pull of .64 ounce is equivalent to 15 N scale passenger cars on straight and level track. I took the train to our Red Oak project model railroad, where the train had no trouble with the layout's 13" minimum radius curves and no. 6 turnouts.

Facts & features

Price: Nine-car set, \$280; EMD FP7 and F7B locomotive two-pack, \$190 (DC only), \$270 (DCC); EMD FP7, \$110 (DC), \$150 (DCC)

Manufacturer

Kato USA Inc.

100 Remington Rd.

Schaumburg, IL 60173

www.katousa.com

Roadname: Milwaukee Road

Era: 1953 to 1957 as decorated

Locomotive features

- Die-cast metal frame
- Can motor with dual brass flywheels
- Milwaukee Road winterization hatch
- Directional light-emitting diode (LED) headlight on A units
- Weights: 3.2 ounces (FP7), 3 ounces (F7B)

Passenger car features

- Flush-mounted window glazing
- Nystrom passenger car trucks
- All-wheel electrical pickup for interior lighting (light boards sold separately for \$12 each)
- Illuminated LED marker lights on Sky Top lounge
- Weights: Baggage-dormitory, 1.1 ounce (.2 ounce less than National Model Railroad Association Recommended Practice 20.1 of 1.3 ounces for a 75-foot car); diner, coach, Touralux sleeper, and Sky Top lounge, 1.2 ounces (.2 ounce less than RP-20.1 of 1.4 ounces for an 85-foot car); 10-6 sleeper, 1.3 ounces (.1 ounce light); Super Dome, 1.4 ounces (matches RP-20.1 for an 85-foot car)

All

- Low-flange blackened metal wheels, in gauge
- Kato magnetic knuckle couplers, at correct height

The truck-mounted couplers on the cars kept them on the rails through crossovers and ladders and caused no problems when I reversed the train. One locomotive could easily pull all nine cars.

The *Olympian Hiawatha* is a distinctive train with its Sky Top lounge and Super Dome. Kato has done its usual high-quality job in bringing the model to N scale. This model would make a great addition to layouts set anywhere from Chicago to the Pacific Northwest. — Eric White, associate editor



Athearn HO scale SDP40F with Tsunami2

Amtrak's first all-new passenger diesel joins the Athearn Genesis line of superdetailed HO scale locomotives. This model is also the first that we've tested to come factory-equipped with the new-and-improved SoundTraxx Tsunami2 decoder.

The prototype. From 1973 to 1974, General Motors Electro-Motive Division built 150 SDP40F diesel-electric locomotive for Amtrak. Formed in 1971, the fledgling government-funded passenger carrier had been using hand-me-down equipment from predecessor railroads. The six-axle cowl-body SDP40Fs were built primarily for Amtrak passenger service and included steam generator equipment for heating passenger cars. Internally, the locomotive was based on the EMD SD40-2 freight hauler and featured a 3,000 hp 645E3 diesel engine.

Unfortunately the SDP40Fs proved prone to derailments. Unable to fix the problem, Amtrak removed all SDP40Fs from service by 1981. Most were traded back to EMD, but 18 were traded to the Atchison, Topeka & Santa Fe Ry., which modified them for freight service. Re-classed SDF40-2s, these freight locomotives served on the Santa Fe and its successor Burlington Northern Santa Fe Ry. All SDF40-2s were retired by 2002.

The model. The dimensions of the Athearn model match prototype drawings published in the August 1992 *Model Railroader*. With its twin air horns and flat nose, our review sample, Amtrak no. 589, models what railfans refer to as a phase II SDP40F. Earlier production phase I SDP40Fs had pointed noses and

a single four-chime horn. Athearn is making both Amtrak versions, as well as multiple versions of the ATSF SDF40-2.

The well-defined panel lines and other molded details also match prototype drawings and photos. The pilot decks feature realistic anti-skid texture.

The model's many separate detail parts include all handrails and grab irons, windshield wipers, m.u. hoses, and clear window glazing. The rooftop is especially well detailed, with see-through grills and separate radiator fans. The vent and Sinclair "ice skate" antenna on the cab roof are correct for the Amtrak prototype.

The model is painted in Amtrak's phase 1 paint scheme. There's sharp color separation, and all lettering and graphics are properly placed, including the "pointless arrow" logo on the sides.

The HT-C trucks are well done with separate brake cylinders. The front truck includes a speedometer cable on the fireman's side of its first axle. The flexible plastic sand lines are mounted high enough to avoid catching on trackwork.

Under the hood. After removing the couplers and two screws on the underframe, I could lift off the plastic body shell. This reveals a detailed cab interior with control panels and three separately applied and painted seats. Although crew figures aren't included, they would be easy for a modeler to add.

Behind the cab section, the five-pole, skew-wound motor with dual brass flywheels rests in the center of the die-cast metal frame. Driveshafts on each end of the motor transfer power to the truck-mounted gearboxes.

The SoundTraxx Tsunami2 decoder is attached to the frame above the motor. Two 28mm round speakers are also mounted atop the frame. One speaker is behind the cab, and the other is under the steam generator stacks.

Performance. All-wheel drive helps make this locomotive a powerful puller. As measured with our workshop force meter, the locomotive's drawbar pull is equivalent to 21 HO passenger cars or 42 HO freight cars on straight and level track. During real-world testing on our staff layout, the Milwaukee, Racine & Troy, the SDP40F hauled 10 HO passenger cars up a 3 percent grade.

Although it doesn't include a CurrentKeeper capacitor system, the model rolled through yard ladders and crossovers without so much as a headlight flicker, thanks to its all-wheel electrical pickup.

On our DCC test track with its decoder set to 28 speed steps, the SDP40F accelerated smoothly from 5 to 85 scale mph. The prototype could reach about 103 mph.

After setting the decoder to 128 speed steps, I had more precise slow-speed control. The model then crawled along at 1 scale mph in speed step 1. For further fine-tuning, the decoder supports both custom and 16 preset speed tables.

Tsunami2. The Tsunami2-equipped SDP40F is louder than any previous Tsunami-equipped HO locomotive that I've tested. Configuration variables (CVs) control the main volume level as well as the volume level of each individual sound effect.

The Tsunami2 uses indexed CVs, which allow more programming options than previous Tsunami decoders. For example, the new decoder has a feature called Flex-Map technology. I could map a particular user-triggered function to any available throttle key. With earlier Tsunami decoders, function mapping was limited to specific combinations of keys and functions.

The decoder includes an improved version of Digital Dynamic Exhaust (DDE), which uses back-electromotive force to automatically adjust the intensity of the prime mover sound. When I ran the locomotive uphill or with a heavy train, the engine rpm notched up accordingly. When I ran the locomotive light or downgrade, the rpm decreased.

For those who prefer, the decoder also supports manual notching, where function keys control the RPM level independent of the throttle setting.

Compared to the previous Tsunami, more user-triggered effects are available by default on the Tsunami2. The usual and most useful effects are still there, including the lights, bell, coupler clank, and long and short horn blasts. Other effects include a fuel-loading sequence, a general maintenance sequence, and an "All aboard" announcement from the conductor. Random cab radio chatter can also be turned on or off.

The enhanced brake functions are among my favorite features. After adding some momentum into the decoder, I programed three different braking rates: the independent brake, the train brake, and the dynamic brake. For example, when the locomotive is running light in the yard, I select the independent brake. In this case, the locomotive stops quicker than if it had a heavy train behind it. If it were hauling cars, then I'd select the train brake and plan for an increased stopping distance.

On a downgrade, I pressed function 4 and triggered the buzzing sound of the dynamic brake fans. With another press, the locomotive actually slowed down according to the rate that I programmed.

I also changed the model's address; switched the headlights to manual, non-directional control; and consisted the SDP40F with another decoder-equipped passenger locomotive. An excellent Tsunami2 User Guide that includes a handy CV calculator is available as a free download at www.SoundTraxx.com.

Facts & features

Price: \$309.98 (DCC sound), \$219.98 (DC, no sound)

Manufacturer

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

Era: 1971 to 1981 (Amtrak)

Road names: Amtrak; Atchison, Topeka & Santa Fe

Features

- 21-pin DCC socket (DC version)
- Light-emitting-diode headlights, Gyalite, and number boxes
- McHenry plastic operating knuckle couplers at correct height
- Metal RP-25 contour wheels, in gauge
- Minimum radius: 18", 22" (recommended)
- Weight: 1 pound, 10.4 ounces

PERFORMANCE TESTS

DRAWBAR PULL	3 ounces 21 HO passenger cars on straight and level track
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9 (start)	2.5
10	8
11	26
12	45
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	5
7	39
14	62
28	85

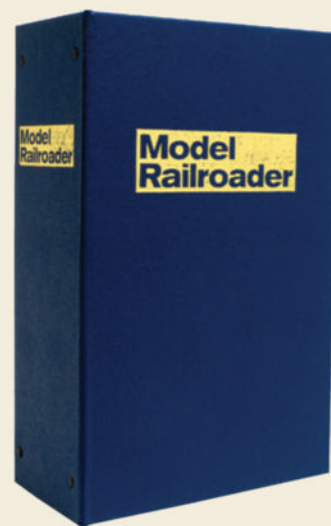
DC operation. During direct-current (DC) testing, the sounds and lights turned on at 7 volts, but the model didn't start moving until I applied 9 volts to the track. The model's 45 scale mph top speed at 12V is a lot less than the prototype. However, it would be a comfortable operating speed for the condensed main lines of most model railroads.

In DC, the lights operate according to direction and the sounds are limited to the prime mover. Running the locomotive with a DC sound controller like the MRC Tech 6 allows access to user-triggered sound effects and CV programming on a DC layout.

Realistic sound and control from the Tsunami2 and meticulous attention to detail make the Athearn Genesis SDP40F the definitive HO scale model of this long-distance passenger hauler. —
Dana Kawala, senior editor

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Facts & features

Price: \$529.98 (complete system), \$129.98 (WiFi module only)

Manufacturer

Model Rectifier Corp.
80 Newfield Ave.
Edison, NJ 08837
www.modelrectifier.com

Features

- 3.5A maximum current
- Advanced or universal consisting
- Built-in fast clock
- Prodigy Elite tethered handheld throttle with backlit display
- Programming on the main or service mode with isolated programming track
- Supports 28 functions
- Supports Prodigy wireless throttles (sold separately)
- Three throttle jacks
- Turnout routing and accessory control
- Two- or four-digit addressing
- WiFi module for smartphone app control

MRC Prodigy Advance² WiFi

Smartphone apps such as Engine Driver or WiThrottle have become an increasingly popular alternative to traditional Digital Command Control (DCC) throttles. In addition to downloading the app, to turn a smartphone or tablet into a DCC throttle usually involves setting up a computer running Java Model Railroad Interface (JMRI) software and a WiFi router. With the new Model Rectifier Corp. Prodigy Advance² WiFi system, smartphone train control is as simple as plugging in a small module.

A complete system. The Prodigy Advance² WiFi set includes everything needed to get up and running with DCC and WiFi control. The included 13.8V power supply and the command station's 3.5A booster is more than enough to power a small to mid-size HO layout running five to eight sound-equipped locomotives. The command station features two sets of terminals, one marked MAIN and the other PROGRAMMING, which makes it easy to set up an isolated programming track section.

The included Prodigy Advance² Elite tethered cab features the intuitive button layout and throttle knob of previous MRC throttles. This Elite version also features an easy-to-read backlit display.

Three cab jacks on the front of the command station allow for expansion,

either for more throttles or setting up a cab bus via plug panels. A wireless receiver or computer interface (both sold separately) can also be plugged into these jacks. See the MRC website for information on extension plates, additional power boosters, wireless throttles, and computer interface products.

Visit ModelRailroader.com/archive to read reviews of the Prodigy Advance² (July 2007 *Model Railroader*) and Prodigy Wireless (February 2008 MR).

Smartphone control. The Prodigy WiFi module is a 2½" square box that's less than an inch thick. There are two screw holes on each side of the box so it can easily be mounted under layout benchwork. To enable the module I simply plugged it into one of the command station's cab jacks using the supplied 8-wire networking cable.

That was it! I didn't need a computer or internet connection.

For those who already have a Prodigy system, the WiFi module is backward-compatible. I also tested the WiFi module on a 13-year-old MRC Prodigy Advance command station, and the smartphone control worked flawlessly.

With the module plugged in, I could run trains with a smartphone or tablet running one of the supported apps. Apple iPhone or iPad users should

download the WiThrottle app, while Android users should download the free Engine Driver app (shown in the inset). The WiThrottle App costs \$9.99, but a WiThrottle Lite version is available free. During testing I found that the module's range with either app was about 100 feet.

Each WiFi module supports up to eight smartphones or tablets. Tethered or wireless throttles can still be used with the system. On our layout, I ran a freight with WiThrottle on an iPad while a colleague switched a yard using a Prodigy Advance tethered throttle.

Both WiThrottle and Engine Driver are intuitive to use, but working with a touch screen can take a bit of adjustment. Function response was instantaneous. I pressed F2 and heard the horn. Likewise, the throttle response was spot-on and worked according to the momentum I'd programmed into a locomotive. Both apps use on-screen sliders for speed control, and I had to practice to avoid over- or under-shooting the desired locomotive speed.

Note that the apps function as utility throttles. Programming decoders requires a Prodigy Advance throttle or computer interface.

Easy WiFi control is a welcome addition to the well-rounded MRC Prodigy Advance² DCC system. — Dana Kawala, senior editor



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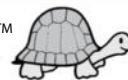
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QUICKLOOK

Walthers HO scale 89-foot channel-side flatcar

Price: \$27.98

Manufacturer

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

Era: 1963 to present

Road names: TTX (yellow and 1960s brown for 40-foot trailers, Twin 45 with KTTX marks in yellow and brown for 45-foot trailers, and general service with JTTX in yellow only). Two road numbers per scheme.

Comments: The F89F channel-side flatcar is a recent addition to the WalthersMainline. The upgraded model includes a newly tooled die-cast metal underframe and improved brake gear.

Our sample is decorated as TTX no. 150029, part of the company's 150000 through 155581 series. The full-size cars were built between 1963

and 1967 by Bethlehem Steel Co. in Johnstown, Pa.

The WalthersMainline model features an injection-molded plastic body and a die-cast metal underbody and sill. The sill flange is plastic and attached with three screws. The control valve, air reservoir, and brake cylinder are also plastic, tethered by piping. Two separate, non-operating plastic trailer hitches spaced for 40-foot trailers are in the lowered position.

I compared the model to prototype data published in the *Trailer Train Equipment Guide* (Trailer Train Co., November 1987). The length over the end sills and strikers, the deck height, and deck width are all accurate. The distance between the truck centers is a scale 65'-4". It should be 66'-0".

The model tips the scales at 5.7 ounces, which is 1.4 ounces too light based on National Model Railroad

Association Recommended Practice 20.1. The Proto-Max metal couplers had low trip pins, which I was able to fix with Kadee pliers. The swinging coupler pockets allow the car to navigate 18" radius curves. However, it would look better on curves greater than 24".

The 33" metal wheels, mounted on plastic axles, were correctly gauged. However, the car didn't roll well down a 3 percent grade. Using a truck tuner (sold by Reboxx and Micro-Mark), I cleaned the axle sockets on the trucks.

Further inspection revealed a small mold seam on the tip of each axle. I used a no. 11 blade to scrape the seam. Then I used a fine sanding stick to smooth the tip of each axle. Cleaning the sockets and smoothing the axle tips improved the car's performance.

Walthers has done a fine job capturing the lines of this TTX work-horse. — Cody Grivno, associate editor





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Scene and photography by Ken J. Johnson
Preproduction model shown

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QUICKLOOK

Atlas O 55-ton coal hopper

Price: \$74.95

Manufacturer

Atlas O
378 Florence Ave.
Hillside, NJ 07205
www.atlaso.com

Era: 1960s (as decorated)

Road names: Kansas, Oklahoma & Gulf; Boston & Maine; Canadian National; Virginian; and Westmoreland Coal Co. Four road numbers each. Data only and undecorated versions also available.

Comments: One of the enduring freight-car designs is the United States Railroad Administration's 55-ton hopper. It's also back on the Atlas O roster in several new road names.

Designed at the close of World War I and produced into the 1930s, these hoppers formed the backbone of many railroads' coal-hauling operations. In all, more than 20,000 were produced.

The Atlas O model features a plastic body on a die-cast metal frame. It has separately applied wire grab irons, brake gear, and die-cast metal stirrups. The unloading doors open and snap shut thanks to discreetly placed springs.

The sprung trucks have properly gauged 33" blackened metal wheels. The body-mounted die-cast metal knuckle couplers are mounted at the correct height. The major dimensions are close to those published in the 1959 *Official Railway Equipment Register*.

Our review sample is based on the 100-car fleet of twin hoppers owned by Kansas, Oklahoma & Gulf to serve the coal industry in southeastern Oklahoma and western Arkansas. Our KO&G model is correctly numbered in the prototype's 700 to 799 car number series.

Atlas O's version of this hopper is a solid representation of the KO&G's cars,

but there are a couple discrepancies. First, the model has a vertical brake staff, which was probably correct when the car was built. However by the early 1960s era that the car is decorated for, the prototype had been equipped with an Ajax brakewheel mounted vertically on the end. Also, the Atlas model has Andrews trucks with bolt-on journal-box retainer bars. According to prototype photos, the KO&G hoppers rode on cast-steel trucks with integral journal boxes.

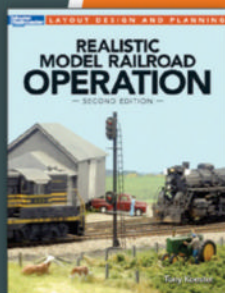
Those things said, the majority of the detail on the model is spot-on.

Having built the detailed but fiddly InterMountain kit on which the Atlas O model is based, this ready-to-run version is a leap forward. It's a great-looking and smooth-rolling model of a prototype that ran on rails all across the country. — Hal Miller, editor

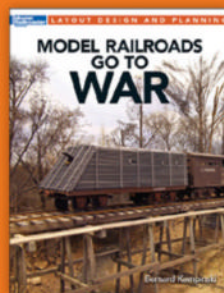


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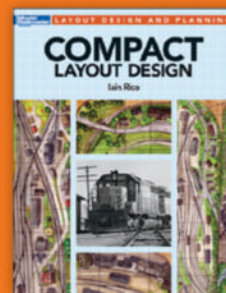
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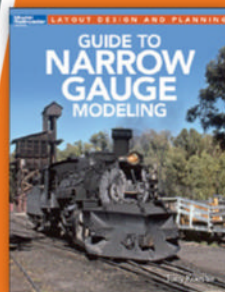
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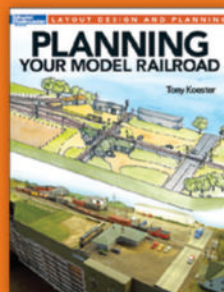
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Using steam sounds prototypically

A recent online post made me think. It observed that today's modelers can readily use diesel sound decoder features because they're familiar with the real deal. We hear horns and bells at grade crossings, the sounds of prime movers notching up, the throb of air compressors and the high-pitched whine of dynamic brakes. However, most of us aren't similarly familiar enough with steam sounds to put steam decoder features to work.

Life has treated me with enough steam experience that our state-of-the-art decoders have me in awe. They produce highly realistic effects that range from opening and closing cylinder cocks to the clank an engine's rods make when it's coasting downgrade, or "drifting." Here, climb into the engineer's seat, take the throttle, and you'll see.

Look around and locate the brake stand, the throttle, the whistle cord, the reverser, and the bell valve. The brake stand has two handles, the automatic train brake and the independent engine brake. The lever that operates the cylinder cocks is on the floor.

Our engine is ready. First, open the cylinder cocks to drain any water collected in the cylinders and prevent damage to the cylinders or pistons. Flip on the bell valve and blow two quick shorts of the whistle, warning that we're about to move. Finally, push the reverser forward and tug on the throttle.

Steam and water whoosh

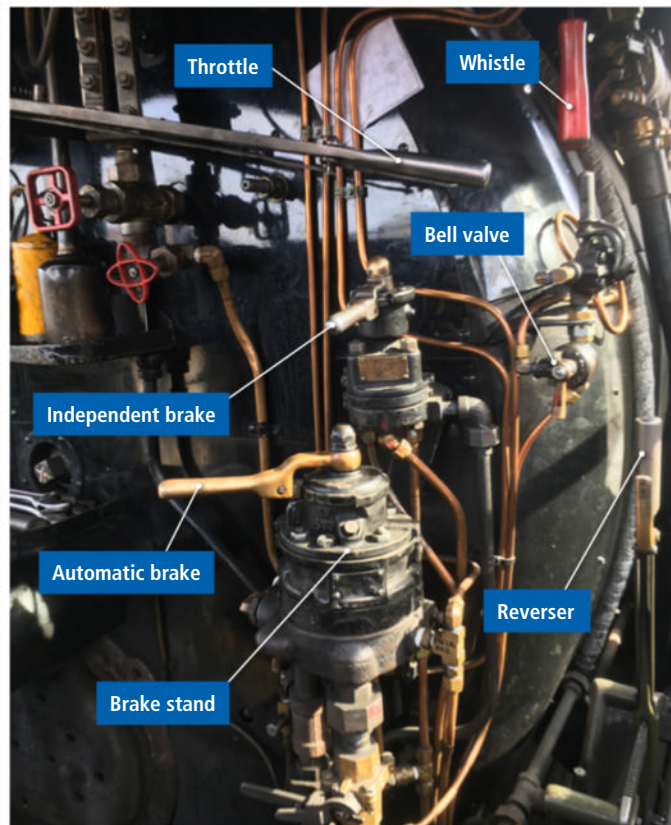
from the cylinder cocks and the drivers begin turning. Test the brakes with the independent. Hear them squeal as the engine slows? Release them. Close the cylinder cocks while soft chuffs rise from the stack.

Now, backing toward our train, close the throttle and drift almost silently, rods clanking gently. A soft puff of air hisses from a light application of the independent, easing the engine to a smooth coupling. The air pump starts thumping when the trainmen join the air hoses, preparing the train's brake system.

Finally, we're ready to roll. Signal two long whistle blasts, start the bell ringing, release the brakes, and crack the throttle, opening it little by little as the exhaust quickens.

Full-featured decoders contain most of these sounds, which we can trigger prototypically with function keys. Commonly, the bell defaults to F1 and the whistle to F2. While some decoders have dozens of other functions, I use only a few more. I follow the instructions in the decoder manual to map the short whistle, rear headlight, cylinder cocks, and independent brake to F3, F4, F5, and F6, respectively. I also use F0 to turn on the headlight. The headlight draws power from a dynamo that has a distinct vibration that's heard as well as felt.

These functions are standard for all my steam power. They cover an engineer's most common actions.



There's little resemblance between a boiler backhead and a Digital Command Control throttle, but decoder technology enables them to produce similar sounds. Jerry Dziedzic photo

I program other sounds so they occur automatically. An engine laboring to start a heavy train thunders ponderously, while the "chika-chika-chika" exhaust of an engine at speed resembles a sewing machine on steroids. Today's decoders can simulate both by sensing current draw. Another adjustment delivers a prototypical four beats of exhaust to each turn of the drivers. Though momentum has no sound of its own, it's crucial because it allows an engine to drift with throttle closed, silencing the exhaust so the clanking noise of its rods can be heard.

Realistic sound requires two other choices. To change direction, engineers strong-armed a manual Johnson bar or operated a power reverser. Choose between the Johnson

bar's metallic "thunk" and the power reverser's quiet "pssfft." The power reverser was typical of larger, more modern power. Also, coal-fueled engines were either hand-fired or equipped with a mechanical stoker. On stoker-equipped engines, reduce or turn off how often the fireman's shovel scrapes.

Refer to decoder manuals for details about such programming. You'll also want to experiment with the sound levels for each effect. I choose the exhaust volume first and set the others proportionally.

Programming only a handful of sound decoder features can have you running an engine realistically, with practice helping your fingers find the right places as instinctively as an engineer's experienced hands. **MR**



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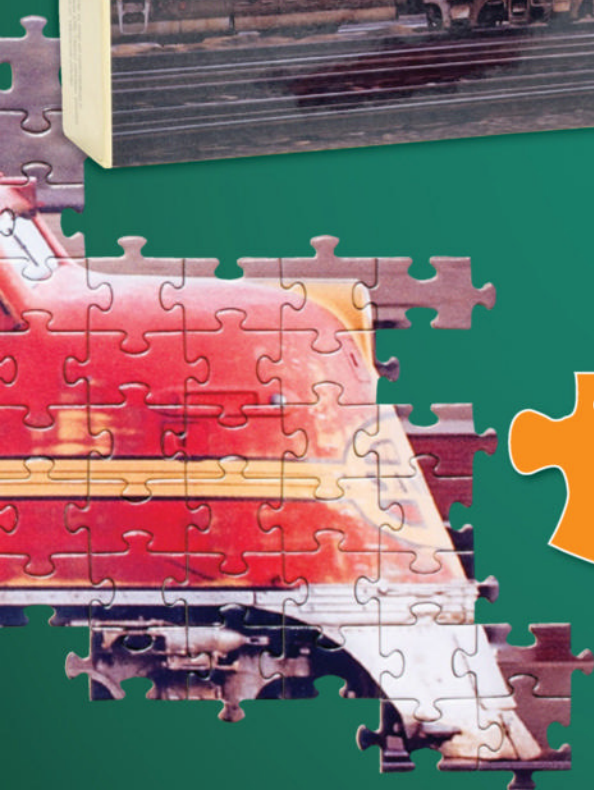
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The eastbound and westbound *Twin Cities Zephyrs*, racing between Chicago and Minneapolis-St. Paul, pass each other as the Burlington Route's main line runs along the Mississippi River. Bill Edgar, former corporate art director for Kalmbach Publishing, created and photographed the N scale scene on his North Shore International Ry. The locomotives and cars are Kato models.

MORE ON THE WEB

Bill Edgar's photo above is this month's computer desktop wallpaper. Download it free at ModelRailroader.com



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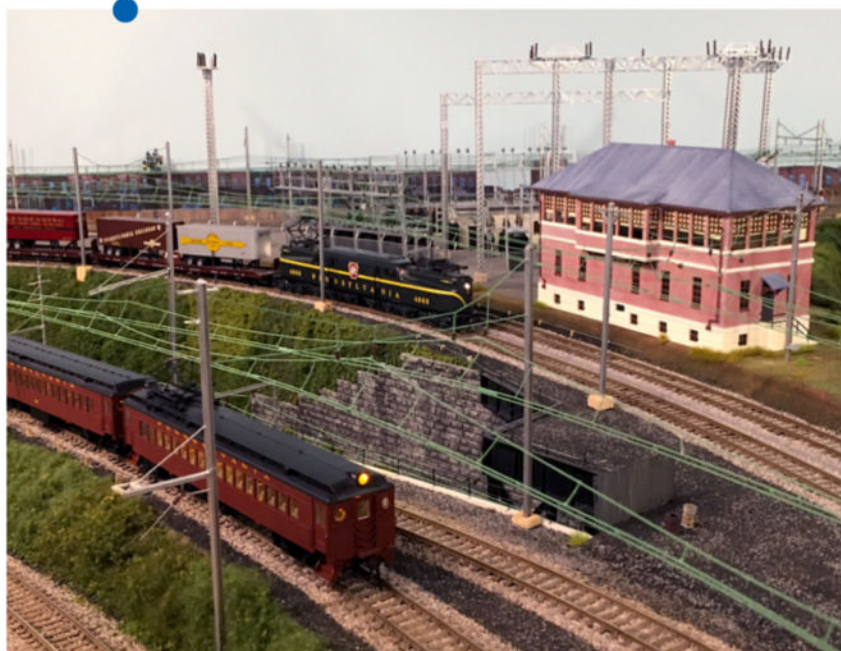
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Pennsylvania RR no. 9059, a Baldwin DS-4-4-1000 switcher, pulls an empty hopper from the coal dealer while the townsfolk nearby go about their morning business. The scene is an HO scale module built by Bruce Steinfurth from Howard, Ohio, to be part of his freelanced Buckeye Northern RR. Brandon Townley of Sunbury, Ohio, shot the photo outdoors.



GG1 no. 4868 leads a Pennsylvania RR Truc-Train eastbound past Zoo Tower while on the lower track, a commuter train works its way toward North Philadelphia Station. Charles Chandler of Wilmington, Del., built and photographed the scene on his HO scale PRR Philadelphia Terminal Division layout. Zoo Tower is a 3-D printed model from Shapeways to which Charles added extra details. The electrical substation and catenary are scratchbuilt.



Italian State Railways (*Ferrovie dello Stato*) no. 803 stops at Cretaz on a sunny afternoon. Mario Vason of Givoletto, Italy, built the HO scale module and photographed it under natural light. The commuter cars are resin shells by Italian manufacturer DaniFer on Euromodell F.P. chassis. Mario scratchbuilt and wired the catenary.





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CLOSING DATES: Jan 2018 closes Oct. 20, Feb. closes Nov. 13, March closes Dec. 19, April closes Jan. 22, May closes Feb. 19, June closes Mar. 19, July closes Apr. 23, Aug. closes May 18, Sept. closes June 22, Oct. closes July 23, Nov. closes Aug. 17, Dec. closes Sept. 24.

Schedule of Events

AL, MOBILE: Model Train Show sponsored by South West Alabama Railroad Modelers (SWARM). Via Health, Fitness and Enrichment Center, 1717 Dauphin Street. March 10, 11, 2018, Saturday 9:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$5.00, family \$10.00, under 10 free. Operating layouts, demonstrations and dealers. Contact Charlie Boyer, 251-454-0572, email charlieboyer6@comcast.net

AR, ROGERS: Sugar Creek Model Railroad Historical Society, Fifteen Annual Show, Embassy Suites, 3303 Pinnacle Hills Pkwy. Rogers, AR. Saturday, March 17, 2018, 9:00am-4:00pm. Adults \$8.00, under 12 free. Keith Johnson, 479-871-2802, E-mail: train072@cox.net or NWA Train Show, PO Box 1283, Farmington, AR 72730, Website: www.railroadclubsugarcreek.org

CO, DENVER: Rocky Mountain Train Show March 3-4, 2018. Denver Merchandise Mart, 451 East 58th Avenue, Denver, CO 80216. Saturday, 10:00am-5:00pm, Sunday 10:00am-4:00pm. 2-1/2 acres of model trains of all scales, 30 layouts, 600 sales tables, clinics and more. Admission \$10.00 Free Parking. Phone: 303-364-0274 www.RockyMountainTrainShow.com information@RockyMountainTrainShow.com

CT, GREENWICH: Southern Connecticut Model Train Show, Greenwich Civic Center March 11, 2018, 9:00am-3:00pm. Adults \$7.00, under 12 free. Valley HO Trak Layout & more. Clinics, 150 tables; trains-books-artwork, DVD's. Door prizes, free parking, refreshments. Ron's Books, PO Box 714, Harrison, NY 10528, 914-967-7541. ronsbooks@aol.com, southerncttrainshow.com.

FL, CRYSTAL RIVER: Regal Railways, Toy Train Collectible & Hobby Show, US Army National Guard Armory, 8551 West Venable Street, Crystal River, FL 34429. Saturday, March 10, 2018, 9:00am-2:00pm. Admission: \$5.00 adults. Vendors, operating layout lunch items for sale. Contact Joe: 727-244-1341 or visit: www.regalrailways.com.

FL, DOVER: Regal Railways Presents Toy Train Collectible & Hobby Show, Hillsborough County Fairgrounds, 215 Sydney Washer Road, Zip: 33527. Saturday, March 24, 2018, 9:00am-2:00pm. Admission: \$5.00 adults. Vendors, operating layout, videos playing. Lunch items for sale. Contact Joe: 727-244-1341 or visit: www.regalrailways.com for more information.

FL, FORT MYERS: Scale Rails Annual Train Show. Araba Temple, 2010 Hanson Street. February 17-18, Saturday & Sunday, 10:00am-4:00pm. Dealers and Collectors: 100+ tables, new & used equipment for all scales. Admission Adults: \$7.00, Teens: \$2.00, Children under 12: Free. Contact: Dwight Sedgwick 239-850-6764.

FL, PLANT CITY: H.B. Plant Railroad Historical Society Train Show and Swap Meet. John Trinkle Building, Plant City Campus, Hillsborough Community College, 1206 North Park Rd., Zip: 33563. March 17, 2018, 9:00am-3:00pm. Adults \$7.00, under 17 free w/adult. Contact: Gilbert Thomas, 863-412-3090, E-mail: Thomas_12399@msn.com Website: www.hbplantrr.org

FL, SARASOTA/BRADENTON: RealRail Train Show. Bradenton Area Convention Center, 1 Haben Blvd, Palmetto, March 10-11, 2018, Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$8.00, children 13 and under free with paid adult. Door prizes. Free parking. Information: 917-817-7479 or www.realrail.org

ID, LEWISTON: 7th Annual Lewis-Clark Railroad and Collectibles Swap Meet. NPC Fair Grounds, 1229 Burrell Ave. Sunday, March 25, 2018, 9:30am-4:00pm. Adults \$5.00, children under 12 free w/adult. Several vendors. Operating model RR's available. Operation Lifesaver Train Simulator. Refreshments/food. Contact Dan Wise, 208-816-0845, wraills@cableone.net

IL, ROCKFORD/BELVIDERE: Rock River Valley Division NMRA 27th Annual Show & Sale. NEW LARGER LOCATION. Belvidere North High School, 9393 Beloit Rd., Belvidere, IL. March 24th 10:00am-5:00pm, March 25th 10:00am-4:00pm. Admission \$5.00 under 12 free. Website: rvvd-nmra.org or Doug 815-765-3135 vendors contact donbrindle@aol.com or Don 815-874-6095.

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the State Fairgrounds. Sunday, March 25, 2018, 10:00am-4:00pm. Early Bird shopping starts at 9:00am. Free parking. Largest show in downstate Illinois! For info call Ray at 217-544-4295 or visit www.springfieldtrainfair.com

IN, EVANSVILLE: Evansville All Gauge Model Train and Railroadiana Show. St. Paul's UCC, 2227 West Michigan Street, Zip: 47712. Saturday, March 3, 2018. Gates open 10:00am-3:00pm CST. Admission \$3.00, under 12 free. Operating trains, test track, Lego display, Thomas dealer, food available. Contact John 812-426-2989

IN, INDIANAPOLIS: The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, March 3, 2018, 10:00am-3:00pm. Admission \$5.00, children 12 & under free. Boy Scouts in uniform free. Free parking. Naptown & White River Model Railroad Club. Contact: Steve Handy, 317-786-8627, E-mail: naptownmrr@gmail.com

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, February 25, 2018, 9:30am-2:00pm (Chicago time). Adults \$4.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186.

IN, MUNCIE: 27th Annual Muncie Model Train Show, Delaware County Fairgrounds, 1210 N. Wheeling Ave., Zip: 47305. Saturday, February 24, 2018, 11:00am-4:00pm. Admission \$5.00, 12 and under free. 200+ Vendor tables, operating layouts, Circus Memorabilia, Free parking. Food on-site. Contact: Brandon Mundell, 765-288-6505, Store@toysforeverhobbies.com

IN, NAPPANEE: The Elkhart Model Railroad Club Annual Train show at Dutch Village Market on March 17, 2018 HAS BEEN CANCELLED due to circumstances beyond our control. We hope to see you at our show the 3rd Saturday of March, 2019.

MA, AUBURN: Worcester Model Railroaders Annual Show at Auburn Elks Club, 754 Southbridge St. Sunday, February 25, 2018, 10:00am-3:30pm. Admission: \$5.00, children under 12 free. Two floors of dealers, exhibits, modular layouts. Contact: Ralph Kimball, 508-868-5189, ralphkimball@charter.net or www.wmrr.org

ME, AUGUSTA: Whitefield Lions Club 32nd Annual Model Railroad & Miniature Dollhouse Show, National Guard Armory, Western Avenue. February 17, 2018, Open 10:00am-3:30pm. Adults \$5.00, under 12 free, family \$10.00. Operating layouts, miniature displays. Contact: Steven Landrie, 50 Fairview Ave., Randolph, ME 04346. 207-582-1410, slaundrie@roadrunner.com

MI, WYOMING (GRAND RAPIDS): Grand River Valley Railroad Club Spring Train Show. Saturday, April 14, 2018. Home School Building, 5625 Burlingame Avenue SW. 10:00am-3:00pm. Adults \$5.00, 12 and under free. 210 vendor-display tables. Food. Free parking. Door prizes. Vendor tables \$16.00 each. Contact Ken Skopp, 616-667-9680, kwskopp@gmail.com. www.grandrivervalleymrrc.org.

MN, ST. CLOUD: Granite City Train Show and Sale. River's Edge Convention Center, 10 4th Avenue South. Saturday, April 7, 2018, 9:00am-3:00pm. \$6.00, 10/under free. Buy/sell model/toy trains, books, videos, railroad collectibles. Operating displays. Win a LIONEL train set or FSM structure kit. 320-255-0033; edwardolson@cloudnet.com or www.GraniteCityTrainShow.com

MN, WOODBURY: Newport Model RR Club Flea Market & Train Show. Woodbury High School, 2665 Woodlane Drive, Zip: 55125. April 7, 2018, 9:00am-2:00pm. Admission \$5.00. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310

NC, ASHEVILLE: Asheville Train Show. Western North Carolina Agricultural Center. March 2-3, 2018. Friday 12:00pm-7:00pm and Saturday 9:00am-5:00pm. Admission \$6.00, under 10 free. All scales, all gauges, collectibles, artifacts. Operating layouts, Thomas The Tank Engine, hundreds of vendor tables. More: www.Asheville-Trainshow.com

NC, GREENSBORO: 10th Annual 'Greatest Little Train Show'. AMTRAK Depot, West Concourse, 236 E. Washington St. Saturday, March 17, 2018, 10:00am-3:00pm. \$5.00 adults, under 12 free. Onsite CMR layouts. Free Downtown city meter/parking. Contact Jim Turkett, 336-314-3341, Jturkett@gmail.com or mail CMR, PO Box 13642, Greensboro, 27415

NH, DOVER: The Great Northern New England Spring Train Show. Dover Lodge of Elks #184, 282 Durham Road, Zip: 03820. Saturday, April 7, 2018, 10:00am-3:00pm. Admission: \$5.00 per family. Exhibitor tables \$25.00 (includes entrance fee). All scales, operating layout, food. Contact Ed Martin, efmter@aol.com or 603-362-4300

NJ, CLARK: Jersey Central Railway Historical Society Train Show-Sale. Mother Seton Regional High School, 1 Valley Road, Clark, NJ 07066. Sunday March 4, 2018, 9:00am-3:30pm. Admission: \$5.00. Model trains, railroadiana, books-photos and more. Contact: Mitchell Dakelman 908-208-2522, dakelmanm@aol.com or Heinz Ricken 909-272-3910, hrricken@gmail.com. Website: www.jcrhs.org

NJ, EAST RUTHERFORD: METCA/NYSME Train Show. St. Joseph's School, 120 Hoboken Road, Zip: 07073. Saturday, April 7, 2018. METCA/NYSME members 8:00am, Public 9:00am-2:00pm. Admission: \$5.00 Adults 16+, FREE for METCA families. NYSME Club layouts open FREE to attendees. Info: www.METCA.org; Bob Amling, Secretary@METCA.org - 718-541-8619 or contact@modelengineers.org

NY, ALBANY: Albany Train Show, Polish Community Center, 225 Washington Avenue Extension, Albany NY. Saturday March 10, 2018, 9:00am-3:00pm. Admission \$5.00 adults, Kids under 12 FREE. O, HO and N gauge working layouts. Over 100 vendor tables of trains-train related items. www.albanytrainshow.com or Jeff Stedje 518-852-7725.

NY, WEST SENECA: TCA Upstate NY Chapter Train Show. Ismailia Shrine Center, 1600 Southwestern Blvd., Zip code: 14224. Sunday, March 11, 2018, TCA Members: 9:00am. General Public: 9:30am-2:30pm. Admission: Adults \$5.00, under 17 free with paid adult. Contact: Chuck 716-390-8216, E-mail: usnyc2015@gmail.com or www.upstate-ny-tca.com

OH, COLUMBUS: The 10th Ohio N Scale Weekend. "For N-Scalers by N-Scalers" Franklin County Fairgrounds, Hilliard, Ohio. Presented by Central Ohio N-Trak. May 19-20, 2018, Saturday, 10:00am-5:00pm and Sunday 9:00am-3:00pm. Set-up Friday May 18th, 1:00pm-8:00pm. Event registration \$10.00. Event info www.centralohiontrak.org or e-mail:ohionscaleweekend@yahoo.com

OH, KIRLAND: Railfest 2018. Lakeland Community College (AFC), 7700 Clocktower Dr., Zipcode: 44094. NMRA MCR Div. 5. March 17-18, 2018, Saturday and Sunday 10:00am-4:00pm. All Gauge Train Show with over 400 tables. 440-357-8890, www.Railfest.org

OH, MT. HOPE: CJ Trains Spring Train and Toy Show. Mt. Hope Event Center, 8076 St. Rt. 241, Zip 44660. Saturday, March 24, 2018, 10:00am-4:00pm. Admission: \$5.00, Free under 12. \$25.00/dealer table. 600+ tables. Contact, Jon Ulbright, 330-262-7488, catjhon@ssnnet.com. www.cjtrains.com (GPS directions: Millersburg, OH 44654)

OH, SPRINGFIELD: Springfield Area Model Railroaders Model Train Show and Flea Market. Clark County Fairgrounds, I-70, Exit 59, March 25, 2018, 11:00am-4:00pm. \$5.00, under 12 free. Robert D. Chaffin, Jr., PO Box 51, Springfield, OH 45501, 937-346-6734.

OH, TOLEDO: Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Perrysburg, OH 43551. Sunday, March 11, 2018, 11:00am-3:00pm. Early Birds: 9:00am-3:00pm. Adults \$6.00/Early Birds \$10.00, 12/under FREE w/adult. Contact: Randy Ramsey, 1566 South Ave., Toledo, OH 43609, 419-215-4181, toledotodystmasters@gmail.com

PA, KITTANNING: Train Show, Kittanning Township Volunteer Firehall, Rt. 422 East of Kittanning, Sunday, February 25, 2018 10:00am-4:00pm. Adults \$4.00, children 12 & under FREE. David Campbell, 734 Freeport Rd., Butler, PA 16002 724-352-1113

SC, COLUMBIA: Jamil Temple, 206 Jamil Road. Saturday, March 24, 2018, 9:00am-3:00pm. Admission \$5.00, under 10 FREE. Over 200 vendor tables, Thomas the Train & Friends, Railroad collectibles. Contact Todd at 843-307-8674, southcarolinatradeshow@gmail.com or www.SouthCarolinaTradeShows.com

VT, ST. ALBANS: Vermont Rails Show. Collins Perley Sports & Fitness Center, Interstate 89, Exit 19. Saturday, March 10, 2018, 10:00am-4:00pm. Adults \$5.00, children 6-12 \$1.00, children under 6 free. Sponsor: NWV Model Railroad Association. Contact Ron Piro, 802-598-0905, www.nwvrailroad.org

WA, CHEHALIS: Lewis County Model Railroad Club, Annual Spring Model Railroad Swap Meet and Show. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Zip: 98532. April 7-8, 2018, Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00. Free parking. Contact information: Ted, 360-985-7788 or tedstrains@lewiscountyclub.com

WA, MONROE: UNW/4-H 27th Annual Model Train Show and Marketplace. Evergreen State Fairgrounds. February 24-25, 2018, Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults \$8.00; Juniors/Seniors \$6.00; kids under 9 FREE w/paid adult. Featuring 25 layouts, over 300 vendor tables, clinics, presentations, family fun for all ages. www.unwclub.com/unwshow.htm

WA, SPOKANE: River City Modelers Spring Train Show. Spokane Fairgrounds, 404 North Havana, Sunday, March 4, 2018 from 9:30am-3:30pm. Adults \$6.00. Free under 12. 200+ tables of Railroad items for sale, operating layouts, Free-MO, Operation Lifesaver & more. Free parking. For information: Shirley Sample, 509-991-2317 or email shirley@busnws.com

WI, LA CROSSE: La Crosse & Three Rivers Railroad Club's 37th Annual Model Railroad Show: NEW LOCATION: Omni Center, 255 Riders Club Road, Onalaska, WI. March 17-18, 2018. Saturday 9:00am-5:00pm, Sunday 10:00am-4:00pm. Adults \$7.00, \$6.50-non-perishable food item, children 11 and under free w/adult. Ed Lundberg 608-790-3864

WI, MADISON: Mad City Model Railroad Show and Sale. Alliant Energy Center, February 17-18, 2018, Saturday 9:00am-5:00pm. Sunday 9:00am-4:00pm. 90,000 sq.ft. of layouts, toy trains, clinics, exhibits, vendors. Adults \$12.00, Seniors \$11.00, Children (5-11) \$6.00, under 5-free. 2-day pass \$16.00. nmra-scdw.org

WI, STEVENS POINT: CWMR 21st Annual Model Railroad Show. Holiday Inn Convention Center Hotel, 1001 Amber Avenue. February 3-4, 2018. Saturday 9:00am-5:00pm; Sunday 9:00am-3:00pm. Adults \$4.00, \$2.00 kids 12-17. Many layouts, swap/sales tables, vendors. Paul Clasen, 4546 Buckhorn La., Stevens Point, WI 54481, designcentralwi@yahoo.com 715-341-5253.

WV, CHARLESTON: Kanawha Valley Railroad Association's 13th Annual Model Railroad Show, Coonskin Park Lodge. February 17-18, 2018, Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm. Admission \$5.00, under 12 free. Free parking. Operating layouts, new and used equipment. Tables \$20.00. Website: www.kvrrailroad.org or contact Joe Horter, 304-539-6721, jhorter@gmail.com

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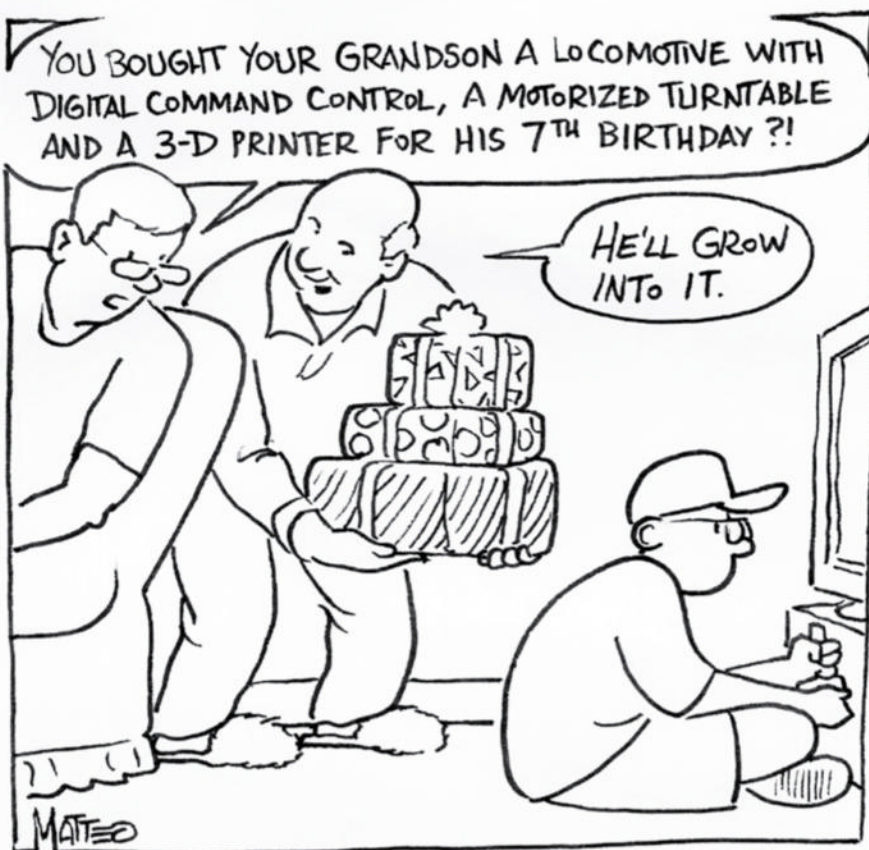
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Atlas Model Railroad Co., Inc.	5	Model Railroader Books.	75
Axian Technology.	57	Model Railroader Special Issue.	18
Bachmann Industries, Inc.	2	Model Railroader Video Plus	82
Bar Mills Scale Model Works.	23	Modelers Marketplace	83-84
Caboose Ltd.	73	Modellbahn Shop	73
Circuitron	73	NCE Corp.	92
Custom Model Railroads	73	Nicholas Smith Trains.	57
CTI.	57	PECO Products	7
CVP Products	57	Realrail Model Railroading	73
Digitrax	19	Ready to Roll, Inc.	7
Evergreen Scale Models.	57	ScaleTrains.com	17, 74
Great Midwest Train Show	21	Showcase Express	7
Great Train Expo.	21	Sievers Benchwork.	57
Greenberg Shows	21	SoundTraxx	23
Halfpricehobby.com	73	Train Collector's Association	7
Kato USA, Inc.	91	TrainWorld	11
Menard, Inc.	15	Value Trains USA	7
Micro-Mark Tools.	7	Wm. K. Walther, Inc.	3
Model Railroader All-Time Digital Archive.	20	Woodland Scenics.	9
Model Railroader Binders	71	Z-Stuff for Trains.	7

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Seeing and modeling what's there

Putting things into proper

perspective is always good advice, and we can expand on that a bit by discussing “context.” What brought this to mind was a photo I’d seen showing some plain-Jane Electro-Motive Division SD40-2s that clearly had seen better days. The factory-applied paint was probably OK, but there was so much dirt and grime covering them that it was hard to tell.

I recall one of the fellows on my railfan photography trips complaining loudly if the motive power wasn’t spic-and-span. High on his hit list of railroads that needed to wash their motive power more frequently was the Carolina, Clinchfield & Ohio, better known as the Clinchfield Railroad (CRR).

Like most mountain-climbing railroads, the CRR negotiated a lot of tunnels, which gave its units a wash of a different kind: a grungy mix of exhaust fumes, traction sand, and whatever else was in the vicinity.

I looked at the situation a bit differently. The lack of spit and polish revealed a great deal about the nature of this central Appalachian coal hauler. The Clinchfield was not about hauling businessmen between New York and Chicago or movie stars to and from the West Coast. It was about moving hundreds-of-millions-of-years-old chunks of carbon from their mountain lair to places that needed them to make steel, heat homes, or generate power.

It was therefore most appropriate to see CRR covered wagons and hood units looking like they’d been ridden hard and put away wet, which was indeed the case. This was the land of EMD 567- and 645-series prime



Six-motor EMD and GE hood units fight for traction as they move a heavy coal train north out of Dante, Va. The grungy lead unit reflects the context of its daily toil. Tony Koester photo

movers, plus a few General Electrics, and they sang their hearts out each and every day inside their grimy steel casings. And what a land that was for the itinerant railfan and modeler!

Which brings us back to modeling. Back when I first became aware that model railroading is a social hobby – that is, we interact with other modelers to learn from them and be inspired by their accomplishments, and to share our knowledge with newcomers – I soon noticed a divergence of opinions. There were those who saw models as the be-all and end-all: They modeled because modeling is fun and rewarding. And there were those who modeled to re-create what they saw on the full-size railroads.

In the latter group were those who assiduously adhered to one main prototype, and others who wrapped their arms around several same-region railroads and then distilled a mythical but could-have-been freelanced railroad out of that

cornucopia. There was (and is) but a paper-thin membrane between the latter two groups.

Boiling this down to a key point, the only thing that really matters for those who aspire to model full-size railroading is that their models look like they’ve been doing the jobs they would logically tackle. A perfectly detailed model of a specific prototype isn’t going to be convincing if it shines like a car in a dealer showroom. Even those gleaming warbonnet Fs on the Santa Fe’s *Super Chief* soon showed signs of use and abuse.

Conversely, an equally well-detailed model lettered for a prototype-based freelanced railroad will be very convincing if it looks the part, which includes showing us viewers how

hard it works for a living.

Those “wash me!” Clinchfield units offered the model railroader an important lesson: The world isn’t a pristine environment. As scale modelers, it’s not our job to “fix it” so much as to see what’s there and model it effectively.

I doubt that “add grunge and dirt” is at the top of anyone’s to-do list. I feel that getting the railroad running and then operating well takes priority over everything else. The Allegheny Midland ran for years with some primer-painted Athearn U-boats, which hauled the coal to market as well as some painted and lettered compatriots.

But they didn’t look the part, and I fixed that as soon as I noticed the problem. **MR**



THE ONLY THING THAT REALLY MATTERS FOR THOSE WHO ASPIRE TO MODEL FULL-SIZE RAILROADING IS THAT THEIR MODELS LOOK LIKE THEY’VE BEEN DOING THE JOBS THEY WOULD LOGICALLY TACKLE. - TONY

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