

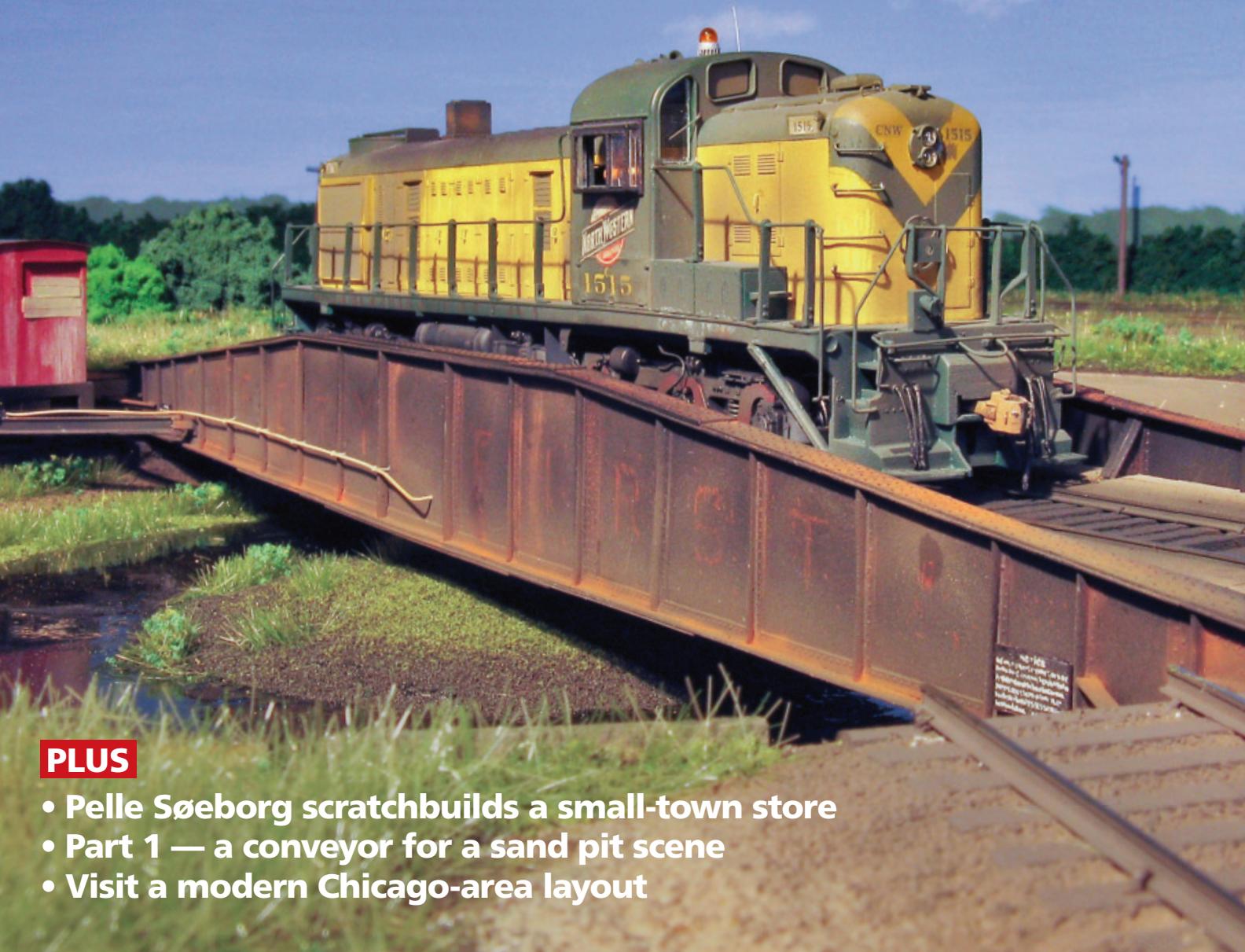
BENCHWORK FOR OUR PROJECT RR

Model Railroader®

February 2026

Build a turntable

Dennis Eggert shows you how with styrene and plywood



PLUS

- Pelle Søeborg scratchbuilds a small-town store
- Part 1 — a conveyor for a sand pit scene
- Visit a modern Chicago-area layout

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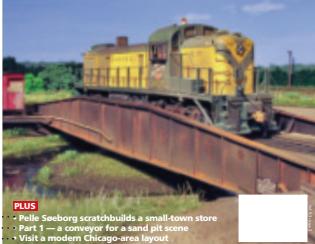
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BENCHWORK FOR OUR PROJECT RR

Model Railroader

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PLUS

Pelle Seborg scratchbuilds a small-town store

Part 1 – a conveyor for a sand pit scene

Visit a modern Chicago-area layout

Dennis Eggert photo

On the cover: Chicago & North Western Alco RSD4

No. 1515 takes its turn on Dennis Eggert's turntable.

Dennis Eggert photo



Next issue

In March, Cody Grivno offers tips on building 3-D-printed kits, David Popp lays and wires track on our project layout, Mike Tylick finishes his sand pit, and more!

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Pre-production Concrete Single Track Kit shown assembled.



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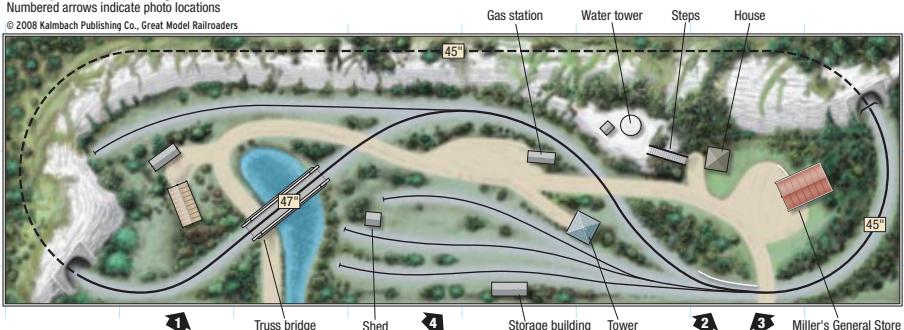


ATLAS MODEL RAILROAD CO., INC. • 378 Florence Ave., Hillside, NJ 07205 • shop.atlasrr.com

Meramec Valley RR

HO scale (1:87.1)
Layout size: 2'-4" x 7'-10"
Scale of plan: 7/8" = 1'-0", 12" grid
Numbered arrows indicate photo locations

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**Compact options to a basement-filling monster**

Are you itching to get started on a new model railroad project but you don't know how to make it fit into your living space and life? Check out *Compact Track Plans: 5 recommendations for cramped spaces* on Trains.com.

Staff writer Lucas Iverson has gathered five examples from our Track Plan Database of layouts that will let you enjoy your hobby without having to give up too much space in your home. And be sure to check out the Track Plan Database for more options!

**Revisiting a model railroad icon****Bruce Chubb's Sunset Valley**

Oregon System is the result of years in the hobby and an expansion with the construction of a new home. Bruce is well-known among layout signaling experts for his C/MRI (Computer/Model Railroad Interface) system. Learn more in *10 railroads, 1 layout: A look at the HO scale Sunset Valley Oregon System* on Trains.com.



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What's your modeling era?

There are people who have a very strict idea of when their model railroad is set. Former Editor Andy Sperandeo set his Santa Fe Cajon Pass layout in 1947. Not 1946. Not 1948.

Some folks get even more precise, choosing a specific season, such as Tony Koester's Nickel Plate Road Third Sub, set in fall 1954 to depict the surge in grain traffic, and some even go so far as to model a specific date.

More broadly speaking, we can look at modeling eras. Andy's and Tony's layouts were and are set in what's popularly known as the transition era, the transition being the switch from steam power to diesel electric power.

This didn't happen overnight in North America, and there were railroads, notably the Norfolk & Western and Pennsylvania, that held onto significant steam fleets due to the availability of fuel on-line from their customers. Having decent sources of water

helped as well. Union Pacific also held onto its larger steam until nearly the 1960s, thrilling fans of Big Boys and Challengers, and Northerns.

Other than the transition era, which stretched from about 1939 to 1960 or so, other railroad eras are up for some debate. There are folks who prefer the prewar era, generally the time between 1900 and 1942. Others model the 1800s, sometimes referred to as old time modeling.

Then, after the transition era, one delineation is the coming of second-generation diesel power, where newer diesels were replacing old diesels instead of steam. After that, it can get pretty convoluted, and it seems most people simply indicate a decade they're interested in.

In Europe, the eras seem to be fairly well defined. Märklin's website offers a guide listing Eras and Epochs from 1835 to the present day. While exact dates vary a little

bit between manufacturers, it's pretty well understood what models belong to what era.

In North America, it's been difficult to come to any agreement on modeling eras. However, I noticed in the 2025 product catalog Bachmann was distributing at Trainfest last November in Milwaukee that the company has added icons to model descriptions to help customers identify generally when various pieces of equipment would have been in use.

The eras are Early Railroading (1827-1860), Pioneer (1869-1910), Golden (1910-1940), Transition (1940-1970), Second Generation (1970-1990) and Modern (1990-present). While some may quibble with the exact years, or want to expand the number of eras, this is a good starting point for people getting into the hobby.

This issue of *Model Railroader* leans more heavily into the more recent eras.



While our cover story features a turntable from the transition era, the layout is set in the 1970s. Our two layout visits are set in the 1960s and present day, and all but one of the other articles are set well after the age of steam.

As I've said before, my focus is on the mid-1970s when I first got into railroading. If you have a focus, what's your favorite era?

Model Railroader

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We welcome contributions from readers, including articles, photographs, and drawings. For more information on submitting material, email Editor Eric White at eric.white@firecrown.com. Model Railroader assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Firecrown Media unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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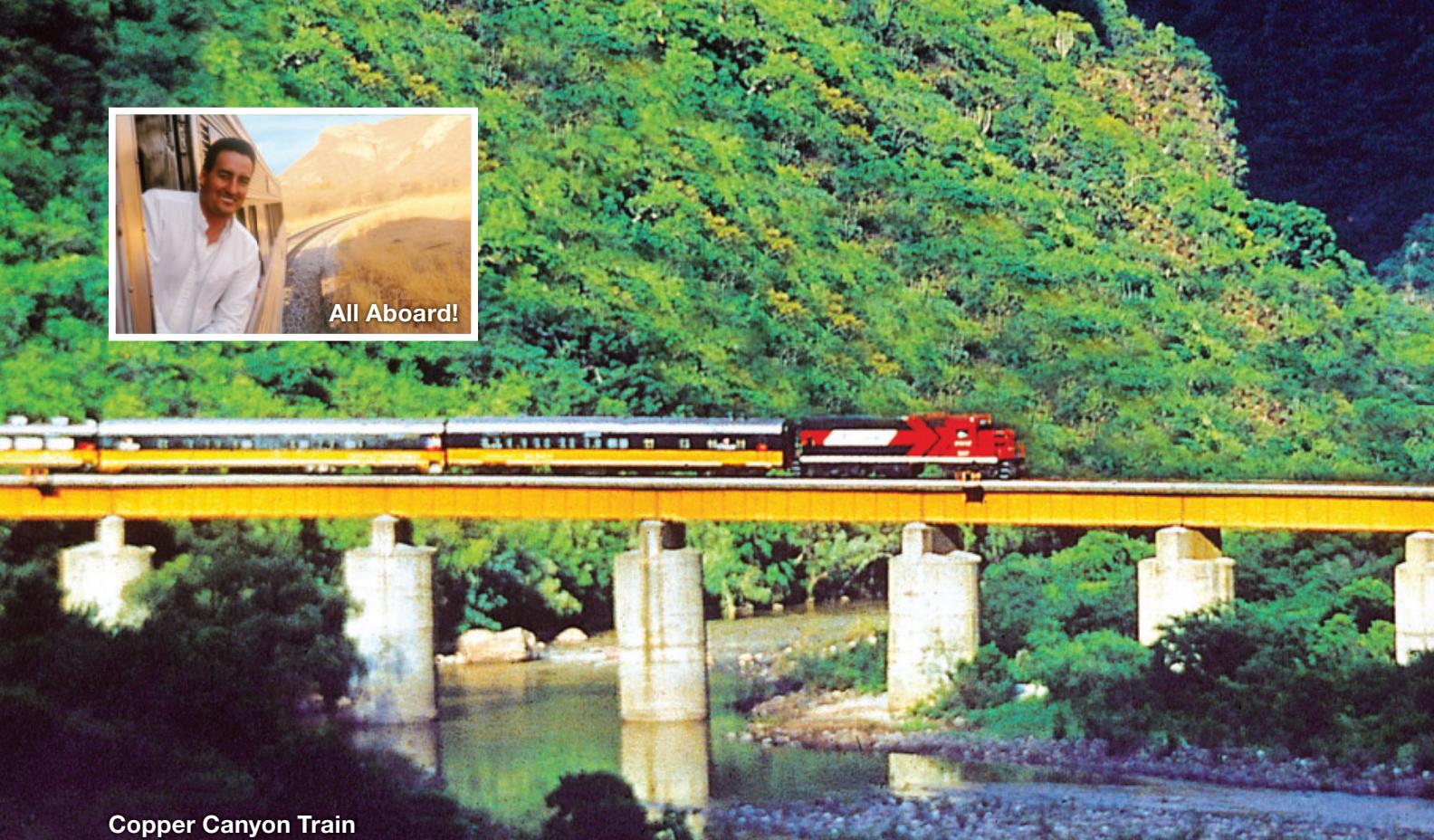
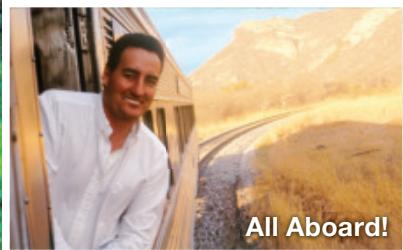
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HO scale



Electro-Motive Division SD9 diesel locomotive. ScaleTrains offers this Rivet Counter line model decorated for Conrail and Norfolk Southern. Features on the HO scale SD9 include a detailed cab interior with separate floor, rear walls, seats, and early control stand; directional, light-emitting-diode head-

lights; and prototype-specific details. The model has a minimum radius of 18" and a recommended radius of 22". Direct-current models with a 21-pin connector sell for **\$214.99**. Models with an ESU LokSound V5 sound decoder are priced at **\$324.99**. ScaleTrains, 844-987-2467, scaletrains.com

Atlas acquires Micro-Trains Line Co.

Atlas Model Railroad Co. announced in late November the acquisition of "substantially all assets" of Micro-Trains Line Co., a manufacturer of N and Z scale model trains and couplers based in Talent, Ore.

As part of the agreement, Atlas assumes ownership of Micro-Trains' molds, tooling, and associated intellectual property, ensuring the ongoing production of the brand's unique products.

The production of Micro-Trains products will transition to Atlas's global manufacturing and supply network. "Micro-Trains by Atlas" is set to resume production in 2026 following a brief transition period.

Jarrett Haedrich, executive chairman of Atlas Model Railroad Co., said, "Micro-Trains has built an extraordinary legacy of quality and craftsmanship. We are honored to carry that heritage

forward and ensure that modelers around the world continue to enjoy the realism and reliability that have defined Micro-Trains for decades."

Eric D. Smith, president of Micro-Trains, added, "Our family and team are proud of what Micro-Trains has meant to hobbyists everywhere. Atlas's commitment to excellence and long-term investment in the model railroad community makes them the right partner to continue our story."

The integration focuses on maintaining the authenticity of Micro-Trains' designs while leveraging Atlas's engineering, logistics, and production capabilities to foster innovation and future

product offerings. Atlas has confirmed that Micro-Trains' existing dealer and distributor relationships will remain uninterrupted, offering stability for the retail network.

Micro-Trains will continue to accept and process orders from its Talent, Ore., location for about 90 days after the acquisition closes — through mid-February 2026.

Post-transition, all Micro-Trains products will be available through Atlas' authorized dealers, distributors, and online store.

Customer service for Micro-Trains products will also continue until mid-February 2026, after which Atlas will handle all customer service inquiries.



HO scale locomotives

• **Pere Marquette Class N-1 2-8-4 Berkshire steam locomotive.** Pere Marquette and Chesapeake & Ohio. Die-cast metal construction with some plastic parts, prototype-specific details, five-pole motor, smoke unit with steaming cylinders, and ESU DCC sound decoder. \$699.99. Museum Tier line. Cardinal River Models LLC, 502-767-4716, cardinalrivermodels.com



• **VIA Rail Canada F40PH-2D rebuilds.** VIA Rail Canada (schemes include Renaissance, Love the Way wrap, and Canada \$10 bill). Working headlights, ditch lights, and number boxes; working

emergency headlight and emergency shutdown strobe light; and underbody detail including separate piping. Radiator fans, radiator, and cabling visible through head end power grills. Suggested minimum radius, 18". Ten customers of VIA Rail 6403 will receive a crisp, uncirculated \$10 bill with *The Canadian* on the back. Direct-current model, \$249.95; with Digital Command Control and sound, \$359.95. Rapido Trains, 905-474-3314, rapidotrails.com

N scale

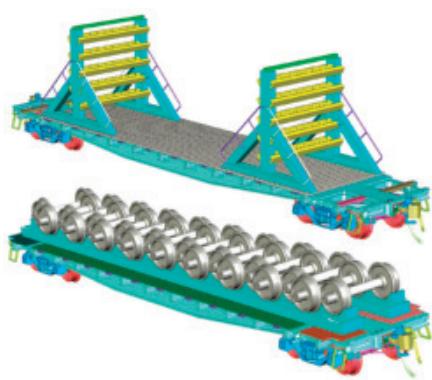
Budd Rail Diesel Car-1. This all-coach car from Rapido Trains is offered in Phase I and Phase II body styles. The Phase I car is decorated for New York Central, Amtrak, and five other railroads. The Phase II RDC-1 is available in six paint schemes. The N scale model has single-motor, all-wheel drive; directional headlights and red marker lights; a detailed interior; tinted window glazing; and all-wheel electrical pickup. Direct-current models retail for **\$149.95**. Models with an ESU LokSound V5 sound decoder are **\$259.95**. Rapido Trains, 905-474-3314; rapidotrains.com

- **Norfolk & Western 4-8-0 "Mollies".**

Norfolk & Western; Chesapeake & Western; Atlanta, Birmingham & Coast; Atlantic Coast Line; and Winston-Salem Southbound. Brass construction; detailed cab with painted handles and dials; and operating cab roof vents, tender water and oil hatches, and operating cab apron. Models produced to reservations. With SoundTraxx Tsunami2 sound decoder \$1,795.99 (add \$75 for SoundTraxx Blunami decoder, subtract \$50 for Digital Command Control ready). Prices subject to change. Third & Townsend Models and Sunset Models, 510-342-4389, thirdandtownsendmodels.com

HO scale freight cars

- **Caboose No. 4.** Laser-cut wood components, 3D-printed parts, custom decals, and Tichy Train Group details. Trucks and couplers sold separately. Inspired by Pickering caboose No. 4 on Niles Canyon Ry. Conowingo Models, conowingomodels.com



- **F30 maintenance-of-way flatcars.** Continuous welded rail flatcars, F30D

company service wheel flatcars, F30A camp cars/equipment flats, and F30D tie flatcars. Multiple paint schemes per body style; all versions also available painted but unlettered. Die-cast metal chassis and deck, turned metal wheels, and Rapido semi-scale couplers. Suggested minimum radius, 18". Single cars, \$64.95 to \$69.95; three-pack, \$194.85 to \$199.95; and six-pack, \$389.70 to \$399.95. Single camp car trailer, \$24.95. Rapido Trains, 905-474-3314, rapidotrains.com



- **Pullman-Standard 40-foot PS-1 boxcar.** Chicago & Eastern Illinois; Canadian Pacific; Chesapeake & Ohio; Chicago & North Western; Copper Range; Duluth, South Shore & Atlantic; Missouri-Kansas-Texas; and Port Huron & Detroit. Two road numbers per paint scheme; also available undecorated. Pullman-Standard ends without rectangle stiffeners, PS "bowtie" roof with flat end panels, and see-through Apex running board. \$39.98. Wm. K. Walthers Inc., 414-527-0770, walthers.com

HO scale passenger equipment



- **Heavyweight combine car.** Baltimore & Ohio; 1947 Freedom Train; Boston & Maine; Chessie Steam Special; Louisville & Nashville; maintenance of way; New York Central; Pennsylvania

Walthers sponsors Pacific Southern Ry.

Wm. K. Walthers Inc., a manufacturer and distributor of model railroad products based in Milwaukee, Wis., recently announced that it's sponsoring the Pacific Southern Ry., a 65-year old HO scale model railroad club in Rocky Hill, N.J.

"We're pleased to support the Pacific Southern Railway and help elevate awareness of model railroading," said Stacey Walthers Naffah, president of Wm. K. Walthers Inc. "Clubs are vital to connecting hobbyists of all ages and experience levels. We deeply appreciate James and Melyssa Murray's commitment to keeping the hobby thriving at the Pacific Southern and beyond."

Murray, star of the television show *Impractical Jokers*, added: "I've loved model trains my entire life — my best childhood memories are of building layouts with my father. That's the power of this hobby — it brings generations of families together. We're proud to announce something unique and different. We will be partnering with Walthers Trains. They have been so supportive of us and clubs and the hobby in general. And we are so proud to partner with them to grow model railroading together."

For the latest information on the club, visit pacificsouthern.org.

RR MOW; Reading, Blue Mountain & Northern; Soo Line; and Wabash. Also available in fictional holiday scheme. ABS body and chassis; detailed, illuminated interior; and sprung diaphragms. \$89.99. Broadway Limited Imports, 386-673-8900, broadway-limited.com



- **Amtrak Viewliner II passenger cars.** Sleeper, baggage-dorm, and diner. Phase III heritage scheme. Injection-molded plastic construction, detailed trucks with rotating bearing caps and shock absorber construction, and optional kinematic

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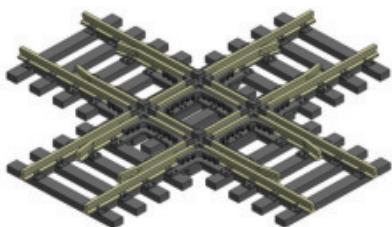


General American 4,180-cubic-foot capacity Airslide covered hopper.

Features on this Bachmann model include a one-piece plastic body with a separate underbody; factory-installed air hoses and hatch covers; and blackened, machined metal wheelsets with RP-25 contours. The HO scale Airslide is decorated for General American Transportation Corp., Burlington Northern, CSX, and Union Pacific in two road numbers per paint scheme. The covered hopper has a manufacturer's suggested retail price of \$65. Bachmann Industries Inc., 215-533-1600, shop.bachmanntrains.com

couplers. Can be illuminated with optional interior lighting kit (7-504). Standard, \$110; with interior lighting, \$140. Kato USA Inc., 847-781-9500, katousa.com

HO scale track



- Code 83 90-degree crossing.** Thin-profile plastic ties molded in brown with woodgrain texture and molded spike and tie plate details. For use with direct current and Digital Command Control. \$34.98. WalthersTrack. Wm. K. Walthers Inc., 414-527-0770, walthers.com

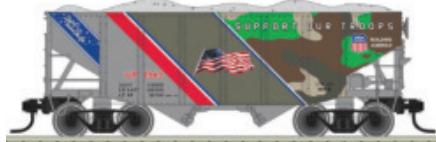
N scale diesel locomotives



- Electro-Motive Division SD40T-2.** Union Pacific, Denver & Rio Grande Western, and Southern Pacific. Multiple schemes and body styles. Factory-applied wire grab irons, windshield wipers, and train line hoses with silver glad hands; etched-metal radiator exhaust grills with radiator shutters visible underneath; and

underbody frame rail with separate plumbing and traction motor cables. Direct-current model, \$159.99; with DCC and sound, \$269.99. ScaleTrains, 844-987-2467, scaletrains.com

N scale rolling stock



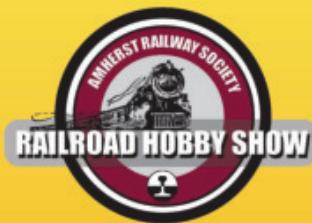
- 55-ton two-bay fish-belly hopper.** Union Pacific (Spirit of the Union Pacific and Route of the Big Boy). Custom-decorated Atlas Model Railroad Co. Master Line freight car. Die-cast metal underframe and slope sheets, plastic body, removable coal load, and Accumate couplers. \$39.99. TrainWorld, 800-541-7010, trainworld.com

N scale commuter equipment



- Comet cars.** Coach and cab car. Massachusetts Bay Transportation Authority (late and Massachusetts 250 wrap), Connecticut Department of Transportation, CT Rail, Maryland Area Rail Commuter, Metro-North Commuter RR (late scheme and west of Hudson service), Metropolitan Transportation Agency (Montreal), and NJ Transit. Underbody and interior details, all-wheel

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NEB&W HO scale model railroad update

Rensselaer Polytechnic Institute's (RPI) well-known HO scale New England, Berkshire & Western has been transferred to the Northeastern Region of the National Model Railroad Association (NMRA-NER).

"In 2019 RPI needed to perform construction where the layout was located," a press release from the NMRA-NER NEB&W team stated. "The layout was disassembled and moved into storage. The idea was to move the layout into a new permanent home on the ground floor of a leased building. Unfortunately RPI decided to end the lease for that building and has no other place to restore the layout."

The press release noted that the layout was carefully cut into 75 pieces; the buildings and rolling stock were packed into boxes.

"The Northeastern Region of the National Model Railroad Association, working together with the Rensselaer Model Railroad Society, must now find new homes for pieces of its iconic NEB&W model railroad," the press release continued. "The Rensselaer Model Railroad Society will receive any items from the layout that they wish to use in future model railroad endeavors. We will try to honor requests from alumni or former club members for items on the layout and will also work with any charities, museums, or railroads wishing to preserve a portion of the layout for display or exhibit. Remaining items will be sold off by the NER."

Additional information can be obtained from the NER NEB&W team via email: nebw@nernmra.org.

electrical pickup, and inside-bearing trucks with metal wheelsets. Fully controllable interior and exterior lighting, including marker lights, headlights, and ditch lights. Coach, \$89.95 (NJ Transit and MBTA, \$98.95; MBTA Massachusetts 250, \$108.95). Three-pack with two coaches and one cab car, \$279.95 (NJ Transit and MBTA, \$307.95). Rapido Trains, 905-474-3314, rapidotrains.com

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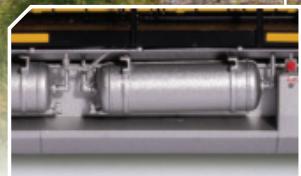
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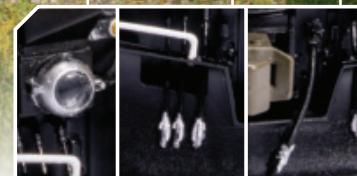
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The **Rivet Counter™** HO Scale GE AC44C4M delivers smooth-running performance, **road number-specific details**, and advanced LED lighting. This model accurately represents the 20 former Santa Fe C44-9Ws upgraded with A1A-A1A AC traction and modernized cabinets behind the cab. BNSF began the AC44C4M rebuild program in 2014 to modernize its fleet of aging GE DASH 9 locomotives. The project transformed traditional DC-traction DASH 9s into advanced AC-traction units, boosting reliability, efficiency, and pulling power. Conducted at GE's San Luis Potosi, Mexico facility, the rebuilds

introduced an A1A-A1A truck configuration with GE's weight management system - lifting the center axle to enhance traction on the powered outer axles. Externally, these locomotives retained their distinctive Santa Fe "gullwing" cabs while receiving new dynamic brake, inverter, and inertial cabinets behind the cab. By 2015, twenty BNSF units had been completed and delivered in the railroad's H3 paint scheme, marking BNSF as the first North American Class I to embrace GE's rebuild technology and set the stage for the modernized fleets that followed.



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Athearn Genesis HO EMD FP45



Athearn has released a new run of Electro-Motive Division FP45 diesel locomotives in its HO scale Genesis line. The six-axle units feature injection-molded plastic and die-cast metal construction, prototype-specific details, and McHenry plastic scale couplers.

Electro-Motive Division produced the FP45 in 1967 and 1968. During that time, 14 units were built, nine for the Atchison, Topeka & Santa Fe (Nos. 100 through 108) and five for the Milwaukee Road (Nos. 1 through 5). The six-axle diesels, rated at 3,600 horsepower, were equipped with a 20 cylinder, 645E3 engine and steam generator equipment toward the rear of the cow body.

Our review sample is decorated as Milwaukee Road No. 4. The full-size unit was built in December 1968 and delivered in the yellow-and-gray passenger scheme. When the diesel was reassigned to freight service in the 1970s, the FP45 was repainted orange-and-black, received a winterization hatch over the lead radiator fan, and had the steam generator equipment removed.

Milwaukee Road No. 4 was retired in December 1981. It was sold to National Ry. Equipment Co. on Sept. 19, 1984 and scrapped at the Milwaukee Shops.

Features shared on all of the Athearn Genesis FP45 diesels include factory-installed and painted wire grab irons; see-through, etched-metal radiator intake grills and radiator fan grills; and m.u. and train

line hoses, all with the glad hands painted silver. All models also feature a detailed cab interior.

The three Milwaukee Road FP45s in Athearn's latest run depict the locomotives after they were assigned to freight service. Prototype-specific details on No. 4 include a nose-mounted headlight, an electronic bell and Prime 8911 Stratolite beacon on the cab roof, and a winterization hatch with an etched-metal screen over the front radiator fan. The cab signal light with red emergency warning light between the number boards is plated over on No. 4; the other two units have that detail.

Our review sample is neatly decorated in the mid-1970s orange-and-black "billboard" scheme. Lettering placement matches prototype images, though the F on the sill by front stepwell was omitted on both sides. The font used for the digit in the numberboards is slightly different than that on the prototype.

Drawings of the EMD FP45 were published in *Model Railroader Encyclopedia: Vol. 2, Diesel Locomotives* (Kalmbach Publishing Co., out of print). The model's dimensions match or are within scale inches of published data.

I tested the FP45 at the workbench using an NCE Power Cab. At step 1, the six-axle locomotive moved at 5 scale mph. The model achieved a top speed of 67 smph at step 28. With a drawbar pull of 3.2 ounces, the road locomotive can pull

approximately 45 free-rolling freight cars on straight and level track.

Though only 14 EMD FP45 diesels were built, examples have been preserved at museums throughout the United States. Thanks to Athearn, you can bring a well-detailed version of the cowl-body locomotive to your HO scale model railroad.

— *Cody Grivno, senior editor*

Facts & features

Price: Direct-current model with 21-pin NEM connector, \$219.99 to \$229.99; with dual-mode SoundTraxx Tsunami2 sound decoder, \$319.99 to \$329.99

Manufacturer

Athearn Trains

2904 Research Rd.

Champaign, IL 61822

athearn.com

Era: 1970s to 1990s (varies based on paint scheme)

Road names: Milwaukee Road (faded with herald only, small side letters, and large side letters); Atchison, Topeka & Santa Fe (Superfleet and pinstripe schemes); and Chicago, Burlington & Quincy (fictional scheme). Two to three numbers per scheme.

Features

- Body-mounted McHenry scale couplers, at proper height
- Metal wheel stubs on plastic drive axle gears, correctly gauged
- Minimum radius, 18"; recommended radius, 22"
- Weight: 1 pound, 10.7 ounces



Atlas N Trinity 5660 PD covered hopper



The third run of Trinity 5,660-cubic-foot capacity pressure differential (PD) covered hoppers has been released by Atlas Model Railroad Co. The modern freight car, based on former BLMA tooling, features freestanding details, screw-mounted trucks with 36" chemically blackened metal wheelsets, and body-mounted couplers.

The 5660 PD covered hopper was introduced in 1999 by Thrall Car Manufacturing Co. The design became part of the Trinity Industries (now TrinityRail) portfolio in 2001 when the Dallas, Texas-based company purchased Thrall. The car is still in production today. Approximately 4,000 covered hoppers have been built to this design.

Free-flowing products, such as flour, are transported in pressure differential covered hoppers. Sales literature from TrinityRail indicates that the discharge lines can be customized (aluminum, carbon, or stainless steel) to suit the commodity being transported.

The sample we received is decorated as GATX Capital 8769, part of the 8764 through 8793 series built by TrinityRail in June 2010 under Job 3294. Cars from this group can be found in service today.

The majority of the Atlas PD covered hopper features plastic construction. The roof has seven 20" hatch covers, painted aluminum, with molded cam lever detail. Two molded safety vents are also located on the roof.

Framing the hatch covers is a one-piece, see-through etched-metal running board. A formed-wire grab iron, painted yellow, is attached to the longitudinal running board above the full-height ladder on both ends.

The brake rod and train line are molded to the left and right sides of the car, respectively. Because of this, some of the stencils found on the sill of the full-size car had to be printed on the brake rod on the model.

The factory-applied plastic end cages have molded grab irons and ladder rungs. A see-through, etched-metal crossover platform is attached to the bottom of both. The air reservoir, brake cylinder, and control valve, as well as the brake wheel, are freestanding parts on the B end. Following prototype practice, the air reservoir is mounted at an angle.

The aerator assembly attached to the bottom of all five hopper bays is painted aluminum. Two-inch air hoses, painted black with silver ball valves, run from each aerator to the 3" pipe. The 3" and 5" pipes, compression couplings, 5" Y pipe, discharge laterals and tubes, swivel pipe fittings, flanges, elbows, and mounting brackets, among other items, are a single injection-molded plastic casting that's also painted aluminum.

Rounding out the details are the plastic roller-bearing trucks. The bearing caps are painted blue. The reporting mark and road number are printed on the sideframes.

The review sample we received features a smooth, even coat of gray paint. Except for a few small labels, all of the printing is legible under magnification. The yellow FRA-224 stripes are opaque.

Graphic placement follows prototype images that I found online. Sometime between 2011 and 2016, the ConAgra Mills name and logo were removed from the car sides. The running board supports should be painted to match the body color.

I compared the car to drawings from TrinityRail website. The model closely follows the published dimensions, which are noted as being approximate.

To see how the model performed in an operating layout environment, I took the car over to our Milwaukee, Racine & Troy State Line Route layout. The covered hopper had no issue navigating the 18" radius curves and No. 6 turnouts while being pushed and pulled in a train.

If you're in the market for modern era N scale rolling stock, you'll want to check out the Atlas Master Line Trinity 5660 pressure differential covered hopper. The model will look right at home in a freight train or spotted at an industry.

— *Cody Grivno, senior editor*

Facts & features

Price: \$47.95

Manufacturer

Atlas Model Railroad Co.

378 Florence Ave.

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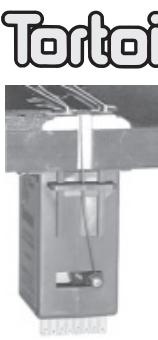
shop.atlasrr.com

Era: 1999 to present

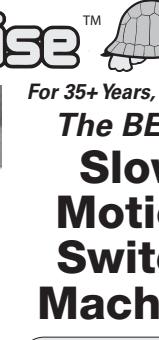
Road names: GATX Capital (ConAgra Mills and blue GATX logo, both with GACX reporting marks), GE Rail Services (NAHX marks), CIT Group (TCMX marks), Trinity Industries Leasing (TILX marks), and VTG North America (VTGX marks). Six road numbers per scheme.

Features

- 36" metal wheelsets, correctly gauged
- Body-mounted couplers at proper height
- Weight: 1.2 ounces, correct per National Model Railroad Association Recommended Practice 20.1



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Table M. CVs 1.257-1.384	
Effect Map Registers	
CV 1.257: Headlight	
CV 1.258: Backup Light	
CV 1.259: FX3 Effect	
CV 1.260: FX4 Effect	
CV 1.261: FX5 Effect	
CV 1.262: FX6 Effect	
CV 1.263: FX7 Effect	
CV 1.264: FX8 Effect	
Table N. Default Function Assignments	
FD-F2B Effect	CV Value
FD0 [Headlight]	1.257 0
FD0 [Backup Light]	1.258 0



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ScaleTrains S scale ACF refrigerator car



An American Car & Foundry 40-foot wood refrigerator car is the fourth model to join the ScaleTrains S-Helper Service lineup. The model, based on a prototype from the 1920s, features plastic construction; factory-installed and painted wire grab irons; and sprung, die-cast metal trucks.

The review sample we received is decorated as Santa Fe Refrigerator Department (SFRD) No. 23949, part of the 23451 through 23950 series built in 1927 by ACF. The full-size car was part of the RR-5 class. In addition to the 500 cars built by ACF, the class included 400 cars built by Pullman and numbered 23951 through 24350.

Refrigerator cars from the RR-5 class were rebuilt in 1950 and 1951 and re-assigned to the RR-49 (11432 through 11931) and RR-50 (11932 through 12421) classes. Among the upgrades were steel sides, 3/4 improved Dreadnaught ends, and metal running boards. The rebuilt cars stayed in service into the mid-1970s.

For additional information, check out *Santa Fe Railway Rolling Stock Reference Series — Vol. 2: Refrigerator Cars, Ice Bunker Cars 1884-1979* by C. Keith Jordan, Richard H. Hendrickson, John B. Moore, and A. Dean Hale (The Santa Fe Modelers Organization Inc., 1994).

The ScaleTrains model has a one-piece plastic body with a separate roof. Formed metal was used for the grab irons, ladder rungs, and stirrup steps. The freestanding details are painted black and mineral brown as appropriate. Molded body details on the wood-side car include the door hardware, ladder stiles, and poling pockets.

Plastic placard boards are attached to both ends of the car. The B, or brake, end of the car also has a separate brake platform and a metal vertical brake staff topped with a plastic brake wheel.

The simulated wood roof is a separate plastic part with a factory-applied running board and positionable hatch covers. Wire grab irons are located on the corners above the ladders. The molded fastener detail near the mounting holes is a nice touch.

The refrigerator car is shipped with American Flyer-style couplers and wheels. I replaced those with the supplied Kadee-compatible plastic couplers and scale code 110 metal wheelsets. The self-tapping screws, also included, easily threaded into the mounting holes at both ends of the car.

The sample we received follows the SFRD paint scheme of the era: yellow-orange (sides), mineral brown (roof and ends), and black (underbody and trucks). The lettering placement is similar to photos in the aforementioned book.

Detail placement varies between the model and full-size SFRD cars. The reefer has two grab irons by the road number and capacity data, but the prototype had one. The model has three brackets where the sides meet the ends; the full-size RR-5 cars had W-profile steel corner posts.

Some dimensional data for the 23451 through 23950 series of RR-5 reefers was included in the Santa Fe book. The car length and height are within scale inches of published dimensions. The door height is accurate, but the width is roughly a foot too narrow.

It has been around a quarter century since this model debuted under the S-Helper Service banner. Kudos to ScaleTrains for making the 40-foot wood reefer available again. Whether you get a factory-decorated model, or decide to make your own cars using the painted but unlettered offerings, the model will add some cool factor to your rolling stock fleet. — *Cody Grivno, senior editor*

Facts & features

Price: \$59.99

Manufacturer:

ScaleTrains
4901 Old Tasso Rd. NE
Cleveland, TN 37312
scaletrains.com

Era: 1920s to 1960s (varies based on paint scheme)

Road names: Santa Fe Refrigerator Department, American Refrigerator Transit Co., Bangor & Aroostook, Fruit Growers Express, Union Refrigerator Dispatch with Milwaukee Road herald, and Western Refrigerator Line with Green Bay & Western herald. Three to six road numbers per paint scheme; also available painted orange and yellow but unlettered.

Features

- Body-mounted Kadee-compatible couplers, .040" too low (both ends)
- Scale code 110 metal wheels on plastic axles, in gauge
- Minimum radius, 20"
- Weight: 5.7 ounces, .1 ounce too light per National Model Railroad Association Recommended Practice 20.1



The ScaleTrains HO scale GP30 (left) features a dual-mode ESU LokSound V5 sound decoder, while the Atlas Trainman GP38-2 is a direct-current (DC) model. Contributing Editor Larry Puckett explains what happens when DC locomotives are placed on Digital Command Control layouts and vice versa. Cody Grivno photo

Can DC and DCC locomotives run on the same layout?

Q I have several On30 locomotives with Digital Command Control (DCC), but was recently gifted a passenger set that has a direct-current (DC) locomotive. If some DCC locomotives are sitting on the track, can I use a DC transformer to operate the DC engine on the same track without damaging the DCC locomotives? What would happen to the DC locomotive if it's still on the track when I use the DCC controller?

Joe Mizell

A First, let's tackle the DC locomotive question. Direct-current locomotives, when placed on a DCC-powered track, will hum or sing in a high pitch due to the high frequency of the DCC track power. With some DCC systems, such as Digitrax, you can operate one DC locomotive using a process referred to as zero bit stretching by setting the throttle address to "00." However this shouldn't be done on a regular basis as it can heat the motor and may lead to failure. Use it only for testing a new locomotive. And it's best not to leave DC locomotives sitting on the DCC-powered track for long periods as this humming may overheat the motor.

Next, we'll look at DCC-equipped locomotives on a DC-powered track. Most decoders manufactured today support a process referred to as analog conversion. That simply means the decoder will recognize that DC power is on the track and will respond to DC throttle commands. You'll notice a lag in locomotive response because track voltage needs to reach about 5-7 volts before the locomotive will move and the sound and light effects will come on.

Also, all DCC locomotives in the same DC power block will respond. If you don't want that to happen, you should move the DCC locomotives to an electrically isolated track, remove them from the layout, or turn analog conversion off in their decoders. The last option is accomplished by programming CV 29 to the desired value. This may sound a bit complicated, but it's described on many websites — just do a search for "DCC CV 29 programming." I discussed this in video No. 48 on my YouTube channel "Model Railroading With The DCC Guy" and have a cheat sheet of CV 29 values on my website <https://larrypuckett.wordpress.com>. — *Larry Puckett, contributing editor*

Q I'm designing an N scale model railroad set in the mid-1950s. I have a space problem and was thinking about a stub-end branch line. I will be running both steam and diesel. Was it normal to run a steam locomotive with the engine first, switch cars, change the engine and caboose, and have the steam engine leave tender first?

Thomas Phillips

A Good timing, Thomas, as I'm building a new O scale model railroad based on a Wabash branch line in Illinois that

involved a long backup movement. The Wabash ran the 11th District "High Line" from Bluffs, Ill., to Keokuk, Iowa, but a Switch Local ran only as far from Bluffs as Mt. Sterling, a distance of about 23 miles. There was no wye or turntable at Mt. Sterling, so the Mogul had to run in reverse for half the round trip.

A good clue about extensive reverse movements is a large headlight mounted on the tender deck. Normal tender backup lights weren't intended for long-distance operations, so tenders of locomotives that were used on branches or in



Wabash Moguls were used on branch lines, some of which had no turning facilities at the ends of their runs. The large headlight on the tender deck is a clue that this locomotive operated extensively in reverse. Tony Koester photo

helper service that often required extensive reverse movements were fitted with the same type of headlights as the ones mounted on the fronts of the engines.

— *Tony Koester, Consulting Editor*

Q I read David Popp's book *Building a Model Railroad Step by Step* (Kalmbach Books, 2007). Why paint the track? Doesn't it damage the track and make the model trains not run?

Alex Brennan

A In answer to your question about painting model train track, no, paint doesn't hurt the track at all. If you decide to do it, the paint eliminates the unrealistic appearance of the shiny plastic ties and metal rails. Keep in mind that you still need to clean the top of the rails to produce electrical pickup so your locomotives keep running.

It's easiest to remove the paint from the rails' tops within an hour after application. Paint hardens as it cures, so don't wait a couple of days, or it will be much more difficult to clean them sufficiently.



Senior Editor Cody Grivno painted the tracks at Winter Hill on the old Milwaukee, Racine & Troy using an airbrush and acrylic paint. He masked the points and heels on the turnout to protect the electrical contacts. Jim Forbes photo

The tops of the rails on real railroad track are shiny as well, so when you've finished the painting and cleaning processes, your rails will match what you see on prototype railroads.

If you do paint your track, one more thing to note is that you must be careful not to get paint into the movable areas of the turnouts. This includes where the

point rails meet the stock rails, as well as any hinge points your turnouts may have, which are usually found between the points and the frog.

The image above illustrates how the points and heels of an HO scale turnout were masked prior to being airbrushed with acrylic Railroad Tie Brown. — *David Popp, Director, Trains.com*

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Q Are N scale graffiti decals available?

Bill Carpenter

A Yes, N scale graffiti decals are available from various manufacturers. Microscale offers contemporary graffiti sets in 1:160, as well as graffiti alphabet lettering in various colors.

Blair Line is another resource for N scale graffiti decals. Similar to the HO scale sets that I mentioned in last month's column, these sets are also laser cut. This means that you don't have to



Cody Grivno applied Microscale graffiti decals to a Kato N scale well car. You can read his article "Weathering freight cars with decals" in the January 2020 issue of *Model Railroader* magazine.

Model Railroader photo

cut close to the graphics to remove the excess clear film.

Circus City Decals, CMR Products, and Fusion Scale Graphics are a few other firms to check out. For more on working with N scale graffiti decals, check out "Weathering freight cars with decals" in the January 2020 issue of *Model Railroader*.

Q Can you give out info on any MR articles on installing ditch lights and/or beacons for DCC applications?

Michael Hauri

A For ditch lights, I'd recommend checking out David Popp's article "Adding working DCC ditch lights" in the February 2008 issue. He explains how to add deck-mounted ditch lights to an Athearn HO EMD SD60.

I'll point you to two stories on beacons. The first is "Working beacons for N scale diesels" in the April 2009 issue. Lennart Svedberg's story covers how to add flashing lights to 1:160 diesel decorated for the Chicago & North Western.



Trains.com Director David Popp added ditch lights to this Athearn HO scale Electro-Motive Division SD60. The five-step process is outlined in the February 2008 MR. Jim Forbes photo

Another article is "Add working lights to a bi-level cab coach" in the August 2011 MR. Former DCC Corner columnist Mike Polsgrove shares how to add various lighting effects to a Kato HO scale commuter car, including the rotary beacon, markers, and headlights. **MR**

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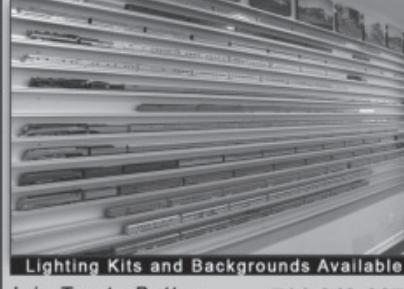




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The *Phoebe Snow* vanishes into Devil's Hole cut on Jef Fagen's layout. Jef Fagen photo

Taking a cut

In your recent magazine an article stated when modeling the Appalachians a cut was a good scenic thing to do [“Scenic hints for Appalachian layouts, February 2025”]. I did exactly that several years ago and it makes for a nice scene.

Here the eastbound *Phoebe Snow* is going through the Devil's Hole cut before reaching Cresco while a freight heading west has just passed the station on the Delaware, Lackawanna & Western RR.

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Jef Fagen
via email

DIY DCC — Nay or yay?

An interesting editorial decision. From a reader interest view, I'd give it a 10. From a reader usefulness view, I'd give it a 1. In choosing a DCC system, my thought is that the big question is what do people you know have? And for this system, the answer is nobody. The hint is that the author is an electrical engineer. Most of us would probably find the project too daunting. Also, every circuit diagram I've ever seen in *Model Railroader* has been followed by a correction a couple issues later.

I confess that scientific method did influence my choice of Digitrax: I wanted to hold operating sessions, and Digitrax allows people to bring their throttles to my railroad and use them without special configuring. That being said, it's very much right out of *The New Yorker's* department of Through the Glass Darkly — My operating scheme has four jobs and I have five new design throttles and six old design throttles to run them!

William Mosteller
Fairfax, Va.

Thank you for publishing Chris Russo's article on building a DCC system in the December 2025 issue of *Model Railroader*. As a longtime subscriber, it seemed to me that we were overdue for a DIY electronics project in the pages of MR. I really enjoyed reading Chris' article.

Much like Chris, I grew up reading MR and had a 4 x 8 layout in the 1970s. I was fascinated by Peter J. Thorne's transistor and SCR throttles, re-motoring locomotives with can motors, and kit-bashing locomotives. Later, Don Hansen's column “Symposium on Electronics” was something I always enjoyed. Along the way, the electronics projects such as the CTC-16, the C/MRI, CTC-16e, and Easy DCC intrigued me. Chris captures those feelings well in his article.

Recently retired, and with my kids out of college, I'm now getting back into the hobby. I set up a test track above the workbench powered by an old MRC 501 Throttle Pack and my old Peter Thorne designed transistor handheld throttle, just like Chris. While DC is fine for the workbench, I wanted to explore DCC on

the new layout. After 30 plus years of development, it is time to go all in on DCC.

I was impressed by Chris' ability to build on a budget. In that regard, he succeeded. But, the “Frankenstein” aspects of his command station build concerned me. Jumper wires soldered to the circuit boards, cutting traces on the circuit boards, and modifying the code in DCC++, all seemed like opportunities to highlight my limitations with a soldering iron. But, Chris inspired me to seek out a DCC project to fit my skill set.

Google time! The DCC++ code Chris used from Greg Berman is from 2015. Over the last 10 years, other folks have rewritten the code and improved it. It is now called DCC-EX. The DCC-EX folks have added many new features to the software, including Wi-Fi, an easy to use interface, good documentation, and connectivity with JMRI for those folks who are interested in a computer interface for automating route control, decoder programming or signaling.

Following the guidelines on the DCC-EX website, I built my DCC-EX Command Station on an STM Micro 32 bit board rather than the 8 bit Arduino. A little bit more expensive, but the capabilities are broader and the assembly is easier. All of the parts were available from Amazon or directly from the DCC-EX online store.

The project came together quickly. I was able to download the Engine Driver app to my phone, connect to the DCC-EX system via Wi-Fi and run my new DCC sound-equipped locomotive. Wahoo! I rang the bell, blew the horn, and reveled in the sound of the diesel.

A list of the resources I used were:

- www.dcc-ex.com
- YouTube: Driver D trains, and DIY and Digital Trains
- www.amazon.com
- www.digikey.com
- www.arduino.cc

DCC-EX is powerful and easy to use. I would encourage anyone to build a DCC Command Station. It is a fun and easy project. I am glad to be back in the model railroading world after so many years away.

Scott Rawlings
Brookfield, Conn.

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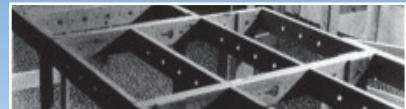
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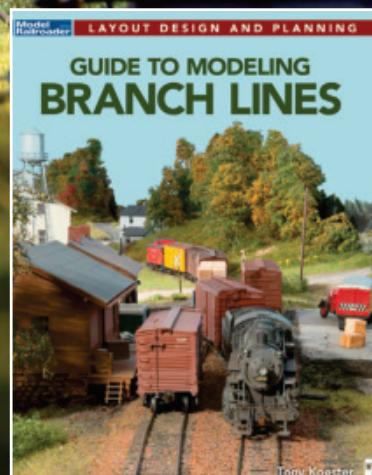
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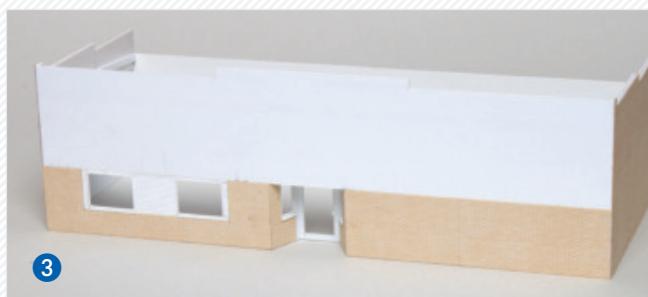
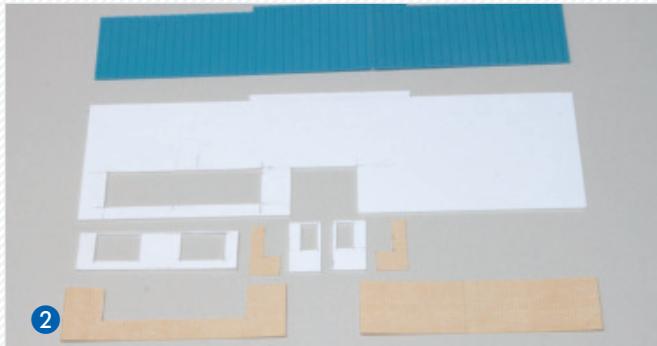
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STEP 1 WALLS, WINDOWS, AND DOORS



I cut the two end walls from the Monster Modelworks brick sheet. The laserboard brick sheet is rather thin, so I made a identical walls from .040" styrene ① so I had a surface to attach the resin-impregnated kraft paper to.

The front wall consists of parts made from various materials ②. I first cut a basic wall from .040" styrene. I used Evergreen clapboard sheet (4041) for the section with the store windows. For the top of the storefront, I used a

piece of Pikestuff steel warehouse wall that I had in my scrap box. The brick wall pieces are from the same Monster Model-works sheet that I used for the end walls.

With the parts cut, it was time for assembly. First, I attached the laserboard pieces to the styrene using 3M Display Mount, a spray adhesive that bonds almost anything. I then glued the styrene walls together using plastic cement ③.



Several of the structures in the town of Daneburg on my former HO scale Union Pacific Daneburg Subdivision layout [See the May 2017 *Model Railroader*. — Ed.] were scratchbuilt. Each time I worked on a building, I took the opportunity to try different materials. For the Daneburg Quick Stop I combined laserboard, a resin-impregnated kraft paper, with styrene and injection-molded plastic parts.

The model is based on the Quick Stop in Blairstown, Iowa. It's not an exact replica of the prototype structure, but it's close. I made my version wider than the full-size building to fit the space I had available. I also didn't model the building in full, but only the front and sides as the back wall was against the backdrop.

I purchased the laser-engraved brick wall sheets from Monster Modelworks. The company's product line is now

available from Larkspur LaserArt & Promotions. The laserboard is rather thin and has a tendency to warp, so it needs to be mounted on something to stabilize it. I attached it to .040" styrene sheet as it was easy to cut and glue.

A carefully executed paint job is the key to realistic looking structures. The crisp engraving made it fairly easy to paint the face of the bricks and leave the mortar untouched. On the prototype you can see that a door and window were bricked up at some point. I captured that detail by painting the bricks a slightly different color.

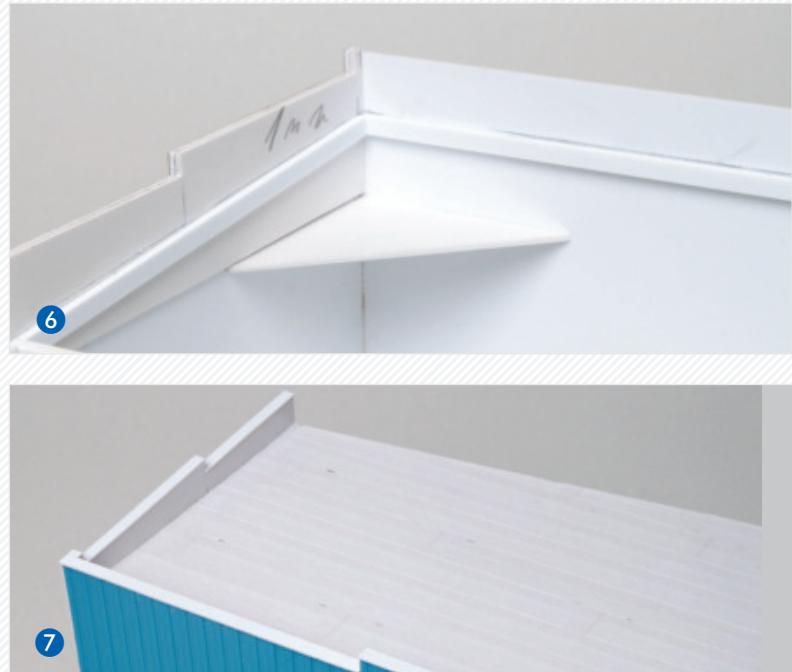
If you have a scratchbuilding project in your future, give non-traditional materials a try. Pairing laserboard with styrene and plastic parts yielded a realistic structure you can find in almost any rural community.

Pelle Søeborg scratchbuilt Daneburg Quick Stop for his former HO scale layout. He made the structure using laserboard, styrene, and plastic parts. Photos by the author



I framed the window openings with .020" x .030" styrene strip. The window sill is .020" x .040" styrene. This can be seen in 4 on the opposite page.

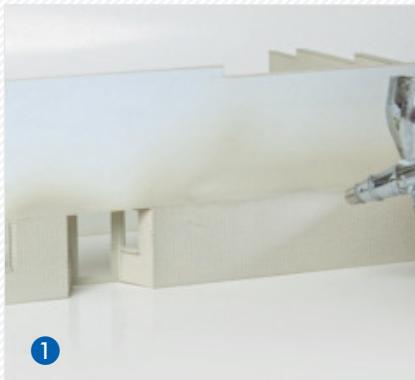
Then I turned my attention to the entrance 5. I cut the door from .020" styrene sheet. The small windows flanking the entrance were made the same way as their larger counterparts, with .020" x .030" styrene strip frames and .020" x .040" sills.



To keep the walls at right angles, I reinforced the corners with styrene triangles. Then I glued .060" x .125" strips to the inside of the walls to support the roof 6. I also added a back wall to the building to prevent light from coming down between the building and the backdrop.

The roof consists of .020" styrene sheet covered with 4-scale-foot-wide strips self-adhesive paper. The wall caps are .020" styrene cut in .100" wide strips 7.

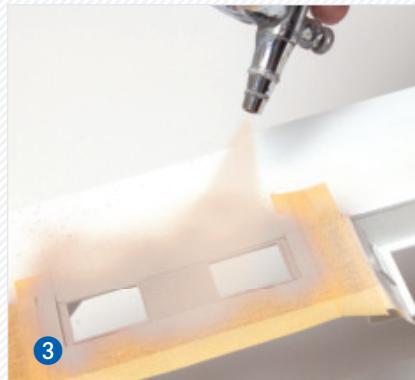
STEP 2 TIME FOR PAINT



1



2



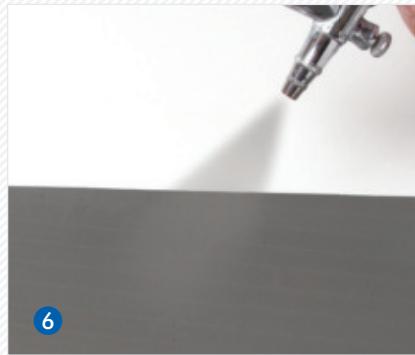
3



4



5



6

With the building assembled, it was time for paint. First, I used an airbrush to spray the brick walls with Model Master 1733 Camouflage Gray to simulate mortar ①. [The Testor Corp. discontinued the Model Master line. Similar hobby paints are available from Rail Center, Revell, Tamiya, and Vallejo, among other companies. — *Ed.*]

I let the paint dry thoroughly. Then I randomly drybrushed the brick faces with two custom-mixed colors ②. The first was Humbrol 70 Brick Red Matte lightened with the same company's 147 Light Gray Matte. The second color was a mix of Brick Red Matte and 63 Sand Matte lightened with Light Gray Matte. The drybrushing was a bit shiny, so I airbrushed the walls with Vallejo Matte Varnish.

Next, I masked the brick sections and airbrushed the clapboard siding with Model Master 1567E Tan lightened

with 1733 Camouflage Gray from the same product line

③. I airbrushed the entry door white.

I used a fine paintbrush to carefully apply appropriate colors to the window frames, trim, and other smaller items

④. After painting the frames, I applied clear glazing to the windows and door.

Then I airbrushed the facade with a custom brown color that I mixed from Model Master 2125 Russian Earth Gray and Camouflage Gray ⑤.

I airbrushed the roof with Model Master 1723 Gunship Gray with a fair amount of the same brand's 2002 Skin Tone Dark Tint added to it ⑥. I moved the airbrush randomly in circular movements so some areas appeared darker than others to capture the look of weathered rolled roofing material.

Materials list

Evergreen Scale Models styrene

121 .020" x .030" strip
122 .020" x .040" strip
156 .060" x .125" strip
4041 clapboard sheet
9010 .010" sheet
9020 .020" sheet
9040 .040" sheet

Humbrol matte paint

63 Sand
70 Brick Red
147 Light Gray

Monster Modelworks

Laserboard clean brick sheet

Model Master paint

1567E Tan

1723 Gunship Gray

1733 Camouflage Gray
1790E Chrome Silver
2002 Skin Tone Dark Tint
2125 Russian Earth Gray

Vallejo paint

70.520 matte varnish
70.951 White (Model Color line)

Wm. K. Walthers Inc.

933-3105 piping kit
933-3733 roof details

Miscellaneous

.010" clear styrene sheet
.028" brass wire
.019" brass wire
thin brass sheet
self-adhesive paper

STEP 3 SCRATCHBUILT AWNING



1



2



3



4

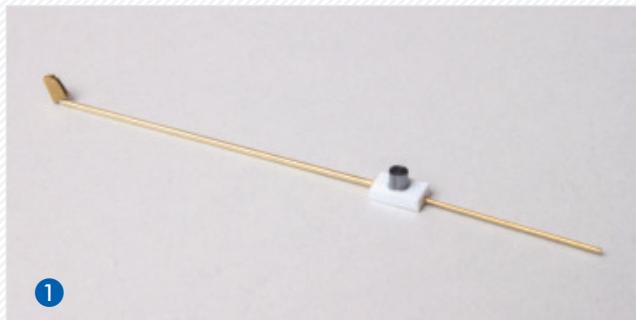
The greatest challenge turned out to be the awning above the entrance because of its rounded corners. I first made the frame from .040" styrene 1. Then I glued .010" styrene sheet to most of the frame, leaving only the corners exposed 2.

Next, I filled the corners with putty. I sanded the material smooth after it had hardened completely 3.

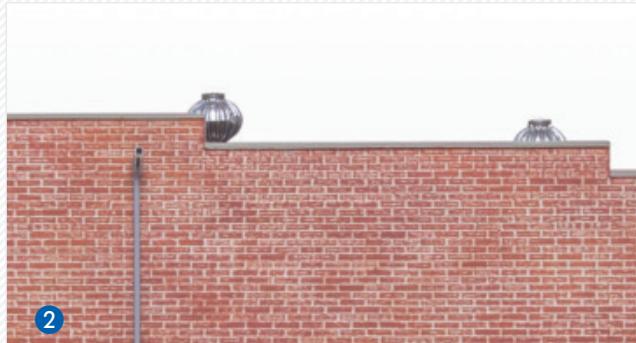
I designed the red awning with text on my computer and printed it out on self-adhesive paper 4. I applied it to the styrene starting at the bottom. Then I wrapped the print around the corners and finally the wide piece over the top.

I touched up the areas where the white edge of the paper was visible with red paint.

STEP 4 FINAL DETAILS



1



2



3



I wrapped up the project by adding details to the structure. I made the meter socket from .060" x .125" styrene strip. I depicted the glass cover with a piece of pipe from a Walthers piping kit.

Then I drilled holes in the styrene strip meter socket and attached brass wire with cyanoacrylate adhesive (CA). The long (top) piece is .028"-diameter; the short piece is .019"-diameter. I wrapped a small piece of thin brass sheet around the top of the thicker brass wire and secured with CA. This represents the attachment point for the utility wires 1.

Then I added cyclone vents to the roof 2. The castings are part of the Walthers roof details kit (933-3733). I painted them Model Master 1790E Chrome Silver.

Finally, I added signs to the front of the building and advertisements in the windows 3. I designed the signs on my computer; the advertisements are scaled images of those found on the prototype. I printed all of them out on my laser printer, attaching them to styrene as necessary.

With that, Daneburg Quick Stop was ready to serve customers. A modernized business like this adds a splash of realism to any small-town scene. **MR**

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Building Scituate Sand and Gravel

Part 1: A conveyor for the gravel pit

By Mike Tylick • Photos by the author unless noted



Mike Tylick has been fascinated by the sand pits that dot the New England landscape and decided it was time to add one to his On30 Marshfield & Old Colony RR. In this issue, Mike shows how he built the conveyor for the scene.

Scituate's Brushy Hill caused the Marshfield & Old Colony RR to make a sharp right turn toward the harbor, but the obstacle ultimately proved to be a blessing in disguise. Unlike the solid granite base of the Third and Fourth Cliffs, Brushy was a large sand dune formed by the wind and the sea centuries ago.

The aggregate proved to be of a suitable grade for construction and beach reclamation, so the Scituate Sand and Gravel Co. was formed to harvest these resources. The M&OC was very happy to

construct a long spur to the quarry to gain its seasonal traffic. In typical fashion the quarry shut down in autumn for the winter, resuming operation when the frost had left the ground in the spring.

Sandpits are found all over New England. From compact ones providing road sand for small town highway departments to much larger ones supplying raw materials to concrete and construction companies, they all have the jarring visual impact of a large gash cut from the face of the Earth. I was drawn to the out-of-context appearance with

their surroundings as much as I am fascinated by the ancient equipment that is seemingly left abandoned. The pits may be active, but one rarely sees anyone working there. I remember a small sandpit operation from the old *Model Trains* magazine and have wanted to build one ever since.

My current On30 Marshfield & Old Colony RR skirts the seashore, a place where there's no shortage of sand, which is a bulk product easily transported by rail. This seemed the perfect opportunity for my long-delayed project.

A small conveyor



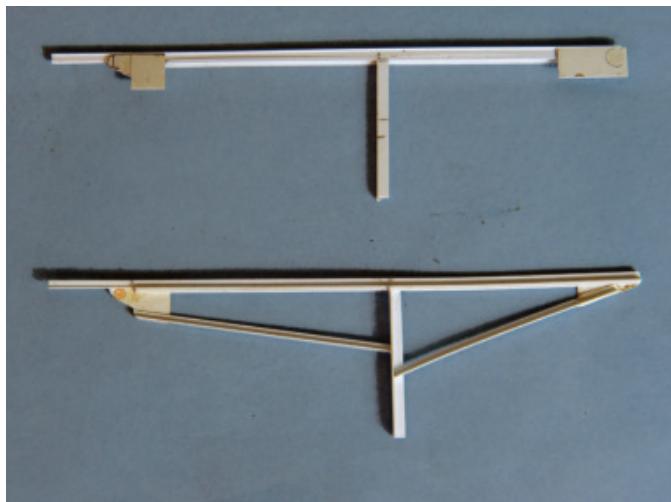
Small quarries always have various conveyors and excavators that appear to be abandoned, but they are quite capable when fired up for occasional use. The equipment is too large to move or store, and there isn't much the weather can do to bother it, so it is often left where it was last used.

I needed some machinery to make my quarry look like a going concern, but nothing suitable was available in O scale. I considered adapting one of the many HO models available, but they were for quarries that are either too modern or too

large to look right. I discovered photos of an interesting, aging small conveyor on Google Images. The conveyor had an older look about it and was of a size a small quarry might have. I was able to find the photographer, Per Ryolf, through Flickr and LinkedIn and obtained a few more views of the conveyor — enough to build a model.

I began my conveyor by purchasing suitable tractor tires from Berkshire Valley (berkshirevalleymodels.com) and scaled my model around them, using the photos as a guide.

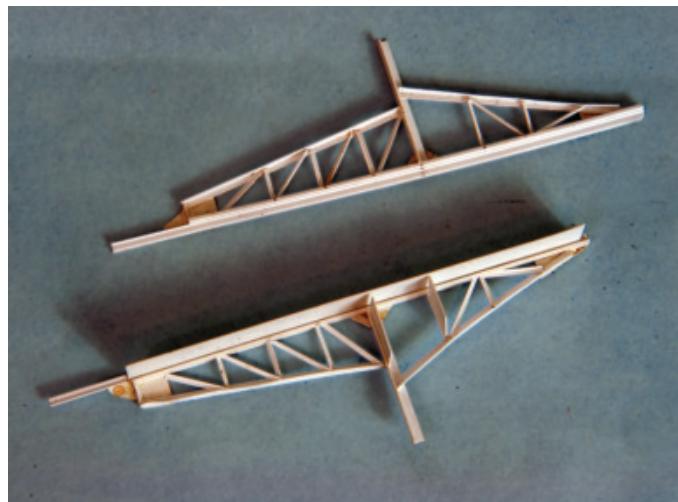
Building the frame



I constructed the main frame member by combining a $3/32$ " styrene zee with a $.100$ " styrene channel. I cut the zee longer to provide support for the front chute. My measurements were obtained by matching the proportions of the wheels to the structure of the conveyor.

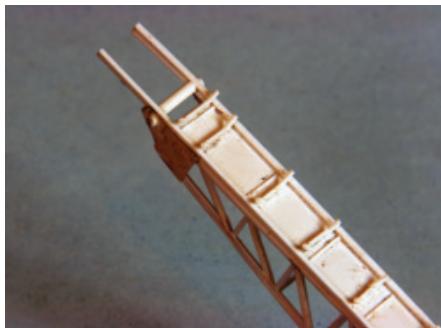
I attached $1/8$ " angle into the channel to form the main vertical member. I cut gusset plates from $.020$ " styrene sheet. Use a small square to check for accuracy when gluing the angle to the channel. Let the liquid plastic cement to harden completely before attempting the next step.

The lower angled members are $1/16$ " channel. Again, check both pieces for accuracy and allow the cement to harden fully before proceeding.



The secondary vertical and diagonal braces that make up the supporting truss are $3/64$ " angle. I cut the center gusset from $.020$ " sheet.

Next, I glued $.020$ " spacers to one side of the frame. Note that the angle hides the joints of the secondary members, so they don't have to be perfect. The prototype conveyor appears to be welded. Lucky for me — I'm not sure how I would add rivet detail to this model.



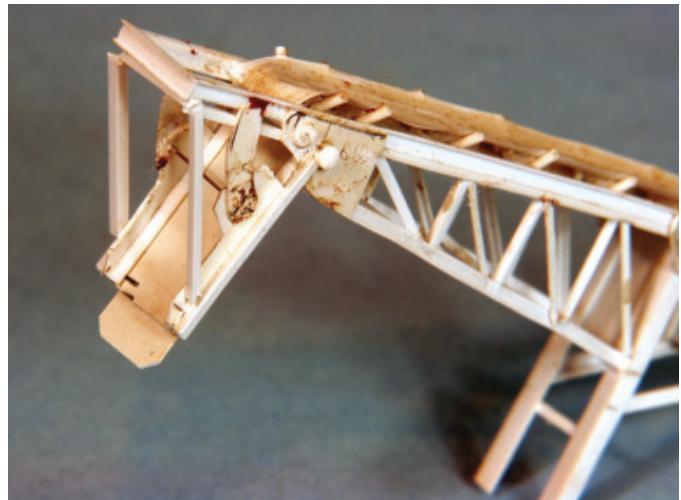
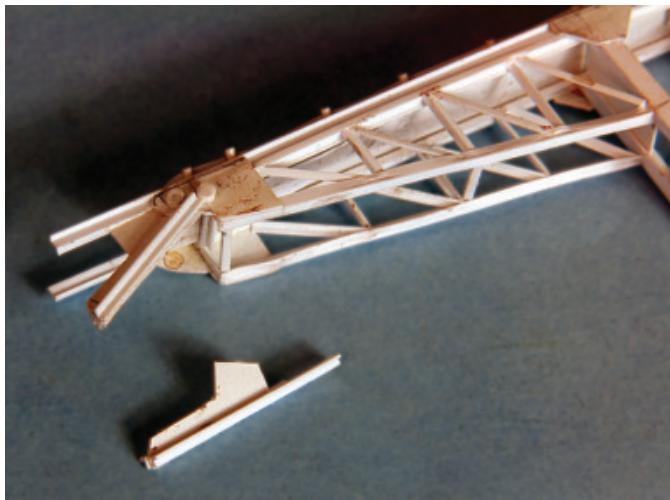
The conveyor belt rides on a series of rollers. Only the ends are visible; the detail is so fine that I was able to represent them with bits of .030" x .040" styrene strip and .030" styrene rod. I built them in place as shown.

I made the rollers at the ends of the conveyor from $1/16$ " rod. The bearings are styrene sheet disks that I cut using paper punches.



I wasn't sure how to model the canvas conveyor belt, but fortunately my first idea proved to work well. I cut a strip of copy paper, brushed thinned white glue on it and pushed and formed it into place with a small brush. When dry, I rolled a short length around the bottom. No one will ever notice that the conveyor belt isn't continuous.

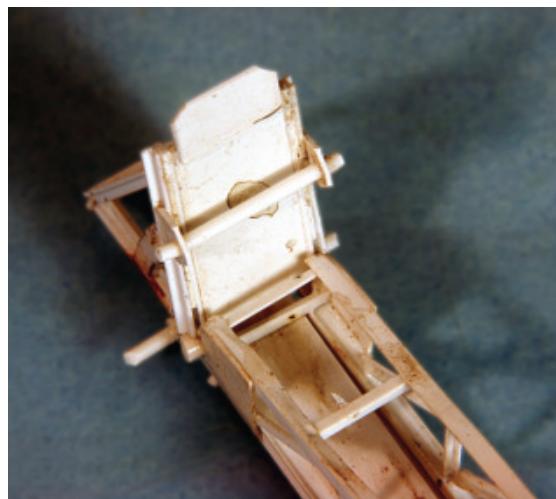
Drive and control



Bits of angle and styrene sheet form the shoot supports. The completed chute isn't as complicated as it looks. It's a simplification of the prototype. If I were more particular, the chute is made of a mesh grating, but I'm building neither a foreground nor a contest model. Nor is it a master model for a production kit. It's questionable if I even should devote this much time to a small detail. I could never afford the time to do this if I had a large, full basement layout, or was being paid.



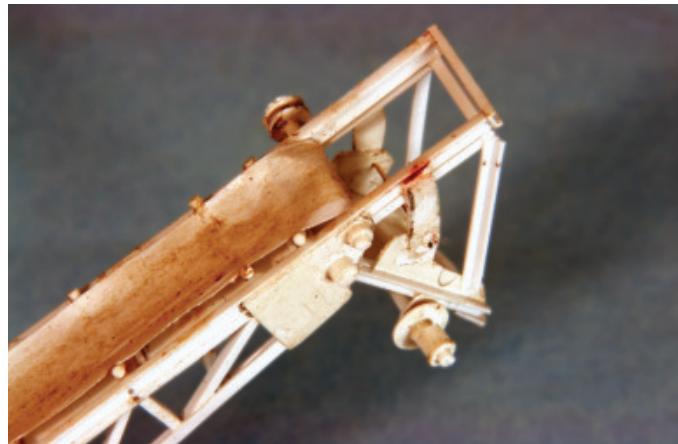
The control panel is an approximation of the prototype using styrene tubes and sheet. I could never quite figure out if the conveyor was powered by air or electricity, but my construction is vague enough to look like something that might work. I'll leave it to the purists to decide.



The drive mechanism for the conveyor is attached to the chute at the top. The motor is on one side of the chute, and the drive pulleys are on the opposite side. I fashioned pillow blocks from .020" styrene sheet, then added an axle made from $1/16$ " tube.



I assembled the conveyor drive pulley and motor from $\frac{1}{8}$ " and $\frac{3}{16}$ " disks cut from .020" styrene sheet using paper punches. I could have drilled holes and added wire "axles," but are they really necessary for a mid-ground detail?

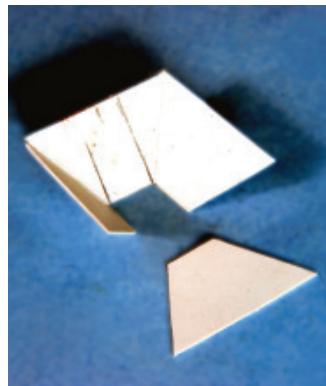


The motor on the opposite side was also made using bits of tubing and disks cut from styrene sheet using paper punches. I'm not sure if this is electric or pneumatic, but it resembles the one on the prototype.

Final details and paint

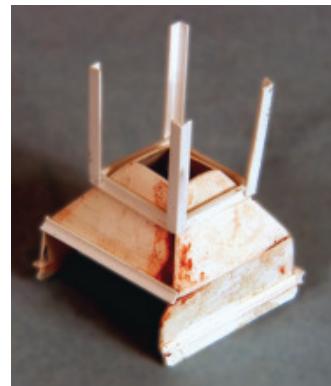


One of the final steps is adding the wheels. Cyanoacrylate adhesive or epoxy can be used to bond the dissimilar materials. The Berkshire Valley tractor wheels are typical of those found on older conveyors. The whole model was scaled from photographs based on the diameter of these wheels, making for a conveyor that was plausible, even if on the small side.



The loading funnel sides were cut from .020" styrene and glued together.

I completed the funnel with a few angles and a base from structural shapes. Bondo spot putty helps to fill the flaws in this miniature model. I then attached the funnel to the conveyor using a small styrene base.



After spray-painting the model with gray primer, I brush-painted it with Delta Ceramcoat acrylic craft paints. I used Quaker Gray for the ironwork. I switched to Sandstone, a warm gray color, for the canvas conveyor. I used Charcoal, a rubber black color, for the tires.

I painted the styrene "ground" under the hopper with Americana Raw Sienna. The color is a pleasing earth tone.



Washes of Americana Burnt Orange, brown, and black paints gave the conveyor an aged appearance. I was planning to spread chalk "dust" around the lower parts, but the prototype didn't show this. There doesn't seem to be much dust around sandpits even when they're in operation.

Next month, I'll show you how I built the steam shovel and the sand pit. **MR**



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Union Pacific's Geneva

Go back to the early 2000s on this triple deck HO scale layout

By Lou Sassi • Photos by the author

The journey that led Eric Lalonde to model the Union Pacific Geneva Subdivision in HO scale is a bit different than what you normally read about here. He got started in the hobby when he was 10. Eric's dad built a standard 4 x 8-foot layout. Though his dad lost interest in the model railroad, Eric's curiosity remained. He scratchbuilt a bridge, turntable, roundhouse, and water tower. Using resources he had available, including fish tank rocks and real dirt, Eric also tried his hand at scenery. Nothing was to scale, so close enough was good enough.

Over time, Eric got out of the hobby. However, he continued researching and building models in various scales. Eric returned to model railroading in 1998. Over his four decades in the hobby, he's built five layouts of various sizes, two in HO scale and three in N. He has also been involved with a few model train clubs.

It started with Rochelle

The HO scale UP Geneva Subdivision traces its roots to April 2011 when Eric planned and built a 10½-foot section of the Rochelle (Ill.) Railroad Park in the third floor apartment he was renting at the time. He attached the scene to the living room wall.

In 2012, Eric moved into his current residence. The duplex had the basement he was looking for to build a layout. He brought the Rochelle scene along. After removing the front fascia and tipping the section at an angle, he was able to fit the scene through a basement window. Not long after, he started sketching a track plan.

Since then, the Rochelle section has become part of a 17 x 25-foot multi-deck model railroad. The proto-freelance layout, set between 2000 and 2005, depicts the Geneva Sub between West Chicago and Clinton, Iowa.

Preparing the space

With the Rochelle portion of the layout in its new home, room preparation, planning, and

① A westbound empty ethanol train led by Union Pacific No. 1995, the Chicago & North Western heritage unit, rolls through DeKalb, Ill., on Eric Lalonde's HO scale Geneva Subdivision layout. The 17 x 25-foot triple-deck model railroad is set in the early 2000s.



Subdivision





② Sterling Mill and the in-progress Sterling, Ill., scene are visible at top right on Level 2. On Level 1, the West Chicago auto rack facility (left) and the former Chicago & North Western concrete coal tower at DeKalb, Ill., (right) can be seen. At distant center is the staging level.

construction began. A new wiring plan was drawn up for the layout room, which included two 30 amp breakers, one for the lights and the other for the model railroad. In addition to wiring, new outlets and plugs were added to the room.

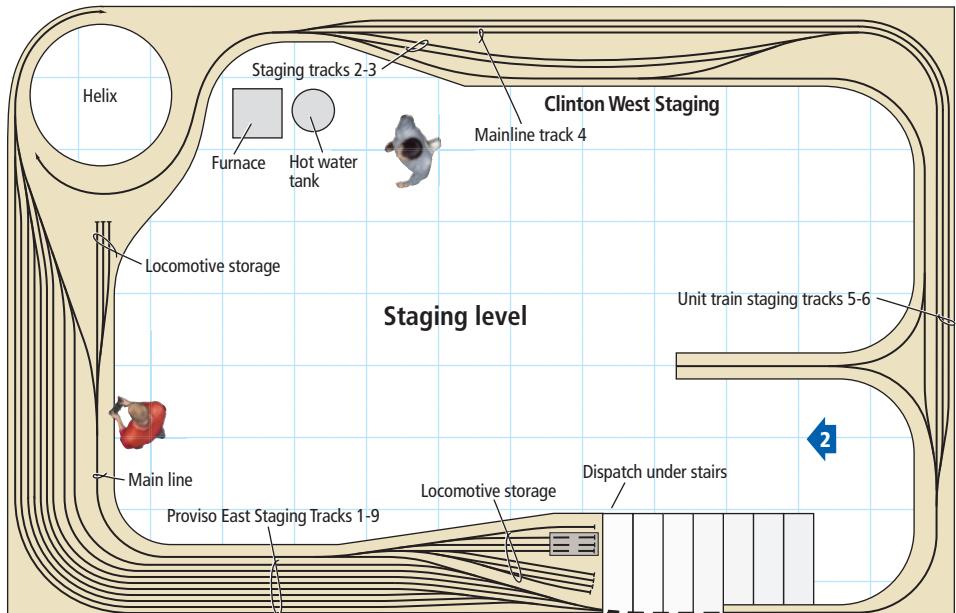
To give the layout space a finished look, Eric painted the basement walls with Drylok paint and applied an epoxy coating to the floor. He attached studs to the walls; a center wall was built to support the peninsula.

All of the layout room lighting is 5000K light-emitting diodes (LEDs). Eric uses old C7 Christmas light strings with LEDs installed. The ceiling-mounted accent lights also have LEDs, which Eric reports create a shadow effect similar to a partly cloudy day.

Building benchmark

Layout construction started in May 2012 with the help of a few friends, including Peter Speliotis. Eric noted that without Peter's help and patience, the lighting, helix construction, and wiring would still be in the learning stages. Peter helped design the helix to fit in a 5 x 5-foot space, which was key to having a three-deck layout. The staging level is 30" off the floor. Level 1 is at 45" and level 2 is at 62".

The helix has an outer radius of 27 $\frac{1}{8}$ " and an inner radius of 25 $\frac{1}{8}$ ". This kept



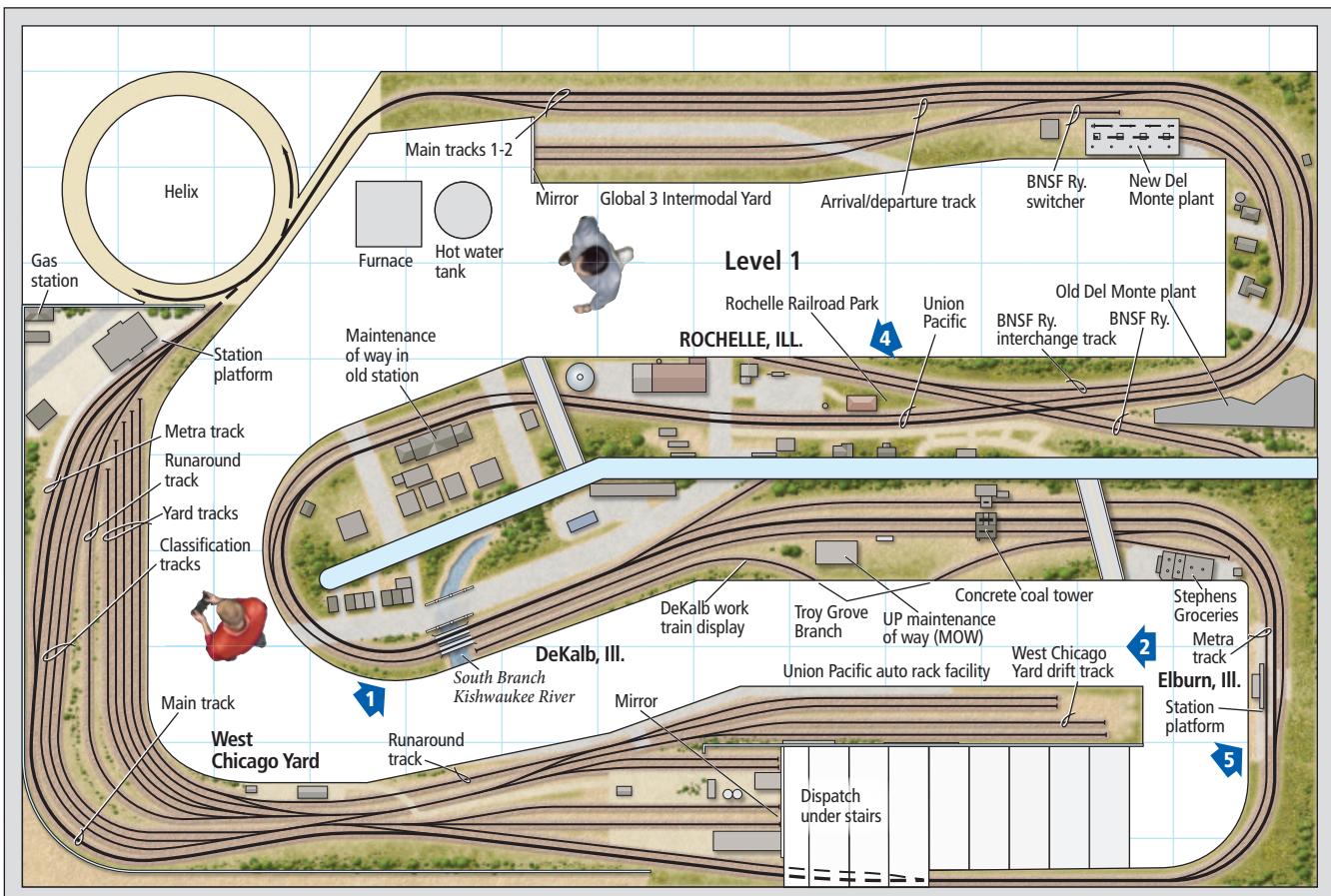
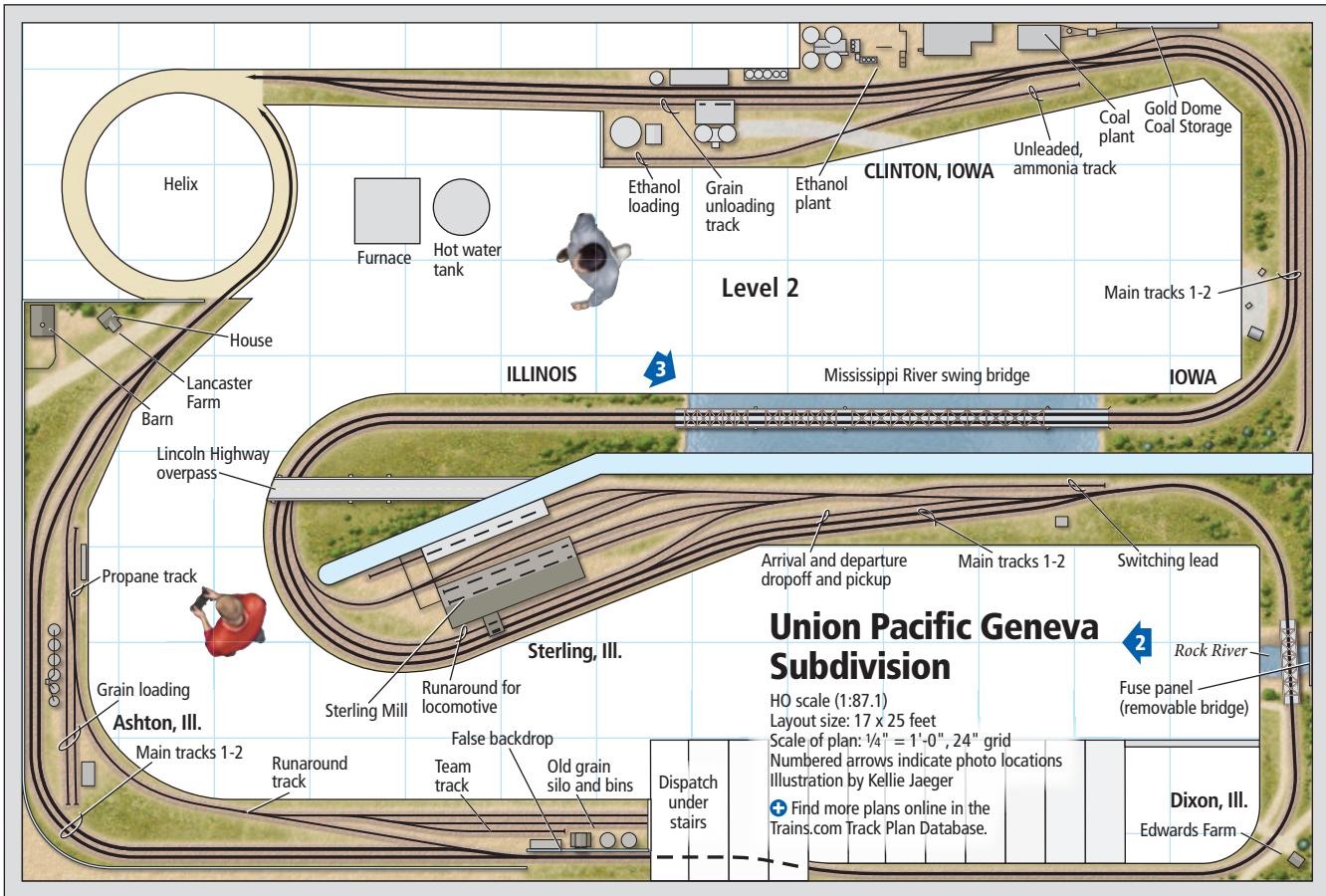
the track centerline at 2.75" and the grade at around 2.5%, good for any rolling stock on the Geneva Sub.

The wall-mounted benchwork features angled 1 x 2 diagonal braces and 1 x 3 pine frame sides. Eric used $\frac{3}{4}$ " plywood for the top, covered with 1"- and 2"-thick extruded-foam insulation board. The scenery base was covered with flat brown latex paint in preparation for scenery.

The backdrop is $\frac{1}{4}$ " tempered hardboard. Fiberglas mesh tape, coated with

The layout at a glance

Name: Union Pacific Geneva Subdivision
Scale: HO (1:87.1)
Size: 17 x 25 feet
Prototype: Union Pacific (ex-Chicago & North Western)
Locale: West Chicago Yard to Clinton, Iowa
Era: late summer 2000-2005
Style: multi-deck walk-in
Mainline run: approximately 210 feet (not including helix or staging)
Minimum radius: 24"
Minimum turnout: No. 6
Maximum grade: 2.5% (in helix)
Benchwork: wall-mounted
Height: 30" (staging), 45" (Level 1), and 62" (Level 2)
Roadbed: cork over foam and plywood
Track: Atlas code 83 and 100 flextrack
Scenery: extruded-foam insulation board
Backdrop: combination of photos and painted $\frac{1}{4}$ " tempered hardboard
Control: Digitrax wireless with TrainController Gold software





③ The Mississippi River swing bridge between Iowa and Illinois is an attention getter on Eric's layout. He hired Jeff Pasquier to build the 10-foot replica of the prototype. The tugboat is a detailed Walthers kit; the river is assorted Woodland Scenics products.

with duplex control and three DB150 boosters. The layout was wired for a fourth DB150 booster in case it's needed in the future. Eric currently has four cabs, two each DT500D and UT4D.

With the exception of a few strategic locations, all of the rail joints are soldered. Though the basement is temperature and humidity controlled, gaps allow the tracks to expand and contract, preventing kinks in the rail.

All of the mainline switches are controlled with Digitrax DS64 quad stationary decoders and SE8C signal decoders using Tortoise by Circuitron slow-motion switch machines.

Fun with scenery

Eric loves watching trains pass through well-detailed scenes, so it shouldn't come as a surprise that scenery is his favorite aspect of the hobby. He takes time to research prototype



④ A large crowd has gathered at the Rochelle (Ill.) Railroad Park to check out Union Pacific 4-8-8-4 No. 4014. Though Eric has never visited the park in person, he's been able to model the signature scene using books and online resources.

locations using Google Maps and Earth. Eric uses a mix of old and new techniques. He digs his own dirt then dries it in an oven. After the dirt cools, he sifts it to different grades.

Eric uses the dirt as the base for most of the scenes on the layout. Once the dirt is in place, he adds up to four more layers, including ground foam, static grass, different shades of grass and shrubs, and

trees. Eric uses a mix of homemade trees and commercial offerings from Scenic Express and Woodland Scenics. He turns to an airbrush and acrylic stains to blend the scenery materials together.

There are a few water scenes on the layout. For one small river scene Eric used Mod Podge. When it came time to re-create a portion of the Mississippi River, Eric switched to Realistic Water and Water Effects, both from Woodland Scenics.

Building a diesel fleet

In the early 2000s, trains on the prototype Geneva Subdivision featured General Electric Dash 9-44CW and Electro-Motive Division SD70M diesels, the latter still new with little road grime. Locomotives from merger partners Chicago & North Western (1995) and Southern Pacific (1996) could also be found, some renumbered and others unchanged from their pre-merger appearance. Early Tier II SD70ACe units also began appearing on mainline trains during this time.

Most of the locomotives in Eric's fleet are from Athearn. He upgrades the models with SoundTraxx Tsunami sound decoders. Other sound-equipped units are from Atlas Model Railroad Co., Broadway Limited Imports, Kato, and ScaleTrains. Eric enjoys researching the full-size units and adding detail parts to his models so they more closely match their prototype counterparts.

In addition to detailing, Eric weathers his locomotives and rolling stock. "All weathering is done with an airbrush and PanPastel products, along with some artists' oils," Eric said. "I always try to find a prototype photo as a reference rather than just guessing how a car or locomotive has weathered over the years." Since Eric's layout is set in the modern era, he has added graffiti (hand-painted and waterslide decals) to most of the rolling stock and a few diesels.

Operations in development

One of Eric's future goals is to host operating sessions on the Geneva Subdivision. He said that the layout will support four operators and a dispatcher.

"Car routing and the flow of the railroad is still in the early stages," Eric reports. "The layout is currently in the process of being computer controlled. It will have a fully operational signal system that's operated by TrainController Gold. The dispatcher will watch and



5 There's more than just freight trains on the Geneva Subdivision. At Elburn, Ill., EMD F40PH No. 137 eases a Metra commuter train up to the platform. The station is scratchbuilt to match the prototype found in the western Chicago suburb.

control all trains across the Geneva Sub by radio communication."

Unit trains, specifically auto racks, coal trains, and priority Z trains (intermodal), make up the bulk of the traffic. "I would like to eventually get some local action between the unit trains," Eric said. "There's a Metra commuter train that will be computer controlled between Elburn and West Chicago. A rerouted Amtrak train will make an appearance from time to time, along with an occasional UP steam excursion."

Sharing the layout with others

In New Hampshire there are several beautiful layouts depicting railroads from different eras and parts of The Granite State. During the last weekend of November, *Tour-de-Chooch* offers clubs and individuals a chance to share their modeling efforts with the public. Eric has participated in the open-house event the past two years.

His HO scale UP Geneva Sub provides something different. Instead of mountains, tunnels, and trees, visitors are transported to the northern Illinois corn belt. Class I railroading; long unit trains; and flat, open spaces are the name of the game. Eric reports that he enjoys sharing his layout with others, exchanging ideas, and seeing people smile when they take control of a train and run it around the layout.

Since all of Eric's modeling knowledge on the UP Geneva Subdivision has been obtained through books, the internet, and social media connections from

the area, Eric hopes to someday visit Rochelle to enhance his expertise.

"When I first got into the hobby, research resources were scarce, and most information was found in books or by living next to a railroad," Eric said. "Now we have the world at our fingertips with websites dedicated to all sorts of prototype information, along with thousands of videos to help one learn all aspects of this wonderful hobby."

"No matter what your skill level is, enjoy making what looks good and works for you and never stop pushing yourself to get better," Eric continued. "We are all students here. After all, it's your railroad and your journey, so have fun." **MR**



Meet Eric Lalonde

Eric Lalonde lives in southern New Hampshire and has worked at a local airport for more than 25 years. He thanks Denise Edwards for helping with the layout. Outside of work, Eric enjoys hiking, fishing, and railfanning.

SCRATCHBUILDING A TURNTABLE

Model an American Bridge Co. 95-foot half-through plate girder turntable in HO scale

By Dennis Eggert

Model photos by the author



When railroads were constructed in the United States in the mid-19th century, steam locomotives were the primary type of motive power used. Most steam locomotives weren't designed to operate in reverse at high speeds, and often needed to be turned around at terminals. Railroads built wye tracks or turntables to turn the locomotives.

Early turntables of the 1800s were constructed using wooden beams and were just long enough to accommodate the locomotives of their time. As

locomotives became larger, the early turntables were replaced with longer steel bridges. During the steam era, there were hundreds of turntables in use on North American railroads. When railroads were dieselized in the 1950s, turntables were still in use at major engine terminals and some still remain today.

My prototype-based HO scale layout is based on the Chicago & North Western's Winona Subdivision in the 1976 era. The model railroad depicts the line between the division points of Winona and Waseca, Minn., and was the eastern

subdivision of the C&NW's famous "Alco Line" where Alco diesels were segregated in captive service during the 1970s.

Waseca is the western terminus of the layout and it includes the engine facility that was there. In its prime, the facility featured a 20-stall roundhouse and a modern steel 95-foot half-through-plate girder turntable built by the American Bridge Co. in the mid-1920s. The turntable was a standard American Bridge design; several were located around the C&NW system and on other railroads. The roundhouse was destroyed by a fire



Dennis Eggert needed a turntable for his prototype-based HO scale Chicago & North Western model railroad, so he scratchbuilt one. Follow along to learn his techniques.



The turntable at Waseca, Minn., still has its earlier tractor cab in May 1979. This shows the turntable as Dennis modeled it. Prototype photos by Lloyd Keyser

in 1953, but the turntable still remained in service in 1976. To make my engine facility complete, I needed a model of the turntable.

Building the pit and motor drive

My friend Lloyd Keyser is building the C&NW Belle Plaine, Iowa, turntable, which was identical to my Waseca turntable. Lloyd measured and photographed the Waseca turntable in 1979 and 1984, and allowed me to use his field notes and images. Thanks to Lloyd, I had everything I needed to draw fairly accurate plans for the turntable. I'm always looking for a good modeling challenge, so I decided to scratchbuild it using the materials I had on hand.

I started by building the pit using $\frac{1}{2}$ "-thick plywood, sawing the circular shapes using a jig saw with a fine-tooth blade. Once glued together, the pit walls were sanded smooth using a pie-shaped sanding block made from the scrap plywood from the cutouts.

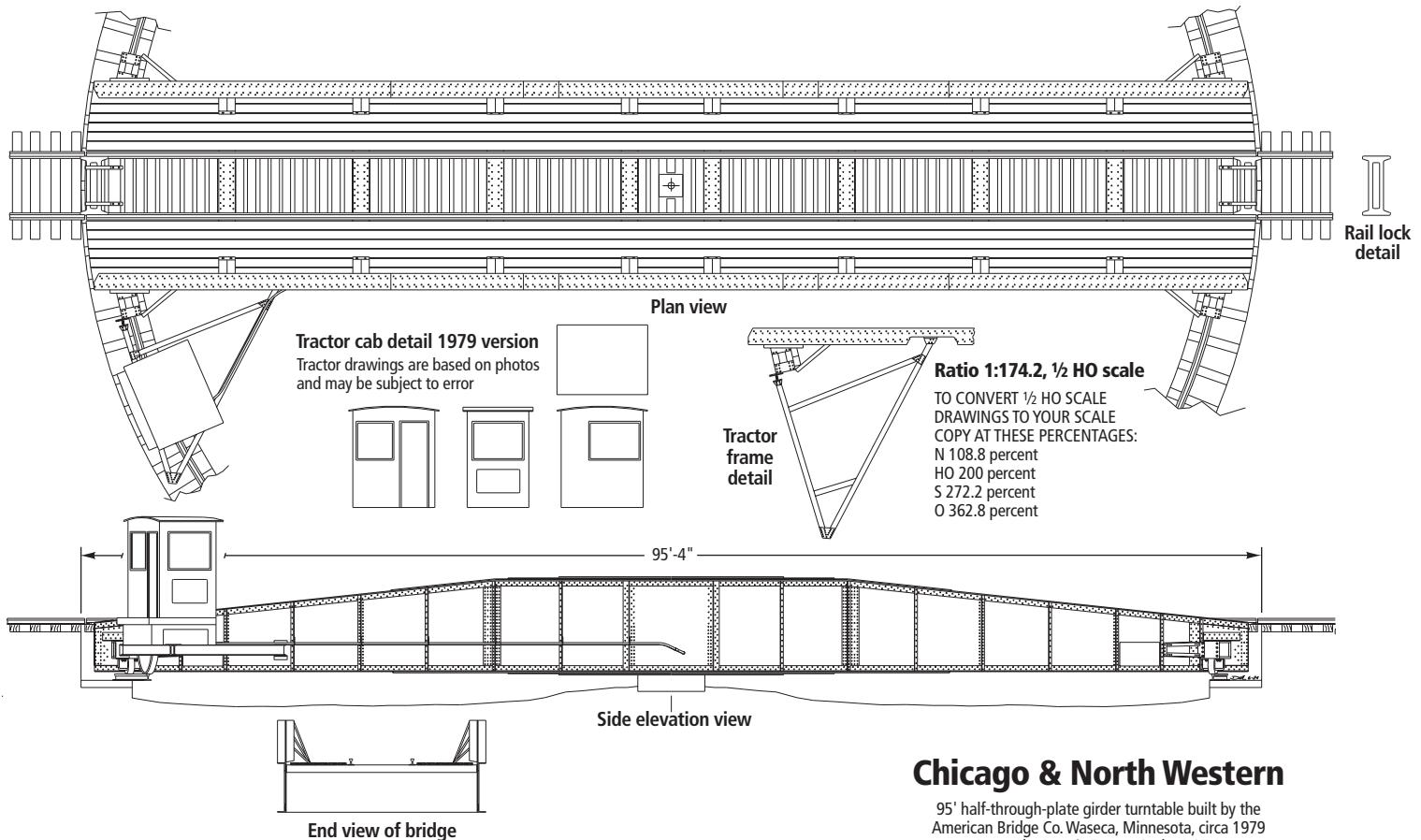
After the woodwork was finished on the base and pit walls, my next challenge was finding a suitable way to motorize the turntable. Several years ago, I was given an HVAC damper motor and gearbox that I added to my stash, thinking it would someday make a good turntable drive. The gearbox had multiple gear reductions, a sturdy output shaft, and was powered with a 24-volt AC motor.



Taken in 1984, this photo shows the replacement cab for the tractor. Note the stained and weathered walkway boards and the rail lock spanning the track gauge at the end of the bridge.



Dennis used this photo to create the notice at the end of the turntable bridge. The side of the later tractor cab is also visible in this image.



Chicago & North Western

95' half-through-plate girder turntable built by the American Bridge Co. Waseca, Minnesota, circa 1979

Drawn by Dennis Eggert, Scale: 1:87.1
Based on field photos and measurements recorded by Lloyd Keyser in 1979 and 1984

Drawn for *Model Railroader* magazine by
DENNIS EGGERT

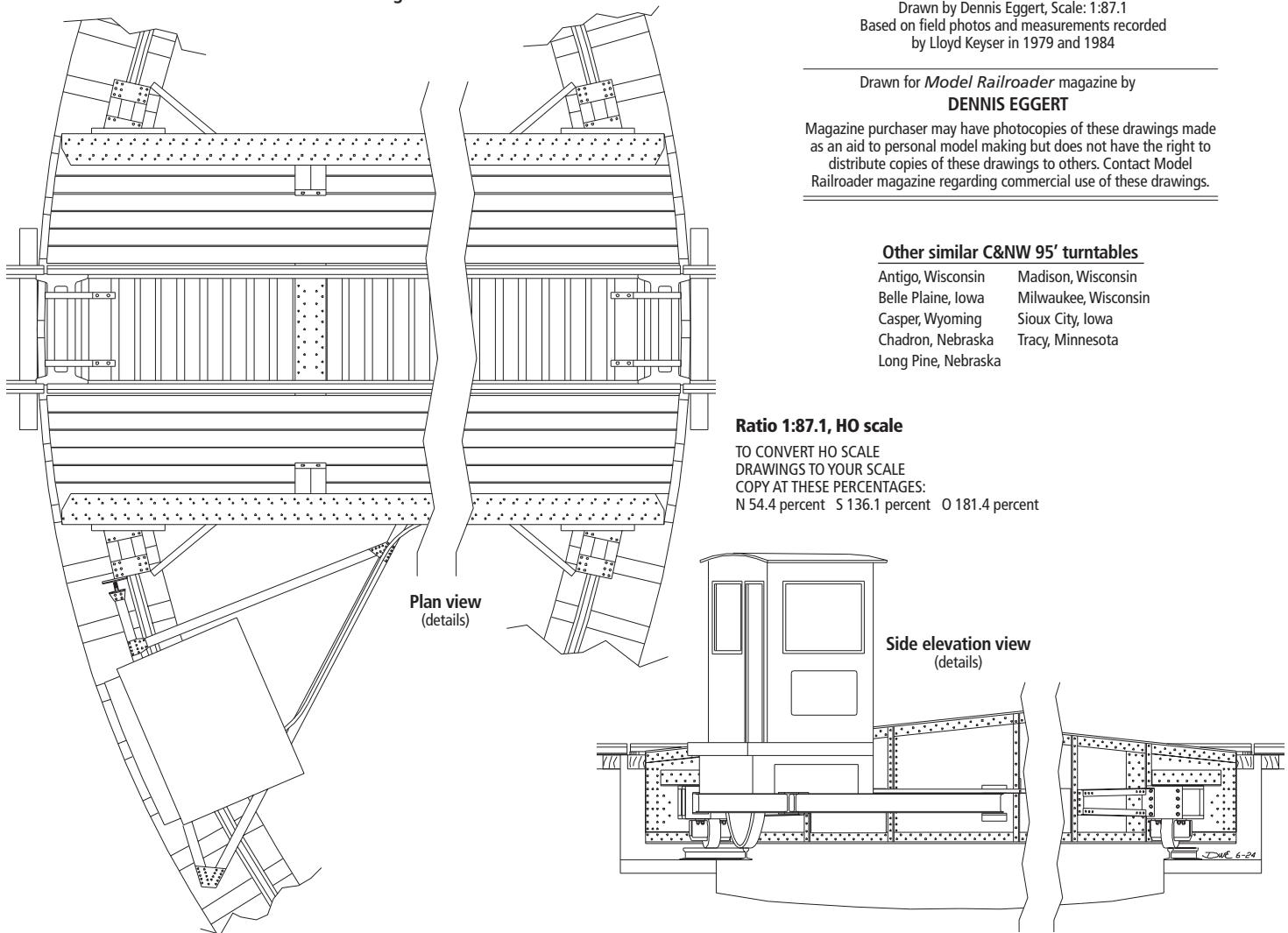
Magazine purchaser may have photocopies of these drawings made as an aid to personal model making but does not have the right to distribute copies of these drawings to others. Contact *Model Railroader* magazine regarding commercial use of these drawings.

Other similar C&NW 95' turntables

Antigo, Wisconsin	Madison, Wisconsin
Belle Plaine, Iowa	Milwaukee, Wisconsin
Casper, Wyoming	Sioux City, Iowa
Chadron, Nebraska	Tracy, Minnesota
Long Pine, Nebraska	

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





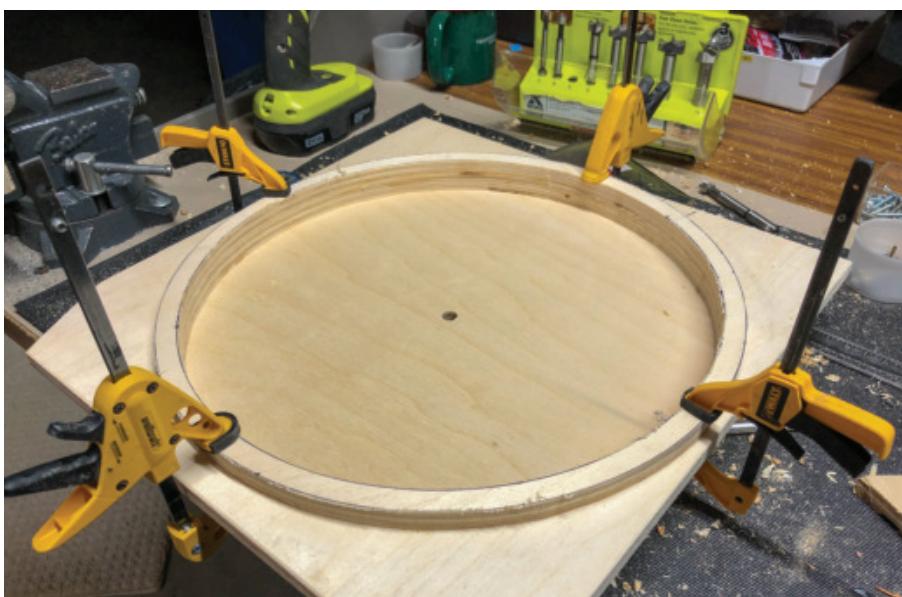
The detail of the pit wall shows the impressions of the wood forms used to pour the concrete.



The rail lock mechanism helped hold the turntable in alignment with the radial tracks around the pit.



Dennis cut the round shapes for the pit wall from $1/2"$ plywood using a jig saw. The messy sawing was done outdoors. A leaf blower made the clean up easy.



Next, Dennis used small bar clamps to hold the rough assembly of the pit wall together until the wood glue dried.

I repowered it with a 12-volt DC can motor from an Atlas locomotive.

Utilizing the Atlas motor was a challenge as the pinion gear from the AC motor had to be removed and mounted to the shaft of the Atlas motor. When running the Atlas motor on 12 volts, I found the rotation speed to be too fast. I tried running it on two 1.5 volt AA batteries connected in series on the work-bench, which seemed about right.

To avoid building a permanent speed control, I chose to use the two AA batteries as the power supply. For as often as the turntable will be used, I'm thinking a set of batteries will last one or two years. A fascia-mounted, three-position center-off momentary toggle switch controls the turntable's direction.

Once the gearbox was mounted to the turntable base, I used it to rotate a wall-forming tool that allowed me to add a thin layer of joint compound to the pit walls. When it was solidified, the joint compound simulated the concrete pit construction better than the plywood, and the process fine-tuned the concentricity of the pit walls with the center of the pit. The use of a wall-forming tool was inspired by an article in the July 1980 issue of *Model Railroader*. After the pit was painted a concrete color, the circle rail was built using wood ties and code 70 rail.

Building the bridge

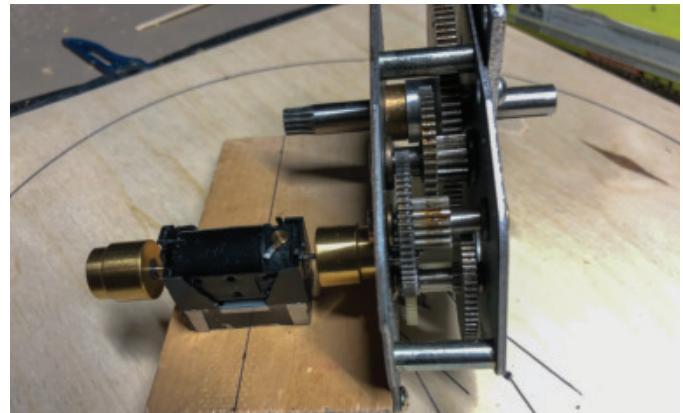
The next step was building the turntable bridge. From my past experience building a turntable, the bridge has to be very flat, level, and straight. I built the turntable with a solid $1/2"$ plywood core. The downside to building with a solid core is not seeing daylight between the ties on the bridge. The turntable is on the upper deck of the layout, a few inches below eye level for an average height person. With that viewing angle I didn't feel it was worth the effort to build an open bridge structure.

To support the ends of the turntable, I mounted modified freight car trucks to the underside of the wood core. The trucks are in pockets chiseled out of the ends of the plywood core. They aren't visible when the bridge is set into the pit. The inner wheels were removed from the axles and the flanges were removed from the outer wheels.

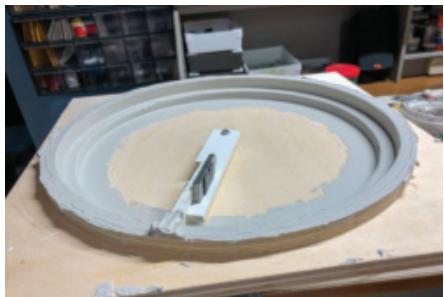
The truck frames were mounted to the core so they can be shimmed up or down to adjust the height of each end of the bridge independently. The use of freight car trucks on a turntable was



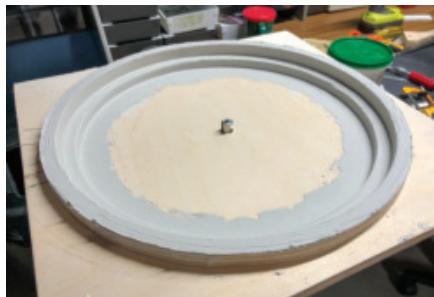
Dennis set the rough assembly of the base and pit temporarily on the layout. The areas outside the pit wall will be filled in with $\frac{1}{2}$ " foam board.



The HVAC damper gearbox, right, was repowered with an Atlas can motor and its two flywheels salvaged from an HO scale diesel locomotive.



Once the gearbox was mounted to the base, Dennis used it to turn the wall-forming tool, inspired by an article in the July 1980 issue of *Model Railroader*. A layer of joint compound was added over the plywood to make it appear more like concrete.



After the joint compound had cured, Dennis carefully smoothed it out with a sanding block. He addressed the rough edges of the compound in the pit floor in subsequent steps. Also visible in this image is the gearbox shaft, seen in the center of the pit.



The $\frac{1}{2}$ " foam board has been added to the outside of the pit and gaps have been filled with lightweight spackling. In addition, Dennis painted the pit wall and shaped the floor of the pit with lightweight spackling. The bridge core is being test fitted here.



Dennis attached modified freight car trucks to the bottom of the bridge base. The inner wheels have been removed from the axles and the flanges have been removed from the outer wheels, which will ride on the pit rail.

inspired by an article in the September 1986 issue of MR.

All of the weight of the bridge assembly rests on the circle rail with the center shaft of the gearbox only acting as a center bearing. The bridge is held in place by gravity. The bridge has a center pin that



This donut shaped printed-circuit board provides a contact surface to transmit the track power to the bridge. The circuit board was made by using blank, copper-clad fiberglass PC board material. The break between the circuits was made using a scribe and a circle template. The gearbox shaft can be seen in the center of the PC board. Note the hole in the center of the shaft and the keyway. A brass channel, shown on the next page, slides into the keyway.

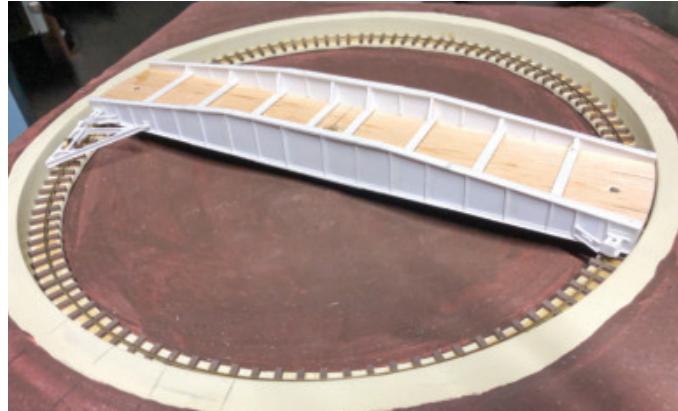
inserts into a hole in the center of the gearbox shaft and a key that slides into a keyway on the side of the gearbox shaft, as shown on the next page.

Track power is connected to the bridge rails using a donut shaped printed-circuit (PC) board in the center

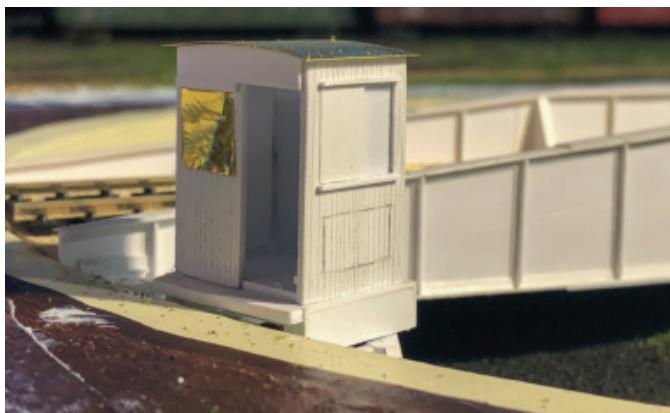
of the pit. Two contacts on the bottom of the bridge continuously contact the circuit board. The contacts were salvaged from an industrial limit switch. A Digitrax AR-1 auto reversing circuit reverses the track power on the bridge so it always matches the approach track.



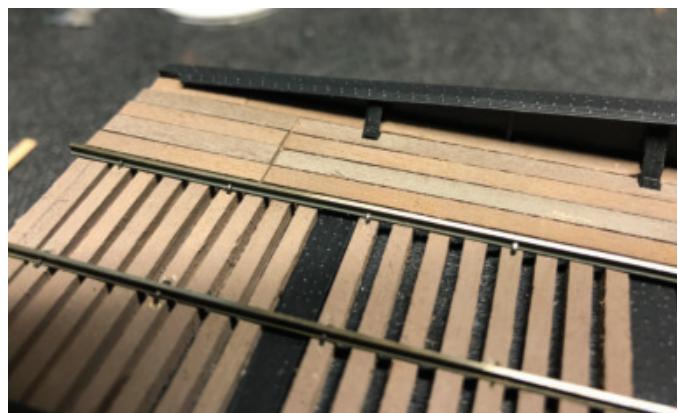
This plate on the bottom of the plywood bridge core secures the contacts for the donut shaped PC board in the pit. The center pin and brass channel are also visible.



Once the wood bridge core was test fitted to the pit, Dennis added the girders and details, which he fashioned from styrene sheet and strip.



Dennis built the control cab from styrene except for the roof. Brass was used as the protruding corners would otherwise be vulnerable to breakage. Brass also covers a window opening.



The bridge ties are HO 8 x 8 stripwood and the walkway planks are 2 x 12s. Dennis secured the code 55 rail to the bridge ties with Micro Engineering Microspikes.



Dennis meticulously added more than 5,000 rivet head decals from Archer Fine Transfers to the bridge.



Dennis painted stripes on the top of the girders to aid in rivet alignment. He used thin tape to mask the stripes.

Bridge detailing

The bridge side girders and details were made from sheet styrene. I started construction by cutting .040" thick styrene into the shape of the sides. The styrene was then glued to the sides of the plywood base using a minimum amount of Barge cement.

Then various angles and details were added to the bridge. Use the drawings on

page 43 to determine the proper size materials for your scale. The rollers on the four corners of the bridge were built from styrene and are not functional. The tractor frame and cab are also styrene. A piece of thin brass sheet was used for the cab roof to make it more durable.

A piece of brass wire was used to make the electrical conduit that runs from the center of the bridge to the tractor motor. It's mounted with Plano lift rings.

HO scale 8 x 8 stripwood was used for ties and 2 x 12 stripwood was used for the walkway decking planks. The ties and planks were airbrushed prior to installation. I randomly airbrushed the planks with lighter and darker colors.

Riveting detail

To finish the bridge, I applied more than 5,000 rivet decals from Archer Fine



The bridge is test fit into the pit after all of the rivet heads were applied to the bridge. The track had already been weathered at this point. Dennis also added static grass and epoxy to the pit.

Transfers (archertransfers.com). The rivet heads are dots of resin on decal film, and work best when applied to a glossy surface. Before applying the rivet heads, the entire bridge was airbrushed with glossy gray paint.

Keeping the long strips of rivets straight on the tops of the girders seemed like it was going to be a challenge, but I came up with a solution. I cut thin pieces of masking tape and placed them on the tops of the girders. Then I applied a light coat of glossy black with an airbrush. This left two gray stripes that I used to align the decal rivet strips, some as long as 3".

Painting and weathering

After the rivets were applied, I airbrushed the bridge with gloss black and the control cab with boxcar red. All paint used was acrylic. Weathering was done using an airbrush, chalks, and artist pencils.

The Whiting nameplate on the cab and the four safety notice placards on the bridge are scaled prototype photos. I used a laser printer to print the images on plain paper. After cutting them out, I blackened the edges with a fine permanent marker.



To simulate oil spillage into the standing water in the pit, Dennis stirred a small amount of blue and violet acrylic paint into the epoxy before it had cured.

Finishing touches

To complete the turntable scene, I weathered the surrounding track using an airbrush. Fine sawdust simulates the spilled sand piles on the engine service tracks. I brush-painted Pledge with Future Shine over airbrushed Oily Black paint to make glossy oil spills. Ground foam and static grass was applied to the pit and surrounding area to replicate the weed infested, poorly maintained look of the prototype.

Turntable pits are typically equipped with a storm drain system. If not

properly maintained, they will plug, allowing water to collect in the pit. I poured Enviro-Tex, a two-part epoxy resin, into the low area of the pit to simulate standing water. While the epoxy was curing, I stirred drops of blue and violet acrylic paint into the epoxy to capture the look of oil in the water. **MR**

Dennis Eggert lives in the Appleton, Wis., area with his wife, Marie. His HO scale model railroad is based on an area he railfanned frequently during the mid-1970s. The layout was featured in the 2023 issue of Model Railroad Planning.



More space = more fun

The B&O Ridgley Division extension improves operation

By Dale Ridgeway • Photos by the author

Surely, many who have completed a model train layout stood back to view their creation. Admiring it, followed by thoughts of "If I only had a little more room I could have ..." The rare opportunity for a little more room came my way when our youngest son moved and vacated two rooms in our house.

An office was in a room adjacent to the layout room in the basement. I took the opportunity to relocate the office upstairs, opening up a nice sized area for an expansion of the B&O Ridgley Division. [Dale's Ridgley Division was featured in the March 2017 issue of *Model Railroader*. — Ed.]

Plans for the new space

There were three things I wanted to accomplish by adding on to the previous layout. First, get rid of the steep grade heading down to staging under Clarksville Yard. Second, add more operation to the layout by creating

1 Baltimore & Ohio GP30 No. 6972 spots two fuel tank cars at Titchman Fuel on Dale Ridgeway's HO scale B&O Ridgely Division. Titchman Fuel is a combination of Walthers kits and scratchbuilt structures.



another town with a few industries. Third, add an interchange with the Western Maryland RR. An additional bonus was an opportunity to create hidden staging under the layout extension. So with a track plan in mind and nothing on paper, I was eager to begin.

I was in the process of completing the National Model Railroad Association (NMRA) Achievement Program requirements for a Master Model Railroader certificate, so I waited to begin the project. The day I finished the last achievement, I was home cutting holes in the wall to reach the track on the other side!



2 Electro-Motive Division GP35 No. 3519 is just exiting Hawkbill Mountain tunnel and passing Deer Park tower as the tower operator watches the roll-by. The tower is a laser kit and the locomotive is from Atlas.

Cutting holes in the wall

The first thing on the list was to locate the high and low points of the track leaving Lake Junction on the original layout heading to lower staging. I measured the rail heights off the floor of both tracks and marked them on the other side of the wall. Luckily with a little grade difference, the lower and upper measurements came through into a wall display case that had been built over my desk.

The wall between the layout and the office is 14" thick, so there was a lot of wiggle room. I cut the existing track and roadbed with an oscillating tool, then after realigning the track, the rails were trimmed with a motor tool. I had to realign the lower staging line to get it through the walls to miss some wall studs, but that put it in a better position for the helix in the addition. Short sections of track were added to get the new leads through the wall and to start planning the next move.

Building the benchwork was next. I have always liked the open-grid benchwork design. It can be built in sections in the garage and easily transported to the lower level of my home. I used primed 1 x 4s from the home improvement store for framing because they were a lower price than the No. 1 pine.

I used coarse thread drywall screws to secure it all together. As with the original layout, the boards were spaced

on 12" centers. Since this is not a linear wall design, I had to put legs under most of the addition for support. I used 1 x 4s for risers to support the roadbed, which was cut from 1/2" birch plywood, the same material used for the fascia.

The new section's track height is at 54 inches, making it the highest elevation on the operating part of the layout. The high line on the original layout is higher yet, but there are no industries on it, and it was mainly built for continuous running.

The place the line left Lake Junction and came through the wall is where I located the interchange with the Western Maryland. I named this interchange Deer Park because my good friend Steve Bittinger, who has a large-scale Western Maryland layout, interchanges rail traffic with the B&O at Deer Park Junction on his layout.

My interchange is just a stub track coming out of a tunnel and running off the edge of the layout. After Deer Park the rails head through the outskirts of the town of Grisdale, which has two industries to switch, then vanishes into a tunnel heading to the helix.

Building a helix is not one of the endeavors in model railroading that excites me. I did it once before and knew I could do it again. I stuck with the 24" radius I used on the other helix under the D. Lee Coal Co. on the original part



3 GP30 No. 6972 spots a car at Grisdale Wholesale Locomotive Parts while traffic waits to cross the tracks. The pickup is from Woodland Scenics and the Jeep is by Life-Like (Proto 2000).

of the layout. This would give plenty of room to create some hidden staging under the new addition.

I built the helix employing what I call the Slinky method. I started by cutting out several half 26" radius circle pieces and several 3" gusset pieces. They are assembled on the floor like I was building a Slinky toy. I assembled more than I needed.

Then comes the mathematical part of the equation. I wanted the railhead to railhead distance to be $3\frac{1}{2}$ ". The curve radius is 24". Calculate the circumference of the circle ($2\pi r$) to figure out how long the slope will be, then divide that into the change in elevation (3 $\frac{1}{2}$ " in this case) to figure the grade, which is 2.32 percent on my helix. Next, I attached blocks to the outside of the gussets with screws to set the spacing. Then I set the helix on the floor where it will make its connections to the tracks and mark the helix for the cuts for track connections.

After that step, I cut legs for it and moved it close to where it will be placed.



4 Baldwin No. 6203, a Bowser model, pulls an empty hopper from Titchman Fuel as workers finish loading the last truck. The coal is crushed from the real thing.

I got some help to set it up as it's large and awkward at this point. Make the final adjustments as needed. At the bottom of the helix is a wye in the track-work to have a hidden staging line. It's truly hidden!

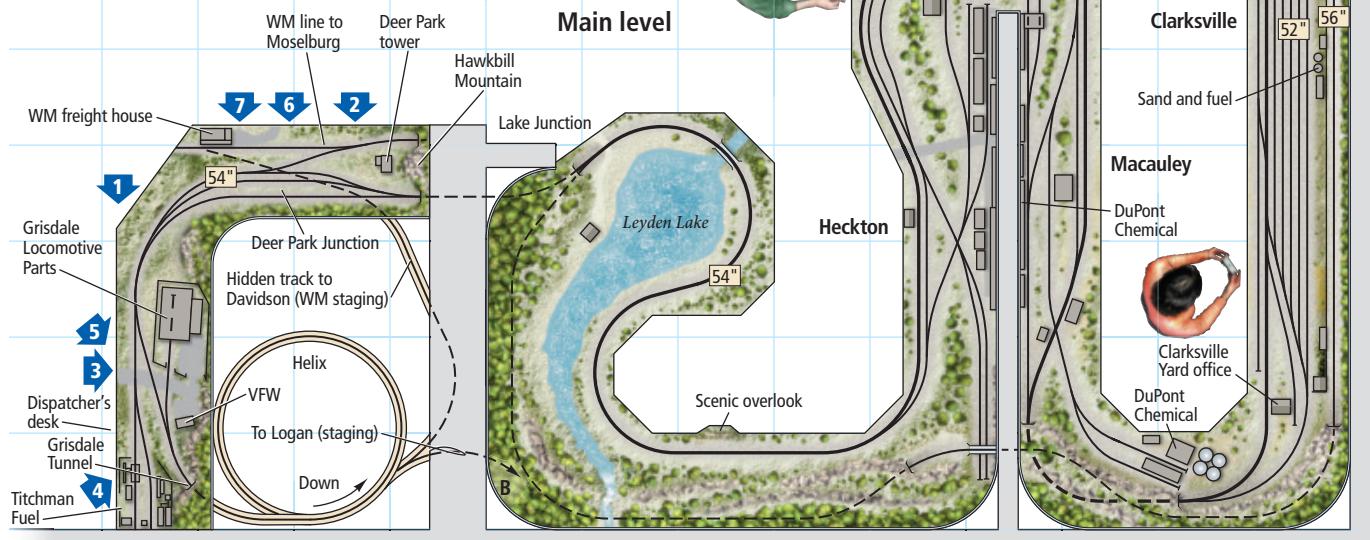
The wye leads to a branch line of the Western Maryland that has trackage rights over the B&O to get to its home rails at Deer Park Junction. To get to the hidden track, see "Real Hidden Staging" on page 53.

Baltimore & Ohio Ridgley Division

HO scale (1:87.1)
Layout size: 18 x 20 feet
Scale of plan: $1/4"$ = $1'-0"$, 24" grid
Numbered arrows indicate photo locations
Illustration by Rick Johnson and Kellie Jaeger

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Laying track

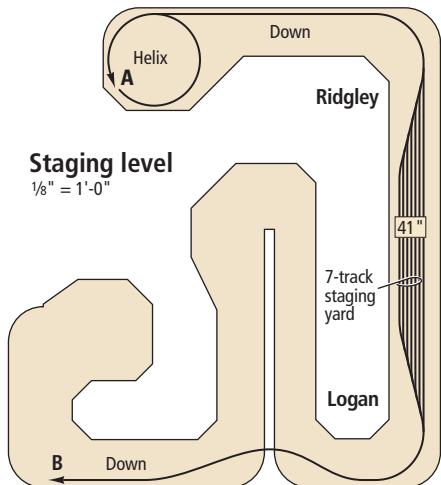
The roadbed is the traditional cork glued to the $1/2"$ birch subroadbed with carpenter's glue. The track is Atlas code 83, and the turnouts are a combination of Atlas, Walthers, and Peco. I do all the track wiring from the bottom of the rails. I don't really care for the look of wires attached to the sides of the rails on the visible part of the layout.

Staging and the helix, however, have the wires soldered to the side of the rails. All of the track has soldered connections because it's in a temperature-controlled layout room. On the existing layout, servo cables were used to line the points on the turnouts. On the addition, I used Caboose Industries N scale ground throws. I used a cable to operate a Blue Point switch machine, mainly because the turnout points ended up at the B&O tunnel portal.

After all the track work was complete, test runs were conducted using several different trains with several different cars to check the function of the track work. A few tweaks were made to ensure smooth running ability.

The layout at a glance

Name: B&O Ridgley Division
Scale: HO (1:87.1)
Size: extension: 8 x 8 feet, entire layout: 20 x 28 feet
Prototype: Baltimore & Ohio, Western Maryland
Locale: central West Virginia
Era: 1967
Style: around the walls
Mainline run: NA
Minimum radius: 24"
Minimum turnout: No. 6
Maximum grade: none on main line; helix, 2.3%
Benchwork: open grid
Height: 54"
Roadbed: cork
Track: code 83 flextrack
Scenery: extruded-foam insulation board
Backdrop: Komatex styrene
Control: NCE DCC





5 Baltimore & Ohio No. 4813 is exiting Grisdale Tunnel and passing the local VFW. The locomotive is from Atlas, and the VFW is scratchbuilt.

Special features

Once all the track work was completed, fascia cut from $\frac{1}{2}$ " birch plywood was added. I built a new dispatcher's desk into the fascia. The backdrop on the existing layout is painted on the drywall that runs the distance around the layout. Since the addition isn't along a linear wall, I cut the backdrop from Komatex styrene.

This is a product used to ship Koma board to lumber yards. I was able to acquire several 4 x 8 sheets of this material before it was discontinued. I cut it 26" wide. Then I glued two pieces together with a 12" splice piece on the back. I used 1 x 4s as supports, and screwed the assembly to the back of the layout. Green top drywall mud hid the seams and screw holes [It's called "green top" drywall mud because the lid is green, rather than blue. It's stronger than blue top. — Ed.]



6 Western Maryland EMD BL2 No. 82 is working the Deer Park interchange to take cars back to Davidson, the hidden track under Deer Park. The BL2 is a Life-Like Proto 2000 model. Dale added a sound decoder to the four-axle diesel.

I painted the backdrop using three different shades of blue, blending them together as I worked toward the top of the backdrop. I attempted to paint some clouds but had little success matching the artistry of my talented artist friend, Lois, who painted the original backdrop. She has promised a visit to come paint the clouds.

Building landforms

I used extruded-foam insulation board for the scenery land forms, as I had done on the original layout. I glued several pieces in place, then cut them to the desired shape with a hot wire cutter. After achieving the shapes and contours of the land, I covered it all with plaster cloth. The plaster cloth is the material used for casting in an orthopedic clinic. It seems to set up quicker and harder.

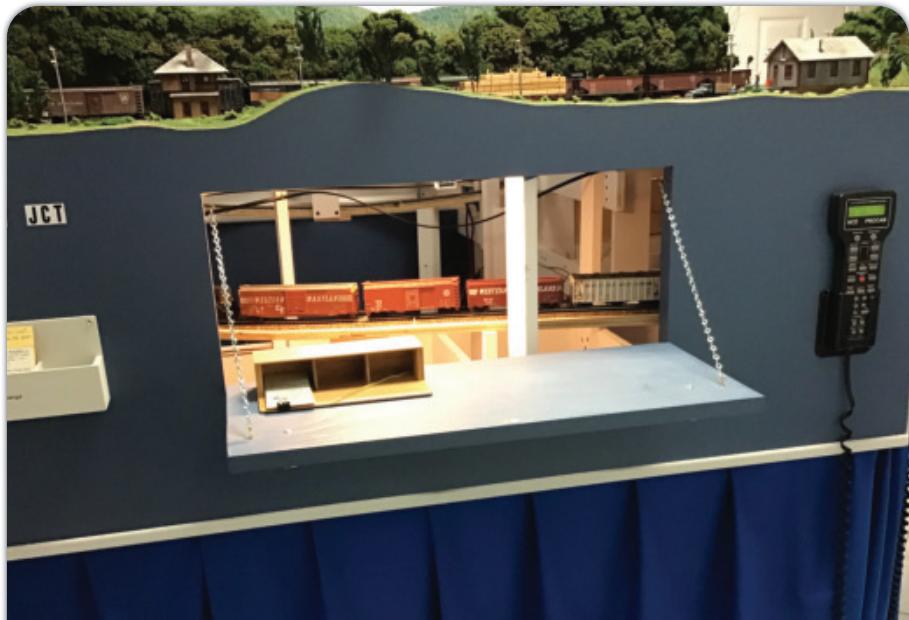
After that set up, I brushed on a mixture of plaster, green top drywall mud, and water stirred to a soupy consistency. The rocks are a mixture of castings and hand-carved. I applied the castings to the land forms with just the drywall mud, then filled in between with more drywall mud.

For carving rock faces, I used 45 minute Easy Sand drywall mud mixture. After it set for about 15 to 20 minutes, I began carving rock formations. All rock work was airbrushed with appropriate colors, then drybrushed for highlighting. When all the paint dried, I sprayed on a mixture of India ink with alcohol to add shadows to the cracks.

I used a clay brown color paint on the ground that didn't have any rocks, then covered it with Woodland Scenics ground cover. I make trees from sedum flowers. There is an abundance of sedum in my area and it makes great looking forest canopies inexpensively. I don't plant too many close to the front of the layout as they can be easily damaged if accidentally bumped.

Unique structures

The structures on the layout are scratchbuilt or kitbashed. However a laser kit was used for the tower at Deer Park. When searching hobby shops for a particular structure kit, I usually just look at the picture on the box to see if there are any interesting parts that will work for what I want to build. For example, I bought the Walthers New River Coal Co. kit just for the hopper and scratchbuilt the rest of the D. Lee Coal Co. on the old layout. All of the



7 This drop-down door allows access to staging under Deer Park Junction, representing Davidson, W.Va., on the Western Maryland. The door also serves as a desk for operators to arrange paperwork.

Real hidden staging

Chances are that when there is a layout set up for operations, there is a staging yard. My layout has a good sized staging yard built under Clarksville Yard on the upper level. The staging yard of Ridgley-Logan is visible from the front of the layout with lighting to see all the trains on the tracks.

I added a Western Maryland branch line to staging under the new addition. I wanted something simple for staging, just representing a single track coming out of a fictional town, which I called Davidson.

The staging for this branch line is behind the fascia with a drop down door that becomes a desk top for operators working Deer Park, Grisdale, or the branch line out of Davidson. The Western Maryland has trackage rights over the B&O to reach its home rails in Deer Park, where it drops or picks up cars, then heads back to Davidson. After the local is run and returned, the door is shut. If another local needs the desk top, it's opened again. — Dale Ridgeway

structures get weathered with chalks that are sealed with Testor's Dullcote.

New rolling stock

Rolling stock and locomotives haven't changed since I'm still modeling 1967, but a few Electro-Motive Division GP35s have been added into the mix. Since there's now an interchange with the Western Maryland, I've added a Proto 2000 EMD BL2 on the branch line. A win-win!

The layout extension was a solo build because of Covid. I have no regrets, but did miss the fellowship from Ed, who helped on the scenery on the original layout. I'm always thinking of ideas for future expansion, but real estate in the basement is getting sparse. Maybe digging out the crawl space or adding another basement? Time will tell! **MR**



Meet Dale Ridgeway

Dale lives in Bishopville, Md., and owns a construction company. He's a member of the National Model Railroad Association, and a Master Model Railroader. He enjoys railfanning, speeder trips, and camping in his camper with his wife, Beth.

Sunday morning local



Once part of the Central of Georgia main line between Chattanooga, Tenn., and Savannah, Ga., the Norfolk Southern Cedartown District is now a stub-ended branch line running 90 miles between Silver Creek and Senoia, Ga. In the modern era, Carrollton is as close as anywhere gets to a hotspot on this line. Home to a small yard, a handful of industries, and a pair of locals (as well as being the turn point for a third), there is a strong likelihood of finding classic EMDs hard at work somewhere in town. Such was the case on Sunday, June 12, 2016.

Local G87 is seen working the yard in Carrollton shortly

after sunrise. They'll pick up the center-beam bulkhead flatcar to their left before heading south to Newnan and Senoia to work the Newnan lumber transload and Winpak (a plastic film manufacturer). They also have an empty gondola in the consist — as there are no industries south of Carrollton that take gondolas, I suspect it was either being moved to the yard at Yates (north of Newnan) for storage, or being used somewhere along the line for loading old crossties.

On this day, G87 featured a pair of SD40-2s leading — typical power at this time. Both SD40-2s had been recently rebuilt by NS, which

Southbound Norfolk Southern local G87 is seen preparing to depart Carrollton, Ga., on a warm June morning, right. Baxter Barnes routinely re-creates the same scene and action on his HO scale railroad, above. He chose an Overland Models EMD GP59 in lieu of the SD40-2s on the prototype. Baxter used a 2-D CAD program to draw the depot. He laser-cut the parts from basswood. Prototype and model photos by Baxter Barnes

included replacing the original cab with an "admiral cab." Other power typical on locals out of Carrollton include SD40Es and SD60Es, which are also unique-to-NS rebuilds (rebuilt from SD50s and SD60s, respectively).

I wanted to replicate this scene as closely as possible on my HO scale model railroad, which focuses on the Cedartown District. I don't own any HO scale SD40-2s, so I chose other standard cab power to

pinch hit. The lead unit is an Overland Models EMD GP59 that I painted and weathered, then added LokSound and LED lighting. The trailing unit is a GE Dash 8-32B that I kitbashed from an Atlas Dash 8-40B, P32-8BWH, and U23B. ShellScale decals were used for both units.

I was able to model the freight cars in the scene a little more closely. The gondola is an Athearn Thrall high side car, the center-beams are by



Walhers, and the plastic pellet covered hopper is a ScaleTrains Pullman-Standard 5820.

The focal point of the scene at Carrollton is the depot and freight house. Originally built in the 1880s, it was slated for demolition before the city of Carrollton stepped in and bought the structure. The city has since restored the depot from its state of disrepair, using it as an upscale event venue. No commercial model comes close to capturing the look of the structure, so I scratchbuilt it. I drew the walls of the structure in a 2D CAD program (including painstakingly representing the varying brick patterns). Almost every part of the structure — doors, windows, decks — was laser-cut out of basswood using my laser cutter.

The other structures visible in the scene are kitbashed from Walhers and Pikestuff kits. Though not perfect

Send us your scenes

Have you modeled a scene based on a prototype photo? Send both the prototype and model photos, along with a brief description of the scene and the modeling techniques shown, to: *Prototype to Model, Model Railroader* magazine, 18650 W. Corporate Dr., Suite 103, Brookfield, WI 53045; or email to Consulting Editor Tony Koester at consulting.editor@firecrown.com.

matches to the full-size buildings, I think they do a reasonable job of capturing the feel of the prototype. These structures gave me the chance to try out some interesting weathering techniques, such as using salt and hair spray as a paint mask to represent peeling paint on corrugated metal walls.

The trees are SuperTree armatures that were straightened with a soldering iron and flocked with SuperLeaf material. Other foliage includes static grass by Woodland Scenics and Silflor, brush from

SuperTree scraps, and bushes and tufts by Martin Welberg Scenic Studios.

I'm from the Carrollton area, so re-creating the scenes I remember from when I was growing up has been one of the major goals in building my layout based on the Cedartown District. I feel I've captured that well in this scene and look forward to seeing the remaining scenes on my layout come together.

You can read more about my railroad in Tony Koester's new book *Guide to Modeling Branch Lines*. **MR**





BENCHWORK AND BACKDROPS FOR EAST TROY

PART 2: Building benchwork in easy-to-construct subassemblies makes for a solid yet portable layout

By **David Popp** // photos by Cody Grivno and MR staff



Above: This photo with the fascia removed provides a cutaway view of the layout's benchwork, showing its L-girders, legs, bracing, joists, and plywood subroadbed.

Right: As shown here, David and Bryson completed the first frame section for the layout, building it with 9'-6" L-girders and assorted spacers. The frame for each section is self-supporting.



With our increasingly mobile society, building railroads that can move with you has become more important than ever for the modeler. Don't get me wrong, permanent layouts still have their place, particularly when building very large railroads that need to attach to walls for support. However, for the average hobbyist, the best return on investment is a model railroad that can travel with you, particularly in the event of a job relocation or downsizing after retirement.

We learned that lesson again all too well when moving offices recently forced us to dismantle our former Milwaukee, Racine & Troy HO scale club layout. Parts of the MR&T had been bolted to the floor and walls, and the entire layout was electrically hard-wired to the building — mobility was far from the minds of the original designer's, which is surprising really, as they had just taken down their first club layout in a similar move before building the second one.

Unlike the previous two layouts, our HO scale East Troy Industrial Park does not have its own dedicated room, so by necessity, it needed to be portable. As such, we decided to use a sectional benchwork design for the new railroad. The project incorporates some tried-and-true

construction techniques, allowing for the layout to be moved around as needed.

For the new layout, we used the strength of L-girders to span long distances while requiring a minimal number of legs to support them. We assembled those L-girders into a series of three, self-supporting box frames, allowing us to disassemble the layout into manageable pieces and remove the legs for transport. This not only makes the layout mobile, but we can also remove single sections at a time, which is an important consideration when filming the construction process for Trains.com Video.

No one piece of the layout is longer than 10 feet, and at 4-feet wide, the sections can be easily carried through the double doors that connect our workshop, storage area, and



There are 6 pairs of legs supporting the layout's three sections. Each has a set of 1 x 2 angle braces, providing rigid support and preventing the layout from moving laterally.

entrance to the building without having to tip the layout on its side. This allows us to move the layout out of the workshop, freeing up that valuable floor space for other modeling projects.

The legs, sections, and backdrop are designed to be built as easy subassemblies requiring just a basic knowledge of hand and power tools. Former associate editor Bryson Sleppy helped me during construction, and although it was the first large layout he'd built, he picked up the necessary skills quickly.

Because this layout fits our specific space, we have not provided a detailed list of materials. However, all of the benchwork components used here can be found at your local home center or lumberyard. You can use the plans on the following pages as a guide to draw your own and figure materials from them.

Frames and legs

Assembly of all three L-shaped sections is similar, although each has one or two unique features based upon its position in the model railroad. Unlike a modular layout that allows the modeler to place the parts back together in any order, East Troy is a true sectional railroad: Its track and scenic features are unique at the two section joints, so it can only go back together one way.

The illustrations on the next page show the construction for the frame and support legs. The frames are made from L-girders built from 1 x 4 beams and 1 x 2 flanges. If used individually, dimensional lumber pieces can easily warp or sag over time. However, by gluing and then nailing the 1 x 2 flange to the top of the 1 x 4 beam, you create a structural



To help level the long layout sections on uneven flooring, David and Bryson installed adjustable furniture feet on the bottom of each leg.



Since the layout is made to come apart, the frames, legs, braces, and backdrops are all attached using 1/4" carriage bolts with washers and wing nuts.

component that is much less likely to sag or bow with humidity changes. The resulting L-girder is capable of holding significant weight while spanning long distances. An L-girder made from a 1 x 4 beam can span up to 12 feet between legs or other supports.

We combined the L-girders into simple box frames to allow each section of the model railroad to be self-supporting when the legs are removed. You'll note from the illustrations that the flange for the back L-girder faces into the center of the frame. Because the layout will normally be positioned next to a wall, placing the flange facing inward allows us to still install screws through it into the stringers. When assembled, 1/4" x 2 1/2" carriage bolts with washers and wing nuts hold the layout sections securely.

We constructed a pair of leg assemblies for each section. Before building the legs, Bryson and I set one layout frame on our adjustable-height workbench and raised it up and down to find a comfortable working height for the railroad. We determined that attaching 42" legs to the frame, would give us a final layout working height of about 46".

The legs are made from long 2 x 2s, joined with a 1 x 4 at the bottom and a 1 x 2 diagonal cross brace to prevent the layout from swaying. For additional security, you can use a 1 x 4 at the top of the legs just below the frame. The legs attach to the frames about a foot inboard from each end and are snugged up against a 1 x 4 spacer installed between the L-girder sections. The legs are attached with 1/4" x 3" carriage bolts, two for each leg, and

are secured with $\frac{1}{4}$ " washers and wing nuts.

As an added convenience, we installed adjustable furniture feet on the bottom of each leg so we can level the layout. Our poured concrete shop floor has a surprising degree of topography to it, so the leveling feet were a necessary addition.

Each leg unit also has a pair of 24" 1 x 2 angle braces bolted between each leg and the frame. We made attachment points on the frame for the braces using 5" 1 x 4s glued to the L-girders. The angle braces are attached using more $\frac{1}{4}$ " carriage bolts. Once the frames, legs, and braces are bolted together, the layout forms a solid base on top of which to build a model railroad.

Backdrop

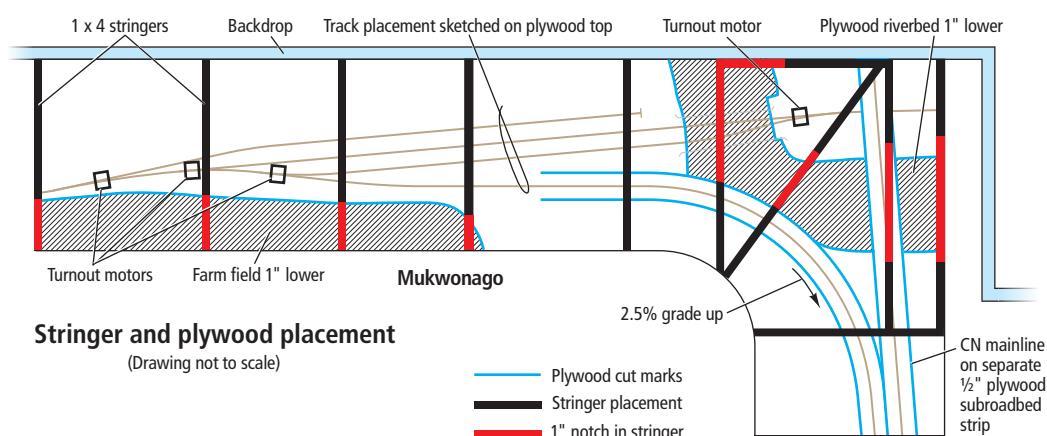
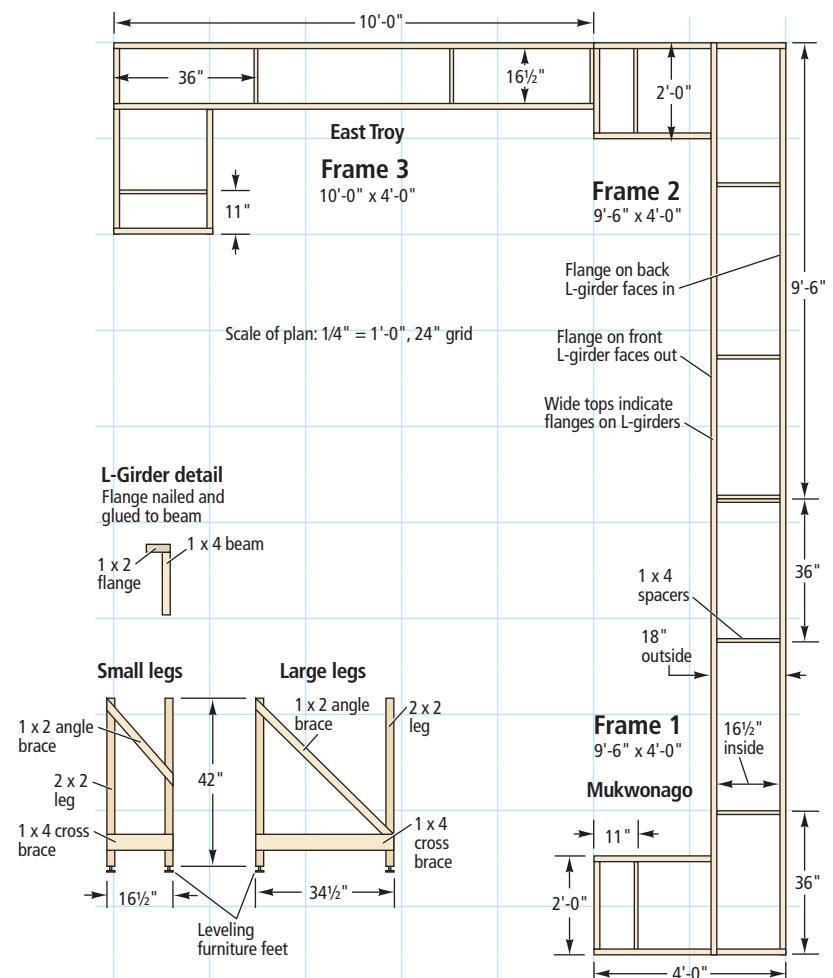
A backdrop is an important scenery-enhancing feature you can add to most any model railroad. Even if you just paint it sky blue, it will help create a sense of depth and realism to your layout. It's also a really good idea to install the backdrop before starting on the subroadbed or laying track, as they can get in the way.

We built our backdrop from $\frac{3}{16}$ " hardboard supported by a simple framework of 2 x 2 posts and a 1 x 2 cap, as shown in the photo on the next page. We spaced the posts approximately 24" apart and bolted them to the back L-girder with more $\frac{1}{4}$ " carriage bolts, allowing the backdrop to be removed if needed.

After attaching the frame to the benchwork, we then cut 24"-wide strips of tempered hardboard and cemented them to the posts with Loctite PL300 construction adhesive. We clamped the hardboard in place until the adhesive had set (about 4-6 hours). By gluing the backdrop to the frame, we eliminated the need to use screws or nails, which left us a smooth, flat

Frame Construction

Overall layout 14 x 19 feet



surface without having to fill holes.

We painted the backdrop with two coats of a pale sky blue interior latex flat house paint. The sky is typically darker blue at the top and almost a hazy white color at the horizon. To simulate this,

when we applied the second coat of the sky-blue, we also brushed a darker blue over the top of it. We used a 6"-wide paintbrush to blend the darker color directly into the wet paint on the backdrop's surface. Later, after building up the contours of the foam

scenery, we added paper backdrop sections from ScenKing to depict distant trees, buildings, and the river.

Stringers and more

Perhaps the biggest benefit of using L-girders to make a



The backdrop is also removable and is made from a framework of 2 x 2 posts and a 1 x 2 top cap with $\frac{3}{16}$ " hardboard glued to it. It bolts to the L-girder along the back of the layout.



This view from later in the construction process shows the finished backdrop with its darker blue sky and SceniKing printed paper trees and river installed. By removing the backdrop, the MR staff was able to protect these features during other construction work.

model railroad is the flexibility of what you can build on top of them. Basic L-girder benchwork is topped with stringers (similar to joists for your home), usually 1 x 4s, spaced roughly 16" to 20" apart. The stringers attach to the L-girders' flanges with 2" deck screws. Stringer placement for the Mukwonago end section is shown at the bottom of the previous page.

Once the stringers are installed, you can then place the railroad right-of-way and any number of scenic features at most any elevation above them using risers made from 1 x 2s. This allows for all manner of scenery placed at any level, which is ideal for modeling mountain railroads. The former MR&T was built this way. Typically, modelers use $\frac{1}{2}$ " or $\frac{3}{4}$ "

furniture-grade plywood for their subroadbed. You can save a lot on plywood by just cutting roadbed sections for the track you need to support, leaving the other sections of the layout open.

To fill those open areas, you can use a lot of different methods. On the former MR&T, we used cardboard strips to make basic landforms, then covered them

with two layers of plaster cloth. For spaces that had towns, industries, and roads, we used extruded-foam insulation board, also supported by risers. You can use plywood for these areas too, particularly if you need to lay track on the section. Also, plywood is still the best base for modeling water features, such as rivers or ponds.

However, for the East Troy Industrial Park, we didn't need much in the way of elevation. East Troy, Wis., is solidly in the Midwest, with fairly flat or gently rolling topography. So instead of using the riser method, we employed a technique called cookie-cutter. This method uses full sections of plywood to cover the bench top and then creates topography by cutting sections from the sheet and elevating them with supports or lowering them below the base line.

We started by cutting support stringers from 1 x 4s and temporarily placing them on top of the L-girder frames. Next, working on one layout section at a time, we cut the $\frac{1}{2}$ " plywood top to fit. We drew the track plan on its surface 1:1, so we knew where to make cuts for raising and lowering sections.

This is where having a copy of the track plan and your scale rule come in handy. Start by marking a 12" x 12" grid on top of the plywood. Then, using the plan, measure the locations where track crosses the grid on the graph paper and mark those on the plywood. Use a straightedge to connect those points to get the track center lines.

We started on the Mukwonago end of the model railroad, since its river and the Canadian National overpass required the most changes in elevation. When cutting along the right of way, be sure to leave at least a $\frac{1}{2}$ " of plywood on either side of the roadbed. That extra space will provide a solid attachment

point later for scenery. If you plan to install signals, leave extra space for those as well.

Cutting the top is work for a variable-speed power jigsaw. Be sure to use a scrolling blade to allow you to make smooth curved cuts with minimal splintering.

Next, we positioned the 1 x 4 stringers under the cut top so that they wouldn't fall where we needed to place a turnout motor or splice between sections of plywood. We also cut 1"-deep notches into the 1 x 4s any place where the plywood would need to sit below the baseline. This included a large portion of the front edge of the layout, as well as the river in Mukwonago and the retention pond in East Troy. Once those cuts were made, we attached the stringers to the L-girders using 2" screws run up through the flange. Don't use glue for these connections, as you may need to move a stringer later, which you can do by simply removing the screws.

Since our East Troy main line is pretty much flat, we used the stringers as the base line for the right of way, attaching the plywood directly to them using 1 1/4" deck screws. We countersunk the screw heads to prevent them from interfering with roadbed and scenery work.

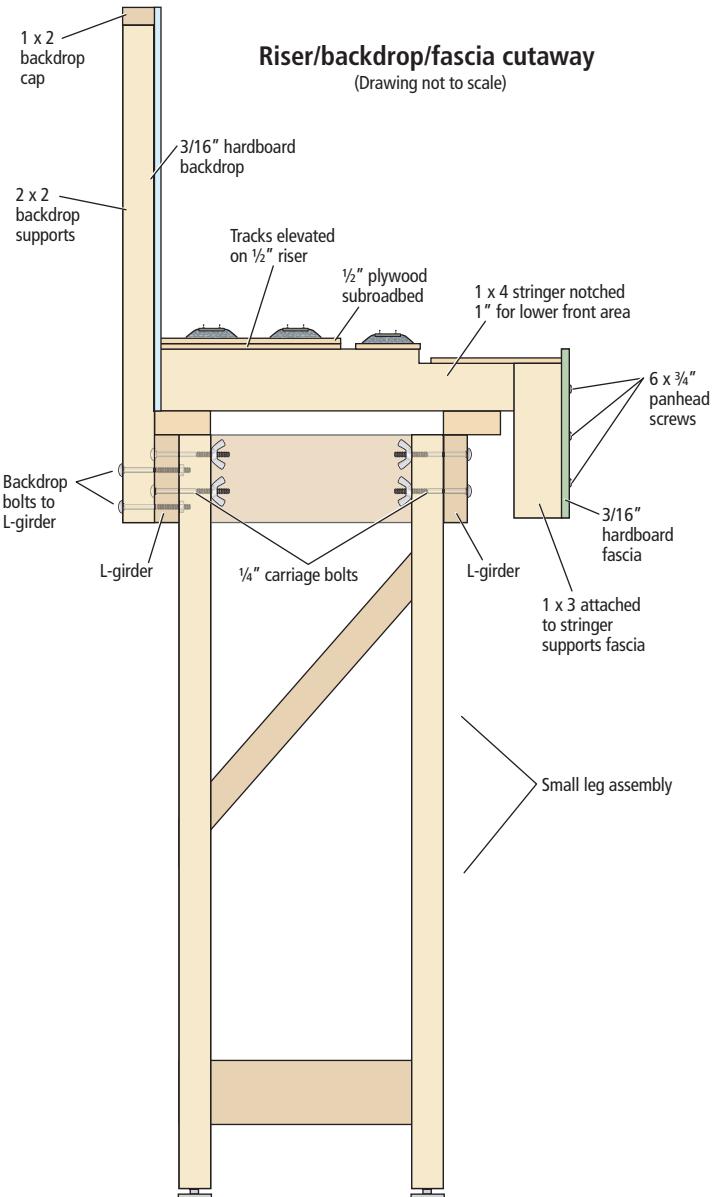
To elevate the plywood for the CN main line above the base, we made 1 x 2 and 2 x 2 risers from leftover scraps. We attached the risers to the joists with 1 5/8" deck screws. Along the back of the East Troy section where the glass factory and Wisconsin Oven would be located, we raised that area by placing 3/4"-wide strips of 1/2" plywood between the stringers and the subroadbed. We used 2" screws at this location to hold both the top and riser.

Finally, we attached the sections of plywood on the front edge and on the river to their cut-down stringers using 1 1/4" screws.

Fascia for the finish

The last benchwork project was to install the fascia. Using more 3/16" tempered hardboard, we cut strips that followed the contours of the scenery along the sides of the layout. To attach the fascia, we added 12" pieces of 1 x 3 to the front of the stringers at a 90-degree angle. This provides a solid support for the 12"-14" deep fascia panels, which will be important when we add the switch motor controls and Digital Command Control plug ports in the next installment of our project layout series. The fascia attaches to the model railroad with No. 6 x 3/4" pan-head screws spaced 3" apart from top to bottom. Later, we painted the fascia black, giving the front edge of the layout a clean, uniform look.

Though we might not be able to run a train yet, we've already completed a great deal of work on the East Troy Industrial Park HO layout. We filmed the entire project from start to finish, so if you're eager to see what we did here or what comes next, Trains.com members can watch the complete series at Trains.com/vid. There's a lot more construction fun ahead for the ETIP! **MR**



The Mukwonago end of the layout has the most elevation changes, including the CN main line, the interchange track, and the riverbed. All were accomplished using risers or by cutting 1" deep notches in the stringers. All screws are countersunk below the plywood's surface.

Trackside Photos

The Ground Hog Special from Philadelphia, pulled by a Broadway Limited Imports Pennsylvania RR K4s 4-6-2 Pacific, stops in Cresson, Pa., on its way to Punxsutawney for tomorrow morning's activities. The photo was taken on John Swanson's HO scale PRR Cresson Branch. With light snow showers, will Phil see his shadow?

Douglas Kirkpatrick photo







Train HW999, a high and wide move on Phil Monat's HO scale Delaware & Susquehanna layout, slowly eases over the bridge leading to tunnel 7 with a 110-foot-long LNG heat exchanger, made by Air Products Corp. in Wilkes-Barre, Pa. Pulled by a Norfolk Southern SD80MAC, the special flat cars can shift the load to either side as required to clear obstructions. The manufacturer's caboose carries the personnel who accompany each journey and operate the equipment. High above, a D&S local has a bird's eye view of articulating action down below. The load was 3-D printed to Phil's drawings by his good friend Bill Carr. Phil Monat photo

Send us your photos

Trackside Photos is a showcase for the work of *Model Railroader* readers. Send your photos (digital images 5 megapixels or larger) on a flash drive to: *Model Railroader*, Trackside Photos, 18650 W. Corporate Dr., Suite 103, Brookfield, WI 53045; or email them to us at editor@modelrailroader.com.



Lehigh Valley Alco S2 switcher No. 157, Michael Collins' NMRA Master Model Railroader number, passes between an abandoned tower and its replacement, scratchbuilt following a design by former MR staffer Gordon Odegard, at the Bronx Terminal on Michael's HO scale layout. Michael Collins photo

No. 7571, a Conrail GP10, was captured at a grade crossing as its horn pierces the quiet Pennsylvania countryside. The local is en route to switch Vandelay Industries, the area's major employer serving the latex industry. The model is an N scale GP10 that Chris Broughton kitbashed from an Atlas GP9 mechanism and hood, an SD26 cab, and a Life-Like GP18 walkway and handrails. The Dynacell air filters are 3D-printed parts from CMR Products. The action takes place on Chris's 6 x 48-inch Inglenook switching layout. Chris Broughton photo



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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 7-8, 2026, Saturday 9:00am-5:00pm; Sunday 11:00am-4:00pm. Admission \$8.00, family \$15.00, under 10 free. Operating layouts, demonstrations, and dealers. Contact Charlie Boyer, 251-454-0572 (before 9pm CST), email: charlieboy66@att.net, or Glenn Samuel, 205-914-0693, email: gasamuel@aol.com

CO, COLORADO SPRINGS: Train Expo Colorado (TECO) model train show is February 28–March 1, 2026. Saturday 9am-5pm and Sunday 10am-3pm at our NEW LOCATION! The Norris Penrose Event Center, 1045 Lower Gold Camp Road, Colorado Springs, CO 80905. Admission: \$10/person; \$5/youth 13-18; Children 12 and under are free. Visit our Facebook page or website www.tecoshow.org

FL, NEW PORT RICHEY: Regal Railways presents a Toy Train, Collectible and Hobby Show/Sale. Elks Lodge, 7201 Congress Street, New Port Richey, FL 34653. Saturday, February 28, 2026. 9:00am-2:00pm. Admission: \$6.00 adults, children under 12 free. Vendors and model train layout. Lunch available. Contact: Joe at 727-244-1341 or visit: www.regalrailways.com for more information.

FL, VENICE: RealRail Model Train Show, February 21st & 22nd, 2026. Saturday 10-4 & Sunday 10-3. Venice Community Center, 326 S. Nokomis Ave. Layouts, displays, 100+ dealer tables. Adult admission \$13, 13 and under free w/paid adult. Tables \$55. Info at www.realarail.org. Contact: Allen Novak, alnovak@tampabay.rr.com, 941-962-8542.

GA, SAVANNAH: Coastal Rail Buffs 37th Annual Model Railroad and Train Show at Pooler Recreation Center, 900 S. Rogers St., Pooler, GA 31322, April 11-12, 2026. Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults 2-day admission \$10.00; Students/Seniors \$7.00. Active-Duty Military \$5.00, under 12 FREE. Dealer tables, operating layouts in O, HO, N, G, Z. Visit: www.coastalrailbuffs.com

IA, MONTICELLO: 2026 Train Show. 2 Days, January 31–February 1, 2026. Saturday 10am-4pm and Sunday 9am-2pm. Berndes Center, Jones County Fairgrounds, 766 N. Maple St., Monticello, IA 52310. Tables \$30. Admission: \$5, children under 12 free with paid adult. Monticello RR Club, PO Box 169, Monticello IA 52310 or email Ron Ackermann at rack611@gmail.com

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the Illinois State Fairgrounds. Sunday, March 15, 2026. 10:00AM-4:00PM. Early bird shopping starts at 9:00AM for \$10.00. Admission fee \$5.00 from 10:00AM to 4:00PM. Free parking. Largest show in downstate Illinois! For info call Mike at 217-899-3100 or Ray at 217-544-4295 or visit www.springfieldtrainfair.com

IN, LA PORTE: La Porte County Train Show and Swap Meet. La Porte County Fairgrounds Community Building, 2581 In-2, La Porte, IN 46350. Sunday, February 22, 2026, 9:30am-2:00pm (Chicago time). Adults \$5.00, youths 6-12 \$1.00, 5 and under free. Contact: Dave Novak at trains86@yahoo.com or 219-778-3195.

MN, ST. CLOUD: Granite City Train Show and Sale. River's Edge Convention Center, 10 4th Ave S, St. Cloud, MN 56301. Saturday, February 28, 2026, 9:00am-3:00pm. \$6.00, kids 10 and under FREE! Buy/sell model/toy trains, books, videos, railroad collectibles. Operating model & toy train displays. Win a LIONEL train set! 612-558-6484; GraniteCityTrainShow@gmail.com or visit: www.GraniteCityTrainShow.com

NC, HICKORY: 24th Annual Hickory Train Show. Hickory Metro Convention Center, Interstate 40 at Exit 125 (Lenoir-Rhyne Boulevard). Friday, March 27, 2026, 12:00pm-7:00pm and Saturday, March 28, 2026, 9:00am-3:00pm. Admission \$9.00, children under 12 free with a paid adult. Sponsored by the Newton Depot Authority and Alexander Chapter - NRHS. Info: 828-874-5958, HickoryTrainShow@gmail.com

OR, PORTLAND: February 28, 2026. Willamette Model Railroad Club 39th Annual Swap Meet. Over 114 tables, all gauges. Free Parking. Food available. Kliever Armory, 10000 NE 33rd Dr., Portland, 97211. 9:30am-3:00pm. Admission: \$6.00, 12 & under free w/adult. Early Bird 9am admission: \$12. Table rentals: \$30/\$35. Website: wmrcswapmeet@gmail.com. For Table Reservations Contact: wmrcswapmeet@gmail.com or 503-256-2248 (no text).

PA, ALLENTOWN: ATMA Spring Thaw Train Meet. Allentown Fairgrounds Agri-Plex, 1925 W. Chew Street, Allentown, PA 18104. February 21-22, 2026. Saturday 9am-4pm, Sunday 9am-3pm. Admission: \$10. Advance tickets \$15, admitted at 8am. 12 and under FREE with adult ticket purchase. For more information visit www.allentowntrainmeet.com or call 610-442-2859

WA, SPOKANE: River City Modelers Spring Model Train Show, Spokane Fairgrounds, 404 N. Havana. Sunday, March 8, 2026, 9:30am-3:30pm. Admission: adults \$8, 12 & under free. 200+ tables of railroad-related items for sale, operating layouts, Free-MO, Lifesavers & more. Free Parking. For table rental or general info, contact: Shirley Sample, 509-991-2317 or shirley@busnw.com

WI, LA CROSSE: The 34th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. Saturday, January 24, 2026. 9:00am-3:00pm. Admission \$8.00, under 12 free. 300 vendor tables. All Scales: Model, Toy & Antique Trains & Memorabilia. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383. Visit: www.4000foundation.org

WI, STEVENS POINT: Central Wisconsin Model Railroaders 28th Annual Model Railroad Show & Sale. Holiday Inn Convention Center Hotel, 1001 Amber Avenue, Stevens Point, WI 54482. January 24-25, 2026. Saturday 9:00am-5:00pm. Sunday 10:00am-3:00pm. Adults \$5.00, kids 12-17 \$2.00. Many layouts, swap/sales tables, vendors. Contact Jim Miller, 715-340-0265; email: jimbro67@gmail.com or Don Anderson, 715-340-8105; email: cwmr_mnw@yahoo.com

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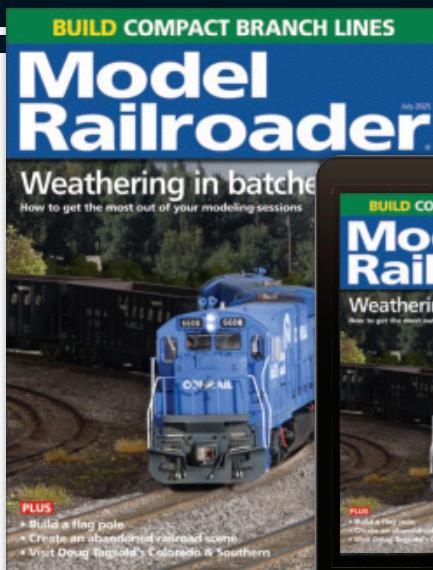
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Next Issue

Finishing the sand pit

Mike Tylick shows how he scratch-built an O scale steam shovel on tracks from a military model, then created the sand and gravel pit for it, and the conveyor from the February issue, to work in.

Zigzag through the Cascades

The HO scale Zigzag Valley RR serves the region around Mount Hood in Oregon and features its namesake railroad along with modern BNSF Ry. through trains.

Workin' the switchback

Lance Mindheim shares a day in the life of an engineer on his CSX Miami Downtown Spur HO model railroad. It includes tips for more realistic operation from an "interested uncle."

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Vastly different objectives



As much as Tony will enjoy seeing the Wabash "High Line" in northwestern Illinois come back to life one day, its primary purpose is to allow him to polish his switching skills. Tony Koester photo

I envy newcomers to our hobby, as they have so many exciting options to choose from. But I'd hate to be a rank beginner again because — well, I'd have so many options to choose from. That path is littered with rabbit holes that can cost us valuable time and money — and enthusiasm — when they don't turn out as expected.

MR's annual *Model Railroad Planning*, which comes out in January each year, was conceived to help the beginner navigate through those shoals and to prompt the more experienced modeler to investigate new ways of thinking about layout research, planning, and design as she or he upgrades an existing railroad or contemplates a new one following a relocation, for example.

But during the decades I've been editing MRP, I suspect we've only scratched the surface of ways to help you decide what to model and how to approach it. There's no single "right answer," so the best we can do is to alert you to the myriad possibilities.

Consider, for example, how your choice about what you plan to do with your railroad when you're "done" with construction, track and electrical work, scenery, and structures can make a huge difference in what you get back from your hobby. If you enjoy building layouts more so than operating them, you may dismantle it (to the surprise and horror of your family and friends) and build a new one ... and another one after that.

Some of the hobby's most talented practitioners have done just that multiple times. I did it once when I dismantled the Allegheny Midland to make room for the prototype-based Nickel Plate Road. It was a nice change of pace, and the timetable-and-train-order dispatching system employed on the NKP make it a much more challenging railroad for crews to operate than the CTC environment of the AM. But I do miss the mountain-climbing Midland Road on occasion.

As I've mentioned in previous commentaries, I've been busy not only with

updates on the HO Nickel Plate Road in my basement but also with building an O scale Wabash branch line in my enclosed porch. In both cases, after acknowledging that my lifespan is finite, I am turning to friends and professional model builders for help. My goal is not to build prize-winning models but rather to create an authentic context in which each railroad can go through its paces.

And then ... well, that's where a huge difference in my overall objectives arises. The NKP was built as an experiment to see whether I could re-create childhood memories of the late steam and early diesel era. As it neared a reasonable degree of completion, I wanted to stand back and watch my crew put the railroad to work according to everything I've learned about that part of the NKP.

That's worked out extremely well, I'm delighted to say. It is indeed a time machine.

But there's a "cost" a model railroader contemplating the construction of a sizable layout needs to fully understand. The owner of such a railroad usually assumes the roles of general superintendent and chief mechanical officer during operating sessions. If I accept a call to run a train, I seldom get far before someone has a question or concern.

A large model railroad is, after all, a rather sophisticated and complex system assembled by one or a few amateurs using components supplied by hundreds of vendors. Thanks to National Model Railroad Association (nmra.org) Standards and Recommended Practices, the key parts usually play nice together, but don't be surprised if a loose solder joint requires your attention.

I do get to stand back to watch and hear the NKP of the 1950s come back to life, which fulfills my objective. But I don't get to "operate."

What to do? Everyone seems to assume I'm an ace operator. Look how long I've been doing this! But give me a busy town with intricate switching

moves required to get the work done, and I'm like a rusty old bolt.

So I'm building a two-town branchline railroad that offers lots of switching to polish off some of the corrosion. I'll let you know how that works out — after I finish spiking down the rails, of course. **MR**



**MY GOAL IS
NOT TO BUILD
PRIZE-WINNING
MODELS BUT
RATHER TO
CREATE AN
AUTHENTIC
CONTEXT...**
— TONY



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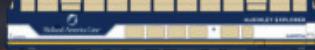
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