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Fourth Quarter 2009



New series:
**Building an operating
turntable and roundhouse**

Track Planning on Computer with 3rd PlanIt - part 3

SP Narrow Gauge Track Plan
**NEW: One evening project
Better windows
for structures**



Front Cover: We named our magazine **Model Railroad Hobbyist** because it's the modeler that makes the trains move and be more than mere static models. Our first holiday-season cover proudly features modelers Pierre Watters, Raynald Asselin, and Réal Émond from the Free-Modu-Rail de la Capitale in Quebec City, Canada.

ISSN Pending

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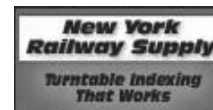
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Any scale

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S

Photo by Charlie Comstock

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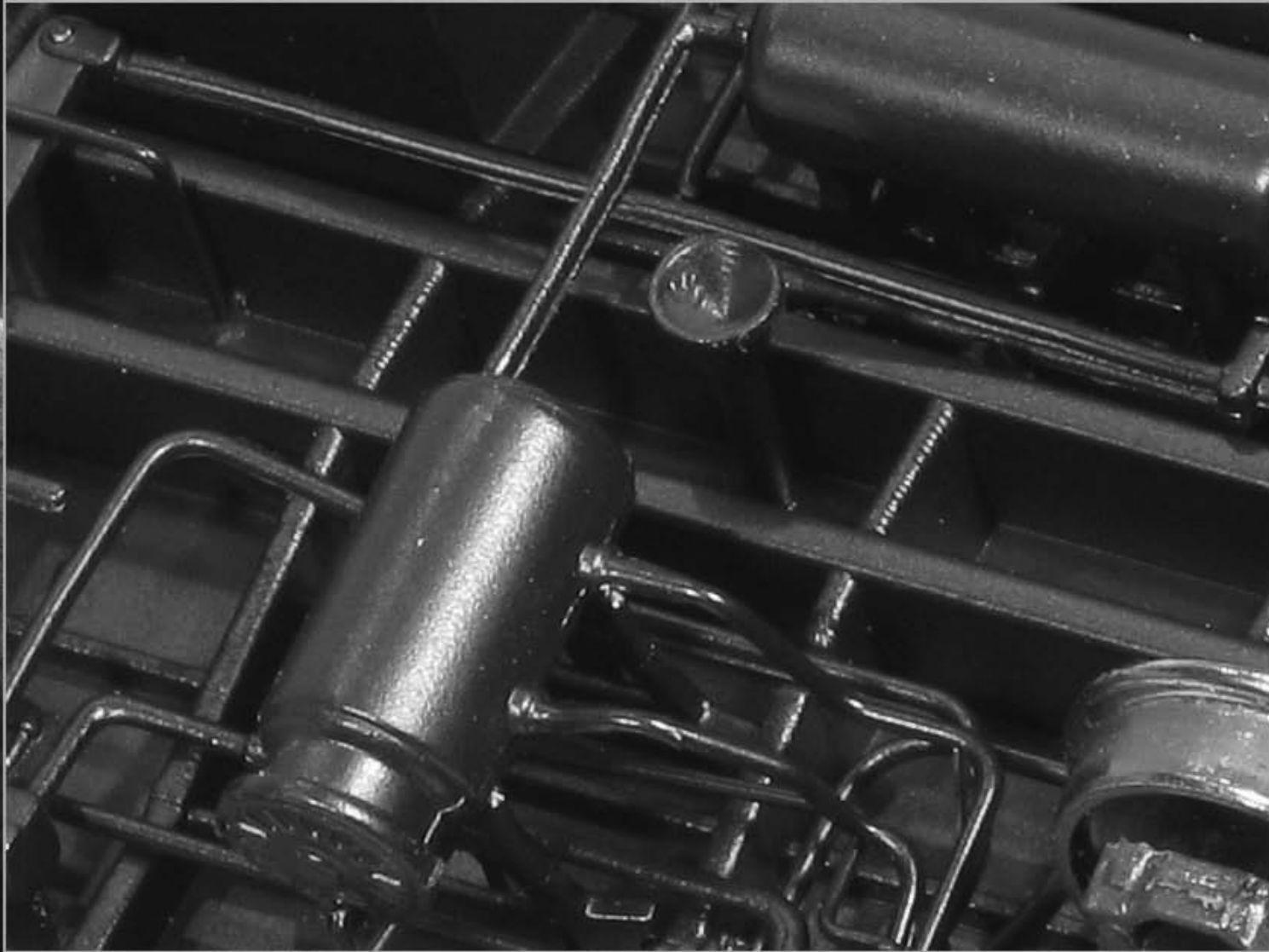
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PUBLISHER'S EDITORIAL: We don't need no stinkin' roofwalks!


Musings from the MRH founder

About the Publisher



Joe Fugate is the featured expert in many [Model-Trains-Video.com](#) videos, and he's also the founder and publisher of **Model Railroad Hobbyist Magazine**.

To learn more about Joe, [click here](#).

 **Reader feedback!**
CLICK HERE for reader comments on this article ...

How the best-laid plans for setting your layout era can go awry ...

When I started planning my Siskiyou Line layout in the mid 80s, I intended to model the late 1960s. As a dyed-in-the-wool Southern Pacific fan, I love the black, orange, and silver "Black Widow" paint scheme. The last of the black widow-painted diesels ran about 1970, so modeling the 1960s SP seemed to be an obvious choice for me.

Nevertheless, I ended up modeling the 1980s instead. How my corruption happened began while railfanning the Siskiyou Line in the late 1980s with my teenage son.

One day, he asked, "Dad, are you going to have Amtrak on your layout?"

Naturally, modeling what he saw most interested my son. He has never been a "foamer" railfan, but he had a mild interest in trains – and I figured if I humored him, he might show more interest. Besides this, most of the local SP modelers helping me when I started my layout in 1991 modeled contemporary 1980s SP equipment. That cinched it.

Modeling the 1980s instead of the 1960s (in the short-term, I told myself) might be expedient for the time-being. I could always go back to modeling the 1960s later (yeh, right).



Joe originally planned to model the late 60s Southern Pacific because he loved the Black Widow paint scheme. Here's how the 1960s Siskiyou Line looked in the early days before Joe decided to move his layout's era to the 1980s.

As I began modeling the 1980s, I fell in love with the look of no roofwalks on the rolling stock. And there's something about going down to the railroad tracks to do "research for the layout" that's really fun.

As things can be in prototype railroad-ing, doing "live field research" was short-lived. By the late 1990s, everything changed – the SP gray and scarlet was no more. Who would have thought the mighty SP would become a fallen flag road?

Recently Ryan Andersen (our New Media editor) interviewed Lance Mindheim on his Modelrailcast show. Lance outlined his case for modeling modern railroading and expressed how it's been some of the most fun he's ever had in the hobby.

I have to agree with Lance, modeling more contemporary railroading has been *way more fun* than I ever would have guessed. For this reason, I hope to present more contemporary modeling in the pages of MRH as we head into our second year.

Our reader survey indicates some 28% of you like contemporary modeling, and younger modelers find modeling what they see to be more interesting than historical steam-to-diesel transition modeling.

While steam-to-diesel modeling still reigns supreme in our hobby (34% of MRH readers), expect MRH to devote some pages to more modern railroad modeling in future issues.

When it comes to contemporary modeling, if there's any one detail that "screams" modern railroading, it's the lack of roofwalks on rolling stock.

The FRA rules for roofwalks state: "All cars built after April 1966, and entering service before October 1966 must not be equipped with roofwalks, except those with roof hatches. (49 CFR 231.27, paragraph i.)"

By December 31, 1983, all cars built before April 1966 **must not** be equipped with roofwalks. (49 CFR 231.1, note.)"

Almost all rolling stock on a late 1960s-era layout will have roofwalks. Only the very newest rolling stock just being delivered won't have roofwalks. From the FRA rules, we can see only new covered hoppers are allowed to have roofwalks after 1966.

With apologies to Humphrey Bogart, my 1980s Siskiyou Line equipment guideline has become: "Roofwalks? We don't need no stinkin' roofwalks!"

"When it comes to contemporary modeling, if there's any one detail that 'screams' modern railroading, it's the lack of roofwalks on rolling stock."

Notes from the MRH Staff

Moving to bimonthly, gauge not gage, reading MRH online, and more

Yes, it's true – we're publishing Model Railroad Hobbyist magazine every other month starting in January 2010.

We believe going to every other month to be essential to MRH's long-term success. Even though MRH is free to our readers, it's the model railroading vendors who support us through advertising.

Magazine downloads drop off noticeably in our two off-months. We expect overall circulation to go up with only one off-month per issue as a bimonthly publication. We likewise expect ad click-throughs to stay strong for more months out of the year. In short, a more frequent magazine should be a win-win for everyone.

Our vision doesn't change: we want MRH to be a quality, professionally edited publication that's freely available to modelers via the internet. And to get higher quality content, we feel it's important to pay our authors. It's also important to pay our editors, proof readers, and technical support staff.

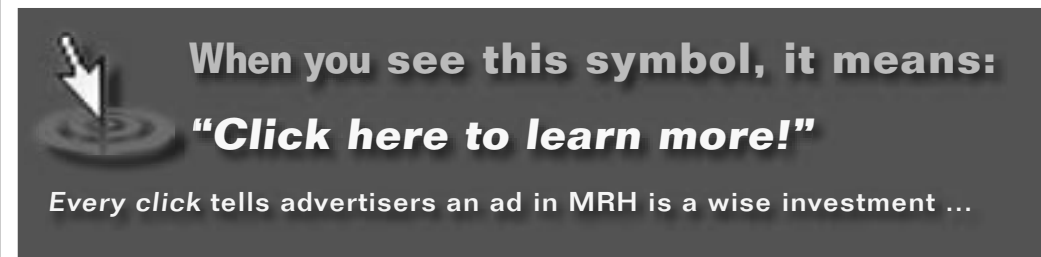
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hood of becoming a publication that's here to stay becomes assured.

So far, our high-water mark has been issue 1. As of this writing, we've had **over 40,000 downloads** of issue 1. Even though issue 1's clearly a back issue at this point, we're still seeing it get over 1,000 new downloads per month!

Okay, gauge not gage

Our preference of the spelling gage instead of gauge hasn't set well with many readers.

Sometimes you have to pick your battles. As of this issue, we've knuckled under and gone with *gauge*.

It's funny how one little letter can be such a big deal. At the Hartford National this last summer we got *so much grief* over this issue that we decided it's just not worth it!

So gauge it is – on to bigger fish to fry.

One-click downloads

For some very technical reasons, getting a **simple one-click download** for a large PDF file like this magazine has been challenging. We've found ourselves caught somewhere between browser security limitations and Adobe's annoying tendency to ignore all browser user interface conventions.

In the short-term, our fix has been an attempt to force a right-click/command-click behavior when you download. However, we've had more than a few non-tech savvy model railroaders ask us, "what the heck is a *right click*?"

The obvious simple solution is to have you click one button to download each new issue and you're done. None of this right-click or command-click jazz. You would think doing a one-click PDF download would be easy, but it's not!

Happily, it appears we've finally solved this problem, but it wasn't easy.

We had to write our own custom downloader program using Adobe's Flash

programming environment, Flex. We've implemented this new "one-click download" as of issue 4, so hooray!

The one caveat: you need Flash Player 9 or greater on your computer. If you're trying our one-click download and it's not working for you, check your Flash Player version using [this link](#).

If the version shown is not at least 9.1-something, then you need to upgrade using [this link](#).

Reading MRH online

Even the need to *download* the magazine can be an impediment to some modelers, so we've been working on

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“near-instant” access to the magazine online without the need to download at all.

We’ve experimented with this over the last couple newsletters using Adobe Flash in a format we’ve dubbed “Flashbook”.

For you technical types, the Flashbook approach works better than plain HTML because we have more control over the look and feel of our magazine and we can incorporate more of the interactivity.

Adobe’s legacy PDF format is too heavy weight to make online reading practical. With Flashbook, we can give you something readable online in a near-instant fashion.

As of this writing, we’ve worked out most of the bugs and believe we have a practical Flashbook format that’s working well. For this issue, we’re also releasing it in Flashbook form as a beta test.

Make sure you give the Flashbook version a try, and leave comments on our web site telling us how it works (or doesn’t work) for you.

Assuming we don’t find any show-stopper bugs, we expect to roll issue 5 out using *Flashbook as the default* way you read the magazine.

Never fear, you can always click download if you want an offline version (standard or embedded). That will not go away for the foreseeable future.

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- by V.S. Roseman
Photos by the author

Building a model railroad is much easier today than it was years back. There are more structures than ever before, and while the latest releases include a lot of excellent models, fewer still have thick heavy window muntins that make the model look toy-like. (Muntins are the supporting strips between panes of glass.)

While wooden window muntins are somewhat thicker than metal ones, generally, some model window muntins are not only overly wide but are also thick. Molds for injection molding plastic, or soft metal sometimes have to be cut this way to permit the material to flow or be injected properly.

It is possible to upgrade kits that have oversized window muntins by using photographs of prototype windows to produce a very realistic effect. Using either a color copier or computer it is possible to size the printed windows to fit specific models, and the proportions can even be adjusted.

Generally, the best subject windows to be photographed for model use should have high contrast with a dark interior and light window frames or light colored shades with dark window frames. An especially good effect is created when shadows of the window frame grid fall on objects just inside the window, such as light-colored window shades, packing crates, machinery

More Realistic Model Windows: Enhancing Model Structures with Photo Windows



Figure 1: The Walters Redding feed mill happens to have fine window moldings, but this was the only structure I had for demonstration purposes when I began this project. I liked these windows because they have light shadows on the window shades which create a very three-dimensional effect.

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Printer-friendly version

As if we don't have enough versions of the magazine already, with this issue, we're also inaugurating our super-lightweight [printer-friendly version](#).

More than a few readers have told us they prefer to download the magazine and then print it out for reading offline in their easy chair (or elsewhere). Then later they'll open up the computer version and watch any media or click any links.

We designed the magazine for optimum viewing on a computer screen, with much lower contrast to the page than normal. This means it doesn't print very well for offline reading. Enter our printer-friendly version.

The [printer-friendly version](#) is a completely flattened, high-contrast black

and white version of the magazine. Since it's "flattened", that means none of the links or interactive media do anything. It also uses low-res 72 dot-per-inch images so the file size is extremely small and makes for a very fast download.

If you're one of those readers who prefers to print out MRH to read it, then this version's for you. It's ideally suited for printing out on a laser printer, for example.

On an inkjet, it will only use black ink and won't use up all your expensive color inks. Most printers have been optimized for black and white printing, so the pages from the printer-friendly version should print out faster than the actual magazine's low-contrast full-color pages.

See you in January – may this be the best holiday season ever! ■

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October 2009

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*The Old
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News and views from up and down the line...

New HO scale models coming from Accurail (www.accurail.com) this month include a New York, New Haven & Hartford 55-ton USRA twin hopper; a Louisville & Nashville 41-foot steel gondola; a Norfolk & Western 70-ton triple hopper decorated in the modern N&W scheme; a Delaware & Hudson 40-foot wood refrigerator car; a 40-foot Nickel Plate wood stock car and a Southern Pacific 40-foot 6-panel single-sheathed wood boxcar.

Allen Keller Productions (www.allenkeller.com) has released a DVD tour of Mike Burgett's double-deck Chesapeake & Ohio layout. Among the features of the 600-foot main line is an authentic signaling system

designed by Mike who is a signal supervisor for the real Canadian National.

American Models (www.americanmodels.com) has S scale ready-to-run AAR 4-bay hopper cars available with either ribbed or offset sides. The cars will be offered in 23 decorated schemes with 4 number variations. Weight for the one-piece ABS plastic body is provided by a die cast metal underframe.

Blackstone Models (www.blackstonemodels.com) drew lots of attention at the recent Narrow Gauge Convention in Colorado Springs with the announcement that it was developing an HOn3 scale tank car

in both narrow frame and frameless versions. Other projects currently being researched for future release include Jackson & Sharp open platform passenger cars, a drop-bottom gondola and a double-deck stock car.

Bowser (www.bowser-trains.com) is working on two new Trinity spine cars to be available for delivery in its upscale Executive Line early next year. The HO scale 53-foot spine cars will be available as three-unit (RAF33) and five-unit (RAF53C) sets. Details featured on the ready-to-run cars include air hoses, sturdy die cast frames, etched metal walkways, knuckle couplers and free rolling metal wheels with RP-25 profiles.

Broadway Limited (www.broadway-limited.com) is quoting November delivery on its On30 scale DRGW 2-8-0

steam locomotive No. 268. Decorated in the distinctive yellow Bumble-Bee scheme, the class C-16 locomotive will be equipped with BL's Blue Line sound. Also expected to arrive next month is an HO scale EMD NW2 phase V Southern Pacific diesel switcher with a black body and orange tiger stripes.

Cimarron Works (www.cimarronworks.com) showed two new S scale structures at the Narrow Gauge Convention including Samualson Hardware, a brick structure based on a prototype in Blackhawk, Colorado. Also shown was Iron Horse Press, a false-front wooden structure that has previously been available only in O Scale.

Doctor Ben's (www.debenllc.com) has expanded its line of weathering materials and publications with the



FIGURE 1: 3rd Rail Division of Sunset Models expects delivery this month on its O scale Baltimore & Ohio class Q-4b 2-8-2 steam locomotives. The hand-crafted brass models of the Baldwin-built Mikado will be offered in both two-rail and three-rail versions.

purchase of the **Thomas A. Yorke** line of structures (see Industry news page 7).

The first offering from the acquired line will be **HO** and **O scale** kits for both single and two stall versions of the Yorke Industrial Engine House.

The walls are cast in Labstone medium from Thomas Yorke's original hand-carved brick pattern masters. Commercial components in the kits include Kappler scale lumber, and Grandt Line windows and doors. Custom window vents in the cupola



FIGURE 2: This classic farm silo is available now in an **HO scale laser cut kit** from **American Model Builders** (www.laserkit.com). The windows, doors, trim, roofing material,

and silo support bands combine peel & stick and tabbed & slotted constructions methods to simplify assembly. The 8-1/2-inch high silo may be finished as either a wood or concrete structure. Detail parts include a cast resin dome and unloading chute and a plastic filler for the silo.

replace the wooden slat design used in the original 1987 edition of the model.

Richard Bendever, aka Doctor Ben, said the assembly instructions have been re-written to include current construction methods and materials, as well as a complete description on aging the finished model using Doctor Ben's Weathering Solutions, Stains and Industrial Pigments. Bendever is working quickly to meet a scheduled release date of late October.

Deluxe Innovations (www.deluxeinnovations.com) has an **N scale** Southern Pacific 40-foot boxcar featuring a new rectangular panel roof. The car includes factory-installed Micro-Trains® Line trucks and couplers. Also new from Deluxe Innovations is a Delaware, Lackawanna & Western 2-bay covered hopper. Both cars are available in six different numbers.

Division Point will import an **HO scale** version of ATSF 3800 2-10-2 locomotive in mid-2010. The Baldwin-built Santa Fe type will be produced



FIGURE 3: Athearn plans to begin delivery of this **HO scale Mack B truck** and 40-foot Expost trailer in February 2010. Other decorating schemes will include B&O, BAR, C&O and ATSF.



FIGURE 4: Athearn is taking orders from dealers now for its **Union Pacific Veranda Turbine locomotive** with delivery of the massive **HO scale ready-to-run model** expected around June 2010. In addition to the **as-delivered version without tender** (road number 61), the locomotive will be available with tender with both large (numbers 65 and 74) and small (number 71) lettering schemes. The tender will also be offered separately with no road number.

in Korea by Boo Rim with production limited to just 120 models. Features of the hand-crafted brass locomotives will include drifting valves, pilot-mounted Elesco feed water heater, extended square cab, two sand domes and pilots appropriate to road numbers 3800, 3803, 3817, 3828, 3849 and 3890. Also in the works at Division Point is an **HO scale** Central Vermont 2-8-0 Consolidation.

Eastern Seaboard Models Corporation (www.esmc.com) will soon begin tooling for an **N scale** Magor/AC&F 40-foot XIH insulated plug-door boxcar. The regionally-

popular car, also known as the "State of Maine Boxcar," is scheduled for delivery in the spring of 2010.

Scale Color Key:

Z scale news

N scale news

HO scale news

S scale news

O scale news

G scale news

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"Maersk Containers" by David Casdorff is the newest digital CD book from **Highlands Station**. The 295-page study details Maersk containers from 1980 to the present with 174 high-resolution photos and data compiled from hand-written notes made by the author from 1982-2009.

Presented in PDF format (Adobe® Reader® 5.0 or later required), all text is fully searchable and all of the high-resolution photos can be zoomed in for close examination. Pages may be printed for personal use. Visit www.HighlandsStationLLC.com for additional details and ordering instructions.



FIGURE 5: Oak Leaf Shipping & Storage is among the latest offerings from the fertile minds at Bar Mills (www.barmillsmodels.com). Among the features of the craftsman-type kit are weathered gray cedar shake shingles. Although shown here as a loading dock, the appearance of the roughly 6 x 9-inch HO scale model suggest other applications as well. A pier or waterfront scene quickly comes to mind.

Image Replicas (www.imagesreplicas.com) has produced a limited number of the Pennsy class B70a theatrical scenery car. The ready-to-run HO scale cast resin models come with appropriate trucks and Kadee® couplers. The cars are painted and lettered for PRR car No. 6061 Romeo and car No. 6062 Juliet.

InterMountain (www.imrcmodels.com) is quoting a release date of April/May 2010 for its recently-announced 3300 cubic-foot Procor pressure-differential covered hopper cars. Built by Procor between 1972 and 1975, the cars feature distinctive cone-shaped discharge hoppers.

The newly-tooled HO scale models will have etched metal ladders, end platforms and roofwalk, wire grab irons and brake rigging and Kadee®



FIGURE 6: BLMA (www.BLMAmodels.com) reports that its second new N scale car this year will be a Pullman Standard 2-CD 4000 cubic-foot covered hopper. Notable features on the new 1:160 model include BLMA's new 100-ton ASF Ride Control trucks with metal wheels and body-mounted Micro-Trains® couplers. The PS-4000 will be available in three different road numbers for ACL - Atlantic Coast Line, ATSF - Santa Fe, CB&Q - Burlington, CGW - Chicago & North Western, GN - Great Northern and SP - Southern Pacific.

FIGURE 7: The Sorfeetz Brothers, two comical characters who first appeared on John Allen's famous Gorre & Daphetid layout, are now available from BOSCO. The HO scale white metal figures are available in both painted and unpainted versions at \$5 and \$3 respectively. Contact Keith Glaab at keith_az@hotmail.com for ordering information.

#78 couplers. Road names will include Canadian National (gray body), BCOL - British Columbia (dark gray body) and Halliburton (light gray over red). For



those interested, **Jim Abbott** (www.highballgraphics.com) has additional CN decals for this unique car including the as-delivered scheme with red lettering and the modern scheme with black lettering.

Additional new releases from IMRC include **HO scale** A-line Husky Stack container carrier cars decorated for BNSF, NOKL and the modern TTX scheme.

For **N scale** modelers, IMRC will begin the new year with delivery of Red

Caboose class X-29 boxcars decorated for SAL-Orange Blossom Special, CNJ-Miss Liberty, PRR with circle Keystone, N&W, LNE with small herald, and CGW-Corn Belt Route with Creco doors.

JnJ (www.jnjtrains.com) has nicely-detailed resin body shells for a variety of **N scale** diesel locomotives including DL 110, E3/6 A&B, Erie-built A&B, F45, FP45, FT A&B, Genesis, GP15, GP38-2, GP60, GP60M, H16-44, RF16 A&B, SD45 and SD45T-2. The shells are designed to fit on a commercial chassis such as Life-Like, Atlas, Kato and

FIGURE 8: Seen here is a preproduction sample of Con Cor's new **HO scale** Pennsy mP54 combination car decorated for Santa Fe. After buying used combines from PRR, ATSF blocked the portholes with sheet metal. All the cars in the



mP54 series come with a factory installed lighting kit that will function in either DC or DCC modes. Production quantities of the combines are scheduled to be sent to dealers at the end of November. Paint schemes will include: PRR pre-War II (brown roof, Tuscan red sides and ends), PRR post-War II (black roof, Tuscan red sides and ends), Boston & Maine (black roof, maroon sides), Long Island (black roof, Tuscan red sides and ends), Norfolk & Western (black roof, N&W Tuscan red sides and ends), Penn-Reading Seashore Lines (black roof, Tuscan red sides and ends), Santa Fe (black roof, Pullman green sides and ends), and unlettered (post-War II scheme). Although the initial production run of coaches is sold out, a rerun is set for early next year.

FIGURE 9: The **HO scale Pullman 43-R roller bearing truck** illustrated here is representative of a series of



exquisite 4-wheel passenger car trucks available from D & G Models (www.dandgmodels.com). The working springs accommodate cars weighing 7 to 10 ounces and can be modified during assembly to function properly under heavier cars. D&G trucks are molded in black styrene and have low friction nylon bearing inserts for optimum rolling capability. The trucks come with .110 tread wheels, but narrower .88 tread wheels can be requested at no additional charge. Additional truck types currently available include 1937-1939 SP Daylight/Sunbeam triple-bolster trucks with plain bearings; 1941 SP Daylight 4-TC-7 and 4-TCA-3 trucks with bolster anchor and SP post-war Daylight trucks with SKF roller bearings. Prices range from \$15 to \$17 per pair.

FIGURE 10: Foothill Model Works (www.foothillmodelworks.com) has a versatile new



On3/On30 freelance gondola that can be assembled as a full length gondola or a half-gondola/half-flat car with the gondola bin either centered or at one end of the car. The kit is cast in styrene and replaces an earlier resin kit that is no longer available. Foothill components include 24-inch wheel sets, wooden brake beams cast in styrene, truck brake levers, 15-inch Acme brake wheel with ratchet and pawl, and 7 x 20-foot styrene frame castings. Commercial parts include stirrup steps from San Juan Car Company; clevises, stake pockets and T-16 trucks from MacLeod Western; and Kadee© #26 couplers.

Bachman. For example, JnJ's Erie-built resin shell will fit on a ConCor, Life-Like or Kato PA chassis.

Key Models (www.keymodels.net) is hard at work on a project to import several **O scale** versions of Southern Pacific Cab Forwards. Hand-crafted brass models will be created for class AC-7, AC-8, AC-10, AC-11 and AC-12 Cab Forwards.

The 1:48 models will be powered by two motors. Officials at Key note that production will be extremely

limited with a total of only 40 models in the project. Delivery is tentatively scheduled for the second quarter of 2010.

The latest decals from **Microscale Decals** (www.microscale.com) include BC Rail 50-foot boxcars in white lettering, FMC Chemicals & XTRA covered hoppers in black lettering with red FMC logotype, Railbox RBOX & ABOX circa 1990 and modern Railbox FBOX & TBOX circa 2003 and later in black. All of these are available in both **HO** and **N scale**.

Portland Car Company will soon have **HO scale** car name and letterboard decal sets for Great Northern heavyweight passenger equipment. The project includes bronze-gold sets for the 1924 Oriental Limited and

deluxe gold sets for the 1929-1948 Empire Builder. To order visit www.greatdecals.com/Portland.pdf.

Rapido (www.rapidotrains.com) reports that it will make the initial



FIGURE 11: Grand River Models (www.grandrivermodels.com) has introduced Forest City Welding, an **S scale** limited-edition structure kit that features pre-aged wood siding, corrugated metal roofing and some colorful signage. The painted sign on the front of the structure is a waterslide decal made especially for this kit. Six-pages of assembly instructions include several helpful modeling and painting tips. The finished building occupies a foot print of approximately 5 x 9-inches.



FIGURE 12: Fos Scale Limited (www.foslimited.com) has just introduced an **O scale** Brewer's Coaling Platform that features laser-cut walls, doors, and windows, along with an assortment of metal and plastic detail parts. The platform is made from scale lumber and is assembled using templates and laser-cut jigs supplied with the kit. The finished structure has a footprint of 2 x 10-inches and sells for about \$40. Also new from Fos Scale is "Roads & Highways For Your Model Railroad," a DVD that shows dozens of easy ways to create realistic roads.

release of its new **HO scale** wide vision caboose in November.

Road names on the first production run will include CSX, Santa Fe, Toronto Hamilton & Buffalo, plus an undecorated version.

The second run will follow a few weeks later and will include Cotton Belt, Great Northern, Algoma Central, Chessie and Northern Pacific. The Canadian Pacific “vans” will arrive shortly after that. Reservations have been closed for some time so contact your favorite dealer regarding availability.

Roundhouse (www.roundhouse.com) is preparing several new decorating schemes for its venerable 36-foot refrigerator cars for release in late January 2010.

The old-time series will include Decker, Mason City, Iowa; AT&SF Refrigerator Line; National Despatch (Tiffany Summer & Winter Patent Car); MRS/Purina (red and white checker scheme); ETV&G and Pacific Fruit Express. The cars ride on arch bar trucks with 33-inch metal wheels, McHenry couplers and wire-formed truss rods.

Sunshine Models will offer at least three new prototypically-accurate **HO scale** resin kits at the Naperville meet in late October.

The kits include GATC Type-30 8,000 gallon non-insulated tank cars for food commodities in nine road names; ARA 1923 XM-1 single-sheathed boxcar with a Pratt truss utilizing hat-section

vertical and diagonal steel bracing in eight road names; and a series of seven composite gondolas including SAL class G-7, PRR class G-24 and SL-SF 85000 series.

Although Sunshine does not maintain a web presence, a current summary of products is available at an independently-maintained site at www.sunshinekits.com.

In response to reports that the couplers on some **Trainworx** 86-foot boxcars may be mounted too low for successful operation, the manufacturer has issued a service bulletin document (www.train-worx.com/lowcoupler.pdf - note it's a *6 MB download*) that provides instructions on how to correct the problem.

Trainworx owner, Pat Sanders, has issued a blanket apology for the snafu and will arrange to do the modification at the factory at no charge for any customers who may be reluctant to tackle the job themselves. Information on how to return models is included at their web site.

As a tribute to the last remaining C44-9Ws running in their original Chicago & North Western paint schemes, **Kato USA** (www.katousa.com) will issue both N and HO scale versions of locomotives No. 8646 and No. 8701 – the only ex-C&NW locomotives still in service that have not been repainted or patched over. See your favorite dealer for more details.

FIGURE 14: This beautiful engineering sample is just one of ten road-number specific versions of EMD SDP45 diesel locomotives being developed by Union Terminal Imports (www.union-terminal-imports.com). Decorated in Southern Pacific's colorful “Kodachrome” scheme, the HO scale model replicates prototype features of SP's number 3201 including standard engineer's windows (other versions have L-shaped windows), icicle breakers, a large “SP” on the nose, classifications lights, a 5-chime horn and a steam generator on board. Delivery of the hand-crafted models is expected in November.



FIGURE 15: Micro-Trains® Line (www.micro-trains.com) has announced the release of its first factory weathered car. The HO scale car is a Florence & Cripple Creek Railway gondola with coal load. The car comes unassembled with steps and grab irons included in the kit. Micro-Trains® says it is committed to producing additional weathered models in future months.

TrueLine Trains (www.hobbycraft.com) has announced the second run of its N scale 50-foot Canadian newsprint cars. Road names and new numbers will include Duluth Winnepeg & Pacific (brown with yellow door), Boise Cascade, Canadian Pacific (green with newsprint herald) and Central Vermont (brown with CV noodle and yellow door). All of these will have the internal-frame plug doors. Cars with internal-frame doors will include Canadian National (CN noodle) and PGE with map herald.

INDUSTRY NEWS

Richard Bendever, founder of Doctor Ben's (dba DEBENLLC), has acquired a large portion of the **Thomas A. Yorke** product line. The purchase includes the master patterns, molds, drawings, and manufacturing rights to models created prior to the year 2000.

Tom Yorke told MRH associate editor Lew Matt that he will keep most post-2000 items including the Pepito's and Frijole Flats lines. Tom said he is looking forward to focusing on developing a

variety of 1/4-inch and 1/2-inch scale structures and interesting machinery items and plans to limit production to about 20 or 30 units. ■



FIGURE 16: For Z scale modelers, Mirco-Trains© Line has released EMDs popular SD40-2 locomotives decorated for CSX with a blue body highlighted by a white roof, yellow nose, and blue and yellow rear.

FIGURE 17: Tool specialist **Micro-Mark** (www.micromark.com) has a nifty digital meter that measures the drawbar pull of a model locomotive. The digital meter displays in ounces the pulling force developed by the locomotive. Weight can be added to the model to determine the maximum drawbar capability before stalling or slipping.



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About our news and events editor



Richard Bale writes our news column under the byline of *The Old Yardmaster*. He has been writing about the model railroad trade for various hobby publications since the 1960s.

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Briefly noted at press time...

Terry Weigman will soon introduce a series of HO scale tri-color LED-equipped United Switch & Signal type H2 searchlight signals. Based on Weigman's history of spot-on prototype accuracy, they should be worth the wait....

Micro-Trains© Line will soon announce a series of N scale heavyweight steel passenger cars beginning with a Great Northern RPO

in Pullman green. The cars will come with appropriate 6-wheel trucks with 36-inch wheels.

Steve Hatch made some handy gauges to help him lay S/Sn3 code 83 dual track on wood ties. He made a few extra gauges and is willing to sell them at a reasonable price. Contact Steve at www.railwayeng.com....

Let's hope there is some truth to the roundhouse buzz that Dave Grandt of **Grandt Line** is developing a kit to

convert Bachman's new 4-6-0 steam locomotive from On30 to On3....

Look for **Mile Post Models** to introduce a On3 scale kit for the Chama Oil Dock in the next few months....

Kadee® will introduce a series of type E couplers in G scale within the next few weeks....

The 1952 Milwaukee Road Twin Cities Hiawatha decals from **Pete's Decals** mentioned here last month come in maroon, not black. Sorry for the error... ■

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The Unassuming Man Who Built a Model Railroad Empire

— by **Kenneth Haedrich**

On the evening of September 23rd, 1990, after 50 continuous days of operation and the estimated equivalent of 23 years of normal use, a Life-Like Chesapeake & Ohio BL2 locomotive pulling six Athearn passenger cars faltered and then quietly expired its way into model railroading history. A lone security guard who witnessed the event in the basement of a former BF Goodrich building reported that the HO scale train began to “run funny” shortly before eclipsing the standing Guinness Book of World Records for endurance by roughly 343 hours.

Which is where our story begins, on a footnote that would have passed unnoticed by all but a handful of

industry insiders: that the creative genius behind the stalwart locomotive in question, the designer and manufacturer of the BL2, was one Mr. WaiShing Ting, the most venerable icon of model railroading you've probably never heard of ... and probably should.

He's certainly the busiest, or was at least, until his recent retirement as the CEO of Sanda Kan, the Hong Kong-based train maker to the stars of model railroading.

Over a span of three decades and a trail of more than a million frequent-flyer miles, WaiShing Ting took Sanda Kan from a fledgling enterprise to a manufacturing behemoth. His client list – the manufacturers he manufactured for – includes names like Atlas, Lionel, Aristo-Craft, Micro-Ace, S-Helper, Hornby, Brawa, Marklin and Tomix.



They and many others came to Ting, more often than not referred by one another, because his achievements

– his BL2s – were no accident but his trademark.

“Frankly,” says Dick Maddox, the former COO and President of Lionel, “I don’t know what we would have done without him. He was the best business partner we could have had and a wonderful man to work with.”

The Early Days

WaiShing Ting did slow down just long enough in July of 2007 to accept the model railroad industry’s Hall of Fame Award, “In Recognition of Outstanding Leadership and Contributions to the Model Railroad Industry.” Lewis Polk, President of Polk’s Model Craft Hobbies, was on the committee that nominated Ting for the award.

“I knew just how much he meant to the industry. He cared about everybody, he was a loyal friend, and he was able to face any problem in business and resolve it.”

It was always the pursuit of excellence, however, and not visions of fame that had driven Mr. Ting. “WS” – as his colleagues sometimes refer to him – was born in 1934, the first child of parents whom, he says, taught him the importance of honesty, practicality and concern for others.

“... he was a loyal friend, and he was able to face any problem in business and resolve it.”

He was especially close with his paternal grandfather, who had retired early and then volunteered his time to the local poor who couldn’t afford medical care. Not surprisingly, Ting’s boyhood dream was to become an emergency room doctor and save lives.

His father enrolled Ting in Shanghai’s Xuhui Middle School – a Catholic boarding school run by priests. WaiShing soon discovered he rather liked the order imposed by the faculty.

“It was like a military school,” he recalls. “We knew exactly when we had to go to sleep, get up, and arrive in class. We had 3 minutes to get everything out of the desk that we needed for class.”

Straight out of middle school, Ting enrolled in Shanghai Polytechnic. A career in medicine would have to wait; as the oldest of seven siblings, Ting felt an obligation to go to work as soon as possible to help support his large family. Three years later, he graduated with a diploma in mechanical engineering.

A Career Takes Shape

After working as an engineer for a company that made diesel engines, Ting moved to Hong Kong in 1962 to take a job with American-owned Shiro Precision Engineering. His timing was fortunate: the firm was phasing out their repair work on prop engines and focusing on the manufacture of plastic injection molds for small parts for the electronics industry - transistor

radio cabinets, knobs and the like. It was Ting’s first experience with making plastic molds and an important chapter in the education of a future model railroad manufacturer.

Shiro closed their doors for good in 1965, the same year that Roy Cox, a California toy maker, arrived in Hong Kong in search of a supplier of DC motors for his line of slot cars. Ting’s former boss at Shiro knew Cox and had heard that he was unhappy with the quality of the motors he’d found in Hong Kong. So he arranged a meeting between the two.

The most memorable thing about it, says Ting, was its brevity: after about 5 minutes he had convinced Roy Cox that he could in fact manufacture a superior motor. A deal was struck. Cox International was formed with Ting as the new managing director, a position he would hold for years.

The Sanda Kan Years

When Ting left Cox and moved to Sanda Kan in 1979, he was no stranger to the company. Indeed, he had helped start it 6 years earlier when he and Sol Kramer of Life-Like Products launched Sanda Kan as a joint venture.

Kramer needed a supplier of motors and other parts for his model railroad company. Ting, who was looking for a fresh challenge, agreed to a partnership but had a change of heart – at least for the time being – when Cox decided to start their own model railroad division.

“I tried to create a culture of continuous learning. We always looked for ways to innovate, improve and adapt new technologies.”

It’s hard to appreciate the depth and breadth of WaiShing Ting’s impact on the model railroad industry without taking stock of just how large Sanda Kan would grow under his leadership.

So try to imagine, if you will, 10 factories with over 1.2 million square feet of space in Guang Dong, one of China’s most prosperous provinces. Picture upwards of 10,000 employees (and their housing) including 60 designers, 275 product and production engineers, 50 business engineers and 400 highly-skilled toolmakers.

Now consider that every component for every locomotive, every piece of rolling stock, track, transformer and accessory that Sanda Kan makes is created and assembled, essentially, under one roof – and you’re starting to get the picture.

Maybe it’s just his calm, fireside-chat manner of answering questions that throws you. But looking back on WaiShing Ting’s career at Sanda Kan, it’s hard to decide what’s more remarkable: the fact that he managed

to create all this from a company of 200 employees making a handful of products for a single brand, or the fact that he makes it sound like it was almost easy, the natural result of some guiding principles that could fit on a couple of Post-it notes.

When he first started, did he have any sense of how big or how profitable Sanda Kan would become?

“No, I didn’t. My vision has always been to serve my customers and put them first. I knew if I did that, we would grow and make a profit.”

“He remained a tower of strength in the midst of the storm. His efforts saved the company.”

How did he manage to keep tabs on so many employees?

“I put trust in people. When I hired, I always valued loyalty over talent. I can teach someone to do a job, but I can’t teach loyalty. I encouraged everyone to think like an owner of the company.”

As for the ongoing challenge of honing Sanda Kan’s competitive edge? “I tried to create a culture of continuous learning. We always looked for ways to innovate, improve and adapt new technologies. I often told my employees that what might have been

a good product yesterday may not be a good product for today.”

A Reversal Sets the Stage for a Sale ... and the Future

By the mid-1990s, bolstered by China’s economic reforms, a growing client list and a deep labor pool, Sanda Kan was prospering. It seemed that nothing could slow them down when WaiShing Ting was dealt a devastating blow – a serious heart attack. Had it not been for the quick work of a son-in-law who drove him to a nearby hospital, Ting might not have survived.

His brush with death, says Ting, brought him face-to-face with Sanda Kan’s vulnerability. And with no family successor to take his place, he knew he would have to find a buyer for Sanda Kan to protect the interests of his clients and his employees.

It would be five years before a match was found, but in 2000 Sanda Kan was purchased by ZS Fund, a private equity firm. WaiShing Ting would stay on as director of day-to-day operations.

Sanda Kan would be sold twice more: in 2004 to the Hong Kong-based JP Morgan Partners, and in January of 2009, after falling on difficult times, to Kader Holdings, the parent company of Bachmann Industries.

Especially during Sanda Kan’s most difficult times, says Frank Martin, Chief Executive of Hornby PLC, “WS Ting was there. He remained a tower of strength in the midst of the storm. His efforts

saved the company. He was a source of inspiration to his colleagues and workers in Sanda Kan, and a trusted friend to many of his customers.”

The recent sale came during one of the most uncertain economic periods of the last 100 years. But Kaders’ business and manufacturing strength in China, combined with a company founded on the principles of quality and innovation, will continue to be a driving force behind the new Sanda Kan.

Tom Haedrich, CEO of Atlas Model Railroad Co., who has worked with “WS” and the Sanda Kan organization for the past 18 years, says “The model railroading industry is always changing. We’ve now entered one of the most tumultuous periods ever seen.

A rare intersection of powerful local and global forces in technology, distribution, contract manufacturing, global economics and the resulting consolidations will change the face of model railroading for years to come.

Thanks to the vision, hard work and dedication of WaiShing Ting and the strength of the company he created, the new Sanda Kan has an excellent opportunity to continue as the best example of worldwide model railroading production.”

WaiShing Ting is similarly upbeat. “Kader is the oldest and leading toy manufacturer in Hong Kong. They’re family-owned and the third generation is now starting to run the business. I believe Sanda Kan is in the right hands and that this will be good for all parties concerned.”

We can think of no one who is more qualified to make that call than Mr. WaiShing Ting, the most venerable icon of model railroading. ■

*Model-Railroad-Hobbyist commends the **Atlas Model Railroad Company** for commissioning this tribute to Mr. WaiSing Ting and for granting us permission to reprint it for our readers.*





Selected Events

October 2009

October 3, NEW JERSEY, HIGH BRIDGE, Northeast Fallen Flags Railroad Prototype Modelers Meet, L. H. Taylor Firehouse, 7 Maryland Ave. Info from Jim Harr or Ralph Heiss at neffrpm@yahoo.com.

October 9-10, NORTH CAROLINA, BREVARD, Narrow Trak 09, Transylvania County Recreation Center, 1078 Ecusta Road (behind elementary school). Annual gathering of hard core narrow gauge and logging model railroaders. Details at www.landofskydiv.org.

October 11, CONN, ORANGE, New Haven and Derby Model Railroad Club 17th annual train show, High Plains Community Center, 525 Orange Center Road. Details at www.newhaven-derbymodelrailroadclub.org.

October 22-25, ILLINOIS, ROSEMONT (Chicago), iHobby Expo Trade Show, Donald Stephens Convention Center. Open to trade only on Thursday and Friday.

October 24, NEW JERSEY, NEW BRUNSWICK, Transit Modelers Convention & Trolley Meet, Rutgers Gymnasium, 130 College Avenue. Info at www.geocities.com/transitmeet/2009details.htm.

October 28-November 1, CALIFORNIA, SAN LUIS OBISPO, Southern Pacific Historical & Technical Society's Annual Conference. Details at www.sphts.org/convention.

October 29-November 1, ILLINOIS, NAPERVILLE (Chicago), 16th Annual Prototype Modeler's Seminar sponsored by Sunshine Models, Holiday Inn, 1801 N. Naper Boulevard. Info at www.sunshinekits.com.

NOVEMBER 2009

November 1, MARYLAND, GAITHERSBURG, 32nd Gaithersburg Show, Montgomery County Fairgrounds.

November 1-15, WISCONSIN, WEST ALLIS (Milwaukee), Trainfest, State Fair Park. Info at www.trainfest.com.

November 7-8, KANSAS, BENTON (Wichita), Mid Continent Prototype Modelers Meet, Benton Community Center, 150 S. Main Street. Details at www.midcontinentprototypemodelers.org.

November 12-14, MASSACHUSETTS, MANSFIELD, Craftsman Structure Show, Grand Holiday Inn Hotel & Convention Center. Details at www.css09.com.

November 14, BRITISH COLUMBIA, BURNABY, Annual BC Railroad Prototype Modelers meet in association with TRAINS 2009, Cameron Centre (across from Lougheed Mall), 9523 Cameron Street. Info at www.bctrains.org.

November 22, PENNSYLVANIA, MONACA, Beaver County Fall Model Train Show, Center Stage, 1495 Old Brodhead Road. Information at www.bcmrr.railfan.net.

Future 2009

December 5, OKLAHOMA, OKLAHOMA CITY, Annual OKC Train Show, Travel & Transportation Building, State Fairgrounds. www.OKCtrainshow.com.

December 19-20, FLORIDA, TAMPA, 5th Tampa MR Show, Special Events Center, Florida State Fairgrounds.

Future 2010

January 7-10, FLORIDA, COCOA BEACH, Prototype Rails, prototype modelers meet chaired by Mike Brock, Hilton Hotel, 1550 N. Atlantic Ave.

January 30-31, MASSACHUSETTS, WEST SPRINGFIELD, Amherst Railway Society Railroad Hobby Show, Eastern States Exposition Fairgrounds. Details at www.railroadhobbyshow.com.

February 24-27, TEXAS, HOUSTON, Sn3 Symposium, Hobby Airport Marriott Hotel. Details at www.sn3-2010.com.

March 26-28, PENNSYLVANIA, VALLEY FORGE, Railroad Prototype Modelers Meet, Desmond Hotel, Malvern, PA. Details at www.phillynmra.org/rpmmeet.html.

April 1 - 5, NEW ZEALAND, CHRISTCHURCH, NZ Association of Model Railroad Clubs National Convention, St. Andrews College, Merivale. More info at www.gcmrsleeper.org/nzamrc/index.html.

April 24, INDIANA, EDINBURGH (Columbus), Hoosier On30 Meet, Jonson County Park. Details at www.trainweb.org/carc/. ■

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Digitrax hardly needs

any introduction to many of our readers. We're delighted to have Digitrax join our family of sponsoring advertisers.

Digitrax has a long history with DCC. We can remember AJ and Zana Ireland, the founders of Digitrax, giving DCC clinics back at the 1992 and '93 NMRA National Conventions, helping us all understand what this new whiz-bang DCC stuff was all about.

From the very beginning, Digitrax introduced one of the more flexible DCC bus protocols: LocoNet. With LocoNet and some other Digitrax

components you can easily add things like signaling to your layout – nothing like a simple and relatively pain-free way to add signals to your layout!

Digitrax today offers modelers a wide selection of systems, throttles, decoders, and accessories. They also have their Tech Support Depot, one of the more robust support sites of any DCC vendor.

Digitrax updates their site regularly, so make sure you check out the [Digitrax](http://www.digitrax.com) web site often and keep up on the latest from this leading DCC vendor!

Model Railroad Hobbyist magazine™

Issue 5 sneak peek ...

Build an Operating Switch Stand:
Make it move when the turnout's thrown

– by Wolfgang Dudler
Photos by the author

I like the look of an operating scale switch stand, and they're not that hard to do. Follow along as I describe how I build mine.

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Questions, Answers and Tips

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QUESTIONS AND ANSWERS

Q: I was in Home Depot this morning and was wondering about using 3/4" MDF instead of plywood for benchwork. Is this a good idea or not?

A: I'd say it's probably not a good idea. MDF, otherwise known as Medium Density Fibreboard, is a particleboard-like material made of leftover wood from other manufacturing that's been finely chipped and glued into boards.

While MDF can replace plywood in general construction, for model railroad applications it requires sealing to prevent warping/expansion. MDF may swell or break if waterlogged and many model railroad scenery techniques involve water. MDF can even shrink in a very low humidity environment.

All in all, MDF's stability sounds questionable for model railroad purposes.

Additionally, MDF is very dense, and certainly heavier than plywood. If you need to cut it, not only does it dull blades faster other wood products, you'll want to wear a respirator to protect yourself from the large amount of dust created.

You can learn more about MDF on [Wikipedia](#). — **Jeff Shultz**

Q: When gapping track, what's the best way to do the gaps? Do I need to fill them with something?

A: If I can, I like to use a natural joint between the rails to gap the track – either between sectional track sections or between flextrack sections. If this

isn't convenient, I normally use a cutting disk in a rotary tool (such as a Dremel™ tool) to slice through the track at as near to a 90° vertical angle as possible.

I don't recommend using rail nippers such as the tool from Xuron™ or other manufacturers, since only one rail end will be flat and to trim the other end flat you'll have a bigger gap than you want.

You definitely need to fill the gaps or you risk having the rails shift back into contact, negating the effect of the gaps. Common methods of doing this include using insulated rail joiners like [these from Atlas](#), using a drop of glue, or inserting a piece of styrene plastic into the gap.

In all cases you want to trim/file the insulator material so it doesn't interfere with equipment wheels rolling over it. For instance, when I used the code 100 plastic rail joiners that I had on hand for some Code 83 flextrack joints, I found the wheels on my cars "bumped" over the extra 0.015" of plastic sticking above the top of the railhead. I simply trimmed this excess off and that fixed it. — **Jeff Shultz**

Q: I just bought my first building kit and I don't know what kind of glue to use. What do you recommend?

A: Congratulations on getting started with structure building! I'm going to assume you have purchased a plastic kit. For this I recommend *liquid* plastic cement.



Figure 1: Two of the many types of solvent-based liquid plastic cements and a small paint brush suitable for applying the glue.

There are many brands that will work well for you: Figure 1 shows a couple common brands). Don't use the thick stuff that comes in a tube – it's hard to get into the joints and any excess will leave an awful mess behind.

With the two pieces of plastic being joined held firmly in place, dip a brush into the liquid cement and paint it along the joint as shown in Figure 2.



Figure 2: Using a brush to apply the liquid cement to an inside joint of a plastic building wall.

Capillary action will suck the liquid cement into the joint. Since this cement is a solvent it will literally melt (weld) the two parts together. If the pieces are large it may be a good idea to paint the surfaces that will be joined with cement before putting them together to give the solvent a head start softening the plastic.

Liquid cement evaporates very quickly so keep the bottles capped or it will disappear! You'll have a joint that will tolerate gentle handling in less than 20 seconds.

Because the excess cement evaporates quickly, you don't need to be obsessive about applying it only from the inside of the model. If you get some on the outside it will evaporate before it can destroy details. You can handle a joint normally after about 15 minutes, unless you used a *lot* of cement.

Never touch a freshly glued joint with your finger. You can deform details and will likely get some cement on you. This isn't good for your skin and can leave messy fingerprints behind.

Plastic cement will only join plastic to plastic. Remember it works by "melting" two pieces of plastic together. Since it won't 'melt' wood, metal, or resin (or most other materials) it can't "weld" them together.

If this is your first time using liquid plastic cement, try joining some scraps together to get a feel for how much cement to apply to the joints.

Oh yes, it's best not to inhale the fumes. Losing more brain cells doesn't help improve your understanding of model railroading! — **Charlie Comstock**

Q: I have heard that metal wheels are better than plastic wheels. What's the best source for metal wheels, and what are "semi-scale wheels?"

A: "Best" is one of those controversial terms – what may be best for *you* may not be best for *me*. Many manufacturers make replacement metal wheelsets, both only as wheelsets alone and with trucks included.

Since you mention "semi-scale," I assume you're thinking HO scale. In HO Kadee is the best known and they have a variety of wheel sets from 28" to 36" diameter and even smaller scale wheel diameters in HO_{n3} and On30.

Reboxx's unique line of replacement wheelsets in both 33" and 36" come with different axle lengths, depending on which manufacturer's truck the wheels will go in.

Others who make replacement trucks and wheelsets include Athearn Genesis, Intermountain, Branchline Trains and Life-Like/Proto2000.

Many of these can be purchased from MRH sponsoring advertisers Dallas Model Works and CMT as well as your local hobby shop (some of which are listed on our website – if your shop's not listed, ask them why not – it's free.)

Semi-scale wheels have narrower wheel treads than the normal .110" width. They're generally .088" wide, which makes them look more like prototype wheels.

Branchline Trains has a couple of good photos to compare between the two. On poorly laid track or poorly conforming turnouts, semi-scale wheels may have problems staying on the track – but you're likely to have some problems on such trackwork even with standard-width wheelsets.

Note that semi-scale are not the same as Proto:87 wheels, which feature an even narrower wheel tread width and shallower flange depth intended to match prototype wheels precisely. Proto:87 wheels don't work well with non-Proto:87 trackwork, especially at turnouts. — **Jeff Shultz**



TIPS

Making transition rail joints: One of the trickier parts of track-laying can be how to make transition joints between different rail

code sizes. I prefer to use Atlas code 83-to-100 transition rail joiners (see Figure 2).

While officially listed for joining code 83 and code 100 rail, I find these little guys work great for Code 83 to code 70 rail joints, and they even work for Code 70 to code 55 rail joints.

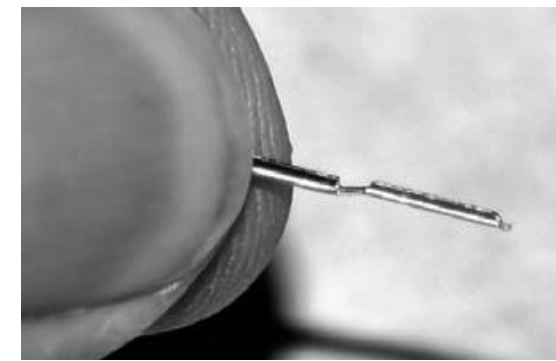


Figure 2: Joe Fugate finds Atlas transition rail joiners to be a god-send for joining rails of different code sizes together.

If you look at the differences in rail-height between these joints, you can see why these joiners work so well:

- **Code 100-to-code 83:** 0.017" difference
- **Code 83-to-code 70:** 0.013" difference
- **Code 70-to-code 55:** 0.015" difference

At most, these transition joiners miss by up to 4 thousandths, or about the thickness of a human hair. A slight tug is all it takes to pull up the lower rail to get a perfect alignment.

These rail joiners are almost too snug for code 100-to-code 83 transition joints, they're just right for code 83-to-code 70 transition joints, and they're a bit loose for code 70-to-code-55 transition joints.

I use an X-Acto knife to open them up a bit for the code 100-to-code 83 use, and I crimp them down a bit with needlenose pliers for a code 70-to-code 55 joint.

I keep a supply of these rail joiners on hand when laying track because



Figure 3: Charlie Comstock attaches his 3/16" masonite fascia to cleats at the end of the benchwork joists.

they're super handy for making easy transition rail joints.

You can get these Atlas transition joiners from our sponsoring advertiser [Dallas Model Works](#). — *Joe Fugate*

Fascia building and easy tunnel access:

I make my fascia from masonite hard-board. Lately I've used a single 3/16" thick piece. In the past I've used two 1/8" pieces of masonite laminated together with yellow glue.

I attach vertical cleats to the edge of my benchwork and screw the fascia panels to them using #8 flat head wood screws (Figure 3). I predrill and

counter-sink the screw holes to make the heads flush with the surface.

If the fascia isn't perpendicular to the joists, I bevel the cleats to provide a flat mounting surface for the fascia.



Figure 4: Fascia with access panel in front of a ridge.

I cut the masonite oversize before installing it, then I use a hand held saber saw (jig saw) to cut the top (and sometimes the bottom) fascia contours. It's nearly impossible to get mountain/valley contours correct at the bench, so cutting in place solves this.

For flat terrain I precut more accurately but still use the saber saw to put very slight undulations in the top surface since very little scenery is absolutely flat – even in Kansas.

If there is a large hillside contour in the fascia with a tunnel behind it I'll install an access panel in the fascia (Figures 3, 4, and 5).

I paint my fascia with a dull green latex house paint. Other modeler's layouts I've seen have used tan or black for their fascia.

— *Charlie Comstock*



Figure 4: Access panel removed, revealing a tunnel liner.



Figure 5: The side of the tunnel liner removed, giving access to the track and train inside the tunnel.



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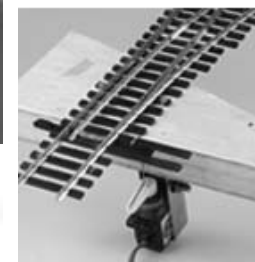
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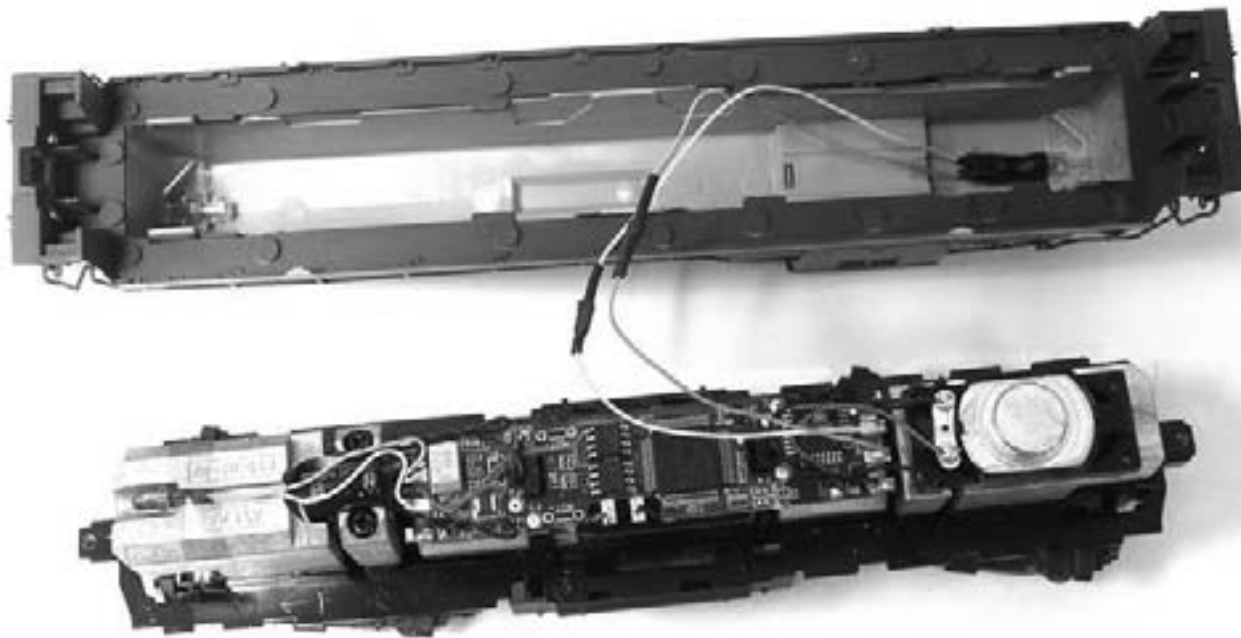


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Slim Rails in Stages

Distilling the essence of real-life scenes in HOn3

— by **Byron Henderson**

www.LayoutVision.com

Figure 1: Cosmetically restored S.P. narrow gauge engine #9 and a brace of cars are preserved with the original station building at the Laws Railroad Museum and Historic Site near Bishop, California. (Courtesy Laws Railroad Museum and Historic Site: <http://www.lawsmuseum.org/>).



The Carson and Colorado (C&C) started with a big dream in 1880: To link its namesake rivers via six hundred miles of three-foot-gauge rails. Although the southward-expanding line was greeted with enthusiasm by local townsfolk and businessmen, traffic sources never developed as expected. This prompted the famous (and perhaps apocryphal) quip by one of its owners after an inspection trip, “Gentlemen, we have built this railroad either 300 miles too long or 300 years too soon.”

Ultimately, tracks extended from the connection with the Virginia and Truckee at Mound House, NV to Keeler, CA on the shores of Owens Lake beneath the towering Sierra Nevada escarpment.

By 1900, the disappointed owners were only too happy to sell the Carson and Colorado to the Southern Pacific, who standard-gauged portions of the line in Nevada. By 1908, work was beginning on the Los Angeles Aqueduct, designed to transport (or steal, depending on your frame of reference and ZIP code) water from the Sierra foothills and Owens Valley to the burgeoning metropolis to the south.

This development spurred the building of the SP standard gauge “Jawbone” branch northward from Mojave to meet the narrow gauge line in Owenyo. This became the primary connection to the outside world for the narrow gauge.

Shortly afterwards, the abandonments began at the north end of the narrow gauge line. By 1943, the line had been cut back to Laws (see map next page, Figure 4). The loss of water to the aqueduct meant the loss of most agricultural traffic, but the S.P.’s “Slim Princess” soldiered-on until full abandonment in 1960 primarily on the basis of a variety of mineral traffic.



Figure 2: SP narrow gauge #9 leads a typical short freight past the isolated Zurich station on the way to Laws. Note the gondolas at right with mineral loads, likely bound for the transfer trestle at Owenyo on the return trip. Courtesy, Joe Dale Morris Collection: http://www.sphts.org/sphts_inprint_sp09.pdf.



Figure 3: Lucky railfans occupy nearly every available square foot as the Slim Princess rolls by Kearsarge station in October, 1955. Diesel #1 had arrived the year before, so the remaining steam power received lots of railfan attention in the last years of the line. Courtesy, Joe Dale Morris Collection.

Focus on Replicating Scenes – Sans Curves!

This HOn3 (HO scale, three-foot narrow gauge) layout is designed for phased construction in a bedroom-sized space. My custom layout design client’s primary goal was replication of some key scenes, along with some operating possibilities.

Because the original C&C was built primarily through empty, relatively-flat desert, most of the desired real-life locations were arrow-straight. My client wanted to maintain this as much as possible for the primary scenes, but I knew we’d end up with a lot of curves to coil a decent amount of running distance into the available space.

Portions of the room would not be available for years, pending the eviction ... er,

graduation ... of one occupant and the winding-down of a home-based business. So a phased plan would be needed to get some portion of the layout operational early, with additional land grabs as circumstances permit.

Prioritizing and Planning

The client’s top priorities for modeled locations were: Owenyo, with its standard gauge and narrow gauge yards; Laws, the northern terminus of the line after 1943; and the south-end terminus of Keeler, with the Sierra Talc plant that was the primary source of loads in later years. If an additional location or two could be added, fine, but this list (and especially Owenyo) were the key locations for inclusion.

Continued on page 4

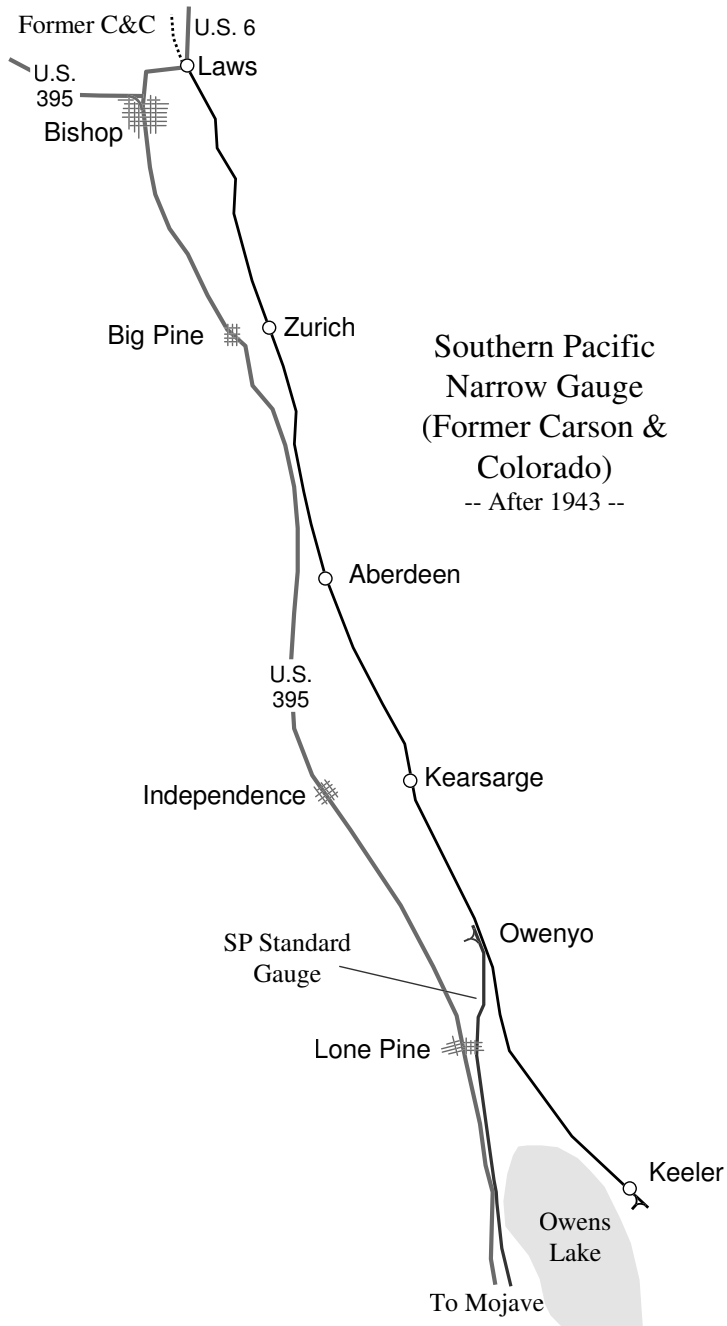


Figure 4: By the modeled era, the S.P. narrow gauge ran from Laws to Keeler in eastern California. Somewhat uniquely, standard gauge connections were made in the middle of the line at Owenyo, rather than at either end.

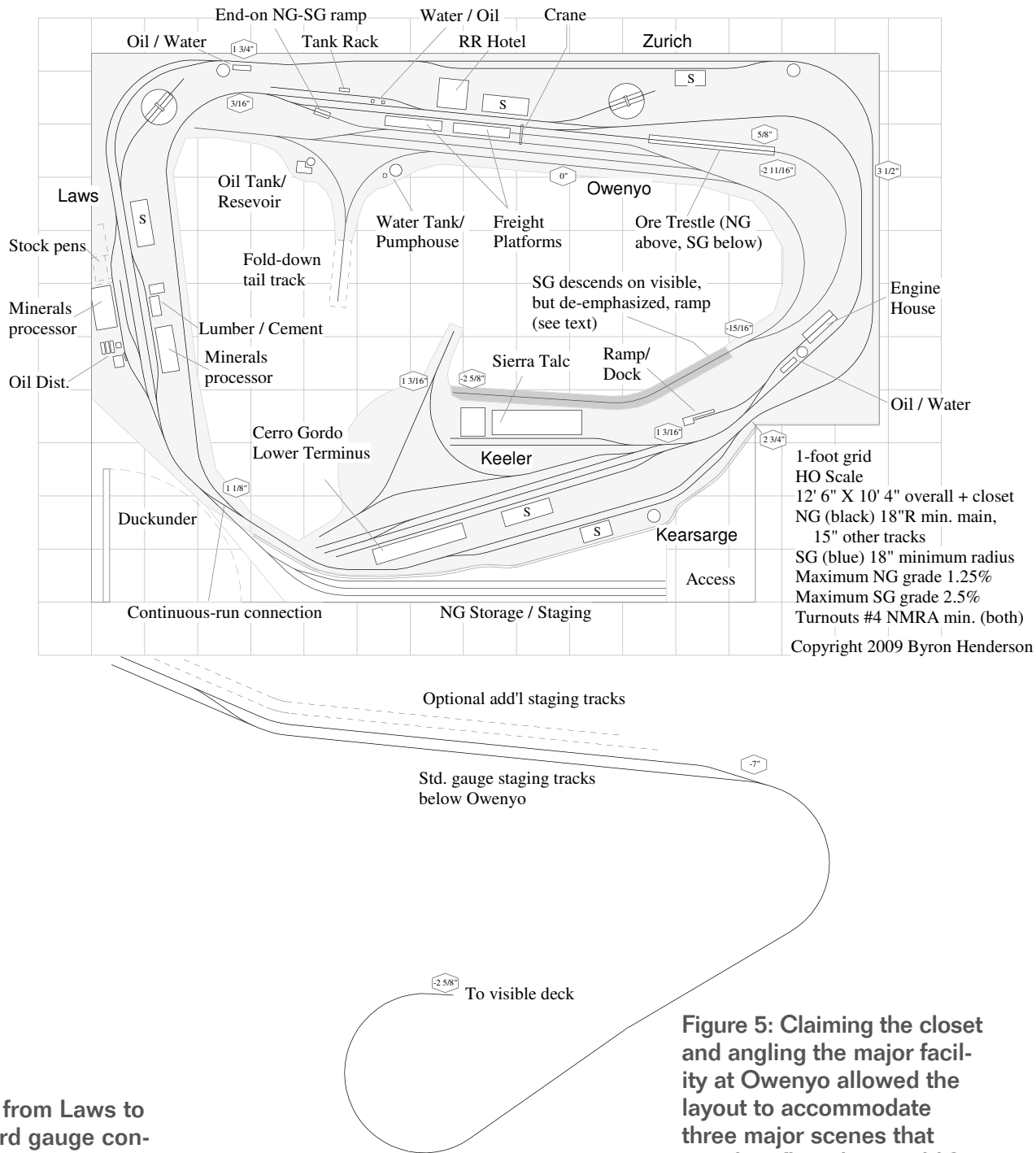


Figure 5: Claiming the closet and angling the major facility at Owenyo allowed the layout to accommodate three major scenes that mostly reflect their real-life configurations.

Initial thoughts on modeled era were the 1950s, but there is an off-chance that the layout will be backdated, so a possibility of representing points north of Laws was desirable. Some running room between the major locations was also requested.

Annexing the Closet for Longer, Straighter Yards

With these marching orders in hand, I set to work on the highest-priority location of Owenyo, which the client insisted must be laid out essentially straight, just like the real thing. Right off the bat, I could see that a decent straight representation of the side-by-side narrow gauge and standard gauge yards would take a lot of length. The best hope for

finding more length in the room was to angle this LDE (Layout Design Element). That helped, though there still really wasn't enough length – but hey, how about that closet?

After some negotiations with his cohabitants, my client indicated that the closet doors could be removed at some point and the full closet floor space used. But to begin, only one side of the closet wall could be encroached.

“The Wyes Have It”

That's one essential design decision down. But from which direction shall we view the layout? The line runs essentially compass north and south, but was timetabled as railroad west (Laws) and



Figure 6: Number 9 has a long train rolling at speed across the high desert. Note the auxiliary water tender behind the regular tender, necessary for operation across the long, dry line. Courtesy, Joe Dale Morris Collection.

Modeling the Slim Princess

Because the S.P.'s narrow gauge stayed in operation until 1960, it became a railfan favorite. The aging steamers were joined by a pint-sized GE diesel (dubbed “The Little Giant”) in 1954 and operations behind both steam and diesel were well chronicled by photographers in the last years of the line. Despite this railfan interest, there has not been a lot of equipment available for the SP narrow gauge over the years.

Classic Miniatures offered kits for some of the stations along the line as well as the Keeler engine house in HO. These are apparently out of production, though they turn up on auction sites and at train shows.

Engines and rolling stock are more challenging. A few brass models have been available over the years, and the former Roundhouse HOn3 engine kits have been the basis for kitbashing into something resembling the line's engines.

More and more HOn3 models are available all the time, though, so there is always a chance that more C&C equipment could be produced. And since many narrow gauge cars were transferred to the line as other SP-controlled NG properties closed down, some of these models might fit. Even some Colorado narrow gauge models might be good candidates for use as stand-ins or as kitbashing donors. ■

east (Keeler). If we want to keep map conventions (west to the left), that's one argument for keeping Laws to the left in whatever track plan we develop, viewing the layout from compass west.

But the most compelling argument came from looking at the actual configuration of the real-life locations. The wyes at Owenyo (standard gauge) and Keeler (narrow gauge) were must-haves – and in their correct relationship to the main line (roughly pointing compass east), for good measure.

In HO scale, and with this size room, there just didn't seem to be a way to orient the wyes to the “outside” of the space without compromising access and the rest of the design. So the wyes

confirm our course and we'll view the layout from the west. In order to mitigate aisle clearance when the standard gauge wye is not in use, the most troublesome protruding leg is designed to fold down out of the way.

Placing More Priority Points

With Owenyo roughly placed and oriented, we can turn to the other priority locations. I wanted them to be as far apart physically in the room as possible, and after some juggling, Laws seemed to work best on the left wall and Keeler along the bottom.

It was a mild disappointment to the client that we couldn't keep these as

straight as Owenyo, but the need to compromise is the reason we set priorities in the first place. Laws endures only the indignity of a curve at the RR east end, with the most important industries on essentially straight trackage. We angled this straight segment to the room to help add visual interest.

More liberties are taken with Keeler, essentially overlapping and compressing the major elements (the yard, Sierra Talc, and the end-of-line wye) that were strung out like pearls in a string in real life.

Note that the wye at Keeler is curved around a bit. This was done at the client's request to make it seem a bit distant from the yard tracks. A more-efficient freelanced configuration would locate one side of the wye parallel to the yard tracks, perhaps with a cross-over connecting them. But the choice here was to suggest "someplace else" by making no part of the wye exactly parallel with the yard.

These varying degrees of compromise and compression represent an important layout design concept: We needn't



Figure 7: Number 18 was the next-to-last steamer operating on the narrow gauge. In this November, 1951 photo at Laws the crew has probably just taken water before the run (compass) south to Owenyo. Courtesy, Joe Dale Morris Collection.



Figure 8: "Gallows"-style turntables turned the diminutive engines at Laws and Owenyo. The Laws Railroad Museum and Historic Site has preserved the turntable on-site, shown here with the snow-capped Sierras for a background. Courtesy, Laws Railroad Museum and Historic Site.

be slavishly-consistent in our design approach over an entire layout.

Considering the various desired elements in light of their priorities (in appeal, operational importance, etc.) helps us make the trade-off decisions.

Round and Round We Go

My first thought was to link the three primary locations in an around-the-room oval. But this approach put them much too close to one another in terms of running length. So we elected to go twice around the room for the point-to-point narrow gauge run from Laws to Keeler, with a continuous running

cut-off that will allow trains to build up mileage if desired.

In order to provide passing points, the stations of Zurich and Kearsarge were added, but with no attempt to accurately model the real-life locations. Kearsarge, in particular, is bent out of all recognition, but the client was happy we could get some running room and additional "towns" into the layout in some form.

Standards are Made to Be Broken

OK, not exactly broken, but varied, to be sure. The on-hand and contemplated

narrow gauge equipment will negotiate an 18" radius and turnouts based on the NMRA #4 template (such as FastTracks). But grades, not so much. For safety's sake, grades on the narrow gauge are limited to less than 1.5%. If the equipment proves stronger than expected, these could be increased during construction for more vertical separation of the two laps of the twice-around.

For the standard gauge, the equipment is expected to be quality 4-axle diesels for the most part, pulling 40- and 50-foot freight cars. This combination is a

little more robust in terms of performance, so grades leading to the subterranean staging yards are steeper and an 18" minimum radius is used.

Standard gauge trains will be short, and there's room on the wye to turn double-headed Geeps.

Willingly "Descending" Our Disbelief

To reach this lower staging lair, the standard gauge tracks must sneak off in plain sight. They descend in front of Keeler on a ramp that is intended to be as unobtrusive as possible.



Figure 9: Mt. Whitney station lost its depot building around 1911 when the standard gauge reached nearby Lone Pine and a depot was built there. Courtesy, Joe Dale Morris Collection.



Figure 10: The tiny trains of the narrow gauge were dwarfed by the immense spaces of the Owens Valley and the towering Sierra Nevada. Courtesy, Joe Dale Morris Collection.



Figure 11: Last steam survivor on the narrow gauge, Number 9 rolls a short train through Mt Whitney on the way to Keeler. Courtesy, Joe Dale Morris Collection.

The suggestion here is to paint track and roadbed on this ramp flat black, a theater trick to suggest “nothing to see here”.

I’ve seen this ploy in use (and it works on me). But should it prove too distracting in practice, some combination of scenery and aisle-side viewblocks might help to disguise the standard gauge exit.

Phasing In the Fun

In the early years, only narrow shelves along two walls and a corner of the closet will be available. But Laws can be built in its final configuration, with the passing siding at Zurich included to use as staging tracks in the interim. In order to avoid

compromising the length of Laws now, the tail track needed for runarounds is provided as a lift-out section.

The lift-out is designed to be long enough to make its support a matter of a simple cleat on the wall. With the lift-out removed, large items such as beds and dressers can still be moved out of the room and down the hallway to the left of the drawing. And the last items to go are the hanging closet doors! When that glorious moving day comes, more of the room will be available.



Figure 12: A short train rolls by Mt. Whitney station headed for Keeler in 1955. The boxcars are probably empties headed for the Sierra Talc Co. plant and the caboose is likely the venerable #401, a 34' combination baggage/coach car. Courtesy, Joe Dale Morris Collection.

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Figure 13: The beginning of the end for steam was the arrival of General Electric-built #1, dubbed the "Little Giant", in October 1954. In this as-delivered view, the 51-ton diesel wears a version of the S.P.'s then-current switcher livery. Rich Yoder Models is planning to release a model of SP narrow gauge #1 in On30 and On3: <http://www.richyodermodels.com/>. Photo courtesy, Joe Dale Morris Collection.



Figure 14: SP narrow gauge GE #1 works the ore trestle at Owneyo in 1955. The side-dump gondolas had an internal "A-frame" pitched floor to facilitate dumping into standard-gauge cars below. This view illustrates well the actual configuration of the high-line trestle. The layout compromises by having the standard gauge duck down because the narrow gauge can't climb enough in the space available. Looks like crews might have re-laid the narrow gauge track in the foreground (headed to Keeler) with some standard gauge ties. Courtesy, Joe Dale Morris Collection.

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In Phase 2 the tracks can complete an oval around the space, but must still cling close to the walls in deference to other needs for the room.

At this point, the largest and bulkiest furniture items will have been removed, so the lift-out can be replaced with solid benchwork in the client-preferred duckunder.

Also by this time, the client hopes to have a good variety of narrow gauge equipment built-up, so some storage/staging tracks are provided to accommodate them in-between exercise laps on the main.

Finally, Access to the Middle

Once the other uses for the room have wound down, Phase 3 may commence. Benchwork supports are built out into the room for the rest of the layout, and the staging tracks for the standard gauge are laid and thoroughly tested.

While only a couple of tracks are expected to be required, additional standard gauge staging tracks may be constructed now "just in case".

Assured that all is well "down below", the builder may cover the staging tracks with benchwork in confidence. Phase



Figure 15: SP # 1 switches at Ownayo in 1955. Note the two crewmen on the ground relaying hand signals to the engineer in the cab. The "Little Giant" is still wearing her as-delivered paint, but the desert sun and sand storms will necessitate two repaintings before abandonment in 1960! Courtesy, Joe Dale Morris Collection.



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4 includes the side-by-side yards in Owenyo and a temporary connection to the narrow gauge main line. This allows point-to-point operation between Laws and Owenyo, with as many laps as desired in between. The prototype's distinctive "gallows" style turntables and engine service facilities allow for realistic operation with engines headed in the proper direction.

In the final phase, Keeler is constructed and the full layout is in place. The narrow gauge staging tracks along the lower wall of the room are slightly hard to reach, but may be kept in operation as a place to store "extra" narrow gauge equipment. And of course, if the layout is ever backdated to before the 1943 abandonments, those staging tracks will represent Benton, NV and other locations beyond Laws.

Compromises and Creativity in Owenyo

In real life, Owenyo's side by side yards and ore transfer trestle stretched out for more than a half mile. Substantially compressing this in length creates challenges in elevation differences that were critical to the real-life operation of this transfer point. I compensated with some tricks, some inversion of reality, and turning the occasional blind eye.

There was never any dual-gauge trackage in Owenyo. Many commodities were transferred by men with handtrucks across the platforms between standard gauge and narrow gauge boxcars. A modest crane could be used to wrestle other items from flat car to flat car. These freight transfers

were easily simulated on the model, with a small elevation difference between NG and SG car floors reflected in the railhead heights to bring all cars to the same platform height.

Mineral Transfers – Solid and Liquid

Some mineral commodities were transferred from the narrow gauge on a transfer trestle. Narrow gauge gondolas or modified boxcars were shoved up the steep trestle to discharge their contents into waiting standard gauge ore cars or gondolas below. In the model, there isn't enough room to have the narrow gauge climb sufficiently.

So in a reversal of real life, the standard gauge descends sharply to get enough clearance below the trestle for low ore cars or gondolas to be spotted. This actually works well because the standard gauge must descend anyway to eventually duck beneath a leg of the wye at Keeler.

Bunker oil for the narrow gauge's steamers was apparently offloaded at a facility located along the standard gauge wye. Although it's not completely clear, it appears that this may have been loaded into narrow gauge tank cars via the oil crane used to fill tenders.

It also is a mystery as to whether any tankcar loads of gasoline were somehow transferred at Owenyo. A 1920s Sanborn map of the oil distributor at Laws shows gasoline pumps located trackside.



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Because the client has a few narrow gauge tankcar kits, I added a tank rack on the narrow gauge near the oil and water spouts, imagining that standard gauge tank cars of gasoline could somehow be unloaded and their contents transferred. But this is completely free-lanced and not suggested by any proto-type information discovered to date.

A final transfer point was the end-on ramp where narrow gauge engines could be transferred onto standard gauge flat cars (for major shop service of steam engines, for example).

There is no room for the grades necessary to reach the real-life difference in heights, so we simply do the best we can and include ramps that are too close in elevation to actually be used.

Operations on the Layout

For most of its life, the S.P. narrow gauge ran short mixed trains with a converted combine or coach as a caboose. The layout is set up for roughly ten-car trains, plus power, auxiliary water tender, and caboose. With the major transfer point in Owenyo, operations were primarily focused on the line between there and Keeler. But occasional turns operated to Laws, as well.

These operations can be readily duplicated on the layout, with diminutive trains being made up in Keeler to switch out the transfer facilities in Owenyo and the industries in Laws. The standard gauge also provides switching interest, so a couple of crews could be kept enjoyably engaged at an operating session.

Although it was probably rare in later years for two narrow gauge trains to be operating on the main line simultaneously, the passing sidings make it possible for meets and passes to occur on the happy occasion when additional operators are available. And if the layout is ever backdated, staged trains from two points north will add to the traffic.

Though the real-life line found itself truncated and reduced in scope over its lifetime, this layout will only get bigger and better!

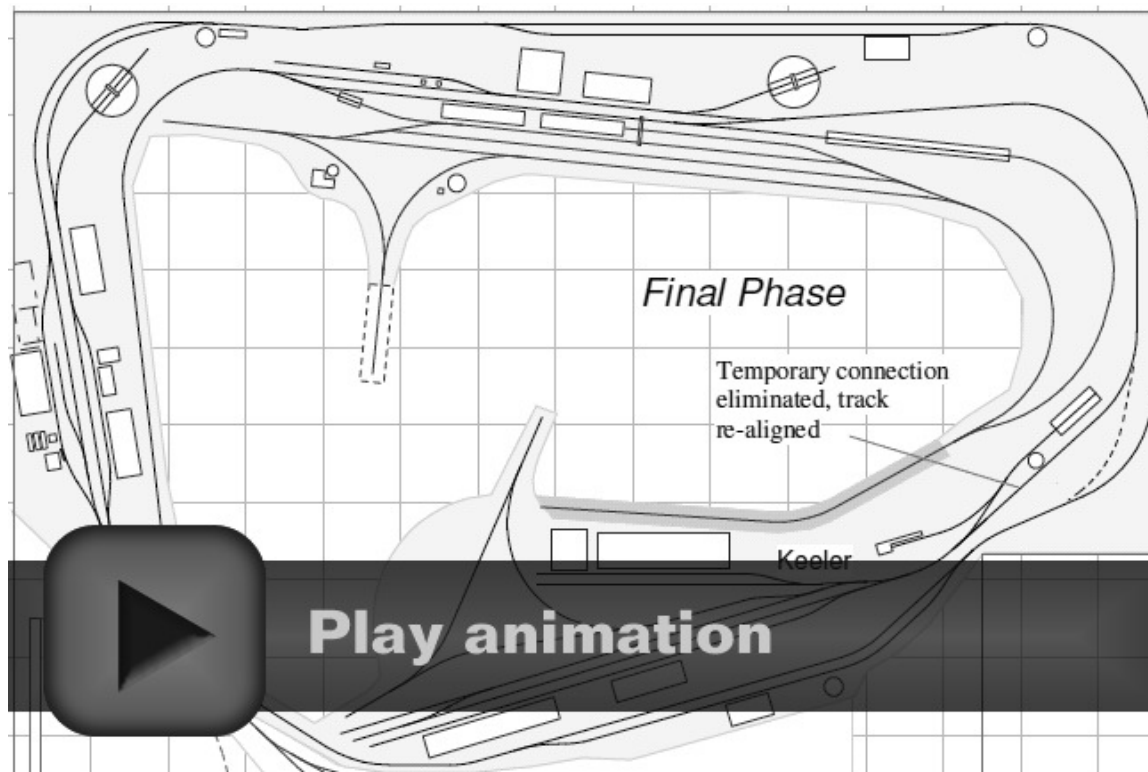



Figure 16: Because the room must accommodate other uses for some years, a phased approach allows increasing operating potential and modeling opportunities over time.

Byron Henderson is a custom model railroad layout designer from San Jose, CA. His own under-construction proto-freelance N scale layout, the Oakland Harbor Belt, is focused on waterside freight terminal operations near Oakland, CA in 1955. Byron is a member of the Layout Design SIG and Operations SIG, and is a past editor of the LDSIG's Layout Design Journal.

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References

For years, one of the best sources of information on S.P.'s former C&C narrow gauge has been George Turner's *Slim Rails through the Sand* (Trans Anglo Books/Interurban Press; 1964). This book was the primary reference for the layout design in this article. Recently published is Joe Dale Morris' *Southern Pacific's Slim Princess in the Sunset: 1940-1960* (Southern Pacific Historical and Technical Society; 2009). As of this writing I haven't received my copy yet, but it looks like an excellent source.

http://www.sphts.org/sphts_inprint_sp09.pdf ■



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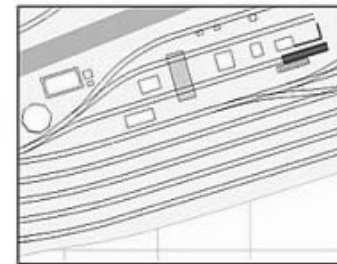
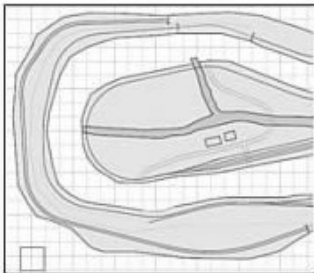
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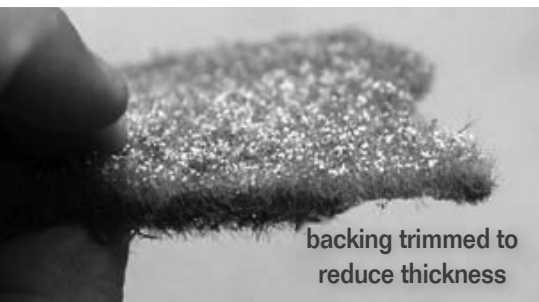
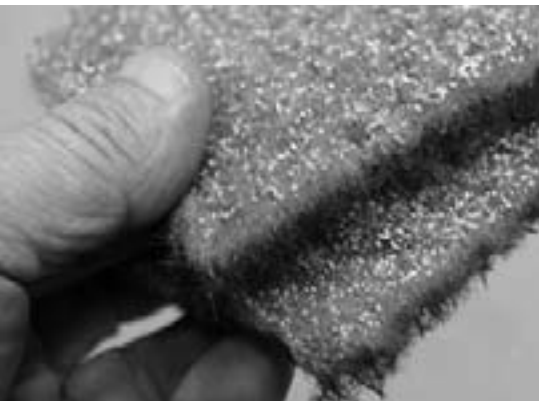
The Scenery Scene

Flower Power

by Charlie Comstock

Is your layout drab? Does it appear bereft of cheer? Are your 'little people' starting to complain about the 'blahs?' How about planting some flowers to help cheers up all the locals?

FIGURE 1,2: Flower mats (top) and mat with its thinned backing (below).



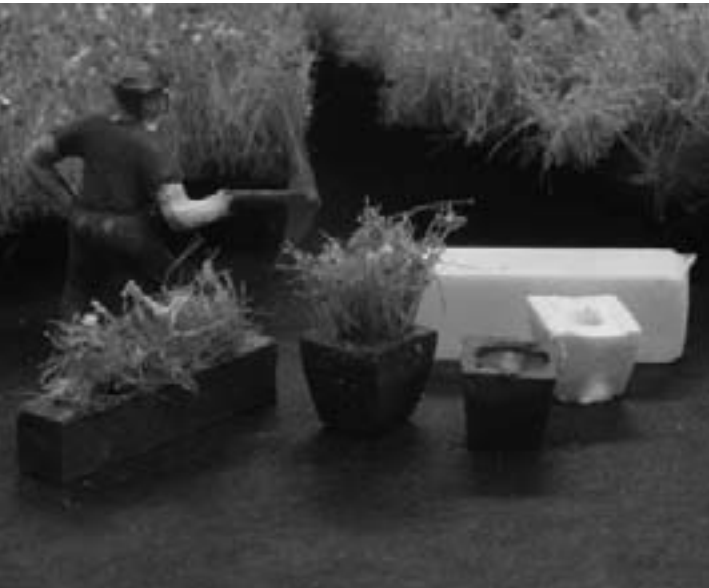
backing trimmed to reduce thickness

Instead of scratch-building microscopic flowers, I bought a sampler pack of Sil-Flor flower mats with 4 different types of flowers from [Scenic Express](#).

Sil-Flor flowers look great but they have a problem: in HO scale they're too thick! A good pair of scissors lets me trim their backing removing most of the bright green roots (figure 2).

After thinning the backing I tear off small bits and pieces. If I'm planting

FIGURE 3: Sil-Flor flower mats and an assortment of pots and planters in various states of construction.

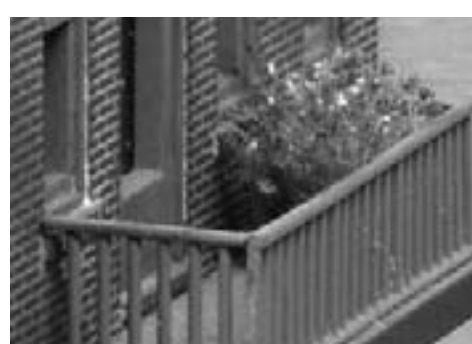


gardens or weeds I just dip the pieces in a small puddle of white glue and set them on the layout grouping them with bushes and static grass.

FIGURES 4-7 (right, top to bottom): You'll find wildflowers growing nearly anywhere. All it seems to take is water and dirt.

I planted mine mixed with grass and weeds for an unkempt look and white-glued them in place.





FIGURES 8-10 (clockwise from above): The planter (above) started as 1/8" square stock. I made the flower pot (right) from a bit of 1/8" styrene round stock. I drilled it to make room for the flowers then gave it a cone shape with a jewellers file.

Sometimes my scale citizens like their flowers potted. I carve pots and planters out of small bits of styrene, drilling holes in them to hold the flower's "roots". I brush-paint the pots roof-brown or box-car red. I tiny tufts of flowers into the holes in the pot or planter box, securing them with some ACC. When the ACC sets I cut off any excess "roots" protruding from the pot's bottom so they'll sit flat.

With potted flowers it's important to tuck ALL of the bottom part into the pot or the result is sloppy. Try to avoid random stalks going every which way. After I started planting flowers most of the locals seemed to cheer right up.





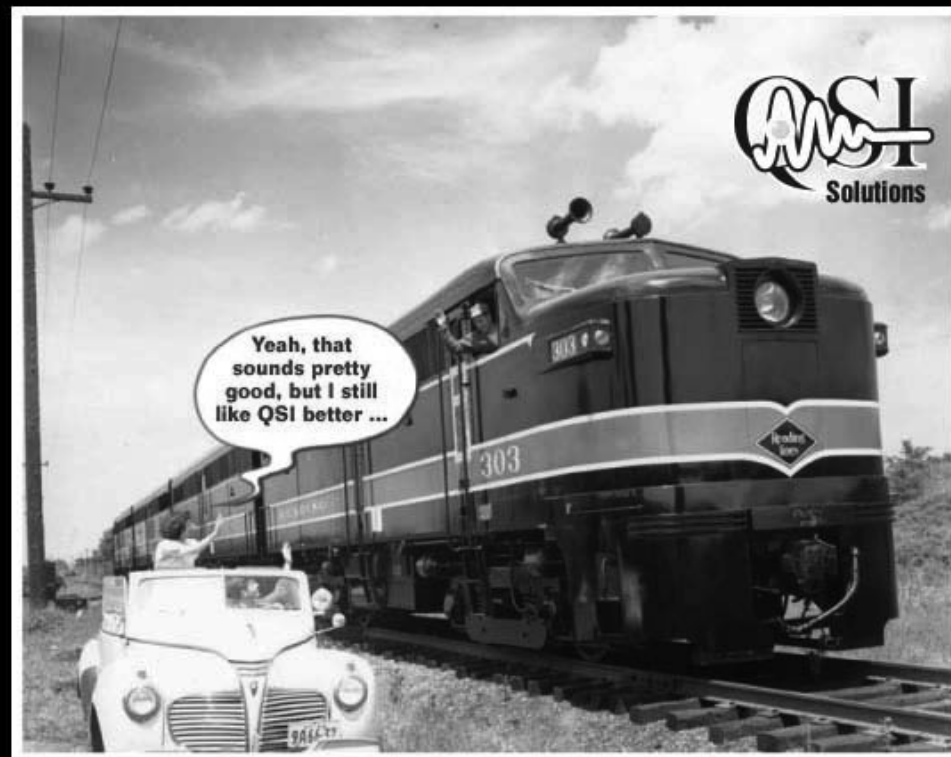
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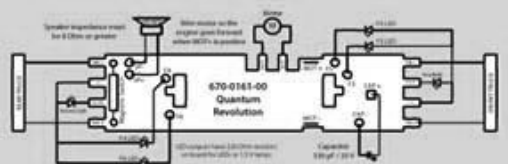
FIGURE 11: A flower bed makes the folks in this building happier. I cut a strip out of Sil-Flor and white glued it in place.



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Building an Operating Turntable and Roundhouse: My Modular Adventure – Part 1

– by *Les Halmos*

Photos by the author

I am modeling a proto-freelance railroad I call the “CB Rail”, set in the later transition era (1960 – 1970). I base my CB Rail on the Canadian National prototype. My main interest centers around the position of hostler, which may seem at the outset to be a limited operational position without that much attraction. But it all depends how far you are willing to take it!

In my case, I want to do a lot of passenger train running and limited freight train running out of a staging area, with the focus on the trains running through great scenery. I want to concentrate on the job of the hostler – and that entails a lot

more than meets the eye, but that’s another article. See the [More Information about Hostler Operation sidebar](#) if you would like to know more.

In this 3-part series, I cover construction of a module from beginning to end, including the planning needed before you can proceed to construction. In Free-mo, the size of a module can vary greatly as long as you build the track interface at the edge to the 6”x 24” standard.

This turntable and roundhouse module is to be part of my home CB Rail layout, so the dimensions are different from that of a typical 2 by 4 foot module. This module also forms one of seven modules that make up the CB Rail engine facilities.

Even though many of my home layout modules are not typical, they can hook up to a Free-mo layout. As far as their construction goes, it is virtually the same as any other module. So let’s get started!

STEP 1: Start with the Track Plan

You should have a general plan of what you want to build and how it is going to fit into the space you have available. I did that with the help of John Armstrong's book "Creative Layout Design" (Kalmbach Publishing, 1979).

I used AutoCAD, which made a big difference in the planning and design stage. It's a lot easier to erase and redraw it on a computer than to tear it up and rebuild it.

A lot of new products have come along that greatly enhance the task of drawing a layout to scale, like Central Valley tie strips and Fast Tracks templates (I like to use Micro Engineering rail and Central Valley tie strips).

Other alternatives to AutoCAD include 3rd PlanIt, Cadrail, Xtrak CAD, and Templot.

The advantage of using scale drawings of the track, especially turnouts, will become evident when we get to the track installation section in Part 2. The diagram here shows the area being modeled in this series.

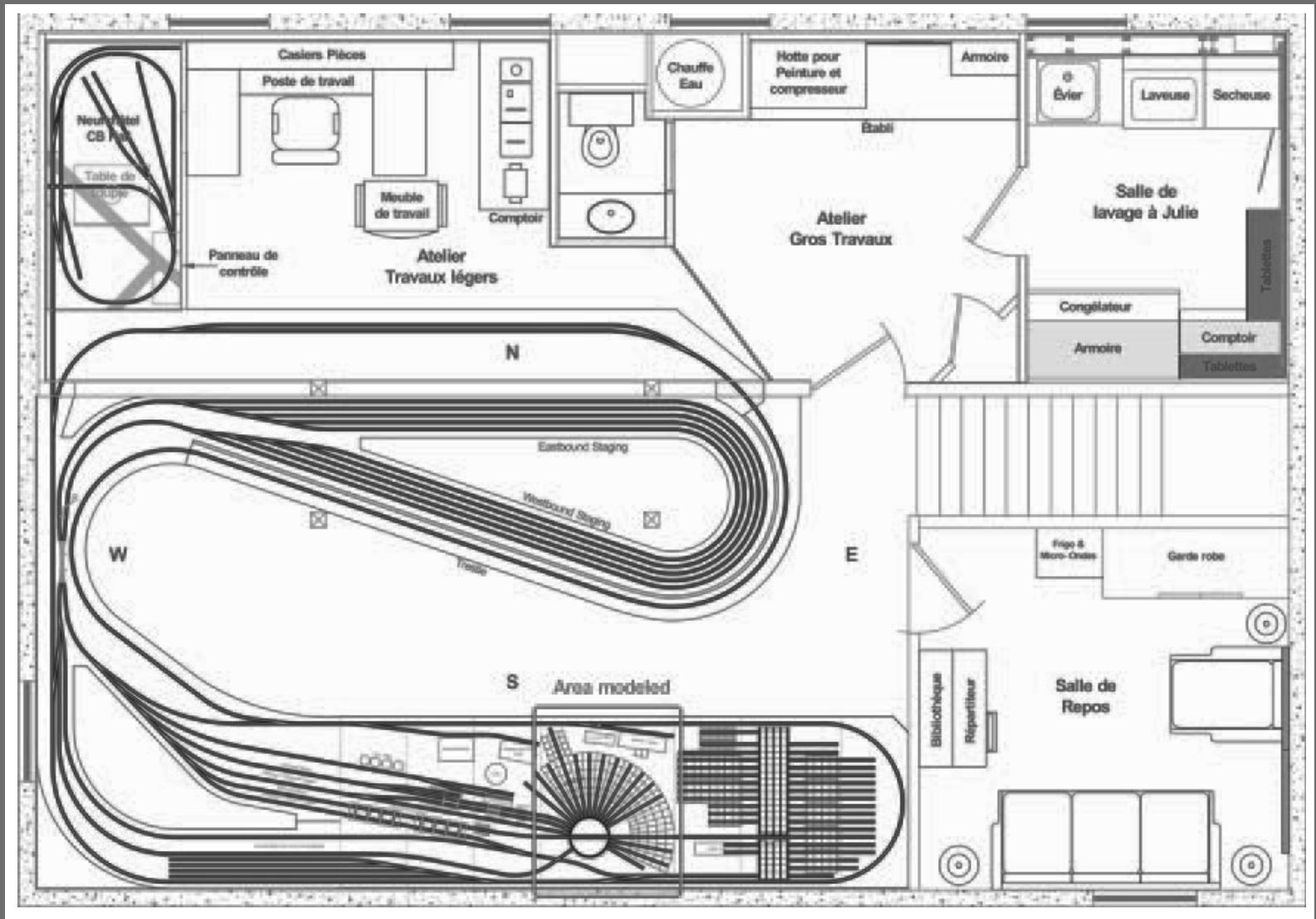


Figure 1: CBRail Home Layout – under construction. To view a hi-res version of this drawing, [click here](#).

STEP 2: Planning the Structures (the Roundhouse and Turntable)

It's wise to have the model structure dimensions (or a prototype plan available) to see if things will fit your space.

For the turntable, I already owned a Diamond Scale turntable. For the roundhouse, I decided to scratchbuild using the prototype found in Trenton, Ontario as my starting point. With just a little selective compression, it all fit into a 48" x 61.25" module.

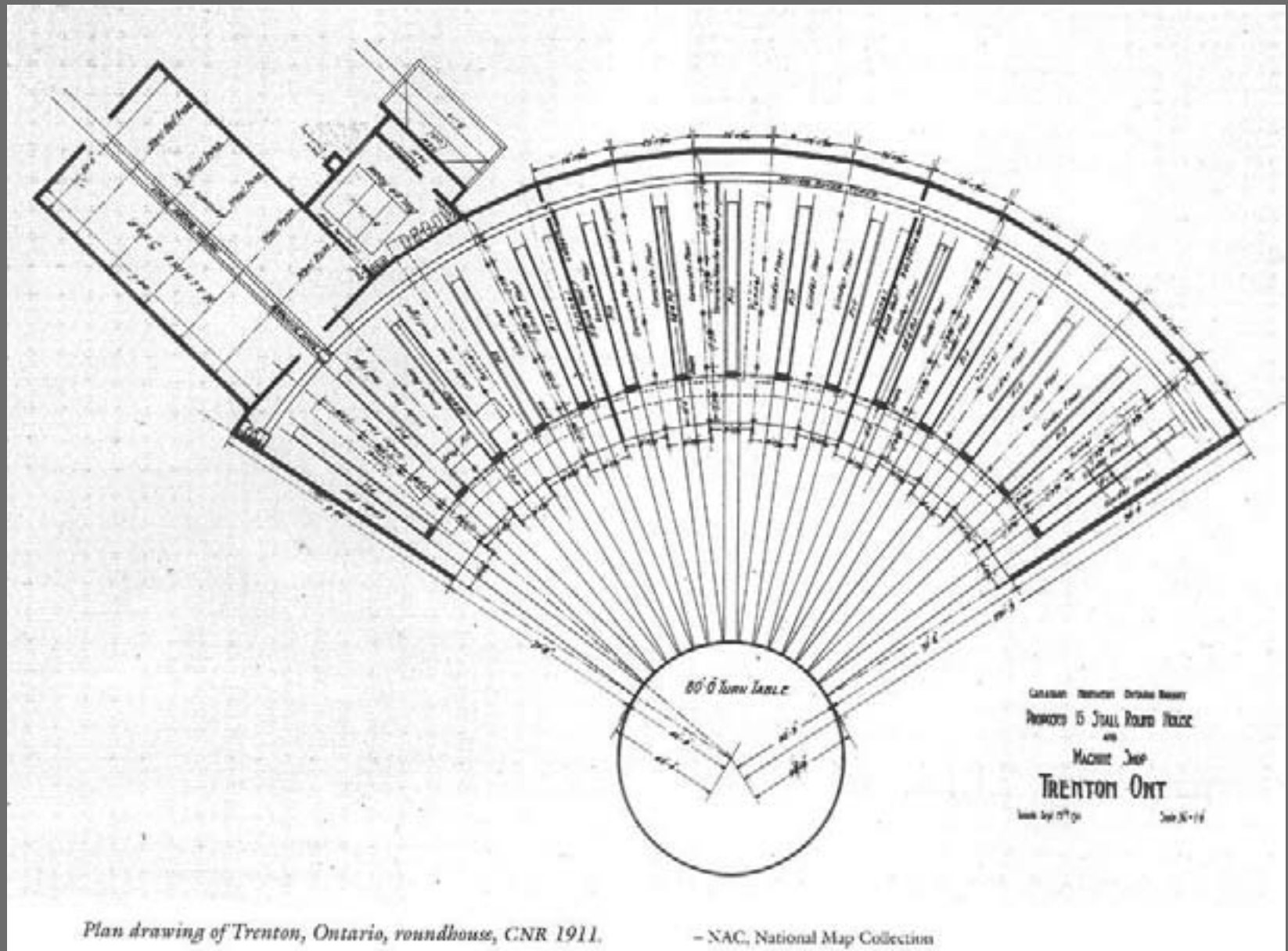


Figure 2: Turntable & Roundhouse prototype drawing.

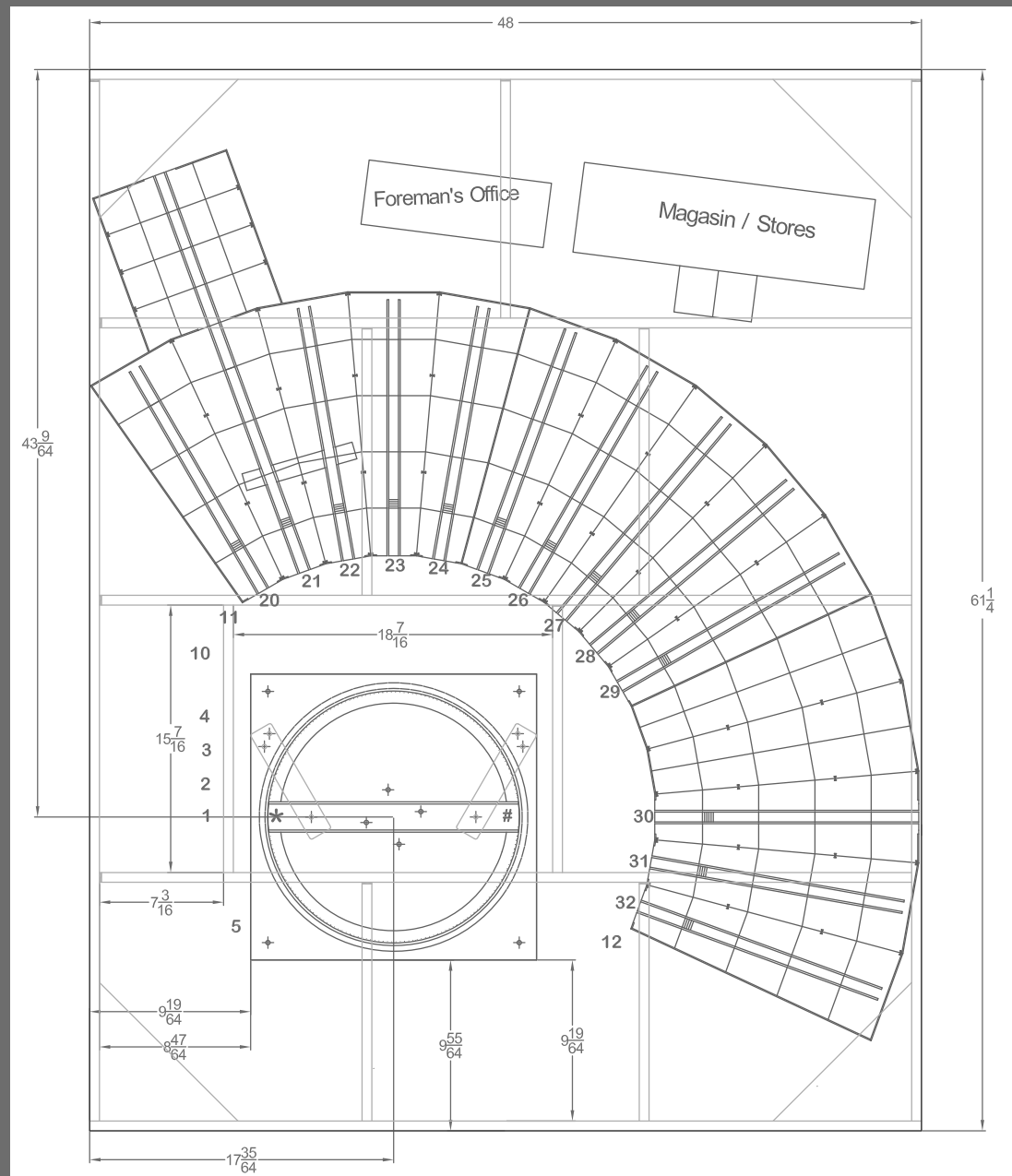
STEP 2: Planning the Structures (the Roundhouse and Turntable) *continued*

I wanted to have a 15 stall Roundhouse like the one shown in Figure 2. I studied the Trenton Roundhouse plan thoroughly to see if I could adapt it to my available space.

I looked around to see what was commercially available for the Roundhouse (I already owned a Diamond Scale 105' so that was a given). I did not find anything that came close to the Trenton roundhouse, so I decided to scratchbuild it. I had an old Heljan roundhouse that I bought at a swap meet, and I used that plus the prototype plan to draw my own. Step 17 and Figure 63 illustrates the results. I will discuss the roundhouse in greater detail in Part 3.

Using the AutoCAD drawing, I made a detailed dimension drawing for construction shown in Figure 3. (Some dimensions have been omitted for clarity).

Figure 3: Positioning and dimensions drawing.



Hostler Operations

If you're interested, you can find more detailed information about hostler operation in the modeling press:

- The Maumee turns a Mike
How to model steam locomotive servicing By Bill Darnaby
<http://www.trains.com/mrr/default.aspx?c=i&id=116>
- The Model Railroader's Guide to Locomotive Servicing Terminals, by Martin J. McGuirk (Kalmbach Publishing, 2001). <http://www.martymcguirk.com/Products.asp>
- Model Railroad Podcast show podcast #60 (contact host Ryan Andersen and ask for a copy of show 60).
<http://modelrailcast.com/> ■

STEP 3: Collect All the Necessary Materials and Components

Having gathered everything, I was now ready to start building.



Figure 4: Diamond Scale turntable kit.

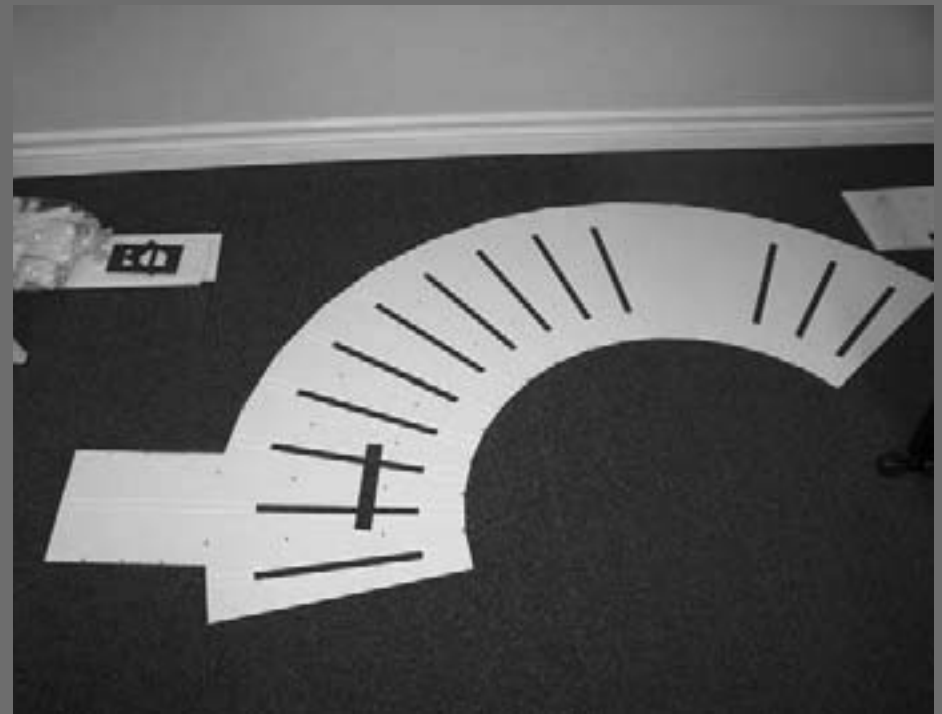


Figure 5: Roundhouse floor.

STEP 3: Collect All the Necessary Materials and Components *continued*



Figure 6: Roundhouse walls and supports.

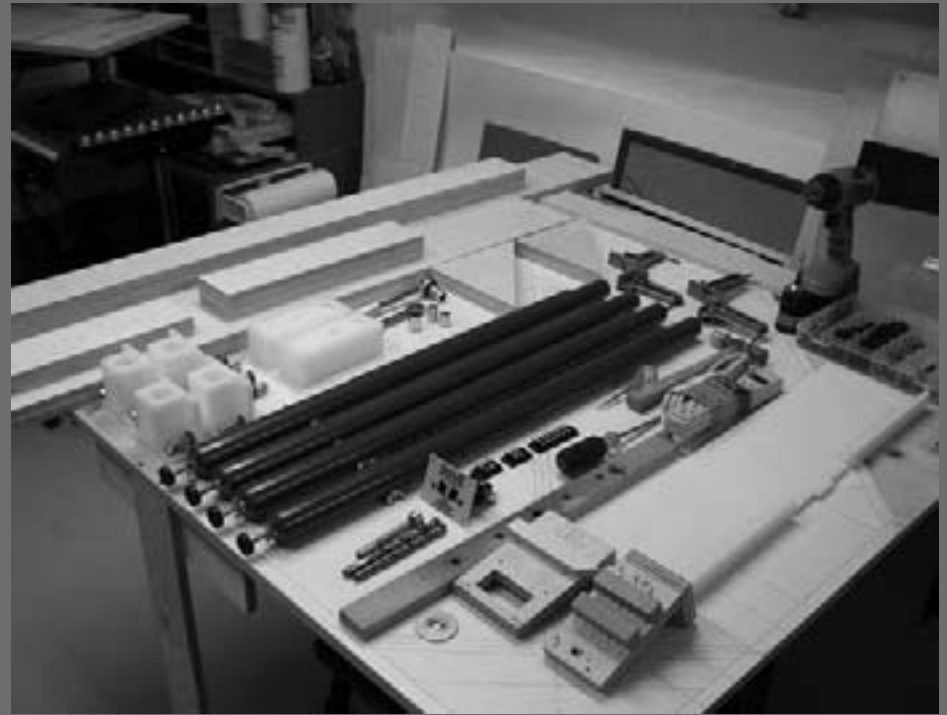


Figure 7: Module parts & hardware.

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STEP 3: Collect All the Necessary Materials and Components *continued*



Figure 8: New York Railway Supply control.



Figure 9: Electrical, DCC and electronic parts.

STEP 4: Design the Module Frame (Benchwork)

For modules, a lot has to be considered when it comes to building the frame (or “benchwork” to use the equivalent static layout term).

Modules differs a lot from a static home layout because modules get moved around on a steady basis. Good strength and light weight matter more in module building, but if compromises have to be made, making a module stronger is more important than making it lighter, in my opinion.

Most popular lightweight module methods work acceptably, but aiming for a lighter module weight sometimes compromises the rigidity and the strength of the module. On outings, ultra-lightweight modules tend to get damaged and need repair.

The module I am building here is not a lightweight module because the components to control the turntable are precision instruments and call for a sturdy base. (More on this later.) Even so, this module can be handled by two people, as is the case with most modules.

The AutoCAD drawing in Figure 10 shows the framing for the module I am building and it is one of a seven-module set which will be part of my home layout. This group of seven modules will be connected to a Free-mo layout once completed. Although the modules are 61-1/4 inches wide the left-outmost module has provisions to mate with the standard 24 inch Free-mo interface.

The 8” triangular gussets (item 16’s) in each corner provide stability to the module frame.

The square on the lower left close to Item 13 on drawing (M2) shows the location of the Diamond Scale Turntable assembly. It is quite evident that the

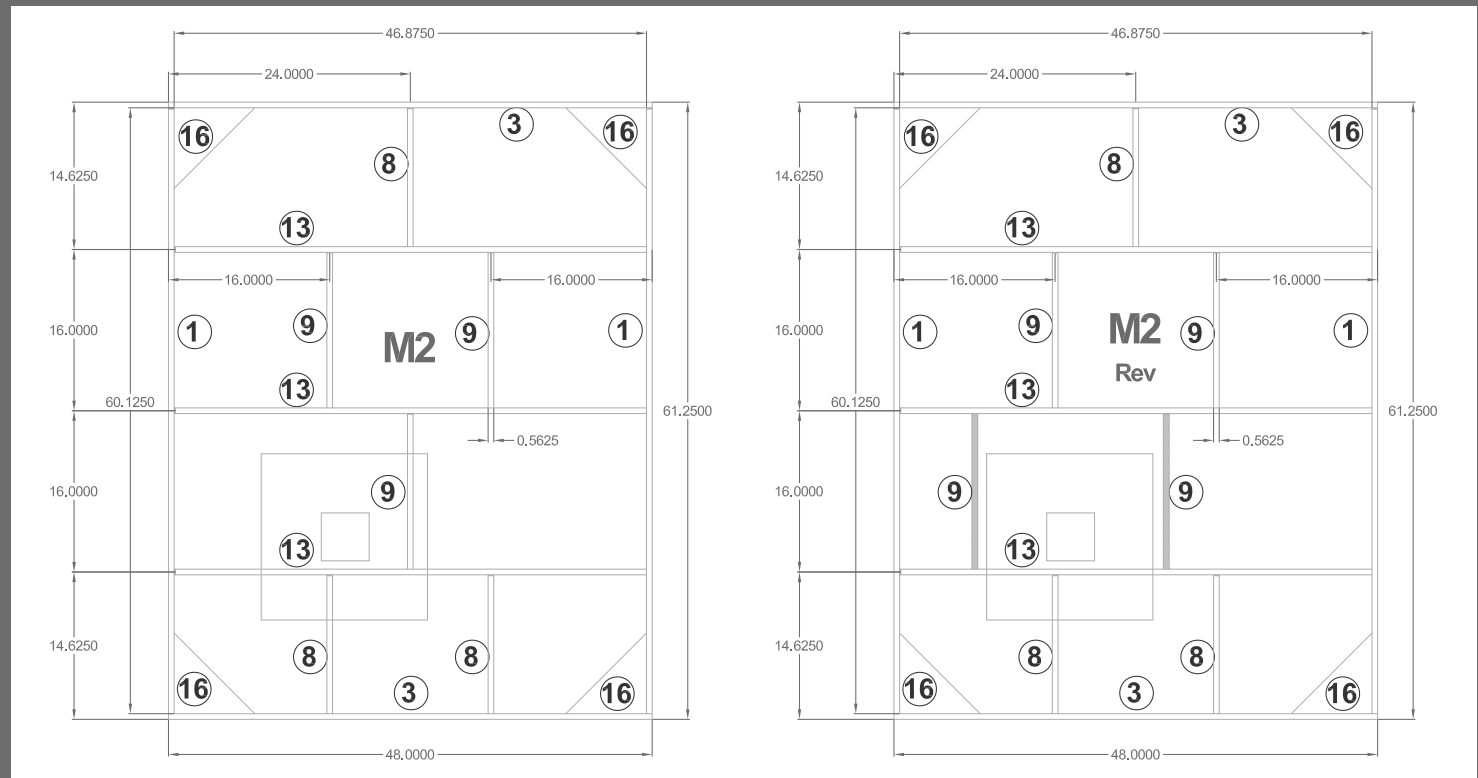


Figure 10: Module frame drawing – note the pieces moved in M2 Rev. Circled numbers are itemized Russian Plywood (furniture grade) framing parts of the module.

cross member (Item 9) is in the way. I moved it and added another as shown on drawing (M2 Rev). This way it was possible for me to slide the assembly in place without any interference.

I’m using a butt joint design, with a 6” high outside frame and 3-1/2” high cross-members.

Having access to a professional shop, I had all the wood members pre-cut from 9/16” Russian plywood using this AutoCAD drawing that I supplied to them. Russian plywood is a fine furniture-grade wood with good strength and dimensional stability – Birch plywood is similar.

STEP 5: Prepare the Module Frame Pieces



Figure 11: Preparing / Sanding rough edges.

The shop cuts, while very precise, had some edges that needed a bit of sanding.

When we built the Free-Modu-Rail modules I had a Ultra high molecular weight plastic (UHMW) jig fabricated with all the necessary screw hole positions pre-drilled. With the jig, not only could uniformity be maintained, but also punching and pre-drilling the screw locations avoids splitting the edges of the plywood. This turned out to be a great time saver during assembly.

(You can see the jig drawing at this URL: <http://www.cb-rail.com/Free-Modu-Rail/Template.jpg>.)

STEP 6: Assemble the Module Sideframe Pieces



Figure 12: Using template to mark drill holes. Ray Assellin is holding the table steady.

I'm using a corner module jig table for my construction, although it's a little smaller than the module I'm building – and the jig table provides a nice solid support as we build.

As you can see in Fig 12, the module is longer than 4 feet – but that's not a problem. I drilled and assembled one end and then flipped the module over and did the other.

STEP 6: Assemble the Module Sideframe Pieces *continued*



Figure 14: Gussets glued and screwed.

When building a module frame, I prefer to use metal wood screws rather than drywall screws. I find drywall screws to be somewhat brittle and to break easily, which doesn't give a transportable module long-lasting strength at the joints. I only glue the triangular corner gussets. (You might ask why not glue all the joints? In step 4, Figure 10, I explain why. Being able to unscrew and move cross-members can be a life-saver at times.)

I used clamps to hold the parts together while I pre-drill and screw each joint. To position the corner gussets at the proper height, I made two blocks 2" square on which to rest them during assembly, see Fig 14. I use 3 screws for the sideframe and 2 screws for the gussets to make sure I get a secure hold at the corners of the 6" sideframe, as shown on Fig 15.



Figure 13: Assembling sideframe and gusset.



Figure 15: Sideframe and gusset screw positions.

STEP 7: Assemble the Module Cross-member Pieces

From this picture you can see that the cross members are not as wide as the outside side frames. I prefer narrower cross-members to allow using risers to support and level the track subroadbed. With the gussets being at 2 inches and the cross members at 2.5 inches from the top, this also allows clearance for wiring and other components to be installed (like a turntable pit and its mechanism).

As previously mentioned, I am not gluing these to the module sideframes, only screwing them. Murphy is always around the corner, so it's best not to get too overconfident!



Figure 16: Assembling sideframe and gusset. I couldn't have assembled the module without Ray's help.



Figure 17: Cross members screwed but not glued.

STEP 8: Add the Leg Sockets

I designed leg sockets for the Free-Modu-Rail modules. Based on my recently acquired expertise in plastics (see 'The Shop' sidebar), I used UHMW plastic which is a very slippery yet strong material. This design allows the PVC legs to be slipped in without the necessity of bolting them in place.

The one disadvantage of this leg method is that a single stand-alone module needs cross bracing for stability. When a module forms part of a multi-module setup, the assembly becomes quite sturdy.

(Detailed drawings can be seen at the following URL: <http://www.cb-rail.com/Free-Modu-Rail/Interface-Legs.jpg>)

There are many other methods to attach legs to the module; many types are available and documented on the Free-mo website.

I attach the UHMW plastic leg sockets with two bolts and Tee nuts, making for a very strong assembly (see figures 18 and 19).



Figure 18: Plastic (UHMW) leg sockets.



Figure 19: Tee nuts.

About My Turntable and Roundhouse

Here's a not-so-closely-guarded secret: if you own a Diamond Scale turntable like I do, trying to control that table via a mechanical or fancy hand crank method (although it has been done before) will be an exercise in frustration. As my friend and MRH staffer Marty McGuirk says, you will have nothing but spider webs in your very seldom-used turntable pit.

So to provide the turntable motion, I selected the New York Railway Supply PTC Model III control system. I am extremely happy with their system, which you will see as this series unfolds. There is just no other system that can control your turntable in a trouble-free prototypical manner like the PTC Model III.

In my case, the turntable forms a key focal point on my layout. Although the NYRS system is not inexpensive, I felt the expense was reasonable and justified. ■



Figure 20: Diamond Scale turntable and pit.

STEP 9: Build the Cleats and Risers



Figure 21: Pre-drilling the cleats.



Figure 22: Cleats ready to go.



Figure 23: Pre-drilling the risers.



Figure 24: Adding a cleat to the top of each riser.



Figure 25: The finished product.



Figure 26: Cleats installed around the inside perimeter of the module.

STEP 10: Add the Subroadbed

For the module roadbed I used ½ inch fibre insulation sound-proofing board, and for the subroadbed I used ½ inch plywood.

After finishing the frame, I painted it to seal it. I recommend painting the frame (on all sides) to prevent humidity from affecting the wood.

In Figures 27 and 28, I installed the peripheral cleats along the inside of the frame to support the subroadbed (Thickness of cleats is 1"; 1/2" Plywood subroadbed and 1/2" fibre insulation board roadbed). On the top right hand corner of Figure 27, notice I cut a small piece of plywood to the exact thickness of the subroadbed and roadbed, enabling me to position the sideframe cleats so everything comes out flush on top. (By the way, the rail segments used as weights are not from Micro Engineering



Figure 27: Sideframe cleats installed.



Figure 28: Subroadbed.

STEP 11: Add the Risers and Finish Installing Subroadbed and Roadbed

Next, I installed the individual risers with cleats built in step 9, to aid in supporting and adjusting the whole subroadbed and roadbed assembly. The photos to the right show how I levelled and clamped the risers and screwed them into the plywood subroadbed.

I had the cut-outs on both the roadbed and subroadbed pre-cut at the shop, but I could have also done it myself with a jigsaw. The cut-outs are for the Turntable and the Roundhouse pits. I will cover the specific construction steps for making use of the pit and roundhouse cutouts later.

I painted both the subroadbed and roadbed prior to fastening them down to the module.



Figure 29: Installing and levelling the risers.



Figure 30: Positioning risers.



Figure 31: All done.

STEP 12: Cut the Mounting Holes for the Electronics

Next, I drilled and cut mounting holes for all the fascia-mounted components: the PTC Keypad, the Controller, the Automatic Power Router and the Digitrax UP5.

Use of proper tools gets a good-looking finished product. I used a few simple tricks like: using a paper template to prepunch hole locations, using a backplate when drilling to ensure a clean cut, and using tape around the cut-out to prevent scratching the finished surface with the jigsaw



Figure 32: Created a paper template.



Figure 33: Used a Forstner drill bit.



Figure 34: Used a backplate to help get a clean cut.

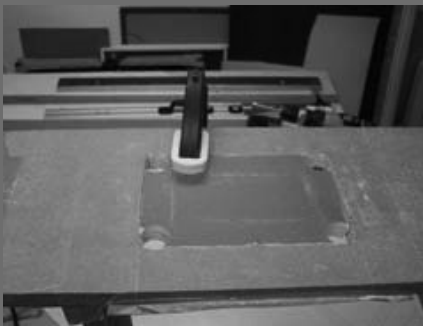


Figure 35: Used a clamp to hold the cut piece.

And yes, no one is perfect. I did make a mistake. I drilled one hole too many, but I just repaired it and moved on!



Figure 36: Oops, I made a boo-boo. The PTC III and the APR I are only mounted on one side.



Figure 37: Holes for the fascia-mounted components.

I am almost ready to start the fun part. If you want a quality product, don't forget the "final finishing". Sand, paint, then sand and paint some more. This gives the finished module a more pleasant look. After all that work I would hate to end up with a shoddy-looking module!



Figure 38: Don't forget the final finishing. Continued on [page 64](#) ...

My Journey into Modular Model Railroading

Discovering the Hobby

I have always loved miniatures and built several including planes, ships, model cars and trucks. But none of these static models lit any sparks for me and were quickly shelved.

Although I had worked at the CNR in Central Station, Montreal, Quebec, both as reservation clerk for passenger trains and ticket agent back in 1960-1962, my interest in model railroading did not really begin until 1979. That year my son's godfather gave him a Lionel O27 trainset for his birthday.

My son was only 9 years old and he asked me to install the trainset on a permanent base so that he could race it around the track. Like a good father and an incorrigible perfectionist, I ran down to the local hobby shop for advice.

The hobby shop owner took the time to introduce me to *Model Railroader* and *Railroad Model Craftsman* magazines and gave me some judicious modeling advice. That was it – I was hooked! I started reading up on benchwork, electricity, power packs and everything else I could get. (My model railroading library today takes up a whole wall in what I used to call my office!)

I began the construction of a 4 x 8 table for my son's trainset. He quickly got bored and asked me to install a slot car circuit on the same table. That same year he was diagnosed with Duchene Muscular Dystrophy, after which his physical prowess diminished and he lost interest in most mechanical toys – he began working with computers instead.

The old man, on the other hand, remained hooked on model railroading!

The NMRA and Modular Railroading

I'm sad to say the local hobby shop that got me started in the hobby has long since closed. I miss the easy access to the hobby shop's face-to-face fellowship and expertise. That is one of the reasons that I am strongly in favor of the NMRA. Through the NMRA's Regions and Divisions, there are venues where I can still enjoy this kind of fellowship.

After a few years in the hobby, I discovered the *NER Coupler* (an NMRA Regional Publication), where I became involved with the NMRA via our local Division. Denis Fortier, director of the local Alouette Division, encouraged me to get involved in the division's activities and that's where first I encountered modular railroading.

I developed standards based on the NMRA NTrack standards, which I modified and adapted for HO. With the division's consent, I decided to rewrite and publish the standards, which eventually became the "NER Modu-Rail Standards". I also founded the "Modu-Rail de la Capitale" round robin modular group in 1981.

We based these standards on the typical two track "roundy-round" approach. We built modules based on this standard and took them to several Division meets, culminating at the Minuteman National Convention in Boston, July 21-27, 1986. At that show I shared the position of module coordinator with my dearly departed friend Edwin Permon.

20 Years Later

During the last 20 years, I have met and made many friends, hosted a few regional conventions, and promoted modular railroading as much as I could.

After the Alouette Division became inactive and interest dwindled in the roundy-round type of modular display, I stumbled on a set of standards from California, based on the "Fremo" European standards. Chris Palomarez founded and promoted standards known as "Free-mo". (See my interview with Chris at the Anaheim 2008 Convention on the MRH Theater site: [first video in the list.](#))

By the time the Millennium scare came and went (still being alive and none the worse for wear), I wanted to investigate Free-mo more closely. In short order I decided moving to this new modular approach could revitalize our group.

This would be a different vision of Modular Railroading: the focus would be prototype fidelity, truer track work configurations, more realistic scenes, point to point or point to loop operation, and have more emphasis on realistic rolling stock – less of the fanciful "roundy-round" style of model railroading.

(There is nothing wrong with "roundy-round" display layouts – on the contrary, these layouts help keep model railroading in the attention of the general public and they provide a useful outlet for modelers to display their work. My intent is not to put them down, I just want to show an alternative to participate in Modular Railroading.)

I found this new vision very attractive, so I assembled our round robin group, explained the benefits of this new concept, and convinced them to regroup as the new

and improved "Free-Modu-Rail de la Capitale" (that is, the new and Improved Modu-Rail de la Capitale group). We agreed to convert our existing modules to the new Free-mo specs.

Some 14 modelers assembled and decided to forge ahead, but instead of being a round robin group, we wanted to have a permanent space for our layout using this improved approach. I wrote new modular specs and laid out a 25-module set. I used the theme of summer, sometime in the 1965-1975 era in Quebec.

We soon realized that revamping our old modules (over 20 years old) would entail an enormous amount of work, only to end up with modules having lower standard generic scenery and the wrong track size (Code 100). So we applied the "chainsaw principle" to our old modules (See MRH Issue 1's *Reverse Running* editorial). We did, however, salvage some buildings, details and most of the electrical and electronic parts.

In November of 2001, after a first false start, we rented a space large enough for us to start building our dream modular layout. I published the new standards on our website and we started building our 25 modules.

After occupying that space for 6 years, we moved to a larger facility, allowing us to access our modules from both sides as specified in the Free-mo specs.

We are now in our 8th year and have built 31 modules. We've completed 99.9% of the track, turnouts and wiring and have 70% of the scenery in place. We're just getting started with operation and hope to do more soon. ■

STEP 13: Prepare the Turntable Pit *continued*

I'm using a Diamond Scale Turntable. I find this this product to be of high quality but a little finicky to assemble. The pit is a hydrocal casting mounted on a sheet of MDF board with ties cast into the pit shelf along the edge. The center has two bronze bushings which accept a sintered iron shaft. On top of this shaft there is a plastic "bridge base" that supports the turntable bridge.



The "oil stain" that you see around the bronze bushing in the center of the pit (Figure 39) is from the small drop of oil I added to it which spread out! No matter. It will disappear once I have weathered the pit.

Figure 39: Pit stained a concrete color.



Figure 40: Painting the ties Floquil Tie Brown.

The pit required sanding to make it perfectly round. For this sanding operation, I mounted the shaft and bridge (similar to Figures 41 and 42) through the bushings, and spun it around to find out where there was a problem along the pit edge. Once I finished correcting the "roundness" of the pit, I painted it with Woodland Scenics Concrete Stain, and painted each tie with Floquil Tie Brown straight out of the bottle.



Figure 41: Center shaft with bridge base.



Figure 42: Completed pit with rail and turntable bridge.

STEP 14: Install the Pit Ring Rail

There are still many modifications to make before I complete the Pit and Bridge assembly. The ring rails have to be installed and wired, the bridge also has to be assembled and adjusted so that it will turn flawlessly.

The bridge support shaft has to be cut to length, grooved and wired as it will be used as one track feeder. The bridge rails also have to be wired the trucks on each end which will feed the other rail. I will cover these in more detail later.

The pit rails have to be bent, wired and installed; we are going to look at that now!

The Diamond Scale kit includes two pieces of weathered ME rails (one 36", the other 18" because the circumference of the pit is greater than 36"). I used a Fast Tracks bender on the rails to obtain the proper curve, I measured and cut

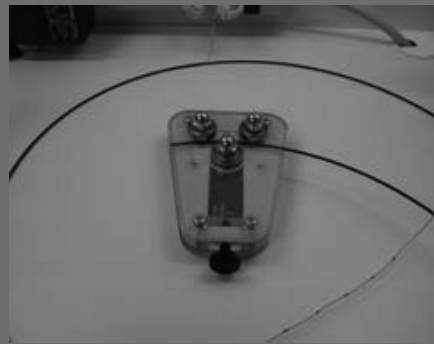


Figure 43: Fast Tracks Rail Bender.

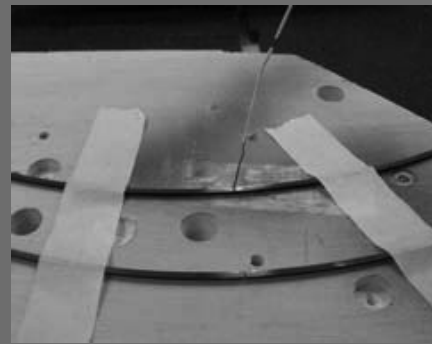


Figure 44: Drill and solder wire.



Figure 45: Drill hole in pit for wire.



Figure 46: Threading the needle.



Figure 47: Barge cement and MEK mixture



Figure 48: Apply mixture to rail.



Figure 49: Apply mixture to ties.



Figure 50: Install rails and add a generous dose of MEK.

the smaller rail to size, then I drilled a hole for the pit rail feeder wires on the bottom of the rails and soldered a wire to each. Then I drilled two holes in the pit between the ties and threaded the wires through the base. Once the rail is in place and ballasted the wires will be invisible.

Next, I used the Central Valley recommended technique of securing the rail by coating the underside of the rail and each tie with a mixture of 1 part Barge Cement and 2 parts MEK. I let the glue dry, then installed the rail on the pit ties on the grooves moulded into them. This helps in positioning the rail. Once all the rails were in place, I applied a liberal coat of MEK to reactivate the bond. More info on this procedure can be read on the [Central Valley website](#) (Central Valley is also an MRH advertiser).

STEP 14: Install the Pit Ring Rail *continued*

Weathered rail has to be burnished to get good conductivity. See Figs. 52 & 53.



Figure 51: Rail weathered (Code 70).



Figure 52: High resistance if not burnished.



Figure 53: Burnished rail shows no resistance.

STEP 15: Assemble the Turntable Bridge

I assembled the turntable bridge according to the Diamond Scale kit instructions, but I used a Central Valley Bridge Tie strip instead of the wood ties supplied in the kit. I prefer the extra detail of the Central Valley bridge tie strip. Figures 54 and 55 show the partially completed bridge assembly – notice I also did some initial weathering of the bridge ties and rail.

I later made some adjustments to the bridge when I installed the New York Railway Supply Control hardware (more about that in an upcoming step).



Figure 54: Bridge assembled.

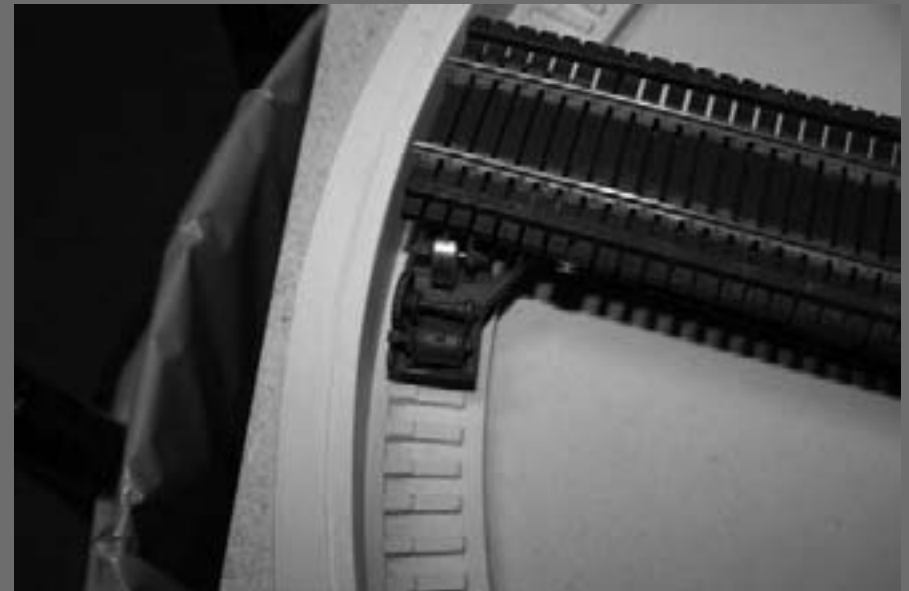


Figure 55: Another view of the bridge.

STEP 16: Install Center Shaft and Bridge Base

The center shaft and bridge base preparation turned out to not be very complicated. The bridge base needs to be grooved and a wire soldered to the shaft – this provides current to one of the rails on the bridge. To do this I used my Micro Mark miniature table saw and cut a groove into it a little past the center. I then installed and soldered a wire with a mini-connector to it. In this case, a picture is worth a thousand words (see Figures 56 to 59).

I will not be using the “split-rail” design wiring scheme on the bridge rails. The NYRS Control System comes with an ATR (Automatic Track Reversing) relay as standard. I will wire one bridge rail to the center shaft, and the other to the trucks on both extremities, and the ATR will take care of the rest. I won’t need to make any polarity switching provisions required by the “split-rail” design. How neat is that?

More details on wiring and split-rail design are covered in Part 2 of this series.



Figure 56:
Groovy.



Figure 57: Slot cut
1/4" deep.

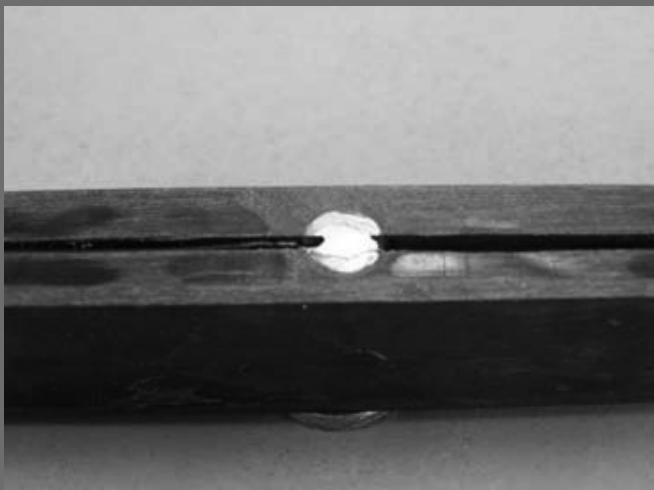


Figure 58:
Soldered and
buffed wire.



Figure 59: Keyed
mini-connector.

STEP 16: Install Center Shaft and Bridge Base *continued*



Figure 60: Bridge soldered other end of mini-connector to one rail.



Figure 61: Dual wipers on shaft for better continuity.

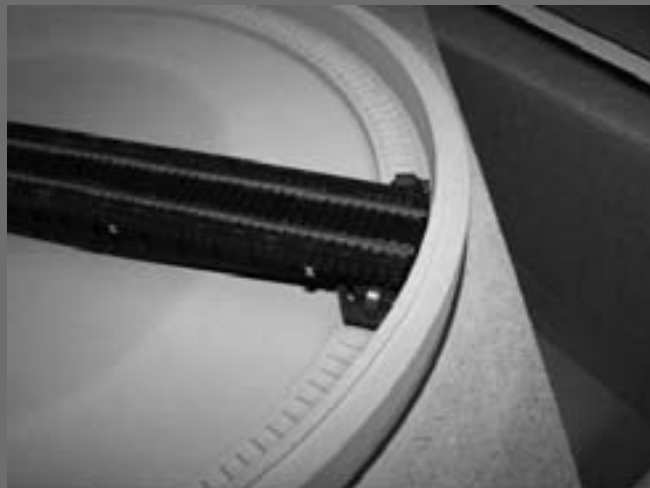


Figure 62: The other rail is wired to both trucks

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STEP 17: Install the Roundhouse Base

It's time to move on to the roundhouse. Here are the pieces as I laid them out on the styrene sheet for cutting at the shop

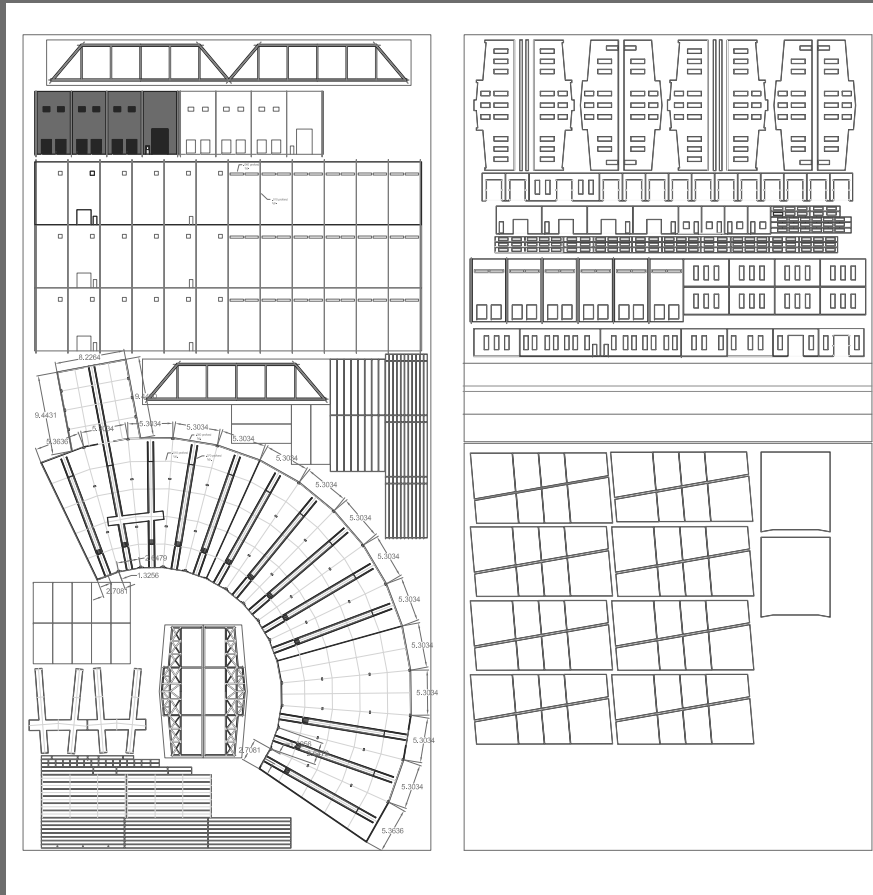


Figure 63: AutoCAD drawing with cut out components for roundhouse and another related building.

Step continues on next page ...

The Shop

In this article, I keep mentioning the "Shop". Let me elaborate more on what the "Shop" is.

When I retired in 2002, a fellow modeler introduced me to styrene modeling. Although I knew what styrene was and had used it before, I never really appreciated what could be done with it.

Lucky for me, the plastics supplier and manufacturer he worked for needed a bilingual counter sales person to replace one of their employees that was being transferred. So I worked there two years (kind of a second career) and learned all about plastics. I was fortunate to build favor with the management, so they now cut my creations using my AutoCAD .dxf file specifications on their equipment at employee discount prices!

That's the "Shop" I was referring to, and as we go along, don't be surprised to see "shop cut" styrene or other parts pop up.



Figure 64: XYZ Programmable Router.



Figure 65: Router programming terminal.

This is a three axis router which can handle a 4 x 8 foot sheet of styrene, or most any other material and precisely cut out pattern according to any .dxf drawing supplied. Figure 63 shows the AutoCAD .dxf for 2 sheets of 1/8" inch 4 by 8 foot white styrene about to be programmed into the router. Different color lines indicate different depths of cut. ■

STEP 17: Install the Roundhouse Base *continued*

As you can see from the pictures here, the roundhouse occupies a good portion of the 48" wide module (it comes as close as 1/8" to each side, actually). If you refer back to my layout plan, this isn't as bad as it seems because there are modules on both sides to "buffer" and protect it. See Figure 1 at the beginning of this article.

I will discuss the construction of the roundhouse building and associated buildings in Part 3.



Figure 67: The complete roundhouse minus the base.



Figure 68: Roundhouse base with pit cut-outs.

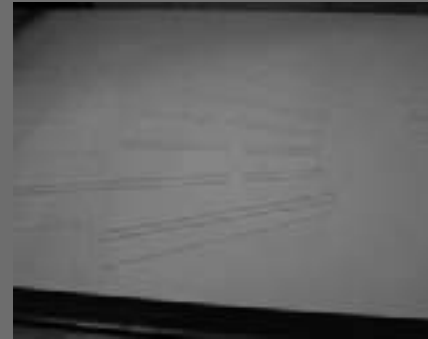


Figure 69: Router in action, you can see grooves for the rails and pits.



Figure 70: Trial fit.



Figure 71: Assembling pit bottoms.



Figure 72: Pits installed with provision for lighting. Will be covered in more detail in Part 3.



Figure 73: Base with pits painted and installed.

STEP 18: Install the Turntable Pit and Motor Bracket

Now comes the part where I read and reread the installation instructions for the New York Railway Supply turntable control (NYRS is an MRH Sponsor – see the [New York Railway Supply kit sidebar](#)).

The NYRS instructions show a particular way of installing the stepper motor to the turntable with the hardware and bracket supplied. With the Diamond Scale turntable, I had to make modifications to the normal NYRS approach in order to get a strong and precise installation. The Diamond Scale hydrocal turntable pit is attached to an MDF base (see Figure 74).

This base is designed to work with a Diamond Scale motor and gear assembly,

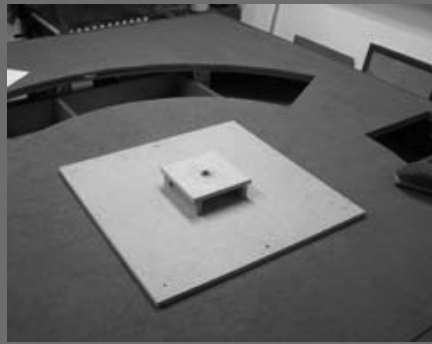


Figure 74: Pit bottom.

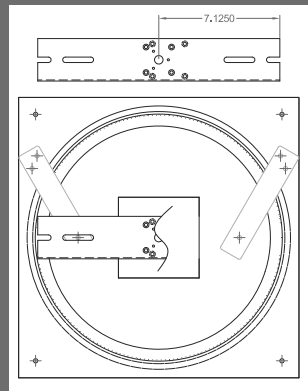


Figure 75: Detail drawing of motor assembly on base.

not the NYRS system. This makes mounting the NYRS stepper motor a little more complex (Figure 75) – follow along to see how I did it.

Drilling through the pit to mount the motor bracket seemed like a bad idea, so I elected to use two pieces of pine, cut to the required height. Then I glued them in place so they were offset to the rear and screwed from the front to the base. Figure 76 illustrates this.

Once I secured the mounting blocks to the pit bottom frame, I measured and cut the aluminum motor mount bracket and installed it, see Figures 77 through 79. I took care to make sure the positioning of the motor mount bracket is dead on center with the turntable shaft. Because the motor shaft connects directly to the turntable shaft, getting precise alignment avoids any operational problems.

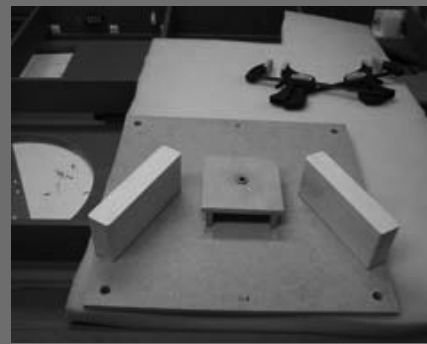


Figure 76: Pit bottom with mounting blocks.

I made sure to mark the exact position of the bracket should I have to make any repairs later. (Note the two red arrows pointing to a line in Figure 81 in the next step. I also scribed two lines on the aluminum bracket to line up with the arrows.)

Before ordering the NYRS Controller, make sure to measure the distance from the turntable shaft center to your expected location of the controller on the fascia. If it exceeds 2 feet, do yourself a big favour and order an extension power cable (they come in 3', 6' and 10' lengths). Don't do like I did: I cut the motor wires and tried to extend them. (Murphy will tell you it doesn't work, ask me how I know!)



Figure 77: Cutting aluminum bracket to fit.



Figure 78: Centering mounting bracket.

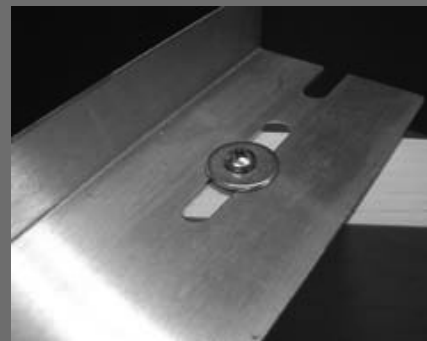
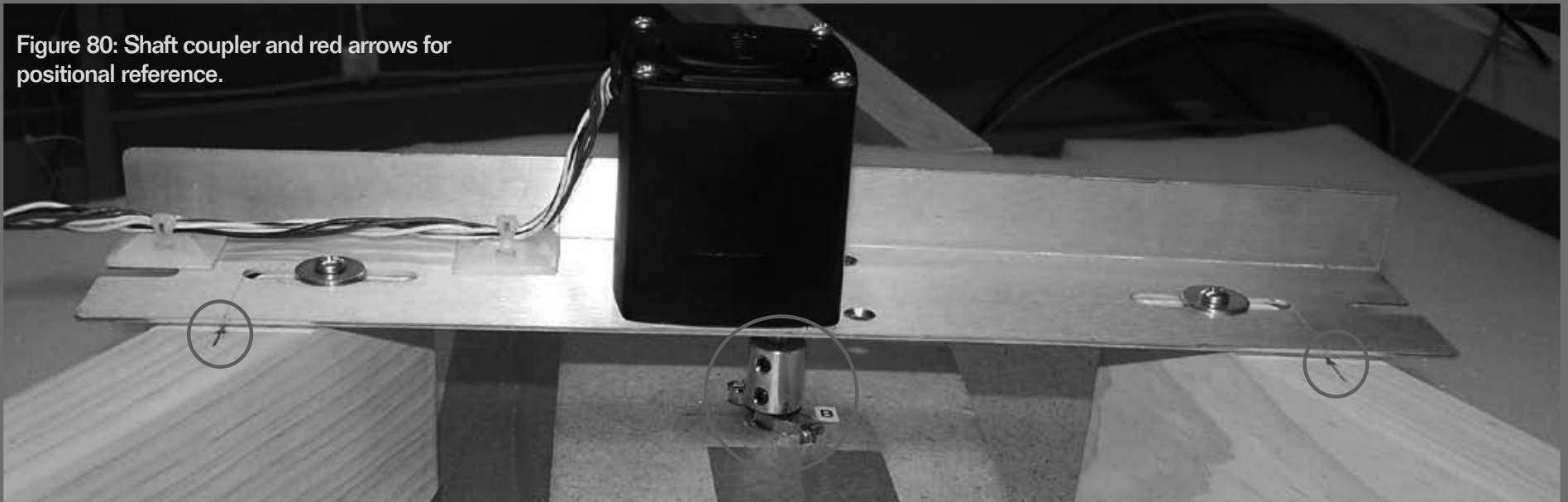


Figure 79: Securing mounting bracket.

STEP 19: Install Stepper Motor

Figure 80: Shaft coupler and red arrows for positional reference.



The turntable shaft is secured to the stepper motor via a bushing supplied by NYRS. It has two set screws. I attached the shaft to the stepper motor and measured the amount I had to cut off as shown by the arrows on Figure 82. I used a hack saw to cut the shaft to length and I ground a flat spot on

the end with my belt sander. This will avoid any slippage once the set screw is tightened, and will also hold the shaft with its bridge base at the proper height. I wore heavy gloves and safety glasses while grinding, as sparks fly and the shaft gets hot very quickly.



Figure 81: Stepper motor installed.

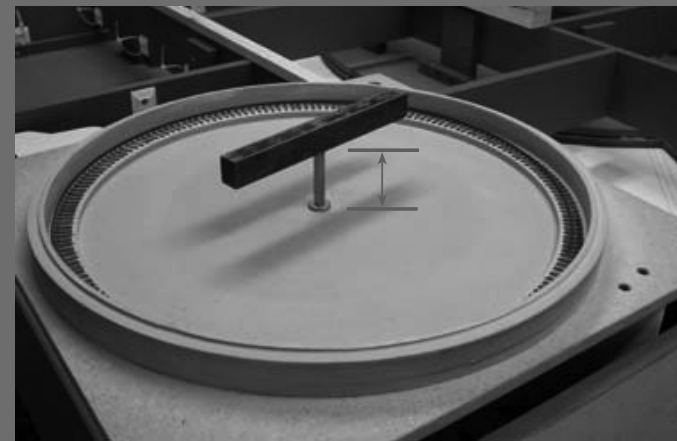


Figure 82: Section between arrows represents proper shaft length, so cut off excess. Be sure to leave 1/16" slack ("to make sure it clears the bottom of the pit.")



Figure 83: NYRS Components with hardware and Instructions.

The New York Railway Supply Kit

When I received the parts from NYRS I was very pleased with the product quality, it appears the manufacturer has paid careful attention to the details. All parts were well identified and bagged separately. I found the included instructions easy to follow.

Whenever I had questions NYRS quickly answered them either by email or by phone. I must admit a little bias here because I have been dreaming for years about this system. Now that it has arrived and I have had a chance to actually work with it, I am extremely satisfied!

NYRS Parts List:

- 1x 03-120-B PTC Assembly PTC III System
- 1x 05-200 A Track Selector Cable, 6'
- 2x 07-952 KP Assembly Keypad 99 Track Selector
- 1x 09-820-C Basic Motor Mount Kit, 20 with 6' power cord extension
- 1x 10-312S COUPLER One piece shaft coupler, 5/16 inch (For DS Turntable)
- 1x 09-902 Heavy Duty Motor, 12 VDC
- 1x 11-105 Power Supply 12V 1.25A
- 1x 03-130 APR Assembly B APR Control Unit
- 2x 08-965-12 Relay PCB A APR Relay Board - 12 tracks

Documentation:

- 1x DOC-KY-03-160 PTC III USER MANUAL, KEYPAD SELECTORS
- 1x DOC-MM-09-820 PTC III MOTOR MOUNT KIT INSTALLATION

NYRS website:

<http://www.nyrs.com/>

KEY:

- PTC=Programmable Turntable Controller
- KP=Key Pad
- DS=Diamond Scale
- APR=Automatic Power Router
- PCB=Printed Circuit Board ■

New York Railway Supply



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STEP 20: Mount Pit Assembly in Place

Next, I attached the entire pit and motor assembly to the module. To do this, I drilled a hole in the four corners of the turntable base, then placed the pit into its hole on the plywood subroadbed. I marked the 4 holes on the plywood from underneath. I installed a tee nut and a threaded nut on each bolt as you can see in the photos below.

I added spacers between the pit MDF board and the subroadbed to bring the bridge track rails level with the stall track rails. The two-nut arrangement used allows for precise adjustment of the pit vertically – once things looked good, I tightened the knurled nut to fix the pit solidly in place. With the pit mounting

arrangement done, I put the roadbed on top of the subroadbed and brought the pit flush. Once I was happy with the up and down alignment of the pit, I anchored it in place and added some grey latex caulk followed up with hydrocal as shown in Figures 87 and 88.

Should I, for some reason, need to make adjustments to this assembly, I would simply cut around the edge of the turntable pit and reposition it. But I found that repositioning will likely never be a requirement due to the NYRS control's flexibility (more on this later).

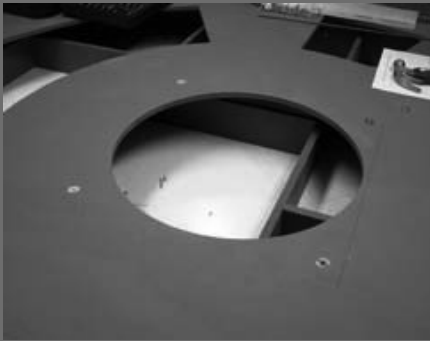


Figure 84: Positioning Tee Nuts from top of module.

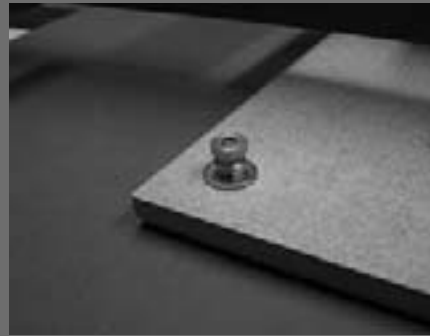


Figure 85: Threaded shaft, washer, nut and knurled nut viewed from bottom of module.



Figure 86: Turntable and motor assembly in place.



Figure 87: Latex caulk added around pit.

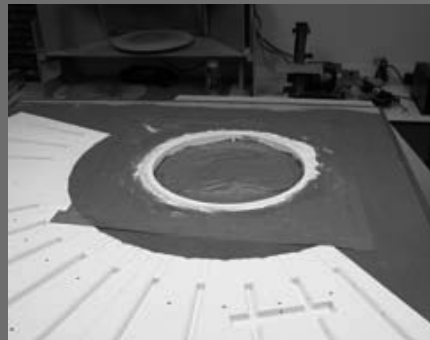


Figure 88: Hydrocal and tape for later sanding.



Figure 89: Finished assembly.

STEP 21: Install NYRS Fascia Components

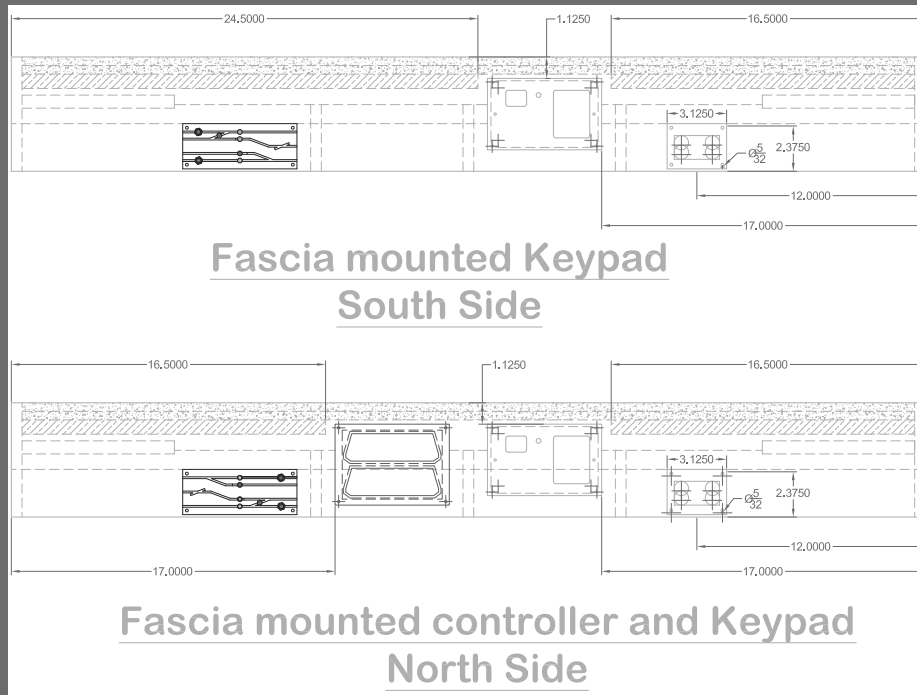


Figure 90: North and South Fascia drawing.



Figure 92: Primed support brackets & protective plates.



Figure 93: PTC III and APR mounted with Velcro inverted view with protective cover installed.

The keypads are relatively easy to install since I had the side panel cut-outs already made. But mounting the controller and the APR (Automatic Power Router) is another matter. I had to build a support because they are two separate boxes. Here's what I built to take care of this.

The pictures show the extra provisions I made so the PTC III & APR can be fascia mounted. My friend Reynald Lepage built a shelf bracket out of some scrap aluminum that he had lying around. I fixed the two components to each other and to the bracket via some judicious placing of Velcro strips. I made sure to install the PTC III Controller on the bottom to allow access to the Dip Switches.

I screwed the whole assembly to the back of the fascia. At this point I was not satisfied with the look. Being an incorrigible perfectionist, I decided to design a faceplate. After measuring the assembly and the special shapes of both components, and allowing for sufficient space for mounting holes, I had my shop make a double faceplate out of 1/8 inch polished black acrylic as shown in Figure 95. (These faceplates, double or single height, are now available from NYRS.)

I then installed the Digitrax UP5's on both sides of the module, so now I am ready for the wiring. The UP5 is the Digitrax LocoNet Universal Interconnect Panel. See details at the following URL: http://www.digitrax.com/prd_up5.php.



Figure 91: Fascia mounted components.



Figure 94: Access to Dip Switches.



Figure 95: Fabricated faceplate.

This concludes the first part of this series. I hope you have enjoyed it and will come back and download Part 2 coming to a computer near you in January 2010 (Issue #5).

In Part 2 I will cover the following:

- Electrical & DCC wiring (Preparation)
- Track installation (ME Rail & CV Ties)
- Final wiring (Track and NYRS APR)
- NYRS Control Programming and Turntable fine tuning



Article feedback!

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Les Halmos has been a model railroader since 1979. He rewrote and published the Modular Standards for the Northeastern Region of the NMRA in 1981 (Modu-Rail Standards).

In 2001, he founded the Free-Modu-Rail Group and has been active in building modules, documenting and

promoting the Free-mo standards.

Les likes computer layout design, electronic gadgets, DCC, and building models – and he’s very pro-NMRA.

Les has a solid background in drafting, computers and High Tech Industrial Controls Sales & Marketing.



New York Railway Supply Turntable System Demo

This video shows the basic operation of the NYRS Turntable Control System.

When I first turn the PTCIII on, it runs a homing routine checking the slack on the system. It moves the bridge to the right and left extremities of track 1 (pre programmed as home). This way the system now knows what the total slack is. It then divides this slack by two, repositions the bridge and lines it up perfectly with the home track. This happens each time the PTCIII is powered up, it is referred to as “Homing”.

Once “Homing” is completed, the PTCIII is now ready to move to any other track. This is as simple as entering the pre-programmed track number on the keypad as shown here.

The sequence is as follows:

I push (#) then enter the track number (2) then push (*).

This aligns the head end of the bridge with track 2.

More details will follow in the remaining parts of this article!

– by **V.S. Roseman**

Photos by the author

Building a model railroad is much easier today than it was years back. There are more structures than ever before, and while the latest releases include a lot of excellent models, some still have thick heavy window muntins that make the model look toy-like. (Muntins are the supporting strips between panes of glass.)

While wooden window muntins are somewhat thicker than metal ones, generally, some model window muntins are not only overly wide but are also thick. Molds for injection molding plastic, or soft metal sometimes have to be cut this way to permit the material to flow or be injected properly.

It is possible to upgrade kits that have oversized window muntins by using photographs of prototype windows to produce a very realistic effect. Using either a color copier or computer it is possible to size the printed windows to fit specific models, and the proportions can even be adjusted.

Generally, the best subject windows to be photographed for model use should have high contrast with a dark interior and light window frames or light colored shades with dark window frames. An especially good effect is created when shadows of the window frame grid fall on objects just inside the window, such as light-colored window shades, packing crates, machinery

More Realistic Model Windows: Enhancing Model Structures with Photo Windows

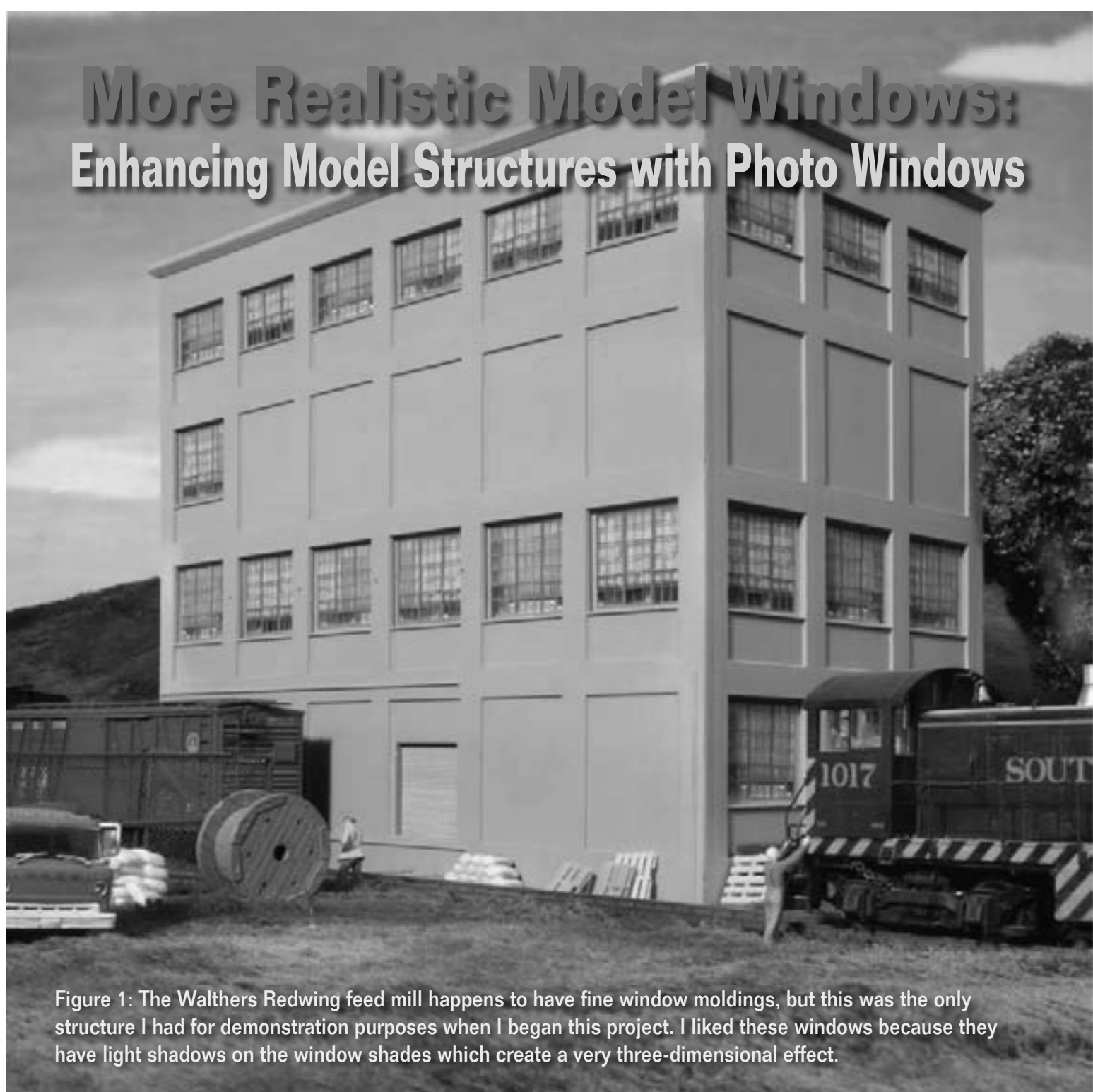


Figure 1: The Walthers Redwing feed mill happens to have fine window moldings, but this was the only structure I had for demonstration purposes when I began this project. I liked these windows because they have light shadows on the window shades which create a very three-dimensional effect.

or furniture. The lines of the shadows appear to move as the onlooker's viewpoint changes, giving a three-dimensional illusion to the interior.

The photographs for this article show large industrial windows which I felt would show up best in magazine reproduction. Windows in wood frame structures have raised framing which can be simulated by adding stripwood or styrene strips around the outside of the window opening.

Photographing Prototype Windows

You can usually click off a few shots of some windows on a structure in



Figure 2: Close up of the windows with shades are just as realistic.

a minute or two with a modern film or digital camera. These days I don't suggest setting up tripods and lot of equipment in an industrial neighborhood unless you wish to be questioned by local authorities.

Many windows can be arranged on a single page document using Adobe Photoshop, Elements, Corel or other programs you may have, so it may only take one or two prints to provide windows for a large HO scale structure. Of course, N scale windows will need even less space. You can have prints or scans made of your prototype windows, cut these out, and glue to a single page for the same result.



Figure 3: Windows of factories were painted over during World War Two and some may still have remnants of that old paint. Although I like this effect, I think it would be better on an old brick building or on one that is more weathered.

Camera Technique

You should be centered in front of the window you are photographing. For windows in upper stories you should try to find a public corridor on the upper floor of a building across the street, or a hill or other location from which you can shoot so you are level with the window.

Shooting with your camera pointing upwards at the second floor or higher causes an effect called "keystoning." Since you are closer to the lower edge of the window than the upper one, the window in your photo will appear larger at the bottom, rendered as a trapezoid instead of a rectangle.

Keystoning, if not too extreme, can be corrected with most photo software (Adobe, Corel and others) using perspective adjustment. Adobe Photoshop calls the control for this "perspective box" (or Distortion Filter, Lens Correction). As most photo programs operate in generally similar ways, you would form a marquee or outline around the window.

Next click on the perspective control to activate this adjustment. You can then use the mouse to click on the upper corners and push them inwards to match the outline of the window. You can then "grab" each side by clicking on it, and pull outwards about 1/4" to give a rim around the window. This will prevent ending up with a white line around the window when you glue it into your structure. Press the return

or enter key and the trapezoidal form selected will reconfigure itself as a rectangle with your window corrected.

In the event your window is deeply recessed in a thick wall, the lower edge may be gone because it was hidden in the photo. You can create a new lower edge using the line tool, matching the color of the line with one of the other window frame parts. You could also carefully select one of the window sides, click copy>paste, and rotate the form 90 degrees so it fits part of the bottom of the window. Then from the toolbar at the top of the desktop you



Figure 4: This photo shows some grey window frames that I think lack contrast and are not as realistic as some of the others, especially from a distance.

can select edit>scale and, using the mouse, stretch the side out to the full width of the window to form a lower window frame.

I have not been able to figure out a fix for keystone if you are not using a computer, although if you have a shift lens on an SLR camera, you can get the same effect by raising the lens and keeping the camera level.

Distortion is sometimes a problem when shooting architectural details such as windows. When you are close to the subject building, the edges of the windows may appear to belly outward. This is called barrel distortion. If you are far away from the subject, some long or telephoto lenses will

show pincushion distortion in which the edges of windows belly inwards.

There are solutions for this effect. Limit the size of the window in your camera viewfinder to about 2/3 of the size of the image area. This is the point at which most lenses are able to render lines as acceptably straight.

If you are not using a computer, you can mask a printed photo and spray paint the window frame color around your window to create straight edges.

I try to shoot with the sun overhead to eliminate strong shadows on one side of windows. Where this is not possible, I create a freehand marquee form on the document around the sunlit side of the windows, clone this, (copy>paste



Figure 6: The upgrade of the old Heljan factory is a definite improvement.

commands), horizontally reverse or flip the image created, and move this to the other side of the window to replace the shadow.

You can do more elaborate shadow elimination, but I have found that it may not pay to spend much time working on these details. The choice is yours and almost any book about your photo program will show how to do this type of effect.

Try to get several similar windows with various shade heights or other details differing from each other so your windows do not all look exactly the same.

Fitting Windows to the Structure

Computer photo programs and many better color copiers have independent

length and height adjustments so you can enlarge or shrink both the dimensions independently.

Measure the exact size of the window openings of your model and adjust your window photos to fit. I like to leave about 1/32" to 1/16" on each side and fill this with either the same color as the window frame so you can adjust the positioning of the window print in the opening in the wall.

Use the size or scale tools to stretch or condense the window forms slightly to fit your model. While it might be tempting to stretch all the windows to fit, if you manipulate the window more than a few percent from its original proportions it will start to show blurs and will no longer look realistic. If you need a wider window, clone a row of window glass panels and add it to the window to enlarge it.



Figure 5: Years back Heljan offered variants of some of their N scale structures for use with HO scale. This factory's brickwork resembles the "Half square" deeply recessed mortaring used on some fancier structures, but those window muntins are not only overly wide but are also thick as well. Kits like this are still on the market and you might want to consider changing their windows if you have some on your layout.

Printing Your Windows

I use photo quality matte coated store brand inkjet paper, but any good photo paper should be able to give you a good print. (Epson now calls this “presentation quality.”) I find that reflections from glossy paper emphasizes the flatness of the photos, but you might prefer it.

Any brand inkjet or other printer called a “photo printer” should produce quality results for you. My new printer cost only \$100 and is capable of doing very fine detail work of this kind.

I like to work in 1200 dot-per-inch resolution, but as it is very slow on my computer, I usually use either 600 dots-per-inch or 400 dots-per-inch to make my photo windows. Generally, 200 or even 100 dots-per-inch may be acceptable.

If you have an older computer, you may need to limit the size of your files.

Once my page is assembled and ready to print, I save it as a “.tif” file, which does not degrade the image when saving it.

Cut out your windows leaving about 1/16” or more on each side, and fit to

the back of the structure walls after the structure is painted and weathered.

Tacky glue, or photo-safe glues such as Elmers Tacky glue or 3M will hold photos to styrene or ABS, although I have used liquid styrene cement to bond paper to styrene. Test any glue on scrap material first to be sure it holds and will not cause your inks to bleed.

I suggest that you spray your prints with an ultraviolet-absorbing coating

such as UV Clear Spray from Krylon to help prevent fading. Sunlight and fluorescent lighting both put out light in ultraviolet wavelengths that can fade inkjet prints over a period of years- see the website of your printer manufacturer for details.

Clear-coating the back and front of the paper will make it moisture-resistant and I suggest doing this.

Continued on page 114



Figure 7: This was the upper floors of the Heljan Brewery kit offered as an “O and HO” scale kit with extra window moldings provided.



Figure 8: The Heljan Brewery with photo windows.



Figure 9: Heljan brewery from a frontal view as built from the kit.



Figure 10: The brewery with new photo windows. Recessing the lower portions of the double-hung (sliding) windows might make this even more realistic.



Figure 11: The Rix multi-purpose building comes with a very nice garage door and fine windows, but this was the second unbuilt kit I could locate in my closet. The windows are photos of course.



Figure 12: Frankly, Rix's molded garage door looks better than this photo close up, but at a distance this one looks good too. For correctly-proportioned use, I would probably use Evergreen styrene strips of about .015" or .020" thick to duplicate the door grid right on the photo, then touch up the white styrene with the door color for a very realistic door.

DOUBLE HUNG WINDOW WITH RECESSED LOWER SASH

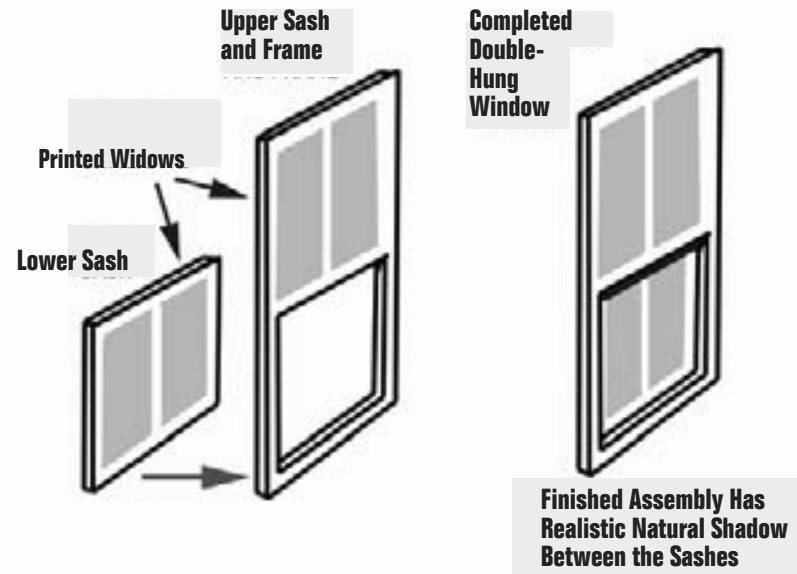


Figure 13: You can improve photo windows by recessing the lower panels of double-hung windows. Just glue the lower pane behind the upper one after mounting on .030" or thicker material. Framing-out the lower panel will give a very realistic effect.

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Figure 14: For those who wish to have clear windows, overhead projector transparency film is lightly coated on one side to make it printable. Unfortunately, colors in inkjet printers and most laser printers are very transparent and will not make acceptable windows because they hardly show up and pass light and images of things behind them. Black window frames, also made from photos are shown at the right side, and look fine.

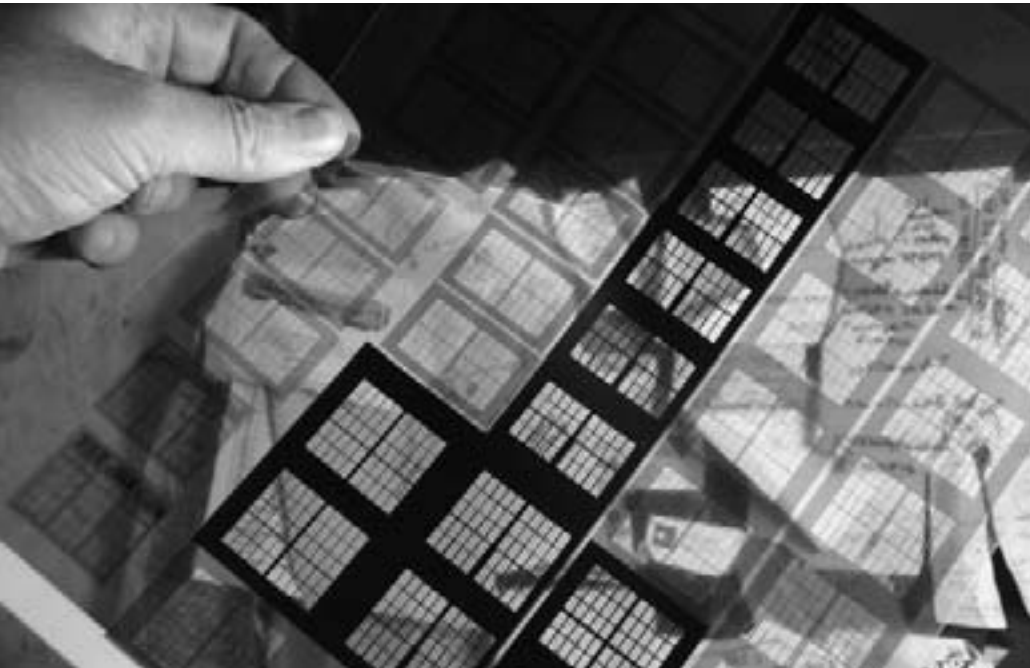


Figure 15: This photo shows graphically how dark-brown and dark-grey colors both transmit images right through them, leaving black window frames as the only realistic alternative.



Figure 16: Red Wing mill structure fitted with black printed clear film windows.

If after all, you decide that you prefer clear windows, it is possible to photograph dark window frames on a structure, or you can create black window muntins and frames on the computer or on paper with black ink.

Print out on clear inkjet overhead-projection film available where computer paper is sold. Black works the best. With this method you can draw your own scale-thickness window frames.

You could also use your photos as a guide to draw your own window frames

using the line tool. Some copy centers can produce overhead projection masters for you from a hand drawn original, but I have not found any color other than black that is opaque enough to use on a model. This may no longer be the case as technology in this field keeps leaping ahead.

Any of these window frames can be enhanced by adding fine wood or styrene elements such as an outer frame covering some of the inner elements. On double-hung windows you can

recess the lower window behind the upper, although in the angled close-up photos you can see that this is not usually necessary.

You can produce doors with this method too. While I have shown industrial windows and doors in this article, the technique works fine with residential windows as well.

While this technique can “save” or upgrade some older structure kits, you may find that you will want to use it on new buildings too.

Please see the following page for more pictures.



1. Select the window with the crop tool.



2. Click on the perspective box in the toolbar. Then move the top corners of the rectangle inwards to match the window's trapezoidal form.



3. The Perspective adjustment permits you to outline the window accurately.



4. Press Enter and the window will render itself into a rectangle. Notice the shadow on the right side and top.

Figure 17: Correcting for keystone images using perspective tool.

ELIMINATE SHADOW ON RIGHT SIDE



To eliminate the shadow on the right end window, select another window panel and Click “Copy>Paste”. Then move the panel to replace the one on the right side.



Window with shadow on right eliminated.

Figure 18: Eliminating shadows on one side of windows can be done easily by cloning the light side of the window, flipping this horizontally and placing it on the opposite side as shown.

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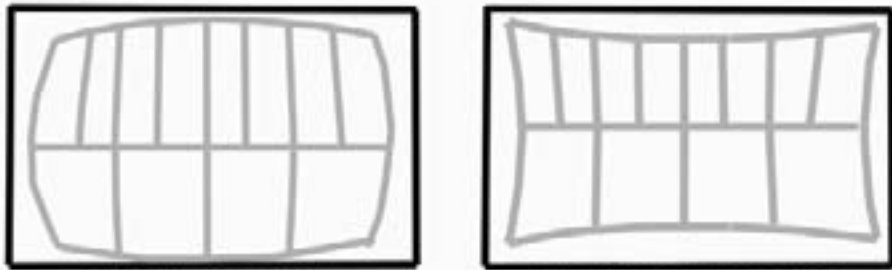


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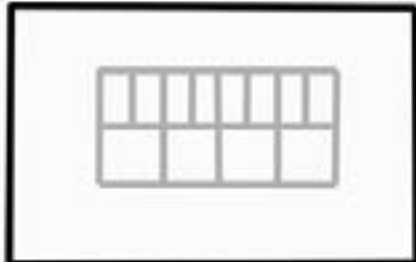
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Barrel Distortion

Pincushion Distortion



Distortion is minimized closer to the center of the viewfinder frame.

Figure 19: Minimize distortion by keeping the window image close to the center of the viewfinder frame.

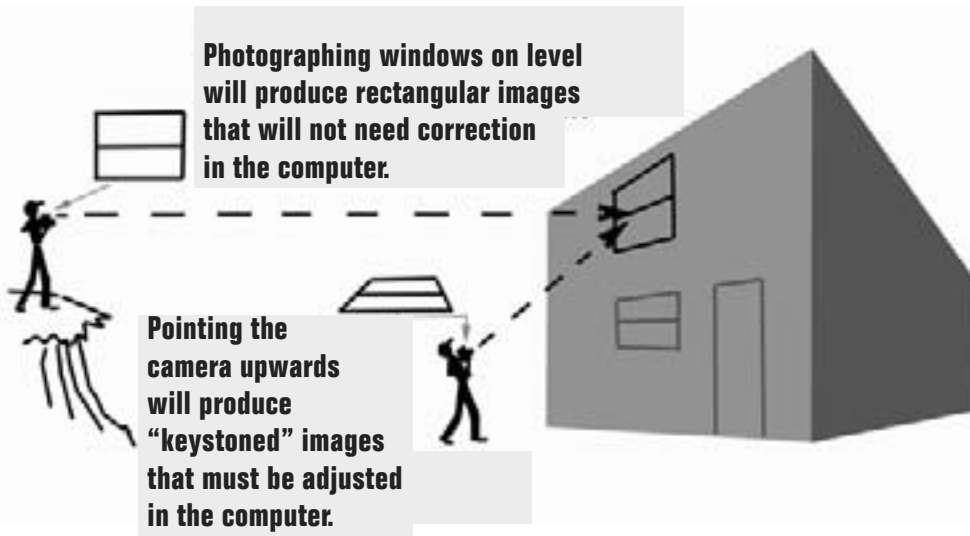


Figure 20: Keystone occurs when you point the camera at an angle to photograph objects. Try to shoot with your camera level where possible.

If you must stand off-center, images will appear skewed and will have to be adjusted.

Always try to stand on-center to get rectangular images that can be used without adjustment.



Figure 21: Keystone can also happen if you stand off-center from your subject, so try to position yourself directly in front of each window.




background in the printing industry, in commercial art and photography.

Victor is known in the model train field for his magazine articles and several railroad related books over the past thirty five years, and also for his photographic work. Victor has done free lance projects for Walthers, Atlas, Showcaseline, International Hobby Corporation and other manufacturers.

Victor is a native New Yorker, but he has also lived in California, Arizona and briefly elsewhere over the years. He got his first trainset, a Lionel Scout, at age 3. From the day he built an oil storage tank from a coffee can with a paper wrapper and emblem from a gasoline company map, he has been a model builder.

Victor has been using his Mac computer as a modeling tool for several years.

A graduate of Pratt Institute with BFA and MS degrees, Victor has taught fine arts on the high school and junior high levels for thirty years, and is now retired. He also has a

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Track Planning on Computer Using 3rd PlanIt

PART 3: Learn the basics of 3D planning with this popular track planning software

— by *Ryan Boudreaux*



FIGURE 1: A 3rd PlanIt strength is modeling terrain like that shown here. The author explains how to do 3D terrain modeling in this final part of the series.

(Image from 3rd PlanIt web site)

Welcome to the third and final installment of the 3rd PlanIt Track Planning software tutorial series.

It has been a fun ride for me – I have enjoyed putting this series together. I trust it's been helpful to those who are designing a layout on computer.

Parts 1 and 2 covered many of the foundation tools that 3rd PlanIt has to offer. In this final segment I'm covering tools for virtual 3D layout planning.

There are many other 3rd PlanIt topics that I could cover, so please post in the comments thread to this article any other topics you would like to see covered.

I'm using 3rd PlanIt version 8.0.6.004.1385 to do the demonstrations in this article. Owners of versions 8.0.2 and up are eligible for a free update. Just go to the El Dorado Software Customer Site using the 3rd PlanIt Help menu (See Figure 2).



FIGURE 2: Customer site.

First, I want to review modifying track segment properties on the track plan, including making them hidden track or staging track, as well as changing elevation, grade or radius.

Next I discuss:

- How to add terrain and contour features and then review them in 3D view.
- How to add foliage and trees.
- How to create backdrops, both flat and curved.
- How to add buildings and structures.
- How to import objects from the Internet.
- How to control your 3D view.

Finally, I run a virtual consist on a finished track plan that I created with 3rd PlanIt.

Modifying Track Segment Properties

A track segment on the track plan automatically defaults to main line track.

But there are other track options you can set, such as: hidden, staging, open view, elevation, grade, track type, shape, length and radius.

For example, in Figure 3 (next page), you see the Track Settings window (access this using **File > Settings (Alt+S) > Track** from the toolbar.

The Track settings sliders indicate when 3rd PlanIt is to render the rail and ties

while zooming in on the computer screen.

Notice you can also change the default gauge from standard to narrow or even set your own distance between the rails.

You can also control the distance between tie centers, the length and width of the ties, and how high they sit above the ballast. And for the rail, you can modify the rail width and height.

It would be nice to see a sample track object being modified on the fly in this window, but 3rd PlanIt doesn't do that (at least not yet).

When using the **Sectional Track Builder tool (Ctrl+Alt+B)**, the track object parameters are not meant to be changed or modified (See Figure 4).

It turns out you *can customize* sectional builder track segments. The program's library of track objects can be altered to create an endless variety of custom-designed track segments!

When you customize track segments in 3rd PlanIt and print them out full size, they can serve as a template for building your own turnouts or track segments!

How can you accomplish this Sectional Builder customization magic?

Click on a section of track in your plan to highlight it. Notice the **Object Data Window** on the right of the screen shows the current object properties.

Just click on these properties to change them. With 3rd PlanIt you can customize the track to whatever extent you need!

I show some examples of this process in *Video 1: Modifying Existing Track*.

Modifying Track Properties

There's more! You can also bring up a Track Properties window and set additional track properties, like setting the track to "hidden." Track objects default to mainline track, unless you change this in global settings.

To bring up the Track Properties window, click on and highlight any track segment, then right-click the highlighted track and select properties.

Or if you prefer, you can click the track once, then **press Ctrl and double click**.

In the popup window, select the Appearance tab (see Figure 5, next page). To make the track hidden, click the Layer drop down menu and select the tunnel track layer. The track segment turns grey to indicate it's hidden track.

See *Video 2: Modifying Track Properties* for an example.

Track Elevation and Grade

Track elevation refers to the number of inches (or your preferred units) above or below the zero (0) level of the track plan. This is also called the **Z measure**, which can be modified from the Object Data Window (ODW).

In Figure 6 (next page) the ODW shows a segment of track which has the Z measurement set to 2". That puts this track segment 2 inches above the track plan zero level.

The track grade can be modified in several ways. To do it the easy way,

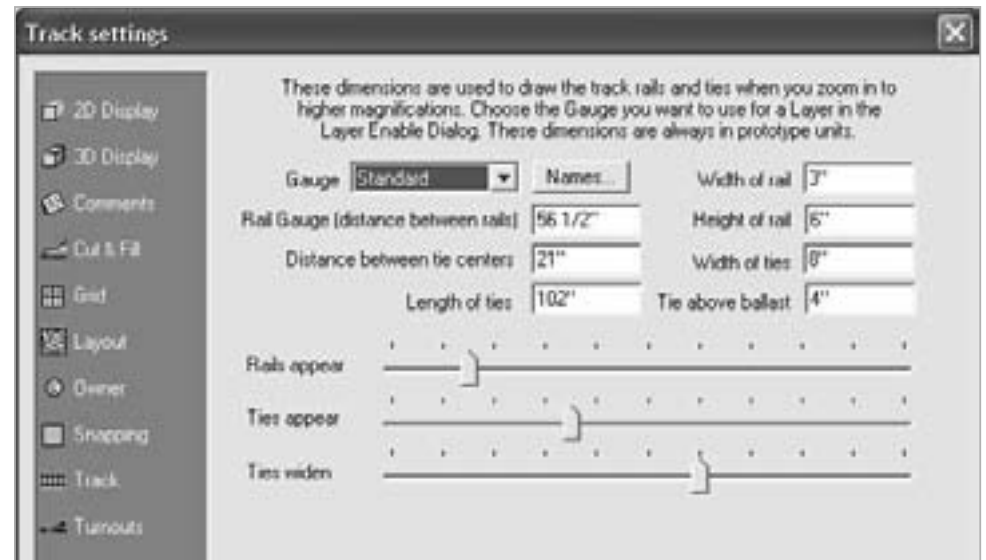


FIGURE 3: Track Settings window.



FIGURE 4: Sectional Builder Tool.

just modify the % value using the ODW.



Figure 5: Track object properties.

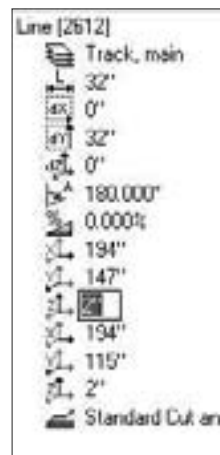


FIGURE 6: ODW Z measure.

A detailed discussion of grades is beyond the scope of this article, but basically, to compute the percent of a grade, divide rise distance by run distance. For example, a rise of 1" over a distance of 100 inches is a 1% grade.

See *Video3: Elevations and Grades* for an illustration of modifying track object elevations and grades.

Grade is also known as slope – for a more technical discussion of slope, see the [online Wikipedia entry for Slope](#).

Track Length or Radius

If you need to modify the track length or radius, just click on the ODW parameters and change the measured length or radius to the desired new value.

You can also click on the track object and with the mouse over one of the end points, drag to enlarge it to the desired length.

Notice that 3rd PlanIt updates the ODW on-the-fly as you adjust a track segment by dragging the mouse. The



VIDEO 1: Modifying Existing Track.

“It turns out you can customize sectional builder track segments. The program’s library of track objects can be altered to create an endless variety of custom-designed track segments!”

same technique can be used for circular track segments as well to enlarge or decrease the radius.

If I find two sections of track that do not align the way I like (even when using the connect with easement tool), I can use these methods to make manual modifications and get everything placed to my liking. On occasion I may make a change to the track length or radius of only fractions of an inch, i.e. 1/64, 1/128, or even smaller.

See the *Video 4: Track Length and Radius Adjustment* to view a demonstration of these techniques for modifying track length and radius to fit a finicky track alignment.



VIDEO 2: Modifying Track Properties.

“To make the track hidden, click the Layer drop down menu and select the tunnel track layer. The track segment turns grey to indicate it’s hidden track.”



VIDEO 3: Elevations and Grades demonstration.

“... to compute the percent of a grade, divide rise distance by run distance. For example, a rise of 1” over a distance of 100 inches is a 1% grade.”



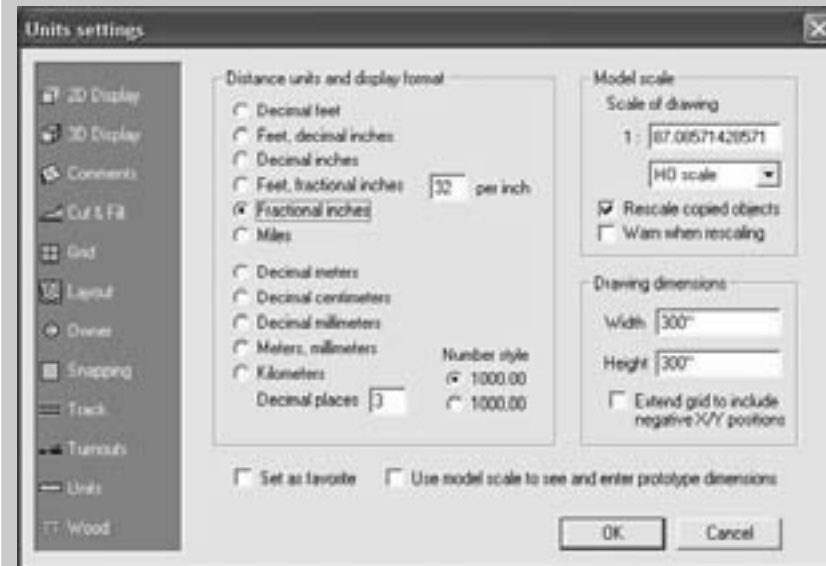
TIP – Unit settings

Figure 7 shows the Units settings window with all the available units that can be modified in 3rd PlanIt, depending on the measuring system you wish to use.

You can access the Units settings window via **File and Settings** on the toolbar.

Once you modify these settings, 3rd PlanIt applies them to the entire track plan as your defaults. ■

FIGURE 7: Unit settings window.



Terrain Building

I find the terrain building part of 3rd PlanIt to be especially fun. I like taking my track plans one step closer to virtual reality by adding the mountains, hills, valleys, adding foliage, trees, and shrubs and putting in water features such as lakes, rivers and streams.

These more advanced techniques take something of an artistic eye and a fair amount of practice. As I've mentioned throughout this series, doing these tasks effectively in 3rd PlanIt takes practice and with practice comes confidence: it's all part of increasing your level of skill with the program.

While working with the 3D tools will not let you change the track portion of the plan, these tools do help you envision the layout in three dimensions.

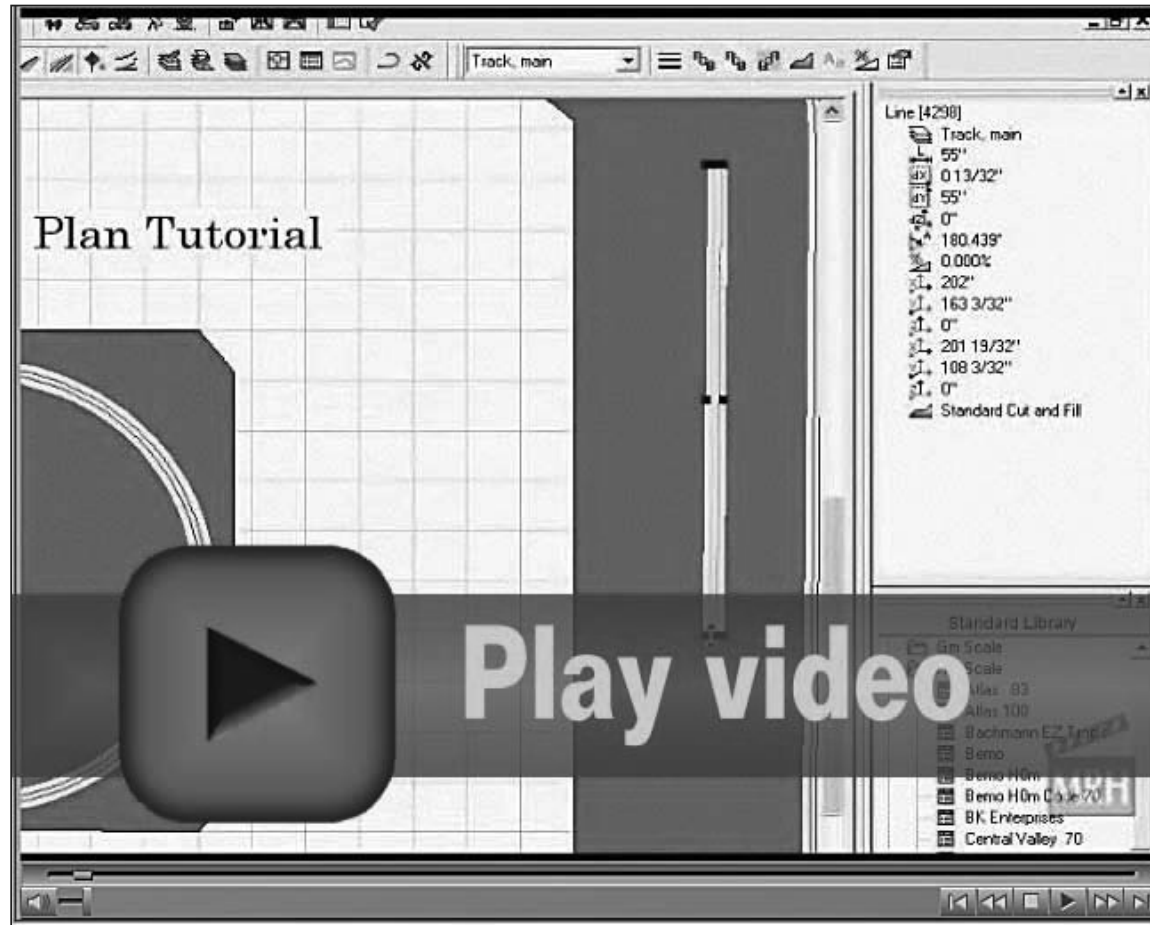
I find this to be especially helpful when planning a layout with multiple decks or in those plans where a number of tracks cross over each other.

Hills, Mountains and Valleys

When adding landscape mesh shapes to your layout plan to represent mountains, hills and valleys, you use the **Draw mesh tools** (Figure 8), which is found in the Toolkit toolbar.

Toggle the Toolkit toolbar on/off using the hot key combination of Ctrl+Alt+T.

The Draw mesh tools provides three options for drawing the mesh, Rect-



VIDEO 4: Track Length and Radius Adjustment.

“Notice that 3rd PlanIt updates the Object Data Window (ODW) on-the-fly as you adjust a track segment by dragging the mouse.”

angle, Elliptical or Freehand. I prefer using the Freehand Draw mesh tool because it allows me more flexibility in drawing and laying down my landscape.

You can also access the Draw mesh tool from the file menu: click Action>Draw>Mesh>Freehand.

If you've been following this series from the beginning, we established a basic landscape mesh in part 1. Now it's time to do more with the landscape mesh.

Adding shape to your landscape mesh is the easy part; getting it to look like real mountains, hills and valleys takes some skill and artistry, and of course practice!

To modify the landscape mesh, place the cursor at any point along the edge of the mesh, then double left-click with the mouse. This opens up the Mesh editor window as shown in Figure 9.

Another way to get to the Mesh Editor window is to first click on the mesh to make it active, and then select from the file menu Edit>Mesh>Mesh Editor as displayed in Figure 10.

Referring to Figure 9, note the small inverted pyramid-shaped cursor with a highlighted area under it and on the landscape mesh itself; this marks the area of focus in the mesh to be transformed.



FIGURE 8: Freehand Mesh tool.

Also notice that when 3rd PlanIt is in Mesh Editor mode, the track plan automatically changes to the 3D view.

The Mesh Editor window contains the tools used to transform the terrain, either in Fractals, Mounds, Peaks, Flat or Smooth (more what these mean later).

The Color Bar adjusts the landscape type from heavy green (representing heavily forested areas or lush valley) to a tan color representing arid or desert-like topography or a bare region like a mountain top.

The Vertical Range constrains the vertical adjustment to 12" by default, but for more fine changes, you can revise this to be a smaller number.

I find the broader 12" range works as good starting point for getting terrain roughed in. I'll then reduce the setting for adding finer details later.

Once I've modified the Mesh Editor selections to my satisfaction, I click on top of the inverted pyramid with the mouse and move it up or down, adjusting the form of the terrain. Pulling up creates a mountain while pushing down creates a valley.

In Figure 11, I've kept the default 12" Vertical Range and Fractal settings. I've moved the mesh editor tool up 12 3/16" as per the Edit setting in the Mesh Editor dialog box.

FIGURE 9: Mesh Editor window.

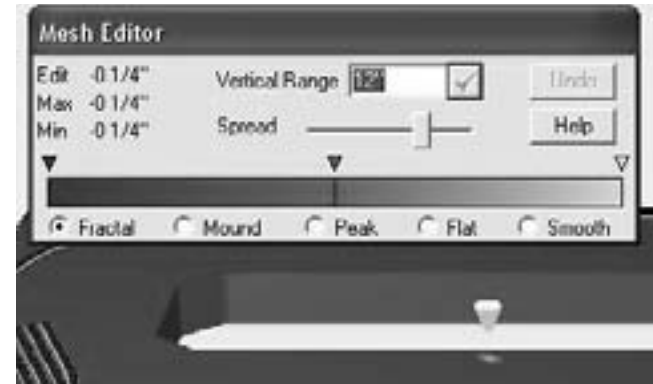
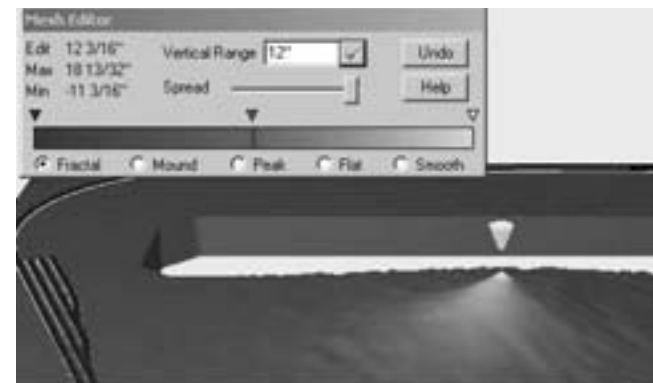


FIGURE 10: Mesh Editor selection.



FIGURE 11: Mesh Editor 12" range with Fractal.



If I don't like the way my terrain form looks, I just click the Undo button to return the mesh to its previous form.

Undo only undoes the last modification, not all of them in succession. I find if I think I might need to go all the way back to an original state in the terrain, it's best to save the track plan file using another name before I begin.

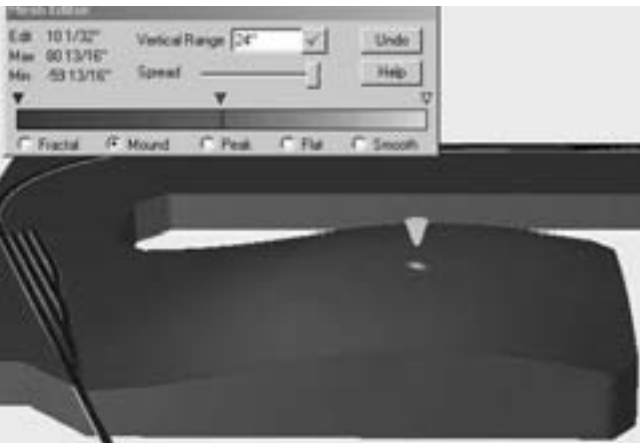
As another example, I've changed the vertical range to 24", I've selected the Mound setting used the mouse to push the terrain height down to 10 1/32". As you can see in Figure 12, using the mound setting with a 24" range creates a very broad and rounded effect when adjusting the landscape mesh.

Go ahead and experiment with the endless variations on creating your own shapes, styles, colors. For a live demonstration of using the Mesh Editor tool, view *Video 5: Using the Mesh Editor*.



FIGURE 12: Mesh Editor 24" range with Mound.

VIDEO 5: Using the Mesh Editor.



“If I don't like the way my terrain form looks, I just click the Undo button to return the mesh to its previous form.”

Water Features

To add a water feature, I create a terrain depression for the water feature and add in the color for the water. I demonstrate creating a small valley for a stream in *Video 6: Making a stream bed*.

Once I've created the stream bed, then I add some blue color for the stream using the Freehand polygon tool (see Figure 13).

Using the Freehand polygon tool, I draw an outline on the inside edge of the streambed and connect the sides to form a polygon. To adjust the water color, I open the polygon object properties by selecting the polygon, right-clicking, and then selecting Properties path (you can also select the object and then Ctrl+DbIclick). Using the Appearance tab I adjust the

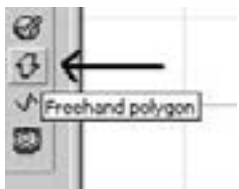


FIGURE 13: Freehand Polygon tool.



VIDEO 6: Making a Stream Bed.

“To add a water feature, I create a terrain depression for the water feature and add in the color for the water.”

fill color to a shade of blue that I like (see Figure 14).

Here's the process I use to make sure my water features look their best:

- Make sure the polygon object is part of the Landscape layer
- Move the polygon object to the front (Shift+F6) so that it appears above the landscape mesh.
- Modify the elevation and drop the polygon object down to the bottom level of the stream bed.

Doing these steps with a water feature gives it a more realistic 3D appearance.

For the example in Figures 14 and 15, I modified the Z setting (elevation) in the ODW by clicking on the polygon object and changing the Z value to -2.25. This drops the polygon two and a quarter inches below the zero level of the landscape mesh. Once the polygon elevation has been adjusted like this, it takes the shape of the surrounding landscape mesh in 3rd PlanIt.

If a picture is worth 1,000 words, then a video must be worth a million words. See *Video 7: Freehand Polygon Stream demonstration*.



VIDEO 7: Freehand Polygon Stream demonstration.

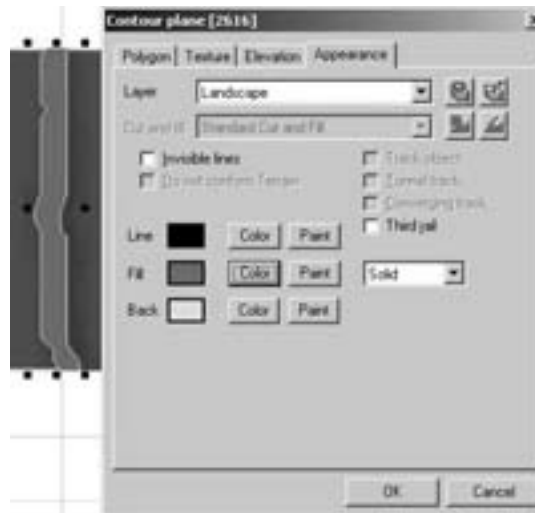


FIGURE 14: Modifying the polygon settings in the Contour Plane dialog.



FIGURE 15: Freehand Mesh tool.

Adding Landscape Trees and Foliage

With the landscape form added, next is to put in some trees and foliage. Greenery adds interest helps you better visualize how the actual layout might look.

With 3rd PlanIt you can plant trees and move them around much easier than on a real layout!

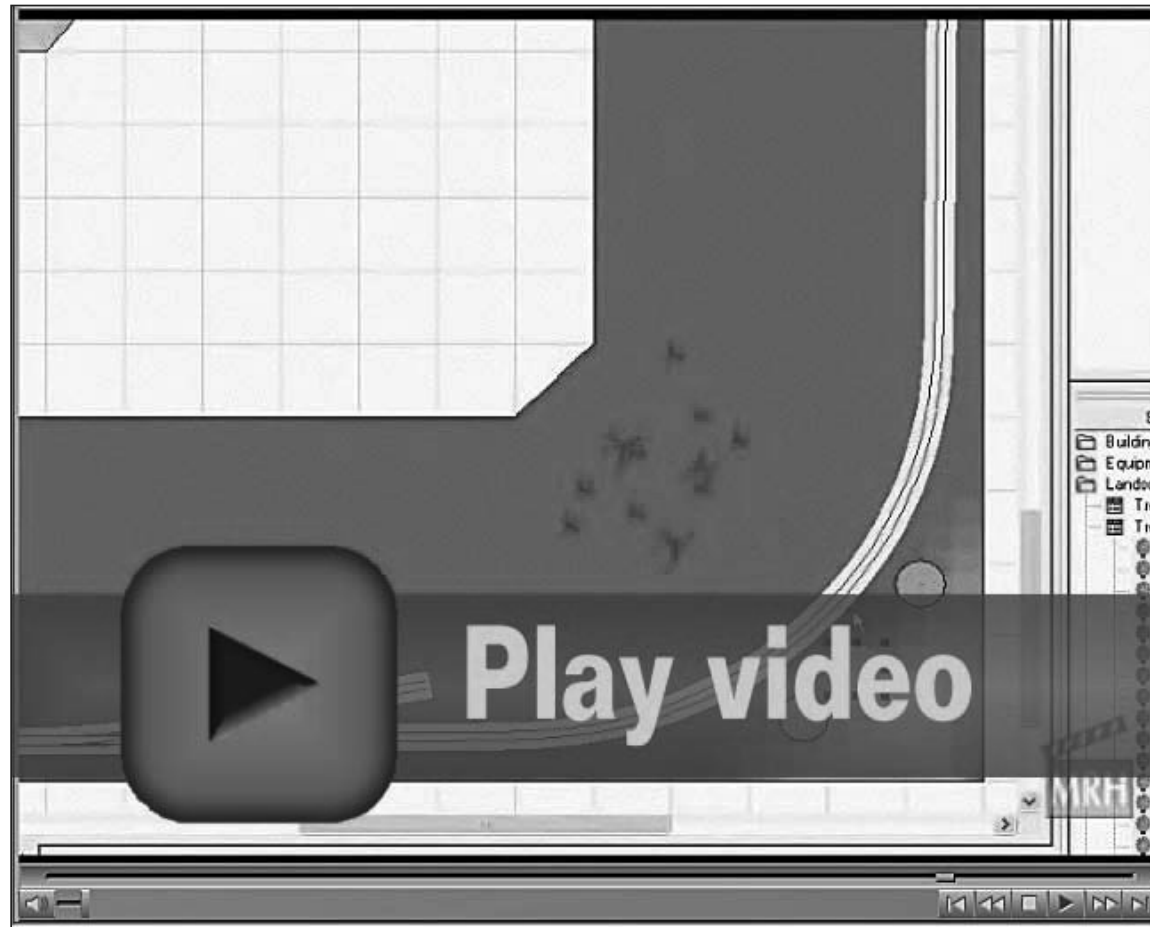
I like to try different “what If” scenarios on my track plans. It’s nice to see what the layout might look like if I put some trees here or foliage there, then toggle between the 3D and 2D views try out various placements.

The 3rd PlanIt Standard Library (Figure 16) provides several Tree groups in the Landscape category: Trees, Trees1, and Trees2.

Trees contains a mix of Oaks, Pines and Redwoods; **Trees1** contains several varieties of flowering and fruit trees ranging from Alder to Willow. Finally the **Trees2** group contains another set including Almond, Aspen, Bamboo, Olive, Pear and Walnut.

To add trees, make sure the Landscape layer is the current active layer. Click on the desired tree object and 3rd PlanIt places the trees on the plan. Once on your plan, move the trees to the desired location.

In Figure 17, I have added several trees to the landscape. For a demonstration of placing trees and foliage on your plan please watch *Video 8: Adding Trees and Foliage*.



VIDEO 8: Adding Trees and Foliage.

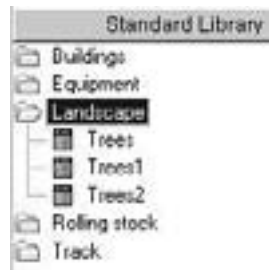


FIGURE 16: Tree selections.

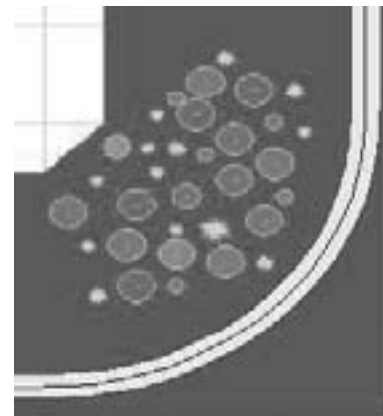


FIGURE 17: Tree placement.

One trick when adding trees: I place one set of trees and then duplicate it over and over using copy and paste either 3, 5, or 7 times. I find an odd number of each tree type seems more natural.

Backdrops

Adding a backdrop uses more of the 3D editing power of 3rd PlanIt and more of the program's advanced editing and drawing capabilities.

Backdrops start with the draw polygon rectangle tool and you tilt the rectangle up 90° from the tabletop plane. Once you've set up a polygon as a backdrop, you can use copy and paste to add more backdrop area to the layout.

Creating a basic flat polygon backdrop works okay, but let's face it, most realistic backdrops have curved corners and are not straight 90 degree angles at all corners.

Once I describe how to do a basic flat backdrop, I'll demonstrate using an advanced curved polygon to get a coved corners backdrop.

To create the rectangle polygon I use the draw polygon Rectangle tool (Figure 18).

I go to the track plan and draw a rectangle by clicking and dragging the mouse. Then I click on the select tool from the toolkit menu bar and click on the rectangle to make it active.



FIGURE 18: Draw Polygon Rectangle tool.

I can modify any of the rectangle's properties by right-clicking on the lines and selecting Properties.

(You can also use the hot key method of Ctrl+DbClick.)

This brings up the Contour Plane properties window for the rectangle, with the Appearance tab in front (Figure 19).

Using the options available, I set the backdrop to a light sky blue color and also make it slightly transparent, which makes for easier 3D viewing of the

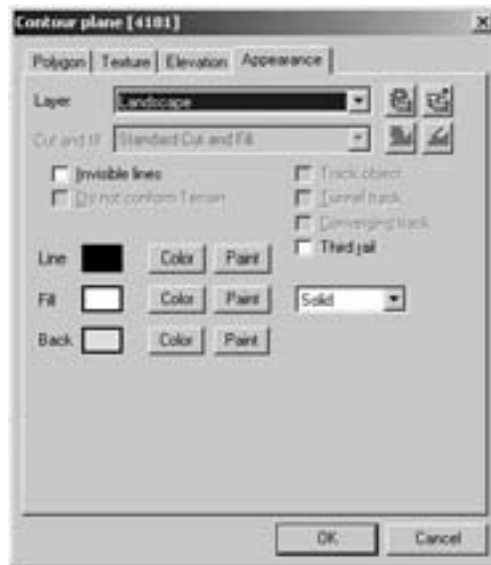


FIGURE 19: Rectangle Polygon properties dialog.

layout. Or I can add a "texture" to the backdrop using an image.

To apply color to the backdrop, click the color selection buttons for the Line, Fill and Back. Select the color of choice.

I like to use a my own custom light blue shade (see the first color block in the custom colors palate of Figure 20) and apply it to each section of the backdrop.

“With 3rd PlanIt you can plant trees and move them around much easier than on a real layout!”

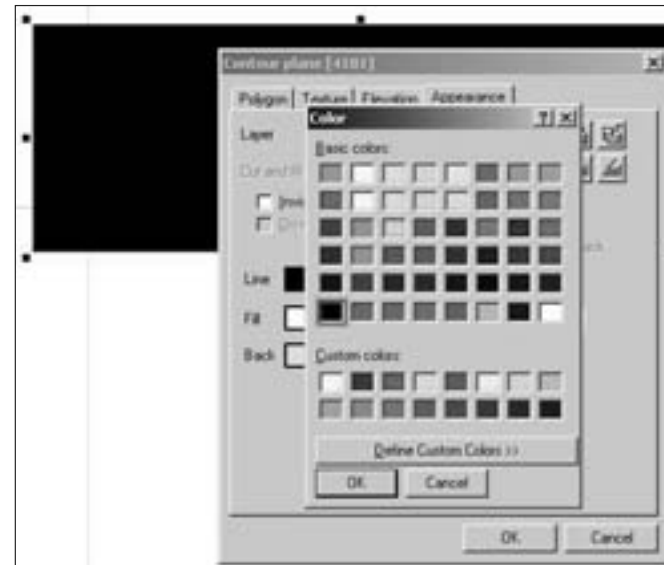


FIGURE 20: Color Selection window.

To define a custom color, I click the **Define Custom Colors >>** button and create a light shade of sky blue. Then I click **Add to Custom Colors** to add it to the Custom colors section (Figure 21).

Once I've added a custom color to the colors palette it remains on the palette. I apply the new color to the Line, Fill, and Back portions rectangle.

The rectangle polygon takes on a light blue shade like that in figure 22. Press the Tab button to toggle to the 3D view mode and see the backdrop rectangle – but wait, the rectangle is still laying down flat!

Before I demonstrate how to flip the rectangle up to a 90° angle, let me show you how to modify the texture to use an image as the background.

Go back to 2D viewing mode by pressing the Tab button. Re-open the properties window for the rectangle and select the Texture tab (Figure 23).

To add a texture image, click “Use a texture for the surface of this object.” 3rd PlanIt opens the texture library window and displays a selection of images that can be applied as a texture, see Figure 24.

By default 3rd PlanIt has a starter set of textures. One folder contains materials such as bricks, concrete, fabric, metal, planks, roads, rust, shingles, stucco, tiles and walls.

The other folder contains natural materials such as bark, bushes,

“I set the backdrop to a light sky blue color and also make it slightly transparent, which makes for easier 3D viewing of the layout.”



FIGURE 22: Rectangle Polygon Light Sky Blue Shade.

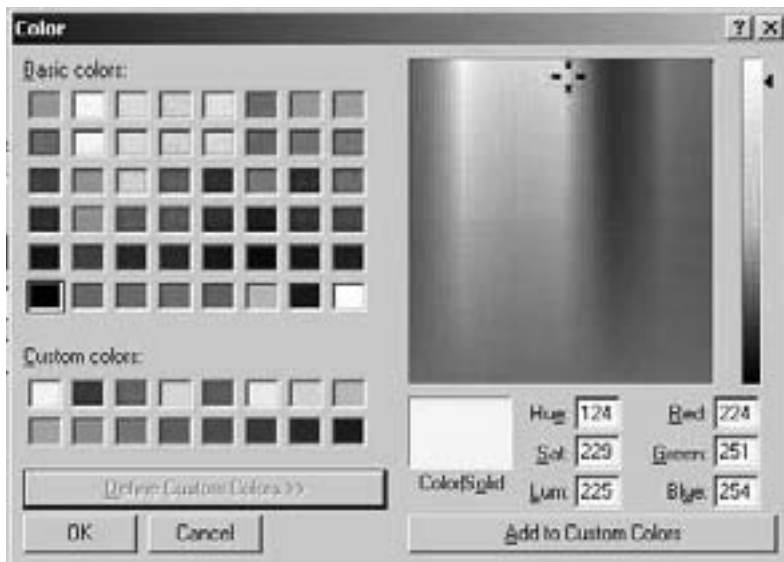


FIGURE 21: Color Selection and Add to Custom Colors.

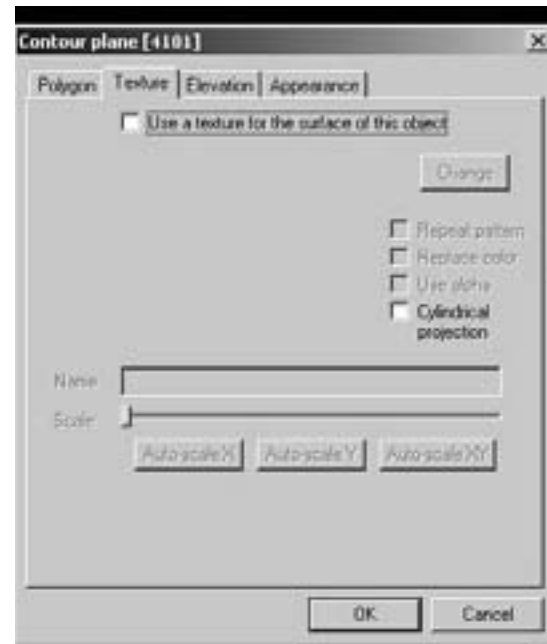


FIGURE 23: Texture tab in properties.

flowers, grass, ground, rocks, scenery, stone, water and wood.

You add more texture images to the library list by copying image files (.jpg, .tiff, .gif) to the 3rd PlanIt\Textures folder.

To add a texture I clicked the the Add button from the Texture List window. This opens up the Select Texture File window, and I click the Nature category and then the Scenery sub-category. Then I select the Cloud04.jpg image and click OK (see Figure 25 previous page). Finally I click OK to add the image to my backdrop.

Once I've added the image to the rectangle contour plane, it gets added to the texture tab of the properties window, see Figure 26.

Now that I'm all done, I click OK to close the properties window. You may notice that in 2D view mode the backdrop rectangle still shows up in the sky blue color. 3rd PlanIt does not render the texture image until you view the plan in 3D mode. I must click the Tab button to view my new backdrop with the texture image in 3D.

For this layout plan I am figuring on a backdrop that's 24" high and running the entire length the layout wall,

“3rd PlanIt has a starter set of textures. One folder contains materials such as bricks, concrete, fabric, metal, planks, roads, rust, shingles, stucco, tiles and walls.

The other folder contains natural materials such as bark, bushes, flowers, grass, ground, rocks, scenery, stone, water and wood.”



FIGURE 24: Texture image library list.

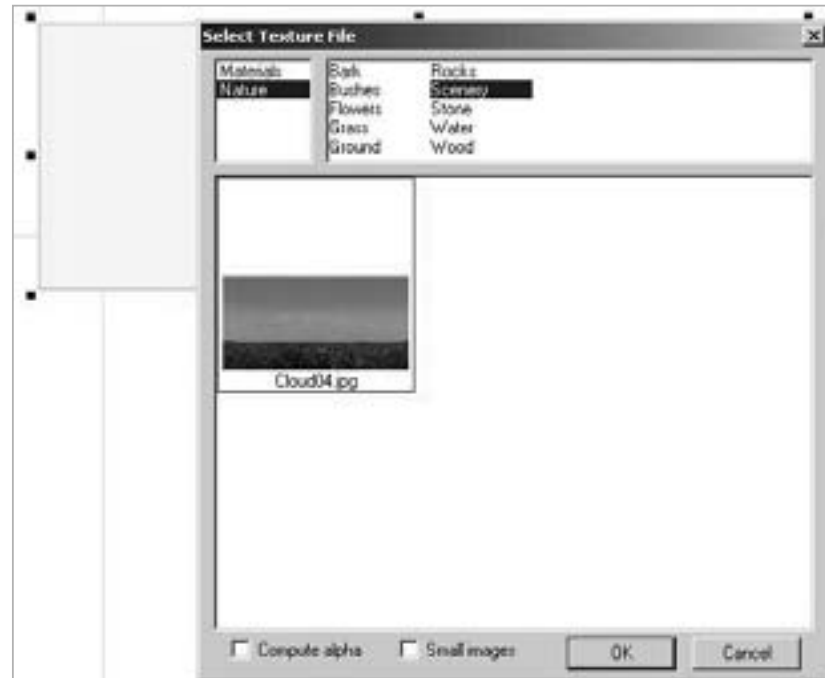


FIGURE 25: Select Texture File.



FIGURE 26: Image added to Texture Tab.

therefore the rectangle needs to be set to 192" long by 24" wide.

I change the rectangle by clicking and dragging the object while observing the ODW setting for dx and dy. Optionally, I can just overwrite the dx and dy dimensions in the ODW directly. In any case we want dx to be 192" and dy to be 24", see Figure 27.

Now it's time to tilt the rectangle 90° and stand it up so looks like a backdrop when viewed in 3D.

I click on the rectangle to select it, then right-click and select **Edit>Tilt>Prompt and Tilt** (hotkey: Shift+T), which opens the Prompt and tilt window, see Figure 28.

Ensure that the angle says 90.000° and click OK – 3rd PlanIt tilts the rectangle 90° to stand upright. It appears as a line in 2D view mode. Press the Tab key to toggle into 3D view mode see the backdrop.

I find the backdrop may not be aligned closely with the benchwork edge, so to correct this I toggle back to 2D mode and align the backdrop line to the outside edge of benchwork.

I toggle back to the 3D view to see the backdrop again – and it should now be butted up against the edge of the layout.

I toggle back to 2D mode to adjust the backdrop elevation. I align the bottom edge of the backdrop with the

top edge of the benchwork. The easiest way to do that is go to the ODW and set the green z elevation to 0" as shown in Figure 29.

After panning and zooming around a layout plan in 3D mode, you'll quickly see that at some angles the backdrop hides the view of the layout. To enable "see-through" viewing, I like to make the backdrop semi-transparent.

To adjust the transparency of the backdrop, go to the **Appearance** tab of the backdrop properties. Select the drop down arrow next to Solid, and select Transparent. Adjust the slider that appears to the level of transparency you prefer from Opaque to Clear.

“After panning and zooming around a layout plan in 3D mode, you’ll quickly see that at some angles the backdrop hides the view of the layout. To enable “see-through” viewing, I like to make the backdrop semi-transparent.”



FIGURE 27: ODW dx and dy dimensions settings.

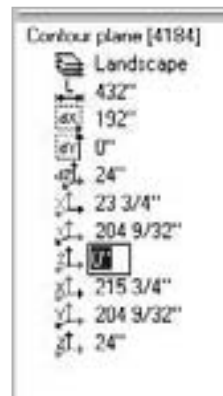


FIGURE 29: Z elevation.



FIGURE 28: Tilt object window.

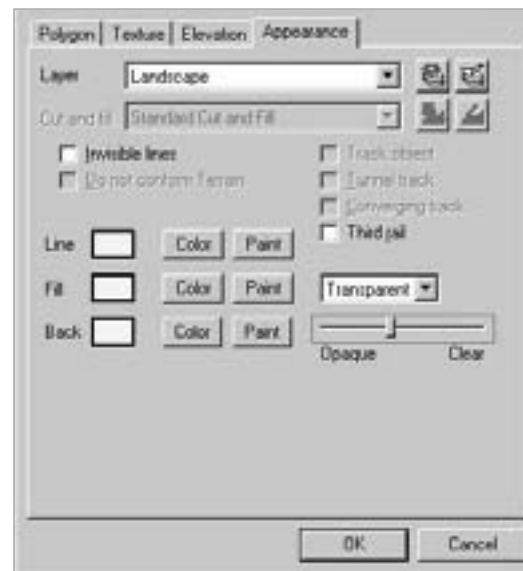


FIGURE 30: Appearance Transparency setting.

I like some transparency, so I move the slider just to left of center as shown in Figure 30 (previous page). Then I click OK to apply the transparency change.

When I toggle back to 3D viewing mode, the layout plan with my transparent backdrop displays as shown in Figure 31.

I can also apply these same settings to the backdrop with the texture cloud image. You can see my layout plan with the cloud image backdrop in Figure 33.

Curved Backdrop Sections and Creating 3D Objects

Adding curved corners to your backdrop makes it look even more realis-

tic. Creating a curved section of backdrop requires using the Draw Polygon N-sided polygon tool (Figure 32).

With the N-sided polygon tool, I create a round object, then transform it into a 3D cylinder, and then slice it in half to create a semi-circular section representing a curved backdrop. After creating this shape, I change the color to the sky blue shade so it fits right in with the rest of the backdrop.



FIGURE 32: N-sided polygon tool.

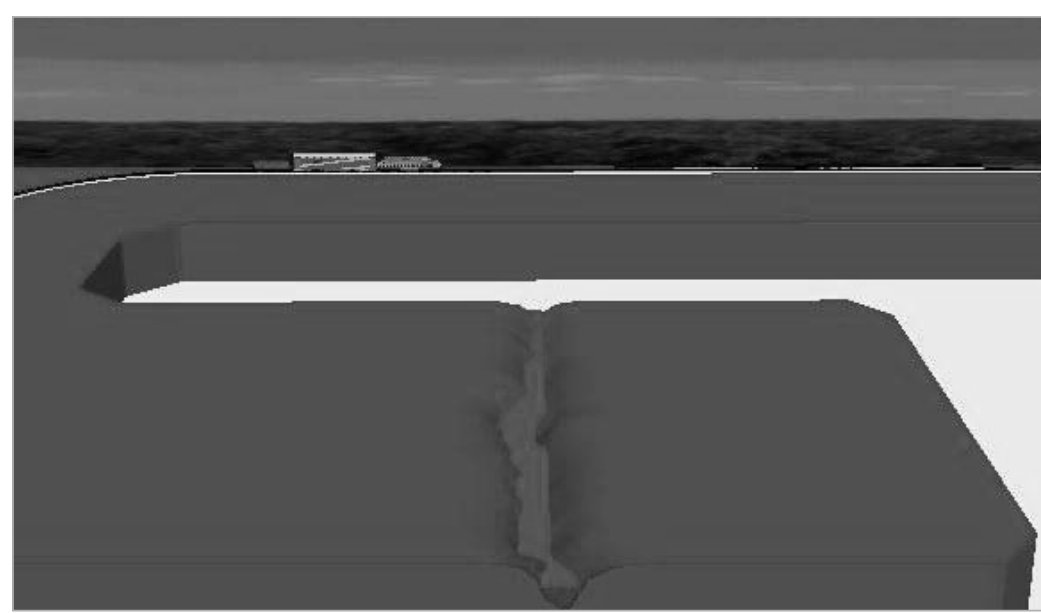


FIGURE 33: 3D view with texture image backdrop.

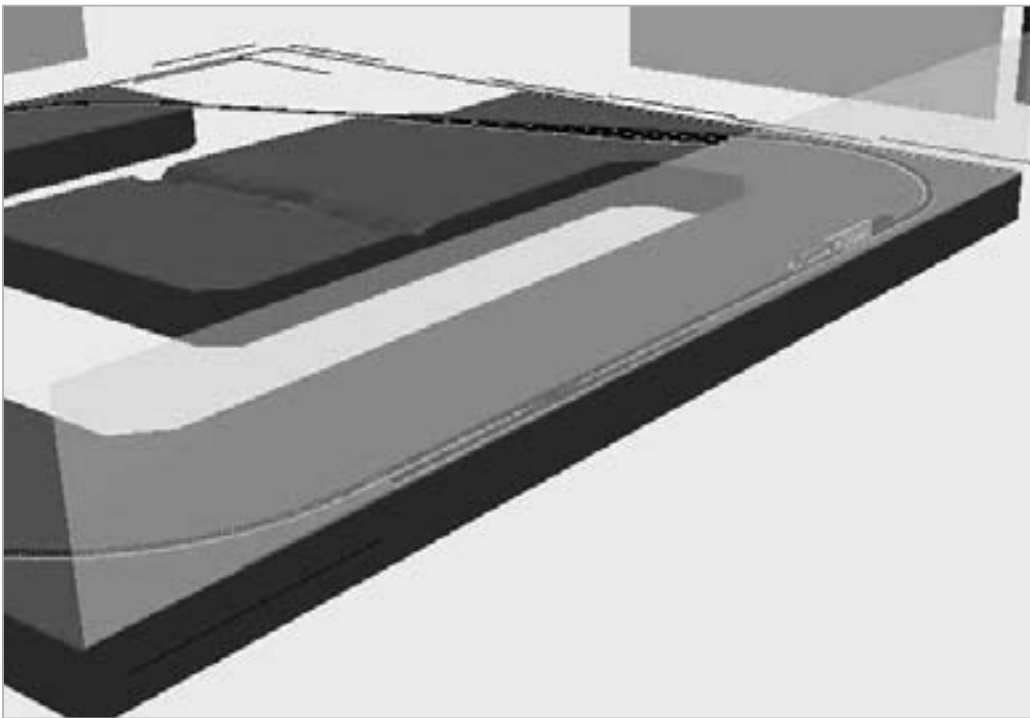


FIGURE 31: 3D Transparent Backdrop view.

“Adding curved corners to your backdrop makes it look even more realistic. Creating a curved section of backdrop requires using the Draw Polygon N-sided polygon tool.”

With the N-sided polygon tool selected, I start in a corner I want to cover. I click and drag the tool until I have a circle similar to the one shown in Figure 34.

Now I slice the circle to form the covered backdrop section. I place the cursor at the edge where the circle meets the benchwork edge, then right click and select **Edit>Slice>Slice Here** (or Alt+F5). The part of the circle between the two layout edges turns black as shown in Figure 35 (next page).

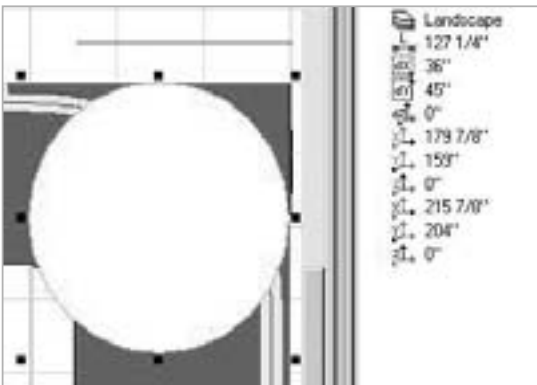


FIGURE 34: N-sided contour plane object.



VIDEO 9: Adding Backdrops demonstration.

“To adjust the transparency of the backdrop, go to the Appearance tab of the backdrop properties. Select the drop down arrow next to Solid, and select Transparent. Adjust the slider that appears to the level of transparency you prefer from Opaque to Clear.”

Now I select the blue line on the left and click the Delete key. Only the the black semi-circular section in the corner should remain.

I find the covered section may not exactly line up with layout edge, so I use the **Freehand Rotation tool** (Ctrl+Shift+R)

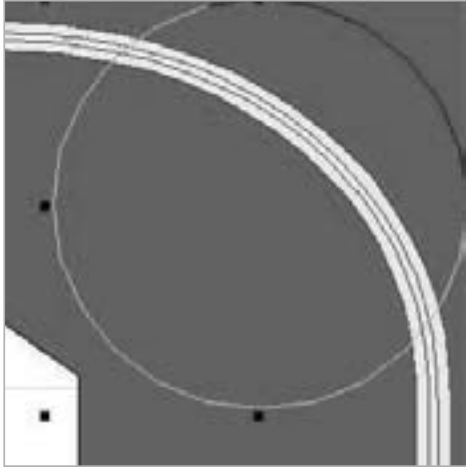


FIGURE 35: Slice Here selection (Alt + F5).

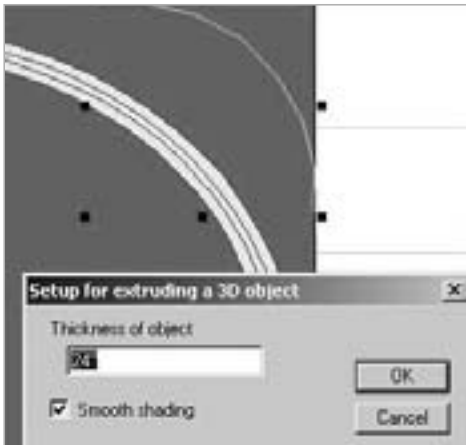


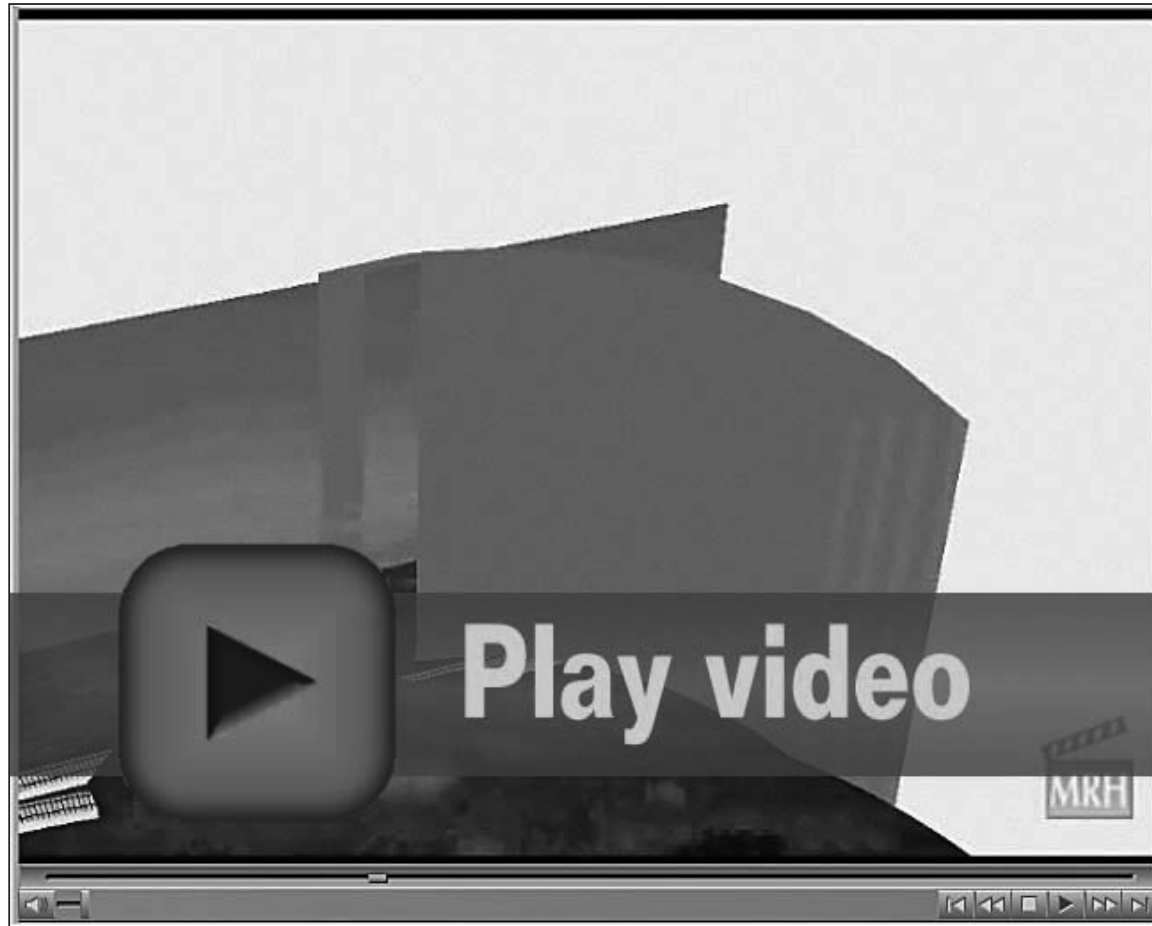
FIGURE 36: Setup extruded 3D object.

to get the covered piece aligned with the other backdrop edges. I demonstrate this process in *Video 10: Adding a Coved Backdrop*.

Once I've aligned the coved section, I'm ready to transform the semi-circular line to a 3D object.

I right-click on the curve segment, then select **Transform>Make 3D solid**

“I find the coved section may not exactly line up with layout edge, so I use the Freehand Rotation tool to get the coved piece aligned with the other backdrop edges.”



VIDEO 10: Adding a Coved Backdrop.

(Extrude) or press Alt+3. Up comes the **Setup for extruding a 3D Object** dialog – I enter 24” and then select OK (Figure 36). I apply the same sky blue color used with the rectangular polygon backdrop. I make it transparent as well.

I view the coved section in 3D by pressing the Tab key. Curved objects seem to take on colors a little differently so don't be too surprised if it doesn't look exactly the same.

In my 3D example, I copied the backdrop with the cloud texture image and pasted it to all sides of the layout, and then placed the curved section throughout the corner sections of the layout plan. Figure 37 shows the result.

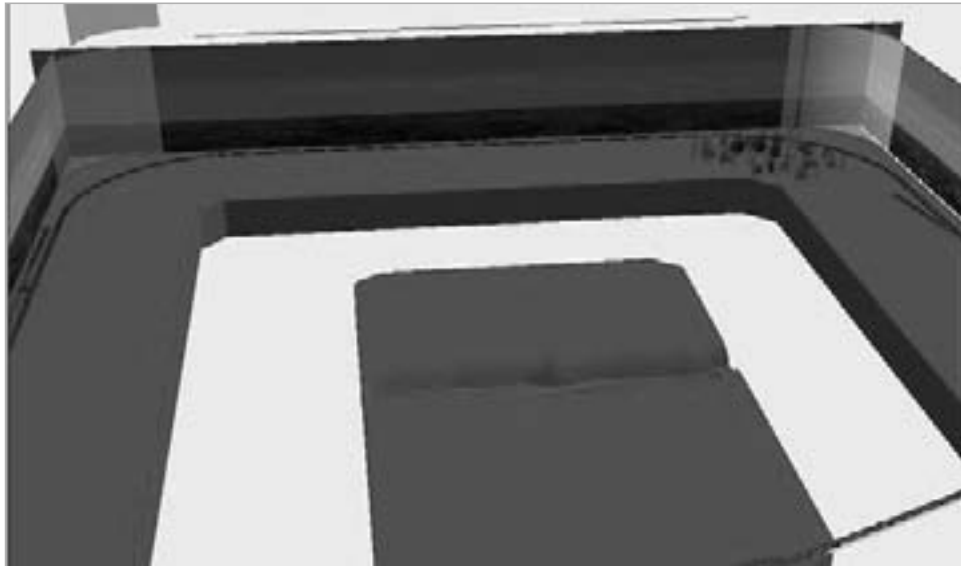


FIGURE 37: 3D View rectangular and curved backdrops.

Adding Other Objects Buildings and Equipment

3rd PlanIt includes a selection of buildings and equipment from its Standard Library. The Buildings section includes manufacturers such as Campbell, Cornerstone, DPM, Faller, and Walthers to name a few.

The equipment category includes Bachmann, Modeling Parts, and Signals. While the list of available building and equipment objects isn't as broad, you can download many more from online sources (see importing objects in the next section).

To add a building or equipment object, simply click on the object in

the Standard Library. 3rd PlanIt places the object onto the track plan. For final placement just use the mouse or directional arrows or maybe a rotation change and you're done. Let me provide an example.

I want to add the Walthers Sunrise Feed Mill to the layout (see Figure 38). I click on the Sunrise Feed Mill and 3rd PlanIt puts it onto the track plan in "active mode" so I can move it around as desired. In my track plan I've placed the mill next to a short spur track as shown in Figure 39.

Notice the ODW displays the Sunrise Feed Mill properties lists all the structure's properties including length,

“To add a building or equipment object, simply click on the object in the Standard Library. 3rd PlanIt places the object onto the track plan. For final placement just use the mouse or directional arrows.”

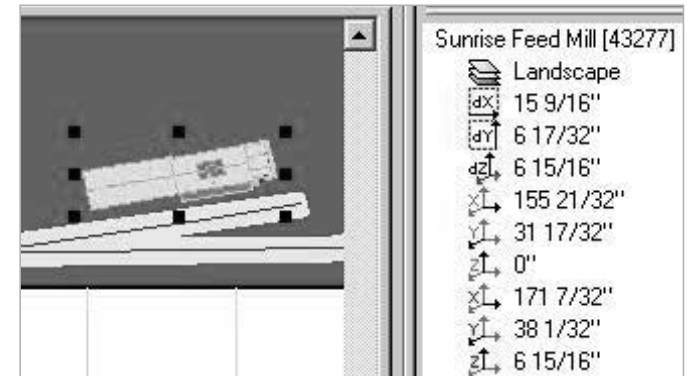


FIGURE 39: Sunrise Feed Mill placed on plan.

FIGURE 38: Building Library.

width and height. I find this feature helpful if I have a custom-built structures and I want to test its fit. I create a footprint of the structure by drawing a polygon of the right length and width and then place on the track plan.

I add equipment to the layout plan in the same exact way as placing a building. I added an STA_RRR signal from the **Equipment> Signals** section of the Standard Library, placed it and rotated it to fit along the mainline track (Figure 40).

Roads - Gravel, Asphalt, Concrete

Adding gravel, asphalt or concrete roads uses 3rd PlanIt's add texture

capability. You can add texture to any polygon or landscape feature on your plan.

3rd PlanIt's default texture library includes many choices to enhance the look and feel of your layout plan.

To illustrate a road example, I start out drawing a free hand polygon near the Sunrise Feed Mill out toward the benchwork edge.

I'm envisioning this area services trucks for delivery and pick-up of grain and other supplies (Figure 41).

I apply a gravel road texture by selecting the Texture tab from the properties window, clicking Nature and then selecting Rocks, see Figure 42.

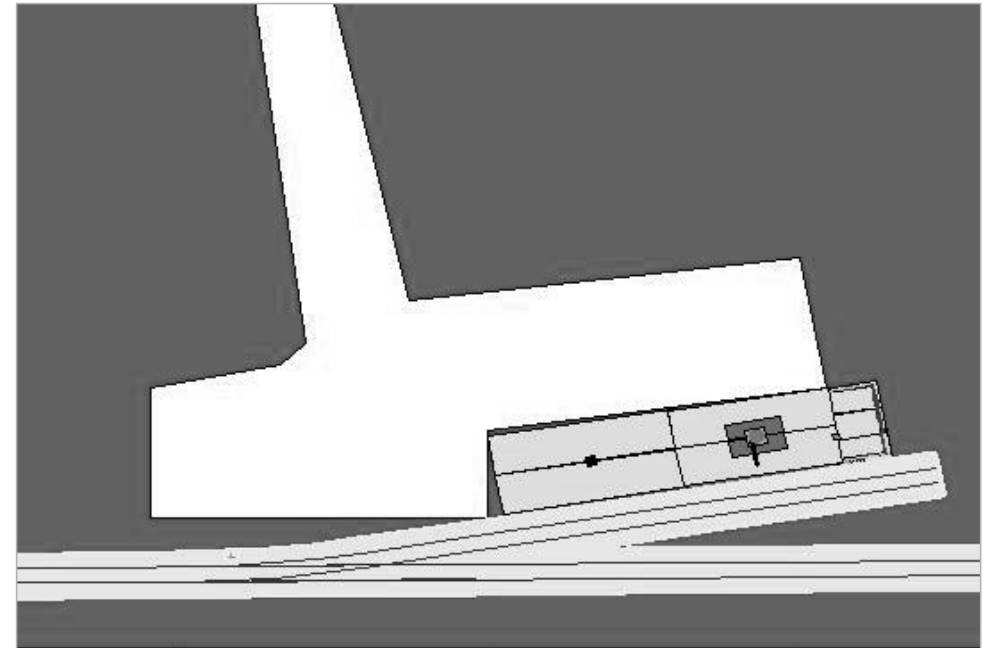


FIGURE 41: Road/Service area polygon in 2D.

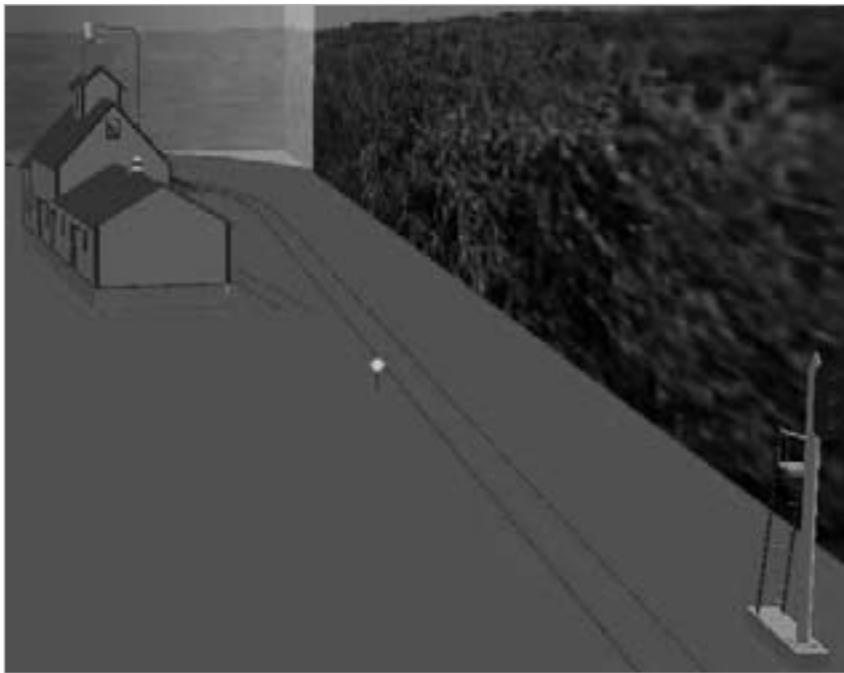


FIGURE 40: Equipment and Building Objects 3D view.

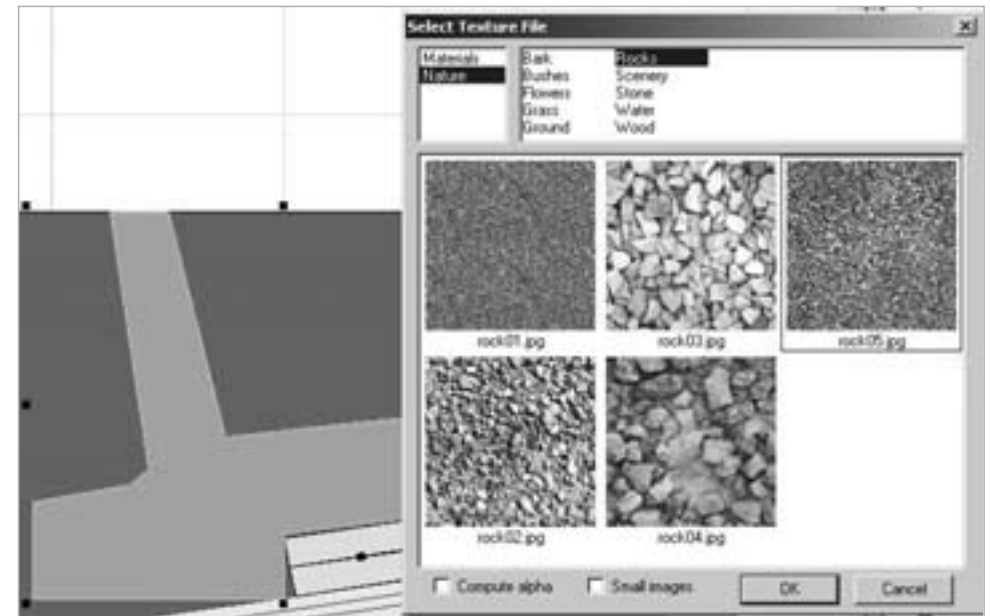


FIGURE 42: Rock selection for road texture.

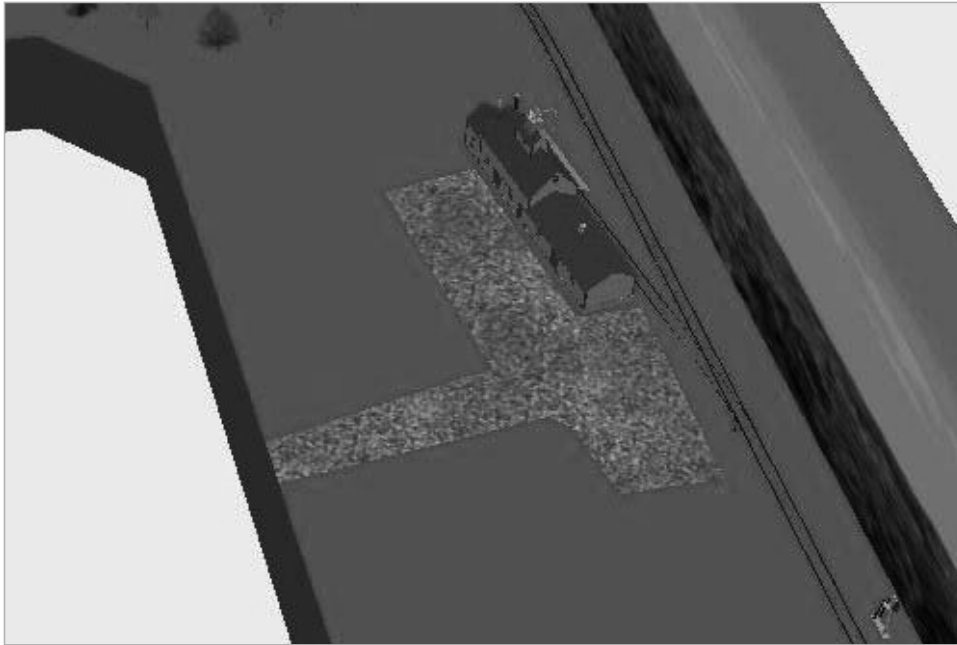


FIGURE 43: Gravel texture viewed in 3D.

I select rock05.jpg and select OK, which applies a gravel texture to the polygon to represent a road. By adjusting the Scale setting on the Texture tab I can represent a finer grain of stone on the surface when viewed in 3D. Remember 3rd PlanIt does not show textures in 2D. See Figure 43 for the 3D view of the gravel road and service area on my layout plan.

Importing Objects

Importing New Objects into the Standard Library

As mentioned earlier 3rd PlanIt has a limited number of objects available in its Standard Library, so you may want to add more objects into your library,

including custom-designed rolling stock and locomotives!

The current 3rd PlanIt version has more options for the Standard Library than earlier versions. If you cannot find that certain building, structure or locomotive, you can likely find one from the online web resources (see next section) and then import it into your own library.

You can also save objects you create on your own to the standard library so that you can use them over and over again. Why build the same thing repeatedly when you can store it in the library and just reuse it?

I have listed the 3rd PlanIt Users Group on Yahoo first as a resource. Once you

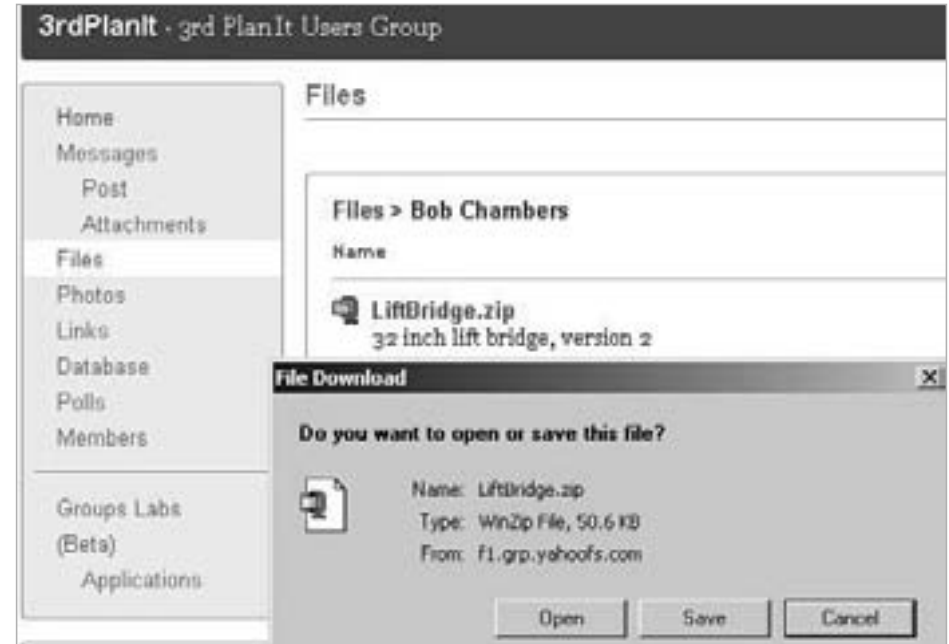


FIGURE 44: 3PI file download.

become a member you will find many resources available as a free download.

You must become a member of the 3rd PlanIt Users Group on Yahoo to get access to these resources, and to do that you need a Yahoo account. If you don't have a Yahoo account, go ahead and sign up for one – it's free.

Once you're a member of Yahoo, you can sign up for the 3rd PlanIt Users Group. It may take a day or so for your request to join the group to be approved. Once approved you can access all the great resources they have and you can also ask the group questions. And if you create any useful 3rd PlanIt objects, you can share them with the group!

For example, I found a lift bridge that was created by Bob Chambers. I downloaded **LiftBridge.zip** from the Files section of the group just by just clicking on it, as seen in Figure 44.

Once I had downloaded the zip file, I extracted the contents to my hard drive. The extracted file has the **3pi** file extension, which is the file type recognized by 3rd PlanIt.

Now that I had this file, I moved it to the 3rd PlanIt Standard Library, which is typically at **C:\Program Files\3rd PlanIt\Standard Library**. I made sure I put it into the Buildings sub-folder for easy reference, see Figure 46 (next page).

Now that I've added the 3pi file to the Standard Library folder, it now shows in the Standard Library list (see Figure 45).

The Lift Bridge object actually consists of three parts, the 32' Truss Bridge and two Groups, each containing the two lift sections, see Figure 47.

To add this object to the track plan I need to click each of the three components, then adjust the placement positioning. For ease of use, I highlighted all of these objects and combined them into one group.

See this technique demonstrated in *Video 11: Adding and Modifying an Object*.

Online Resources

As mentioned, I may want to search for objects to add into the Standard Library from online sources. Here I list some online sources of 3rd PlanIt information.

This is my short list of places that I like to go for 3rd PlanIt.

You'll also find 3rd PlanIt track plans created by others at some of these links. Sometimes it helps to see what others are creating to get a better idea of the full capabilities of 3rd PlanIt.



FIGURE 45: Object added.

“You’ll also find 3rd PlanIt track plans created by others at some of these links. Sometimes it helps to see what others are creating to get a better idea of the full capabilities of 3rd PlanIt.”

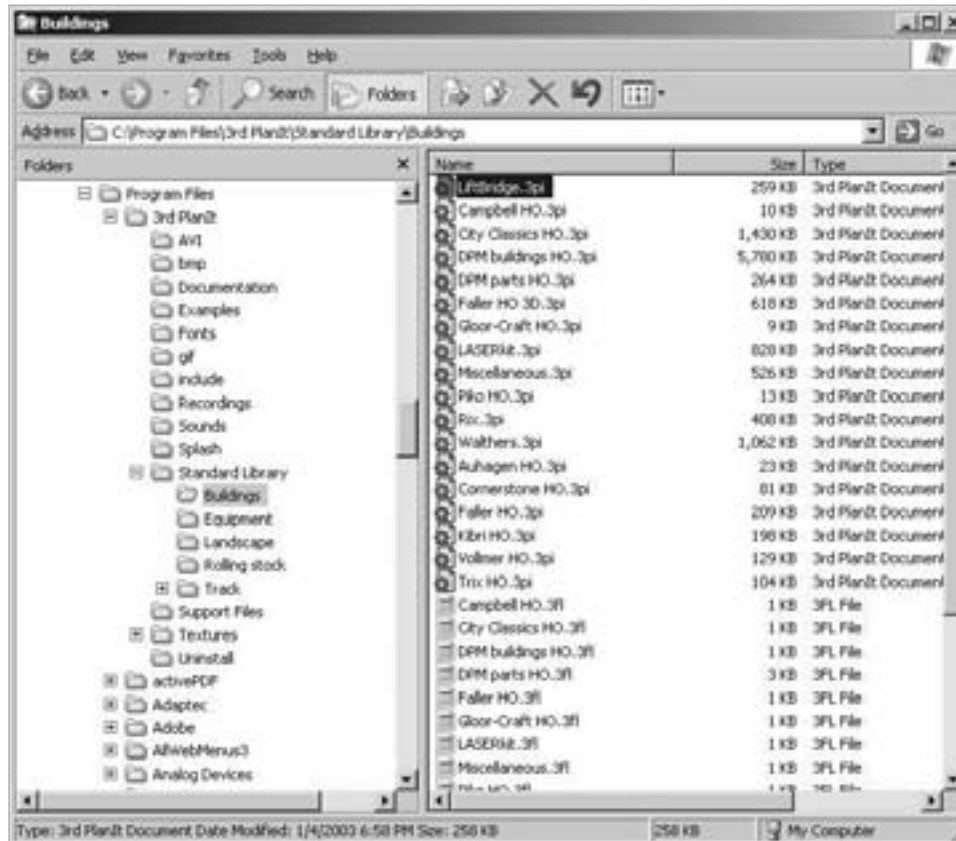


FIGURE 46: Building Library.



FIGURE 47: Lift bridge object.

Just as a 3-legged stool cannot stand without all 3 legs, I'm still learning every day and hope to continue in improving my:

1. Design experience
2. Artistic skill
3. Understanding of railroad operations.

All three components are important to designing a model railroad. Remember how I discussed these keys in the part 1 of this series.

3rd PlanIt Resources Website

<http://3pi.info/index.php>

3rdPlanIt On-Line File Library

<http://3pi.info/superark/>

3rd PlanIt Yahoo Users Group

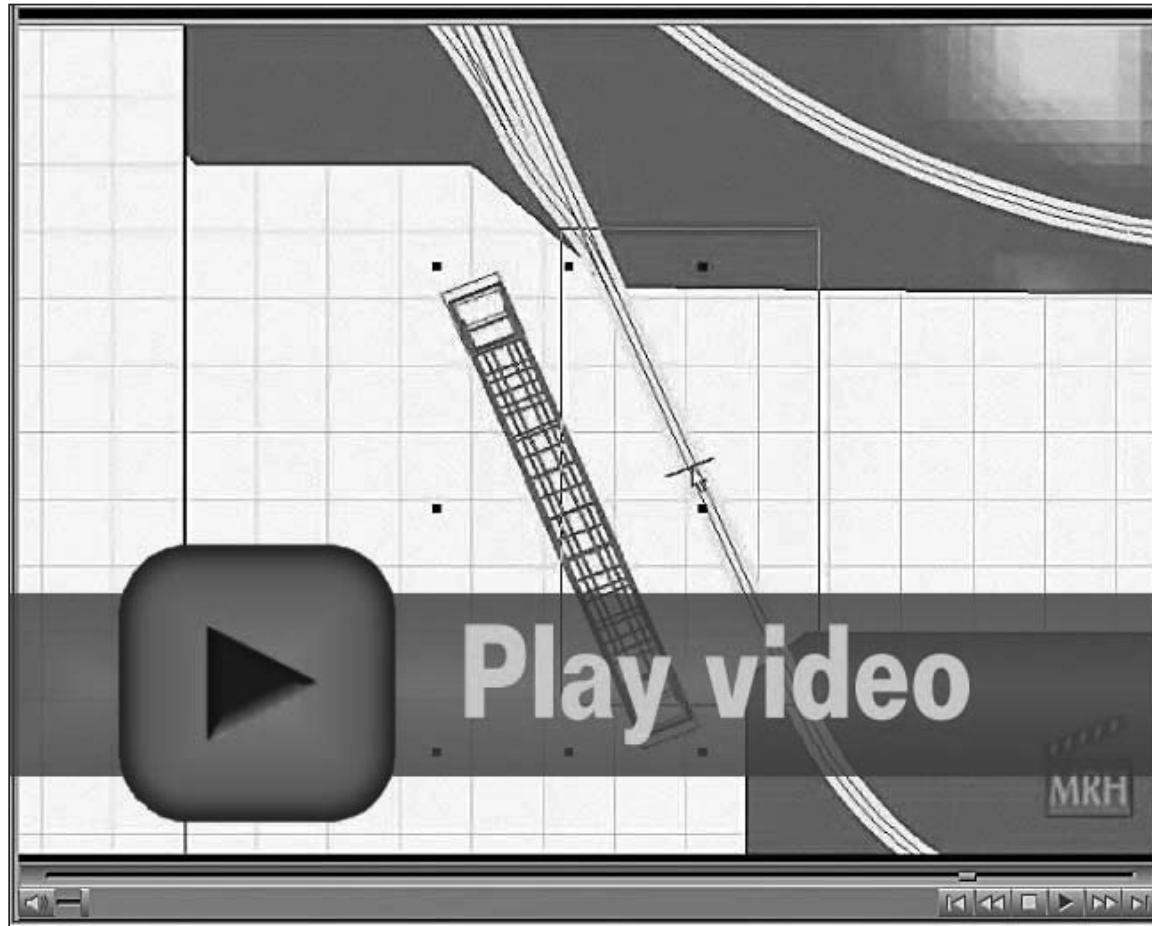
<http://groups.yahoo.com/group/3rdPlanIt/>

3rd PlanIt Main Site

<http://www.trackplanning.com/>

3rd PlanIt Support Forum

<http://www.3rdplanit.com/forum/>



VIDEO 11: Adding and Modifying an Object.

“Just as a 3-legged stool cannot stand without all 3 legs, I’m still learning every day and hope to continue in improving my design experience (1), my artistic skill (2), and my understanding of railroad operations (3).”

Virtual Consisting to Test the Track Plan

Virtual consisting can be a great way to test out your track plan in 3D before you pay for one stick of benchwork. It's not easy to use virtual consisting, however, to thoroughly verify an entire operation plan. Still, it's a great tool for creating some "what if" scenarios that may occur and to verify that certain design requirements can be met.

For example, my Piedmont Division layout plan has a double track mainline on grade that acts as transition tracks between the upper and lower decks. I wanted to ensure that two consists of 28 cars and 2 locos each could meet each other on the grade and negotiate a crossover between the two mains without having to ever stop.

I tested this design requirement using virtual consisting and determined that my plan supported this requirement.

I also wanted to test if I had allowed enough staging area and classification yard space for building two 28-car trains. I was able to test my plan with virtual consisting and the verification process proved it could handle the capacity requirement.

Viewing options

Remember the Tab key tells 3rd PlanIt to display the track plan in 3D? This view mode provides some advanced features (see Figure 48), including the ability to view in two stereo modes – Anaglyphic (Alt+9) and Stereographic (Alt+8).

Both options require special 3D glasses or a stereographic viewing device,

although I've never tried this myself, it's an interesting option.

3rdPlanIt also allows you to record fly-over views to an avi video file using the **Record 3D** (Alt+Z) selection from the View toolbar. You can choose various file compression formats (see Figure 49) or record in full frames uncompressed format.

The full frames uncompressed video option creates very large avi video files – which might be great if you have the computing power and are producing a professional production. But for most home use, select a compression format to reduce the video file size to a more manageable level.

See *Video 12: 3D Flyover Demonstration* for an example (note that I used video compression on this example).

“I can control turnouts easily in 3D mode. I just move my mouse cursor over the designated turnout and click it to throw the points.”

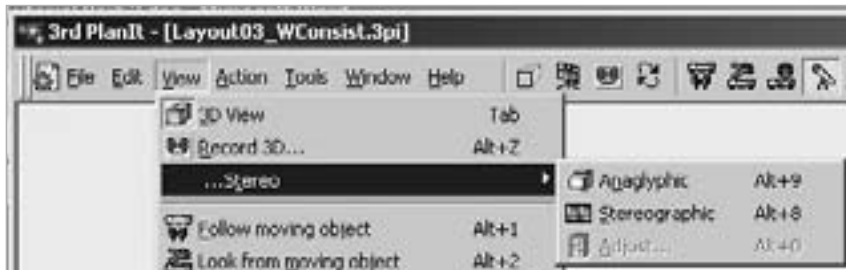


FIGURE 48: 3D Viewing Options menu.

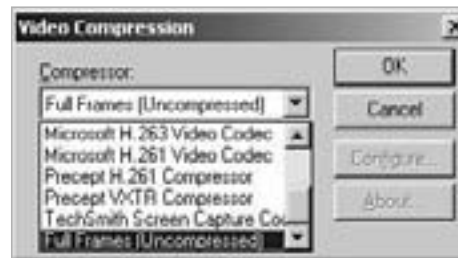


FIGURE 49: Video Compression options.



FIGURE 50: Track viewing options.

In a test using the Microsoft Video 1 Compressor, I chose a compression quality of 50, a temporal quality ratio of 0.50 and ran a 6-second capture.

The test created an avi file of 28MB. Based on this test, you could expect each minute of video to take approximately 280MB and a 5 minute video would take up around 1.4 GB!

Controlling turnouts

I can control turnouts easily in 3D mode. I just move my mouse cursor over the designated turnout and click it to throw the points. The switch stand turns from green when positioned to the main to red when thrown to the diverting route.



VIDEO 12: 3D Flyover demonstration.

“The full frames uncompressed video option creates very large avi video files – which might be great if you have the computing power and are producing a professional production. But for most home use, select a compression format to reduce the video file size to a more manageable level.”

Use the track viewing options in the 2D mode for controlling turnouts. Figure 50 (previous page) shows the track viewing options with the “Show turnout routing” option highlighted. Figure 50 shows the turnout to the feed mill with the points switched onto the main route and the switch stand (the small plus by the points) shows as green.

To throw the turnouts, just click it like you do with viewing the plan in 3D.

The track viewing options include enabling or disabling the track, ballast, roadbed, switch stands and turnout routing.

Epilogue

With this the third and final installment of the 3rd Plan It track planning tutorial, I want to thank everyone who has commented on the first two parts and I encourage feedback for part 3.

I’d like to close out this series with a bang, so I’ve included one last video to highlight all that has been covered in this series.


I hope to add short “clinics” here or there on one specific technique or tip with 3rd PlanIt, and I’m also open to suggestions or recommendations from anyone who may want to delve deeper into a specific section, tip or technique.

See you on the MRH site!



VIDEO 13: Wrap up video.

“I’d like to close out this series with a bang, so I’ve included one last video to highlight all that has been covered in this series.”

 **Article feedback!**
CLICK HERE for reader comments on this article ...



Ryan Boudreaux got a boxed HO scale train set from his parents as a pre-teen and shortly thereafter his dad built Ryan a C-shaped 4X8 layout to get the trains off the carpet.

Ryan’s current modeling passion is the Southern and Norfolk Southern, specifically the Piedmont Division. Ryan’s layout, still in the early stages, combines a mix of prototype operation with freelanced locations and scenery.

Ryan works as an EPA contractor in the National Computing Center at Research Triangle Park, North Carolina.

Shelftrax Deluxe Shelving

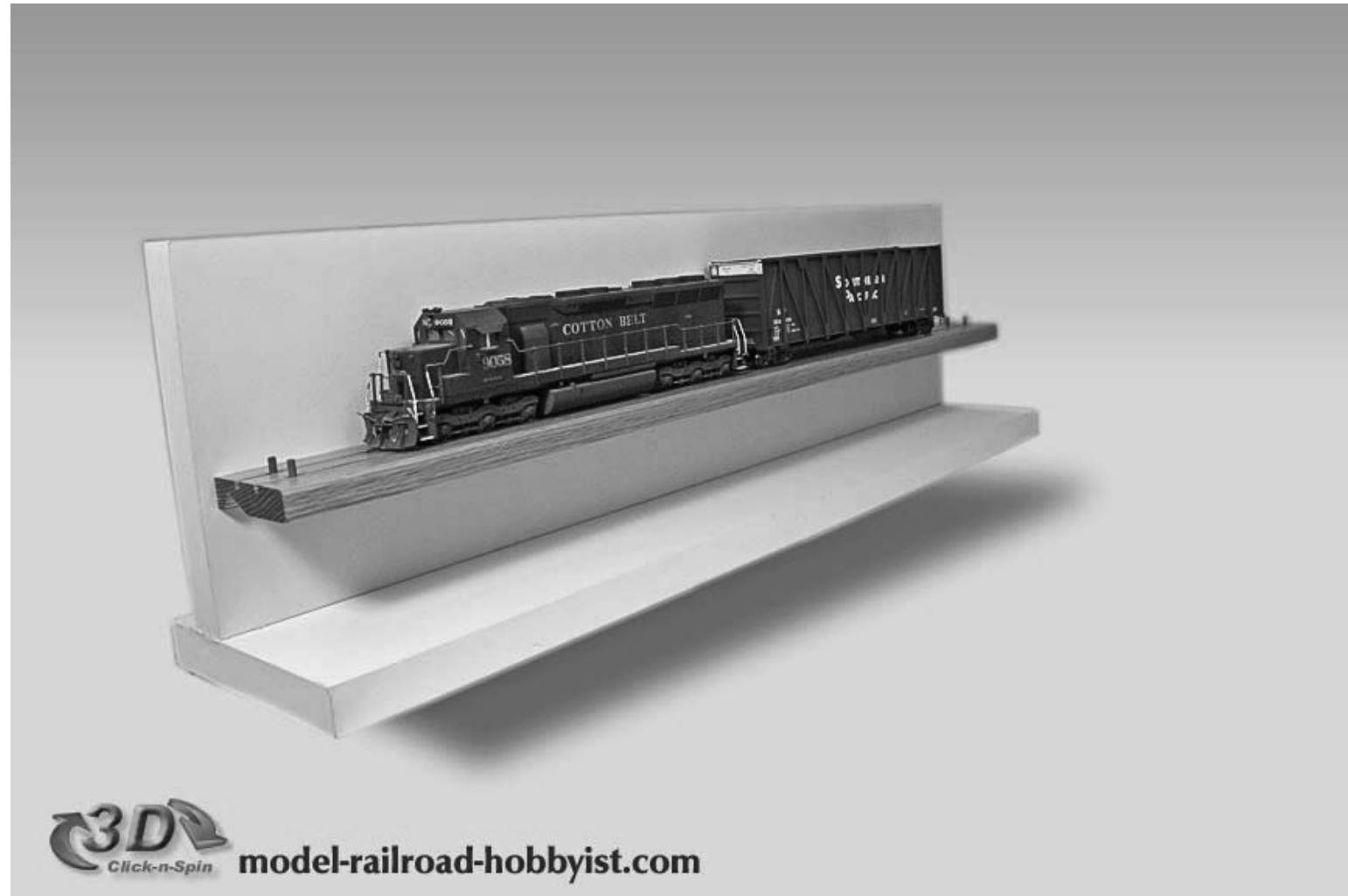


Matysik Displays, LLC, the makers of the innovative ShelfTrax model railroading shelf product, sent *Model Railroad Hobbyist* a sample of their HO shelving.

The free-standing unit we received and show here as a 3D click-n-spin has a 24" milled wooden shelf with two routed grooves spaced apart at the proper HO gauge distance. Each end of the shelf has wooden dowels to act as a stop so equipment doesn't roll off into "the abyss".

The shelf has an polished blonde oak finish. Shelftrax shelving makes for an attractive and affordable way to display your prize model railroading equipment when it's not on the layout.

Ordinarily, you purchase the shelving and install it on the wall yourself. You can also buy free-standing units (email proprietor

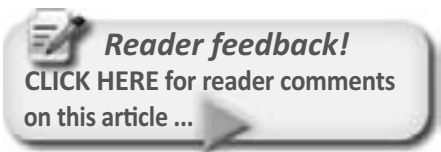


Mike Matysik and ask for details).

The shelving prices (not including shipping):

- O scale, \$39 for 6 feet
- HO and N scale, \$29 for 6 feet

Models shown: [Kato SD45](#)
(detailed and weathered) and an
[ExactRail Gunderson Woodchip car](#).



<http://www.matysikdisplays.com>

North American Railcar

First Look



N Scale Grain Car


Model Railroad Hobbyist recently previewed the new Saskatchewan N Scale Grain Car by North American Railcar. This car is currently available at the URL shown at the lower right.

This N scale car has very fine detail, and crisp application of the attractive *Saskatchewan!* herald, as you can see from

our 3D click-n-spin image above.

In the closeup photo on the left, we show the very tiny lettering on this N scale model. This lettering is only about 0.010" high (a #80 drill is 0.013") and yet it's still legible!

Because modern manufacturers tend to take pre-orders and then produce the

 **Reader feedback!**
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model with a limited extra quantity, if you want this car, you should pre-order it or purchase it as soon as it's released to make sure you don't miss out.

The retail price is \$26.95 US.

<http://www.pwrs.ca>

THE LITE AND NARROW: A Narrow Gauge Modeler Looks at Modules

Ramblings on Narrow Gauge and Branchline Modeling

Bits and Pieces

As I look back over my narrow gauge module railroad experiences of the last 50 years, I see three problems that were always in need of attention to have good experiences with sectional and module layouts: weight to strength ratio, difficulty of assembly and minimum design possibilities. Over the last 5 decades, several satisfactory solutions to each of these problems have presented themselves.

Modular modeling has never been so good. One of the most ingenious module designers I have ever had the privilege to meet is Kevin Hunter of Sykesville, Maryland, an On30 modeler and member of the Mid-Atlantic On30 group. To my thinking, he has found excellent solutions to the problems outlined above to create reliable and easy to use modules.

Before we look at Kevin's state of the art, lightweight modules, let's take a quick look at the scope of information available and some history.

In the old days, portable model railroads needed to be strong enough to avoid torque damage from twisting, withstand rough handling and support the weight of the scenery. They had to be ruggedly built, as the modern, lightweight materials were not an option.

Sectional layouts were constructed of heavy frame members with half-inch plywood tops covered with homasote and terrain frequently formed with plaster and wire. I remember carrying one innovative piece of train layout that was scened with concrete over



FIGURE 1: Each of the photographer's light stands (black legs) is supporting a module that is leveled along the rail and across the track. The white legs in the background are of a bipod module support that is only temporary and not nearly as strong.



FIGURE 2: The top table is cut in the lobed shape to offer the best support for straight or curved modules while saving weight. Note the 1/4" x 20 insert in the center hole to securely attach the top to the light stand. The light stand may be equipped with friction screw fittings or snap clips for fast height adjustment. Photo by Kevin Hunter


About our narrow gauge and branchline columnist



Lew Matt is a published writer, photographer, and illustrator whose work has appeared in many model railroad hobby magazines.

[Click here](#) to learn more about Lew.

 **Article feedback!**

CLICK HERE for reader comments on this article ... 

hardware cloth! The old sectional pieces were a bear to transport, so true portability was questionable. When the module concept was becoming popular, I tried that too, but weight was still the constraint.

Assembly of the layout was a problem, particularly in getting the modules together easily with the tracks lined up that did not create automatic derails with bridge tracks where the sections joined. Assembly frequently required several people, some to just hold the sections, others to align the track and

still more to clamp or fasten the sections together.

Several people came up with clever end designs for plugging modules together, such as using door hinges on the side of the ends to create horizontal and vertical alignment, then pulling the hinge pins to release the modules, or using milled tongues and grooves in the module ends to assure alignment.

Leveling the modules by adjusting the leveling nuts on the bottom of the legs was, and still is, a tedious and back-breaking operation.



FIGURE 3: This illustration shows several standard, On30 modules, 11-foot-long, that form one end of a three legged point-to-point to loop operation at the Mid Atlantic Narrow Gauge Guild meet. This set of modules was constructed by Geren W. Mortinson, Jr., who carries them to almost every meet. A bystander is admiring the detail of Geren's hand laid track work at the engine house.



FIGURE 4: Kevin Hunter is demonstrating to a bystander the simple techniques needed to assemble his lightweight modules. Although the bystander is assisting with this assembly, Kevin installed the previous three sections, without help, in under 20 minutes. After the entire layout is assembled, the operators will go back over each section with a level and adjust the stands to make sure the trains will run well. Each section is leveled in two directions.



MODELERS TIP

Nate Kline uses a battery-powered drill to adjust the leveling screws on the bottoms of the legs.

The devices are made from a piece of "U" channel that is threaded 1/4x20 on the bottom, with a clear hole at the top and four (4) screw holes for #8 wood screws, used to attach the U channel to the 1-1/2" thick module leg. The screw device is threaded 1/4x20 and has a Philips head at one end and a swivel foot at the other.



There have been many improvements to modular railroading since the 1950's, when sectional layouts were the new kid on the block.

Some portable layouts were made up of several sections that only fitted together one way, frequently forming an oval track plan. When the module concept followed the sectional design in the next decade, the same configuration was usually built: the oval.

Several private organizations, like the Sipping and Switching Soci-

ety of NC (<http://www.mindspring.com/~gugliotta/>) pioneered standards before the NMRA, NTrack and others.

The typical norm for the first established standards was the oval, later in double track or even triple track. Point-to-point wasn't a more viable solution because many of the point-to-point runs were just as tedious as the round and round runs as electronic controls allowed the train to go back and forth forever, without the operator's assistance.



FIGURE 5: The On30 modules were assembled at the Mid Atlantic Narrow Gauge Group meet in Kimberton in May of 2009, for a private showing of the members. The modelers are critiquing the connection of the short, transition module, used to attach the older, conventional 2 X 4 modules to the new, lightweight, FreeMo style modules. There are no supports under the transition pieces; they are supported by the modules on either end. (Left is Nathan Kline, right David Michailof, organizer of the On30 Modules Mid Atlantic Group.)



FIGURE 6: Kevin Hunter's three-piece Wye module forms the center of the FreeMo train layout at the meet. This layout becomes a point to point to loop (or several other configurations) for multiple operational possibilities. Geren W. Mortison Jr. is on the right discussing the upcoming operations with unidentified bystanders.

FIGURE 7: This is one of Kevin Hunter's curved modules. Three modules make a half circle. It is designed with spiraling easements in the 26" radius curve so that when two are assembled back-to-back an "S" curve does not result. Even the longest steam engine can easily negotiate this curve. Photo by Kevin Hunter.



I built a sectional layout that became permanent simply because I couldn't move it easily. It weighed too much! Eventually, my experiments led me to rigid foam and Luan mahogany plywood. Things were getting better for me but too slowly. I gradually swore off carrying modules around for display. Too many weighty experiences, and not enough rigidity.

The first epiphany came from Doug Goodsell and his "Featherlite" concept

of layout construction, later reinforced by Joel Bragdon of Bragdon Enterprise, (<http://www.bragdonent.com>) and his use of lightweight foam material.

I realized the key to the strength and rigidity of lightweight modules was the great thickness of the foam train board coupled with a well-engineered thin plywood frame.

I made a few modules to prove to myself that I had discovered the correct

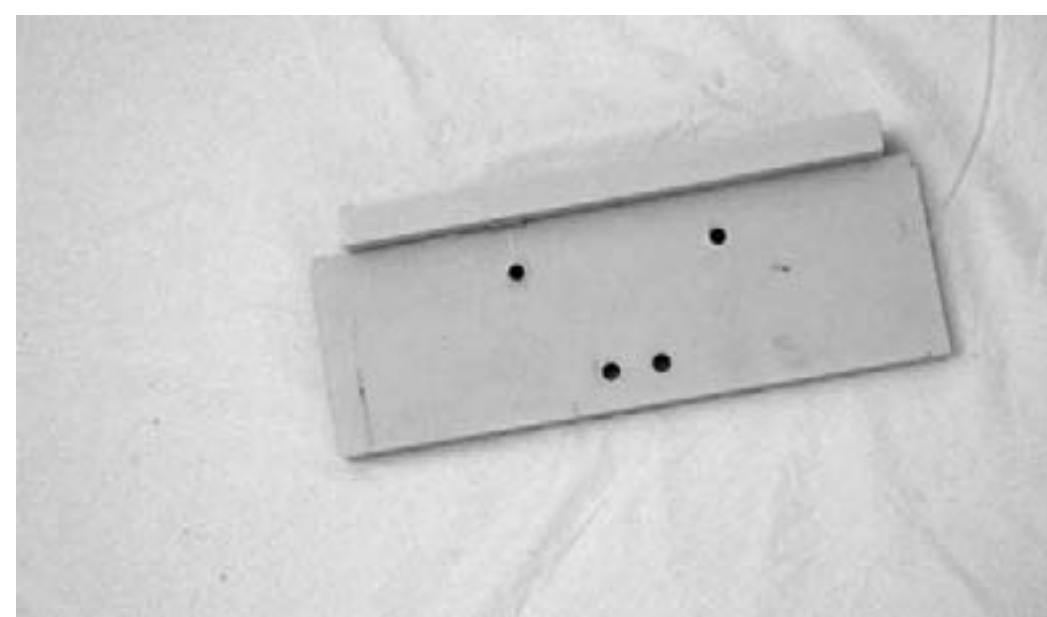


FIGURE 9: The template for drilling the holes for the pins and machine bolts is simple in design and made from MDF. Shims are used to fine-tune the template's accuracy. Very unsophisticated, but extremely accurate. Photo by Kevin Hunter.

combination of ultra lightweight and strong construction, and moved on to other things. I was burned out by transporting modules and all the other negative experiences.

(I know the last modules I experimented with were light, rigid, strong and worked because when I prepared my move all the way across the state of Pennsylvania in 1993, I chucked my modules out the third floor window rather than take them down three flights of stairs to the truck. The modules bounce-landed in the lawn, with no harm done. They ran well, too, when I got around to testing them 8 years later.)

Finally, there was the problem of designing a layout that was more

than an oval for round and round operation. FreeMO changed two of the paradigms: connecting modules and allowing unlimited design possibilities. (<http://www.free-mo.org/>)

The old constraints were gone and form followed function for almost the first time. The, now world famous, Sipping and Switching Society of NC showed what could be done under the old aegis and the new one too.

Today we accept the freeform design without batting an eye. The S&SS of NC introduced the pin and template concept for building module ends that were self aligning, allowing the modules to mate from any module to any other module without using bridge tracks or even rail joiners.

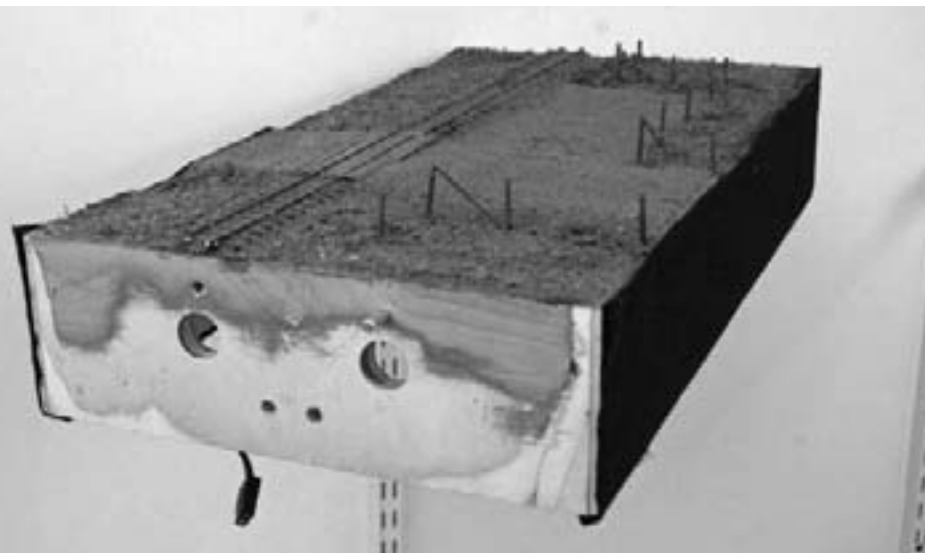


FIGURE 8: This view shows the pin system for connecting module to module. When you face a module, there is always a pin in the right-hand top hole. The lower holes are used for the machine bolts that positively lock the sections together. Spring clamps can also be used. The large holes were for the original pin system based on the Sipping and Switching Society of NC. Unfortunately, the large $\frac{3}{4}$ " diameter holes were "overkill" for the smaller On30 modules and the friction of the pins pulled the ends off the modules when they were disassembled. The wires hanging down are the plugs that carry the main DCC bus power from module to module. Photo by Kevin Hunter.

The time needed to accurately connect modules went from hours to minutes and track plans could be as intricate as needed. Without stronger, lighter building materials, the FreeMo design probably would not have developed as efficiently as it did.

The last epiphany came when I saw Kevin Hunter setting up his On30 modules at a train show in Timonium Maryland. The modules, which were his professional product: Berrett Hill

Trains, were lightweight and rigid, used machine screws and alignment pins for quick and easy connection for perfect track alignment.

Additionally, Kevin had cleverly solved the leveling problem of the individual modules, the last drawback to creating an extraordinary module layout, by using photographer's light stands. He had an easy, one-handed method of leveling the module with the light stand.



FIGURE 10: Kevin uses simple scenery for the display modules, designed to take a beating in transit and still look good when set up. The figures are RTR painted ones of unknown manufacture, easy to replace if damaged or missing. The rolling stock is Bachman RTR with minimal detailing and weathering, designed to travel well and be handled by spectators who compulsively like to “touch” the trains at shows.



FIGURE 11: Green plywood endplates are used to hold two modules face to face for transportation. You can see the pins in their respective holes and the machine bolts holding everything together. This helps to avoid undue wear and tear on the modules viewing surface during the many hours spent in transit. No problems have been encountered with the loose electrical connectors during travel. These modules can be stacked like cordwood in a trailer or truck bed with little fear of damage. They are rugged, light and simple. Photo by Kevin Hunter.

This was the first time I had seen a modular layout go together rapidly, with great ease and accuracy and needing few workers.

Kevin uses photo light stands with a thin, flat, amoeba or clover shaped plywood top on which to place the module. The light stands are easy to adjust up or down and one can quickly level the modules, even with one hand. Altogether a magnificent bit of engineering.

These Berrett Hill Train modules were loosely based on the FreeMo concept to allow unlimited design possibilities. The ends of the modules were template engineered to accurately and quickly attach to any other module in any configuration.


Kevin built a three-sided “wye” module incorporated into the On30 train layout at Timonium that created a three legged point-to-point and loop operation. Couple this with the multiple

train control capabilities offered by DCC, and the operational choices are legion.


Kevin has integrated a new dimension to his modules: sound. The addition of quality on-board sound has changed the parameters of what running trains at shows is all about.

In the days of silent operations, modules had to have a bigger scenic setting because the total scene was about "eye candy."

In this new sound era, sound, motion and scene combine to create a gestalt (think animated "puppet" show) causing modules to be more like stage sets in their nature than extensive scale models. This, more than anything, is the primary influence on the way Kevin sees his modules, and the reason the viewers are satisfied with such a lean look to his module scenery.

More of Kevin's module details, modeling information and philosophy are available at his web site www.berretthill.com. 

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UP THE CREEK: Making a layout seem larger

A regular report on the construction of a 1950s-something layout

About our layouts columnist



Charlie Comstock is our layouts editor and columnist.

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A clipping from the *South Jackson Gazette*

Quantum Theory!

The patrons at the South Jackson Tavern are in an uproar again. It seems the cause this time was the town's native son Ed Cated, recently returned from college with a head full of the latest theories of Terra Forming[™], the science of creating landscapes from nothing.

It seems the "latest theories" involve quantizing terrain into a bunch of smaller and smaller areas - a concept which had some locals concerned that their own patches of real estate were about to shrink.

As Horace Fithers put it, "I sure worked dern hard to get the stuff I got now. Lost everything a couple of times too. I ain't too all fired happy with the prospect of seeing everything shrink up or get cut into itty-bitty pieces! Them college types are getting out of hand I tell ya!"

Ed Cated tried valiantly to explain to the excited crowd that the nature of quantized scenery would make everything seem larger instead of shrinking it. By creating a series of what he called micro-vignettes (a fancy name for scenic quanta) the time spent traveling from one in-

finitesimal piece to another would actually result in any trip appearing to take much longer than before. To prove it he whipped out a slide rule and started scribbling equations on a bunch of cocktail napkins.

However, by the time he'd finished his audience had wandered off grumbling about smarty pants college graduates, leaving only the owner of Hillmovers Construction who had stopped by the S J Tavern to wet his whistle.

Said he, "Gosh, it sounds like we sort of been doing this all along - we just didn't realize it!"

This reporter certainly hopes that quantum effects don't make his train run late tonight. ☒

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*post hole digger

In this month's Up the Creek column I'll be talking about ways I attempt to make my layout seem larger (without actually expanding the physical railroad).

In our all-too-small train rooms one of the most frequently faced problems is making our layouts seem bigger. Of course, one could always opt for brute force methods, but knocking out walls and expanding the size of a train room is usually impractical. A different way of making a layout seem bigger is needed.

Backdrop view blocks

A layout room will often seem much larger if filled with a serpentine peninsula with a view blocking backdrop. If they can't see the whole layout at once - you need to walk around the corner to see what's around the corner - people will feel a bit of the isolation of being out on the high iron somewhere with nothing else around.

In some cases this isn't desirable or practical. Many layout owners prefer a sweeping vista style - having view blocking backdrops doesn't work for them. Layout builders with less room, say a spare bedroom or smaller may not be able to implement such view blocking backdrops, let alone a serpentine peninsula.



FIGURE 1: Micro-vignettes on the BC&SJ. This scene is divided up by the turnout in the foreground, the road, the tracks, and the small cut the train is passing through.

Vignettes

To my mind a vignette implies a backdrop that curves out across the scenery to the aisle edge physically separating the layout into several scenic segments (see Figure 2). Track passes between vignettes by punching through the backdrops.

Although highly effective at separating scenes from each other vignette construction can require much ingenuity from a modeler when it comes to disguising the holes in the sky where inter-vignette trackage passes between scenes. In a mountainous area tunnels are an obvious answer, as are industrial canyons formed by tall buildings in a city scene. But what about modeling rural Kansas or Florida where there aren't many tall buildings and tunnels are few and far between (or filled with water and alligators)?

Micro Vignettes

I've found over the years that dividing layout scenery into small local scenes fools my brain (what's left of it anyway) into thinking that a stretch of track is longer than it is. This happens because instead of sweeping quickly down the benchwork my eyes pause to examine each scene. This is especially true when standing close to the layout, because it takes time to individually examine each scene, it feels like the space is bigger than it is.

So what's the difference between a vignette and a micro vignette? Simple. A micro vignette doesn't use a backdrop

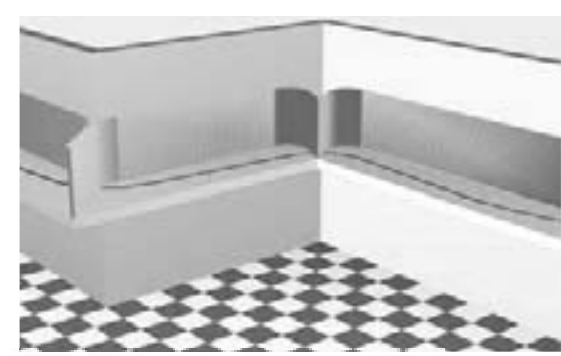


FIGURE 2: Vignettes created by backdrop extensions

curving out to the aisle to demarcate boundaries.

Instead of being separated from their neighbors by a tunnel or an urban industrial canyon, they're delineated by landscape features. I've used as simple a separator as a couple of trees or a creek. Other things I've used include:

- Track passing through a tunnel or a cut in a hill.
- Track passing over a canyon, valley, or river on a bridge
- A change in track gradient
- A row of trees
- A junction
- A building
- A grade crossing

The effectiveness of micro-vignettes at catching and holding your eye depends on details. George Selios is a master of this on his Franklin & South Manchester with its incredible level of detail. It's also true that a micro-vignette may contain other micro-vignettes.

The accompanying photos show some of the micro-vignettes on my Bear Creek & South Jackson Railroad.



FIGURE 4: How many micro vignettes in this photo? What about nested ones like the bridge scene? Are each of the rock faces a micro vignette too?



FIGURE 5: The scene dividers here are the tree and warehouse on the right and the end of the quarry and the grade crossing on the left.



FIGURE 5a (left): A close up of the tree and warehouse in the photo above. When a train passes behind these scenic elements my brain tells me it's a new micro vignette on the other side. This scene is at 63", eye level, which enhances this effect.



FIGURE 6: The foreground grade crossing is a major divider here as is the cut the track passes through in the distance. The tracks are also scenic dividers here, splitting the foreground from the log loading area in the background. What micro-vignettes do you see?



FIGURE 7: The same scene (as fig 6) but from a different angle. The details on the foreground dirt road really attract attention from the viewer's eyes. This scene is also 63" above the floor.



FIGURE 8: I count 5 micro vignettes here, not including the foreground grass and bushes. From left to right, the Bear Creek Salvage Co., the big tree scene, the Mill Bend Rescue Mission, the Cold Storage parking lot, and the reefer loading doors on the Cold Storage Co.



FIGURE 9: From left to right there are a canyon, a tunnel, a rock face, a high mountain valley, followed by another tunnel. Four major micro-vignettes plus some minor ones once the scenery is completed.



FIGURE 10 (left): Micro vignettes need not be oriented left to right. In this different view of figure 11 (top right) you can see different micro vignettes progressing from the aisle (right) to the backdrop (left).



FIGURE 11: The tall cedar and the snag in the foreground, plus the wood trestle in the background, are the major dividers here. But the cuts in which the main and branch line tracks run are also dividers.



FIGURE 12: The bridge (from fig 11) is the main attraction here but the foreground dirt road divides the big cut (on the branch line) from the more grassy areas on the left.

FIGURE 13: The grade crossing is the major scene divider here. But the brick warehouse, junction track, tower, billboard, and background vegetation all have their own micro vignettes.



FIGURE 14: I spent some time detailing the Sixth St. Warehouse to provide more stuff for eyeballs and brains to dwell upon before resuming their march across the layout.

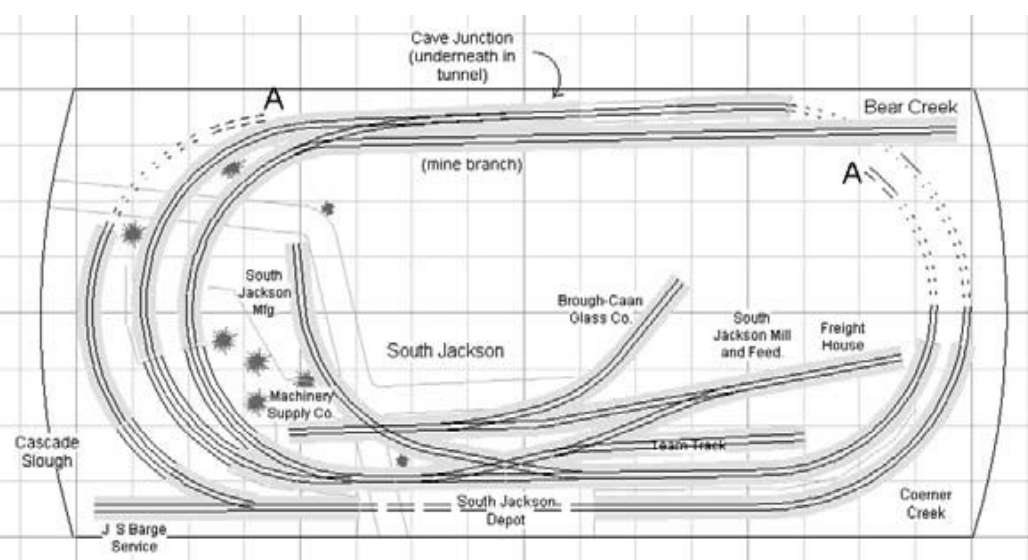


FIGURE 15 (above): The 4x8 (well almost) track plan of my first BC&SJ. When I designed it I had no idea what a micro vignette was! As it turned out the layout was full of them!



How many micro vignettes can fit in a 4x8 layout? Lots of em!
The photos on this and the next page are of my first Bear Creek and South Jackson Railroad (see figure 15). It turned out that a twice around track plan with mountain scenery was good combination for maximizing micro-vignettes...

Smaller layouts

Micro-vignettes work well to keep the old eye balls looking on my current railroad. But it's large layout. How well does this concept work with a smaller layout?

I stumbled on the micro-scene concept on my 1st version of the BC&SJ, a 4x8 twice around design. I read about mini-scenes in magazines and scenery how-to books so I'm not going to claim I invented it.

I built the layout with L-girders and included some elevation change going around its two laps. I won't claim that I did it on purpose (I didn't) but it did eventually have quite a number of micro-vignettes on it. Here's a partial list:

- Track on a mountain side with a bridge over a steep, rocky creek





- A branch line to Bear Creek (which later became a mine, then the Jallen branch)
- Two main-line grade crossings in South Jackson (the main town)
- The South Jackson depot (and 5 other industries) plus a row of shops/offices
- Three tunnels
- A deck girder bridge over Cascade Slough
- A long masonry retaining wall.

That's quite a few scenes for a 4x8 layout and they made it seem bigger both when running trains and in photographs.

Summary

Adding detailed micro vignettes won't actually make your layout bigger or your runs longer (as measured in feet). But it will feel bigger because your eyes will want to stop at each scene and linger there instead of rushing onward to take in the whole layout all at once.



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More micro vignette photos from my first, 4x8 layout.

Roads, creeks, buildings, mountains, and track all work as scene dividers...



GETTING REAL: Aerial Mapping

Adventures in Prototype Modeling


About our
prototype modeling
columnist



Marty McGuirk is an avid Central Vermont fan, modeling the “Southern New England” – an HO scale proto-freelanced railroad set in the 1950s and based in part on the real Central Vermont Ry.

[Click here](#) to learn more about Marty.

Photos and illustrations by the author unless otherwise credited.

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Researching a Scene Using 70-Year-Old Images

Most prototype modeling projects tend to focus on a single freight car, locomotive, or even structure. We usually start by rounding up a few pictures from various online resources, books, magazines, or one of the many prototype photo vendors we find at shows or conventions. We study every detail in those photos in an effort to duplicate it on our model.

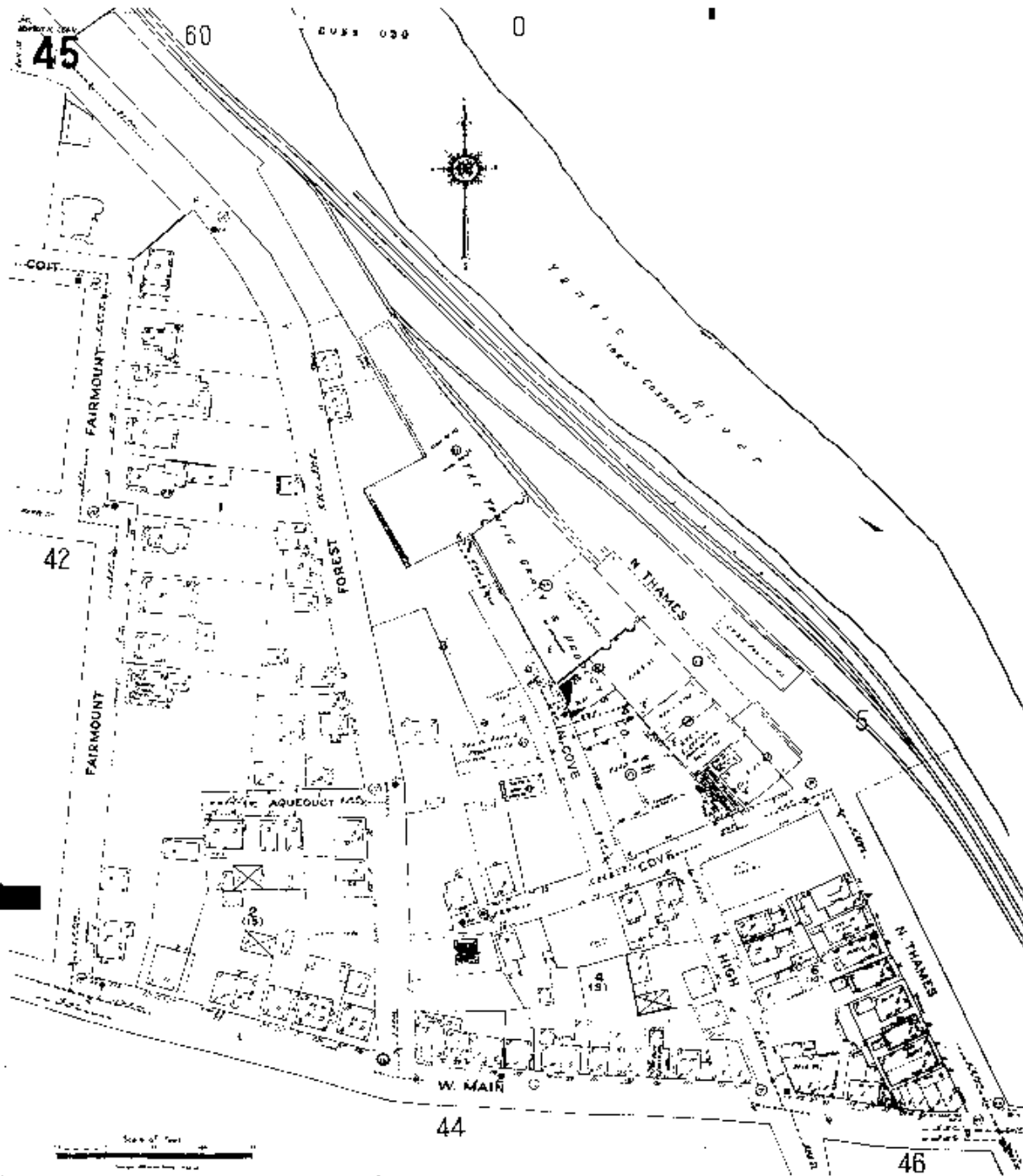
This is a very rewarding aspect of the hobby – and after spending most of my model railroad time over the past six months feeling more like a carpenter than a model railroader, it’s an aspect of the hobby I’m really looking forward to enjoying again.

But what do we do when the project is much broader in scope? Not simply one piece of rolling stock or structure but an entire town, or a large industrial complex? How can we determine how the individual elements of the scene fit together?

Sure, we know going in that we’ll need to compress things, and we might have to move things around slightly as we fight the never ending battle between lack of space and achieving the “flavor” of the real world.



FIGURE 1: Searching around the internet led to some interesting discoveries, including a series of aerial photographs, like this one showing New London, Connecticut in September 1938. Not only are such images useful for seeing details of particular buildings, they are also wonderful for showing how all the elements of a scene fit together – very helpful when it comes time to design a model of the scene.



We can't possibly cover every single source of information in a single column, but I will, from time to time, discuss some of the sources I've used in researching my favorite prototype railroads both from a modeling and strictly historical perspective. Hopefully, even if you're not modeling the same prototype or era, my experience running down these trails of history will give you a few starting points for your own research.

I'm always on the prowl for any sources of information that can help me with my modeling and historic research of the railroads and industries in Connecticut's Thames River valley. Sometimes, the historic research dovetails nicely with planned and ongoing modeling projects. Other times a search for one thing leads me to a fork in the road and I end up answering completely different questions. What can I say; sometimes you just need to enjoy the ride.

This particular search started simply enough. I saw a listing in a Central Vermont employee timetable for a Yantic Grain Co. siding. I looked at pictures of Yantic but could never find any evidence of a grain company, which most folks described as a "large feed mill."

Asking a few former CV employees revealed the building wasn't in Yantic, but instead in the much larger community of Norwich, between 3 and 5 miles south of where I had been looking. Asking some friends who have lived in Norwich a long time produced a vague description of a large, rambling building. Their most vivid memory of the place was the thousands of pigeons who made it their home! The mess, and I can only assume the associated odors, plus the value of land doomed the building.

FIGURE 2: Yantic Grain and Products Company dominates the center of, not downtown Yantic, but a couple of miles north. Obviously this was a large customer and will have a prominent place on the author's layout.

To this day I have never seen picture of it from the ground. But that wasn't going to stop me from trying to build a representational model of the place. The first step was to find the thing! So naturally enough, I started with a map.

Sanborn Maps

Perhaps the best-known historical maps among model railroaders are the tremendous variety of maps produced by the Sanborn Company. These maps were created for fire insurance companies to use in determining risk, thereby setting fire and casualty insurance premiums.

Original copies of the maps are found in various libraries and historical societies around the country – typically for that particular state or town. A complete collection of original maps is available at the Map Reading Room in the Madison Building at the United States Library of Congress in Washington, D.C. Luckily, the Library is a short Metro ride (or even shorter walk some days!) from my office and I've had the chance to view a number of original maps.

But fear not, even if you can't get to D.C. and your local library doesn't have the maps you can still find copies of them online. About 10 years ago, ProQuest was contracted by the LofC

to scan the Library's entire collection of Sanborn Maps.

In Washington these digitized copies are used to preview the maps by researchers, to save handling on the originals. They are also available on line from various sources – I paid the local university a few bucks a year to have access to their digital resources since it's easier to access it from home than to get to the Library. So, I started with the maps for Norwich, Connecticut. It didn't take me long to locate the Yantic Grain and Products Company. (Figure 2 previous page)

But the digital scans of the Sanborns, although quite useful, are black and white .pdfs of the microfilm copies of the originals as it was much quicker and easier to convert the microfilm than to scan the (very large) original maps. The original maps use five tints over the outline of the buildings to indicate the exterior material – olive for adobe, blue for stone, pink for brick, yellow for wood, and gray for metal. This data is simply not reproduced on the black and white .pdfs.

I haven't had a chance to get to the Library to study the original of the feed mill, but it's on the list for my next visit. (Making the most of a trip to an archives or research library may well be the subject of a future column!).

In the meantime, to give you a feel for what the original maps look like, see Figure 3 which shows a different area of Norwich (and dates to 1909).

Some states and universities have undertaken projects to digitize copies of the original Sanborns. For one example, and a detailed discussion of the history of the maps, see (<http://www.dlib.org/dlib/july02/arlitich/07arlitich.html>).

That site also discusses some of the background of the University of Utah Digital Sanborn Project (Figure 4 next page - <http://www.lib.utah.edu/digital/sanborn>).

The University of Utah has digitized the color originals of the Sanborn Maps for that state. Other states and universities also have projects in various stages of completion. Some charge a nominal fee for access to the colorized maps; others offer it only to registered students or researchers.

Aerial Maps

Finding the data on the Yantic grain dealer was helpful, but not terribly useful because I still didn't know what the place looked like. By this point I was also trying to find a picture of the west side of the CV freight shed in New London – like most modelers I have about 20 projects in my head at any one time!

Then I remembered the town hall in my hometown in Connecticut. I didn't grow up in Norwich but I did spend a lot of time at the YMCA playing basketball. And the YMCA was right across the parking lot from the town hall where we would duck in to grab a soda from vending machines in the basement.



FIGURE 3: This copy shot shows one of the original colorized Sanborn Maps of Norwich, Connecticut.

On the wall leading to the lower level was an enormous aerial picture of the entire town. It was great fun finding our houses, school, the New Haven Railroad tracks, etc . . .

I hadn't thought about that picture for years until I was trying to find out what that grain company looked like.

Like any red-blooded American in the 21st century the first thing I do when I want to know something is crack open Google, not a book.

"Connecticut – historic – aerial – photos." Boom!

I've never had such success with a Google search. It brought me to the main page for the digitized, online collections of three of the Connecticut aerial surveys (Figure 5).

The State of Connecticut has the photographs from three aerial surveys (1934, 1938, and 1965) of the entire state available online.

Aerial mapping has a long history, dating back to the use of balloons to conduct surveillance during the American Civil

War. Connecticut conducted some of the first aerial photo surveys in 1885.

In September and October 1885 Alfred E. Moore and John G. Doughty flew over Connecticut in a hot air balloon. Mr. Doughty was invited in order to attempt to get photographs. Each has written about his experiences, and several of the images they took of Winsted in 1885 are available online:

[http://memory.loc.gov/cgi-bin/query/r?pp/ils:@filreq\(@field\(DOCID+@lit\(2005682301\)\)+@field\(COLLID+coll\)\)](http://memory.loc.gov/cgi-bin/query/r?pp/ils:@filreq(@field(DOCID+@lit(2005682301))+@field(COLLID+coll)))

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The Marriott Library owns maps from 1884, 1889, 1898, 1911, 1930, 1949, 1950, 1957, and 1969. This digital collection contains all our Utah maps through 1922.

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FIGURE 4: Although complete collections of original color Sanborn Maps are fairly rare, a number of states and municipalities have begun placing color versions of the maps on the Web. Colorado and Utah are two examples. This is the main search page from the University of Utah Sanborn Map site.

Research Guide to Aerial Photographs at the Connecticut State Library

http://www.cslb.org/aerial/

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Research Guide to Aerial Photographs at the Connecticut State Library

The Connecticut State Library (CSL) holds several statewide aerial photograph collections and additional smaller collections. All are "secured collections" that are retrieved by library staff and which must be used within the Archives/Secured Collections Reading Area (ARA), located in the History and Genealogy Unit (H&G). Some Connecticut aerial photos are also available online.

Connecticut Aerial Photos: Online Collections

Individual Photos:
1934 | 1938 hurricane | 1965 | 1991 | 2004
Mosaic: 1934

Aerial Photos Available at CSL

1934 | 1951-2 | 1965 | 1970 | 1975 | 1980 | 1985-6 | 1990 | 1995 | Other aerial photo collections

About Aerial Photographs

History of Aerial Photography in Connecticut
Understanding & Interpreting Aerial Photos
Report on the State Library Scanning Projects

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Helpful Resources: Geography, Maps & Connecticut
Links to Related Organizations

Policies on Use of CSL Aerial Photos

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Aerial Survey of Fenwick Old Saybrook, Connecticut 1914 Photograph 62647

FIGURE 5: The main index page at the Connecticut State Library site shows the links to the various aerial surveys of the entire state. The 1938 link is to a series of photos taken after the hurricane of September 1938 that ravaged coastal Connecticut and Rhode Island.

Aerial views of Connecticut were taken from a balloon in an experiment to take photographs at altitudes up to ca. 6000 ft.

Connecticut actually conducted the first aerial survey of the entire state in 1934 in an attempt to identify public works projects that could be funded with federal money.

Over the course of March and April, more than 10,000 individual images were taken (a great many proved to be unusable due to missed orientation, clouds or reflections) and were combined into a massive mosaic print of the entire state (see <http://www.cslib.org/aerials/aerialshist.htm>) for

more details on the mapping process, including photos of the cameras, photographers, and aircraft used.)

The search window (Figure 6) at <http://cslib.cdmhost.com/custom/aerials.php> allows you to search by photo number, street name, or town name. That search brings you to an index map of the state with the individual photo numbers. You need to record the photo number, return to the search page, and manually enter the photo number as a five-digit number. In other words, the photo numbers for the 1934 and 1965 aerial surveys are not linked to the images.

I clicked the 1934 Street Map locator link and ended up with a view of the entire state. (Figure 7)

There are few or no instructions, but the site is fairly intuitive (translation – if I can figure it out, anybody can . . .) – I just kept clicking on the area I knew the Yantic Grain Company to be and ended up here (Figure 8 next page). I recorded the photo number, in this case “1908” and returned to the 1934 Index page.

Then I entered the photo number as a five-digit number (01908). This brought me to a large aerial photograph that I could zoom in on. (Figure 9 next page).



FIGURE 6: The aerial photos can be searched by town name, street name, or photograph number.

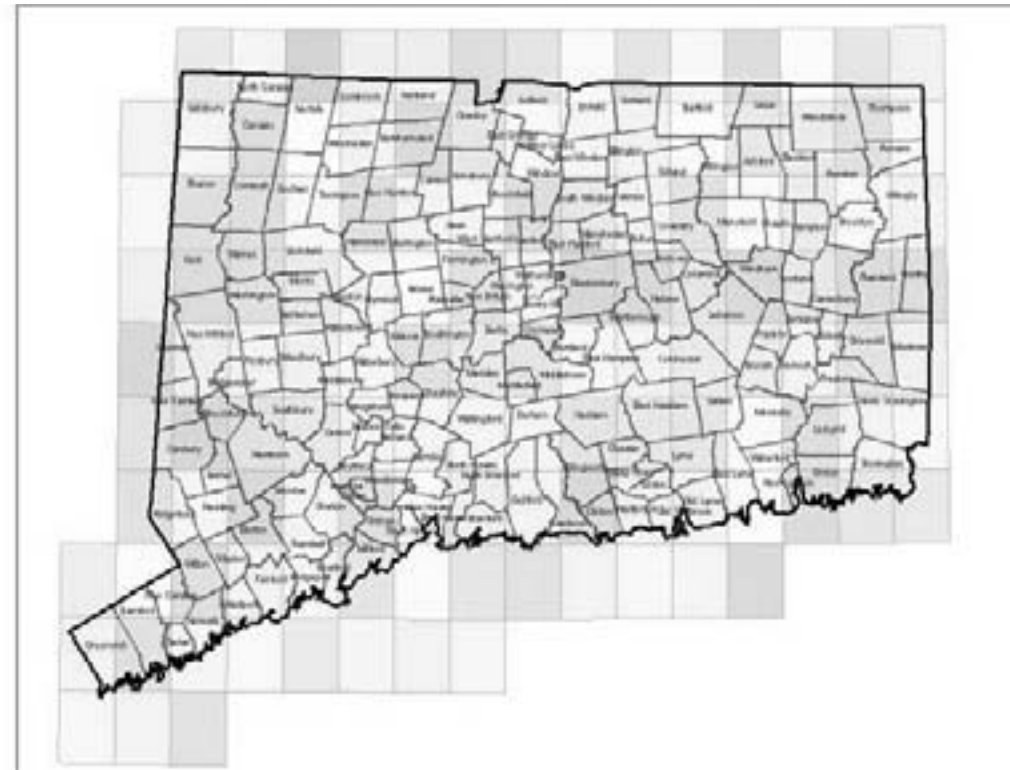


FIGURE 7: The entire state is shown by town. Clicking on a specific town will bring you to the aerial photo identifying tags.

It was similar photographs, blown up to almost 20 feet tall, that I remembered from the town hall in my hometown. By zooming in on the area I knew the grain dealer to be, I was able to get a pretty good aerial view (Figure 10 next page).

In 1965, Connecticut conducted another complete aerial survey. The camera equipment was obviously much improved, so the images are more clear. Just for fun, I

located the Yantic grain dealer on the 1965 aerial photos (Figure 11 next page). The facility is obviously a little different.

But what do the pictures show that is useful to model railroaders planning a prototype based layout? The short answer is, not a lot. The track arrangements, while visible, are hardly detailed enough to draw a track plan.

It's fairly easy to pick out structures, rivers, and streets, but due to the angle of the photographs and relative crudity of the camera equipment, the photos offer few details of things like the sides of buildings, signs, or the like.

The problem is simple – the angle of the photographs simply don't show such things.

For now the overhead shot and Sanborn map are the best information I have to work with.

Until better photos or other information surfaces, a mockup or a kitbash of commercial kits will have to do for this structure.



FIGURE 8: Using the street index function, it's easy to locate Thames Street in Norwich. The Sanborn Map showed the grain dealer was near the fork of the Yantic and Shetucket Rivers, meaning it was most likely in photo "1908."



FIGURE 9: Entering "01908" (the images all have five-digit numbers) brings up this version of photo 1908. Clicking on the area near the grain dealer enlarges the image (see Figure 10 next page).

1938 Hurricane

On September 21, 1938 a large hurricane slammed into the southeastern coast of Connecticut virtually without warning, killing 600 people and causing several hundred

million dollars in damage (in 1938 dollars).

Several days after the storm passed, the 118th Photographic Section of the U. S. Army Air Corps took a series of 132 oblique aerial photographs of those areas



FIGURE 10: Once you know where to look, it's amazing what you can find on the internet. Here's the Yantic Grain and Products Company from March or April of 1934, clearly visible in the center of the photo.

most impacted by the storm. Although no images show the feed mill in Yantic, a number of these pictures show sections of New London, including the west side of the CV freight shed. After locating the picture, I zoomed in close enough to see some of the

details of the freight shed and pier. (Figure 1) By zooming in on the scene a little to the left (north) I was able to single out the CV coaling tower and some of the industries on the east side of the yard, including a fairly large bulk oil distributor (Figure 12).



FIGURE 11: Here's the grain dealer in the 1965 Connecticut aerial survey.

I have no idea what, if any, states have maps or aerial photos available online, but it's worth searching if you're trying to research a particular scene. And many states have these types of images in

various state libraries or archives, even if they're not available on the internet.

The information is out there. You just have to pursue it. Contemporary modelers have various satellite images on various sites

such as bing.com and Google Earth. It's often difficult to find aerial images from an earlier era. Here's hoping you're as lucky as I was in this case!

'Till next time...



FIGURE 12: The CV cooling tower can be seen in this image. Bulk oil distributorships (which received oil in barges, stored it in tanks, and then shipped it either to local customers by truck or further distances by rail) were common in New England coastal towns through the 1960's. An oil tank of one such distributor can be seen in the extreme right edge of this photo.

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COMME-N-TARY: Scenery for the Edsall Industrial RR


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John Drye is our N scale editor and columnist.

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Switching and Scenery

The Edsall Industrial RR is a 3 x 6 switching layout, constructed while waiting for my RR room to be rebuilt. The EIRR served several purposes. It provided a modeling opportunity while residing in a temporary apartment; allowed me to try modeling in a different period – in this case, the 21st Century; and provided a test bed to determine the requirements for reliable switching in N scale.

This article provides an overview of the scenery techniques used on the layout and can be applied to a small or large track plan. For the most part, the techniques can be used in any scale – just make everything larger or smaller as necessary.

In any scale, the key to realistic scenery is variety. Nature provides an amazing diversity of flora; and fortunately,

materials are easily available to recreate that variety on our layouts.

The Layout

The EIRR track plan is loosely based on a chapter in Bernie Kempinski's book "Mid-sized Track Plans for Realistic Layouts" (<http://www.geocities.com/bkempins/ASMMain/TrackPlanBook.html>). The prototype is current day Norfolk Southern, pretty much right in

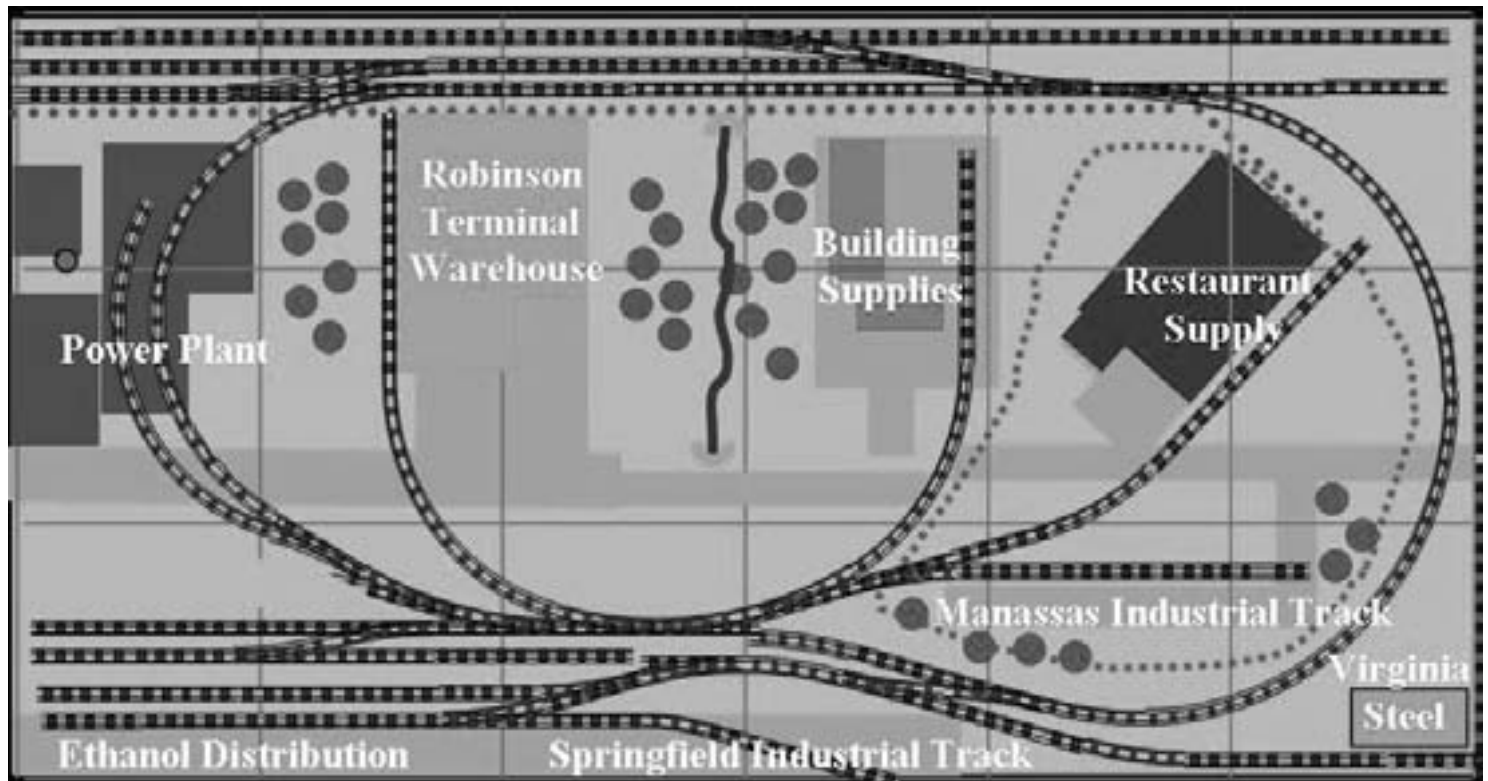


FIGURE 1: EIRR Track plan.

my back yard, and includes industries located in Alexandria, Manassas and Springfield, Virginia.

The layout uses conventional modular construction of ¼" plywood on a lumber frame. Figure 1 (previous page) shows the layout track plan.

The plan is semi-compatible with NTRAK Standards. That is, there is a limited ability to include it as part of an NTRAK setup. The module demonstrates the operational aspect of model railroading – getting cars to the appropriate customers.

The industries were chosen to provide a variety of car types: coal hoppers

for the power plant, boxcars for the warehouse, flats for building supplies, reefers for the restaurant supply warehouse, gons carrying steel, tank cars of ethanol and a couple of industrial (team) tracks that can handle boxcars, flats or other types.

Industries include kit bashed and scratch built structures, mostly modern in architecture.

Terrain Elevation

It's easy to give in to the "plywood plains" urge on a small layout like this, but a little effort yields much more interesting scenery and a realistic environment to shuffle cars. When a



FIGURE 2: Elevated Terrain on the EIRR using the cookie-cutter approach.



FIGURE 3: Insulation Styrofoam and spackle are used to smooth out the cookie-cutter terrain.

layout begins with a table-top frame, there are several easy ways to achieve changes in elevation.

The "cookie-cutter" approach achieves rise or fall in ground level by using a saber saw to separate the plywood top into two segments. Figure 2 shows the area cut and raised on the EIRR. The flexibility of the plywood allows gentle bending to achieve a smooth grade.

Construction insulation (pink or blue foam) can also be used to quickly and (relatively) neatly create terrain elevation. The plywood top can be cut away and partly filled in to achieve depressions on the layout, and Styrofoam stacked in layers can be used to create hills.

One of the maxims of successful prototype railroading is drainage, so locating culverts and allowing for rainwater runoff is a key element of the prototype look. A number of manufacturers offer ready-to-install culverts and drainage pipes can be made from brass or plastic tube, or even drinking straws.

Once the rough contours have been achieved by shaping the plywood and foam, the terrain can be further smoothed out using spackle or other lightweight material. Figure 3 shows the smoothed, spackled terrain.

The key to realistic elevation is to avoid the "wedding cake" look. Time and Mother Nature tend to smooth things out.

Ground Cover

Nature also provides tremendous variety in vegetation: grasses, weeds, bushes, scrub and trees all appear in a multitude of colors, shapes and textures. Fortunately, model rail-roaders also have a wide variety to choose from. Busch, Faller, Heki, Noch, Scenic Express, Silflor, Woodland Scenics, and others all offer ground foam and other materials to reproduce variety in our miniature worlds. Mother Nature herself supplies small rocks, leaves and twigs.

The key to avoiding the monotone golf course look is to apply a large

variety of materials. It's best to work on a couple of square feet at a time. Begin with two or three blended turf colors (use fine texture for N Scale) and add up to a dozen more various colors and textures.

Achieving nature's variety is a multi-step process. Here, we are looking to represent fields of un-cultivated grass and weeds found along the railroad right of way and industrial areas.

Begin by painting the terrain with matte paint in a dull green shade. Latex house paint is inexpensive and covers well. Acrylic colors also work and are available in a variety of colors from art



FIGURE 4: The first layer of ground foam should lightly cover the entire area.

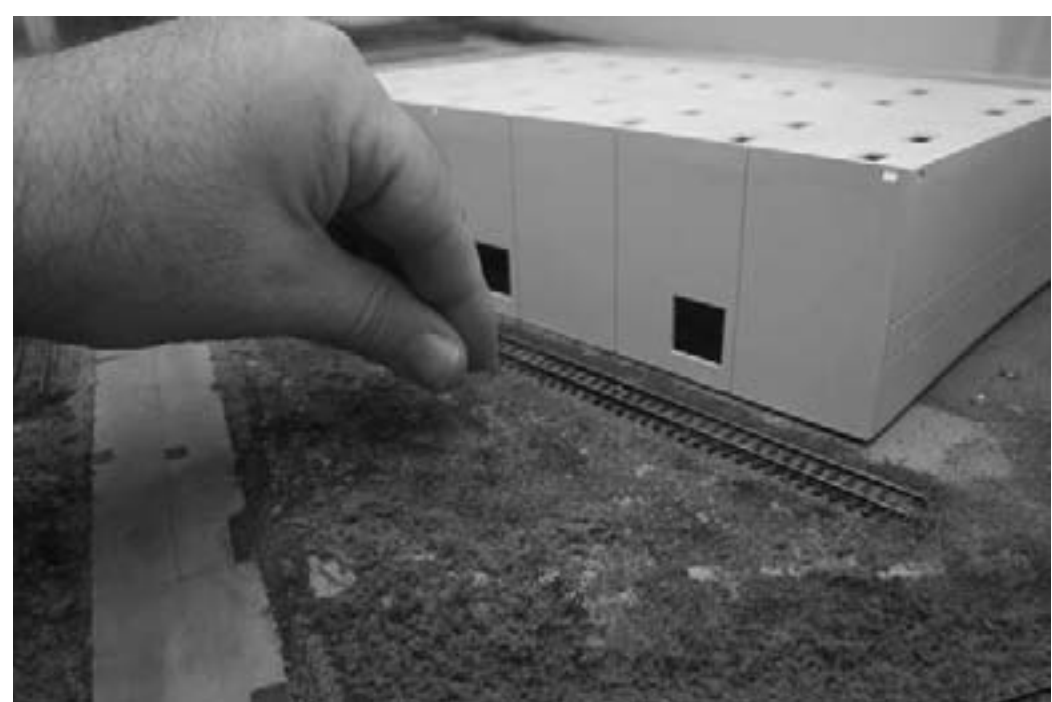


FIGURE 5: Applying the contrasting shades is like finger painting with ground foam.

supply stores. The next steps can begin while the paint is drying, but otherwise the materials are applied to dry terrain. The glue will come later.

Begin with a scattering of very small rocks and a few twigs. Although these will largely be covered by subsequent layers, they provide texture and variety.

One of the best materials for N Scale rocks is shale. It can be gathered from roadside cuts from the area you are modeling (be careful) and easily smashed into very small pieces.

The Halloween accessory known as "Witches Broom" consists of fine twigs bound together and provides a lifetime supply. The broom can be spray-paint-

ed a shade of light grey to represent dead dried ground fall.

There are often more exposed rocks on sloped terrain, and ground fall nearer wooded areas. This is a good place to be subtle.

Apply the first layer of turf on top of the rocks and twigs. Available colors vary from bright green to dark brown. Save the bright colors for the putting green. Shades of greenish browns and tans with a slight yellow tint represent wild grasses from spring to fall.

For the EIRR, the first layer is Woodland Scenics Blended Turf – Earth Blend. The turf can be applied using a shaker bottle or a pinch at a time with

the fingers. The objective at this step is to apply a light layer all across the area. Figure 4 (previous page) shows the first layer of turf applied.

Choose a contrasting color for the second layer. Here, we'll use another Blended Turf shade – Green Blend. At this point, the idea is to begin to show nature's variety. Apply the contrasting shade in irregular, swirling patches. Imagine a toddler's finger-painting; pretty much what we are doing here with different materials. See Figure 5 (previous page).

Achieving Mother Nature's Variety

Next step is to add more variety in color and texture. Select half a dozen or so additional materials. For N Scale, these can include additional shades of darker brown or yellow fine turf, coarser turf in several shades or blends to represent taller grass, Woodland Scenics Foliage to represent weeds and kudzu, Woodland Scenics Foliage Clusters separated into small-1/4" to 1/2" pieces to represent low bushes, and Silflor Grass Tufts.



FIGURE 7: A fishing tackle box allows easy access to the varieties of terrain material to be used.



FIGURE 6: Building supply industry in Manassas, VA. The area on the right shows the wild grassy areas to be modeled.

The variety of products currently available is almost endless. There is a combination available to represent almost any geographic location and season.

Color photographs of the region you model are a great way to select the combination of colors and textures to use.

Figure 6 shows the prototype for the building supply industry on the EIRR. The unkempt grassy area is the sort of vegetation we are trying to create.

A fishing tackle box is a useful tool for this step. Fill the individual sections with the textures and colors you select and label the top to keep track of the specific materials used.

The tackle box works just like an artist's palette with all the necessary colors at your fingertips. Figure 7 shows the tackle box palette for the EIRR.

The additional turf products are applied just like the first two layers, but a little more sparingly. The coarse turf, representing taller patches of grass, is applied in small scattered patches across the field; again like finger-painting. Sprinkling a pinch or two at a time with fingers allows the weeds to grow exactly where you want them.

The Woodland Scenics Foliage material consists of a fiber web with ground foam attached. Stretch the material out as far as it will go without breaking. Cut

into small patches and press gently into the terrain. This material stays put on steep slopes so is a good choice for cuts and hillsides.

Foliage Clusters and Grass Tufts represent scrub and the tallest grasses. These are often found along the edges of fields and especially up against fence lines. The Tufts include adhesive so can be pressed into place. The Foliage Clusters can be attached to the scenery with a full-strength dot of tacky glue or hot glue. Figure 8 shows the final layers.

Once these last elements are in place, carefully inspect the terrain to make

sure there are no large bushes on the right of way or an excess of weeds in the alley. The flocking can be gently nudged back into place with a paintbrush. See Figure 9.

Gluing It in Place

An overall application of white (thinned Elmer's) glue fixes the rest of the terrain elements in place.

First step is to gently soak the terrain with water. All the scenery manufacturers offer spray bottles and they also can be found in garden stores.

Fill the spray bottle with water and add a drop of liquid soap. The detergent



FIGURE 9: Carefully brush materials away from where they don't belong with an artist's brush.



FIGURE 8: Layering of colors and textures helps represent nature's variety.



FIGURE 10: Spray the water gently until the whole area is soaked. The materials need to be fully wet to allow the glue to sink in.

breaks up the water's surface tension and helps it flow into the terrain. Don't add glue just yet. Use the bottle's finest spray setting and wet the terrain. Spraying upwards, so the fine mist falls gently, minimizes disruption of the perfectly placed weeds. Spray until the terrain appears fully damp. See Figure 10 (previous page).

In another container, dilute white glue 50% with warm water and add another drop of soap. The bottle the glue comes in makes a perfect applicator once you use half of the glue. Gently dribble the water and glue mixture across the terrain. See figure 11.

The glue should quickly soak into the grass and weeds. Apply until the terrain begins to look slightly milky. If the glue puddles, a gentle spray from the water bottle will spread it out. Once the glue is applied, stop to let it dry. It will usually take overnight. Don't worry about puddles and

splashes at this point; they can be fixed in the next step.

After the glue has dried, inspect the terrain. There will probably be some patches where the spray or glue splashed the flocking out of place and other spots not completely covered. It is easy to fill in these spots with a second layer of material. Repeat the sprinkle, soak, and glue process and wait for this layer to dry. If there are still irregular patches, repeat as necessary.

Trees and Bushes

Taller vegetation such as large bushes and trees can be quickly produced using a variety of gathered weeds or commercial products. Scenic Express' Super Trees are a good example. These are described as a "distant cousin of sagebrush", but any leafy weed will work. The Super Trees provide a fine-branch foundation for a generic deciduous tree.



FIGURE 12: The trimmed, painted weeds, waiting for leaves.

To quickly create a small forest, sit down with a bag of "trees" in front of the TV or within listening distance of your favorite music.

Gently separate the individual trees and place on a small sheet of pink construction Styrofoam. Punch a trunk-sized hole in the Styrofoam with a small nail and set the trees upright in the foam. A couple of innings (or songs) later you'll have a couple square feet of soon-to-be trees. Don't worry about the crooked ones. They can be placed in the middle of the layout forest, held upright by their neighbors.

The weeds, including Super Trees material, are usually a tan color. That's a great color for weeds, but tree trunks are usually a shade of grey. Take the weeds outside and spray with a flat grey shade of paint or primer. See Figure 12.

While the paint is drying, mix white glue and water in a soupy mix of about 3 parts water to 1 part glue. Add a drop of liquid soap and pour into a medium-sized bucket, large enough to hold the tallest weed (tree). Pour most of a container of fine ground foam into another bucket. The foam will represent the tree's foliage, so pick a leaf color appropriate to the location and season being modeled.

This next step can be a little messy, so it's best to spread newspapers or work in the garage. Take a grey tree and dip fully into the water and glue mixture, let any excess glue drip off for a moment and then dip in the flocking. See Figure 13 (next page).

Rolling the tree around and sprinkling on a bit with your fingers helps to insure complete coverage. See Figure 14 (next page).



FIGURE 11: Dribble the water and glue mixture across the terrain.

Place the leafy tree on the Styrofoam temporarily. A second piece of foam with trunk holes already drilled makes the process a little more efficient.

Repeat the process until all the trees have leaves. Let the glue dry overnight. Especially if the trees are to be planted on a module or portable layout, the leaves can be fixed more firmly in place with inexpensive unscented hairspray.

The trees are planted in the layout just like in the Styrofoam. Dig a trunk hole with a nail or drill, dip the trunk in full-strength white glue and place the tallest tree in the middle of the wooded area.

The ground cover in wooded areas should use more brownish turf. Fall leaves, shredded in the blender, are a

great item to add to the palette, but make sure to clean the blender.

Scenic Effects offers several varieties of forest floor shades, but remember to use a variety, including some green vegetation to represent weeds and bushes.

Crooked and ugly trees go in the middle of the woods. Crooked trees can be straightened by leaning them up against a good one. Save the best-looking trees for the viewed side.

Shorter trees can be planted at the edge of the woods to represent bushes. A couple of the weeds can be painted but not flocked to represent dead trees still standing in the woods. Here is another place to not over-do it. Left over pieces of the Witches Broom

twigs can be placed at the edge of the woods to represent dead fall.

Summary

The variety of ground cover and tree materials currently available make the job of representing Mother Nature's variety easy to accomplish in minia-

ture. See Figure 15. Choosing a palette of colors and textures by referring to color photos of the terrain allows any geographic area and season to be modeled.



FIGURE 13: Immerse the weed fully in the water and glue mixture.



FIGURE 14: The weed with full foliage.



FIGURE 15: Variation and variety are the keys to representing Mother Nature in N Scale

PARALLEL LINES: Wiring Turnouts

Pursuing more reliable and better-looking trackwork

About our
track modeling
columnist



Tim Warris is a long time model railroader and co-founder of Fast Tracks, a trackwork fixtures company.

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Part I – Turnout Types

Model Railroad Turnout terminology

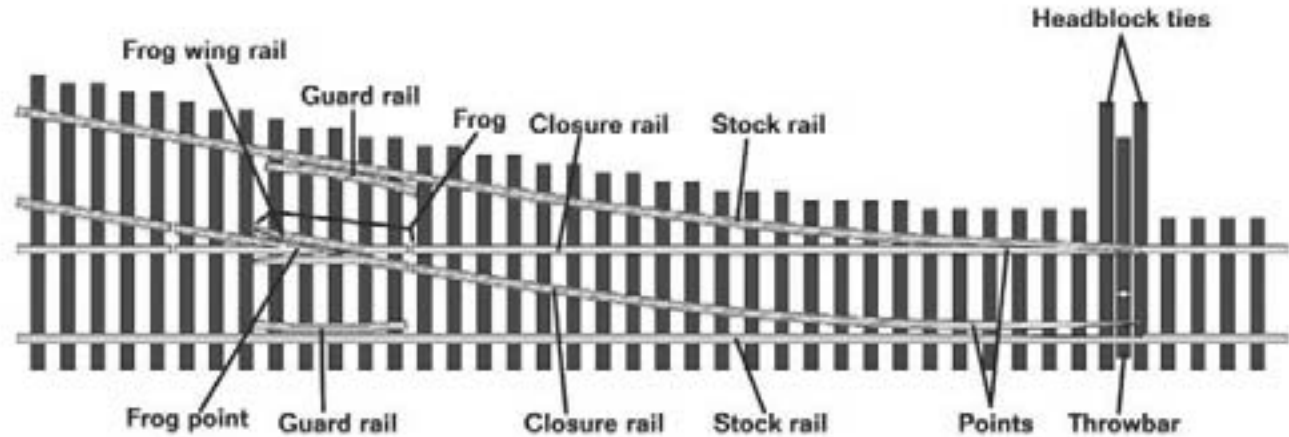


FIGURE 1: Turnout terminology.

When I was 7 years old I got my first electric train set. It was a simple setup. The track pieces were connected together with little metal pegs that went into the ends of the formed 'rails' to make an oval shaped layout. You then connected two wires from a big, heavy black transformer to the rails. One wire to one rail, and the other wire to the other rail. And then you used a huge knob on top of the transformer to make the train move around the track at whatever speed you wanted. For a 7-year-old it was complicated stuff.

I had no idea how much more complex things would get as I got older.

InsulFrogs, power-routing turnouts, DCC-friendly, DCC-ready. Today modelers are faced with an alphabet soup of acronyms and terms that they have to wade through in trying to figure out how to turn electricity into an operating railroad. I am afraid the days of just connecting two wires to your trackwork are long gone, even if you are using DCC.

For the first part of this series I discuss the different types of turnouts that

are currently available, and how they are typically used. In part two I will show how to wire up a basic hand-laid turnout, and discuss some modifications to commercial turnouts to improve their reliability.

I assume that you are already familiar with the differences between DC and DCC, and have a basic understanding of electrical principles that govern the operation of a model train.

Depending on whether you use DC or DCC, there are some subtle differences in the type of turnouts you use. This

difference has to do mainly with how (or if) the frog is powered, and how the outbound tracks from the turnout are powered.

Regardless of all the different terminology used by manufacturers, retailers, and modelers, all turnouts fall into just two categories: power-routing and DCC-friendly (also called DCC-ready). Both of these can be used on either a DC or DCC layout, albeit with some compromises.

The term “DCC-friendly” or “DCC-ready” is a bit of a misnomer. The features generally considered to make a turnout DCC-friendly have nothing to do with DCC at all. A DCC-friendly turnout simply uses a different and more reliable method for wiring. In fact, a DCC-friendly turnout will work

just fine with a DC layout, and for the most part a DC turnout can be used with a DCC system.

Power-routing Turnouts

Back in the days when we all used DC systems to power our layouts it was preferable to use a Power-routing turnout. Power-routing turnouts were designed to feed power to the outbound track that matched the direction of the switch points, leaving the opposite route unpowered. This allowed us to park a locomotive on one route, throw the turnout and then run another locomotive on the opposite route without requiring another block.

Since only the route selected by the turnout is live, a train on the opposite route does not move. This was very



FIGURE 2: Power-routing turnout video.



FIGURE 3: DCC-friendly turnout video.

desirable as it simplified wiring and required fewer toggle switches to shut down a block.

To simplify the installation of the turnout and to eliminate the need for wiring completely, many commercial ready-to-run (RTR) turnouts, such as the old Shinohara type, used the switch points to route the power. When the points made contact with the stock rails they would route power to the frog and beyond.

However, as anyone who has ever used this type of power routing turnout will know, this was not the most reliable method for switching power. Dirt and corrosion would typically build up between the points and the stock rails, making electrical contact intermittent and unreliable.

Another drawback was that both switchpoints were of the same polarity. If powered wheels happened to touch the open switchpoint while passing through the turnout, the track would short out – an especially troublesome problem with long-wheelbase locomotives.

DCC-friendly Turnouts to the Rescue!

When DCC came along it changed how we wanted our turnouts to behave. Since traditional power blocks were no longer required to run multiple trains, we don't want to use power-routing turnouts, because the train on the opposite route would not be powered, completely shutting down the sound and light functions of the locomotives and cars. With DCC we

needed a turnout where all of the routes and rails were always powered. We needed a DCC-friendly turnout.

There are a couple of features that make a turnout DCC-friendly. One is that the turnout is not route-selective. That is, regardless of which direction the turnout is set, both outbound routes are always live. Second, the switchpoints and their adjacent stock rail are typically the same polarity, eliminating the possibility of shorts if the wheels touch the open switchpoint.

When running DCC we no longer want just the outbound track to be powered, we want all of the track to be live all the time. However we still need the polarity of the frog to match the polarity of the selected route.

There are typically two ways this is done. One, the frog is electrically isolated from the rest of the track and then it is switched to match the selected route using contacts on a switch machine. Or two, the frog is left unpowered completely.

If you are running long-wheelbase or modern engines it is fairly safe to use unpowered or "dead" frogs. However for maximum reliability, I always recommend that you run with live "switched" frogs.

The other noticeable feature of a DCC-friendly turnout is that the switch points and their adjacent stock rail are usually the same polarity. This eliminates the possibility of a short and improves performance and reliability because contact between





FIGURE 4: Insul-frog turnout video.



FIGURE 5: Hand-laid turnout video.

the switch points and stockrails is no longer required to power the points and closure rails.

Unfortunately some manufacturers of ready-to-run DCC-friendly turnouts still rely on the switchpoints making contact with the stock rail for power to the points. This can be easily corrected by simply adding a jumper between the stock rail and the switchpoint/closure rails, I'll cover that in more detail in the next part of this series.

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The New York Central in S scale

— by Charlie Comstock

I had the chance to spend some time with Ed Loizeaux and his impressive S scale New York Central empire. He's constructed a wonderland of mountains, cities, bridges, a giant chasm with waterfalls, an industrial area, and logging and mining areas all presented with a sweeping, panoramic backdrop behind them.

Come along as I talk with Ed about his railroad.



Figure 1 - Telegraph wires are under repair as two freights pass each other in the Catskill Mountains on Ed Loizeaux's New York Central

Ed Loizeaux has a passion for trains and the New York Central that he came by as a kid living across the street from the railroad.

If you ask about New York Central and S scale most modelers in the San Francisco bay area will say, "Oh! That's Ed!"

Over the years his vision of the NYC through the Catskill mountains of upstate New York has emerged from raw benchwork to a nearly finished layout.

MRH: How did you get attracted to railroading?

EL: It started at the age of 5 which was 2 or 3 years ago as you can tell from my haircut [when] I lived across the street from the tracks.

MRH: Where was that?

EL: That was in Tamaqua Pennsylvania, the home of the Reading Railroad. We lived there across the street from the tracks. My uncle was a bartender - we lived upstairs [above] the bar. He served all the railroad workers and I got rides on the trains, I got rides on the caboose, I got tours of the roundhouse, and I hung around the station - it was a great place to grow up as a child. My bedroom was right across the street from the yard throat and there were coal trains in and out of there all day long.

MRH: So you just couldn't escape your destiny as a railroad aficionado?

EL: The die was cast. The other set of grandparents that I was living with - this was all during WWII [and] my father was over in Europe - lived right alongside the NYC line in Dobbs Ferry NY [on] the Hudson river and I spent 6 months with them. So



FIGURE 2: This S scale refinery was built using many HO scale components from Walthers and Rix.



FIGURE 3: The Montclair station at the main yard has a fully detailed interior.

I'd go down to the station and watch the trains going down the 4-track mainline and that was pretty exciting also.

MRH: How did you get started modeling?

EL: It started when I was about 5 years old when dad gave me a Lionel train set -

What is S scale?

S scale was popularized by A.C. Gilbert's American Flyer trains in the 50's. It is 1/64 of full size - about halfway between HO (1/87) and O (1/48).

S is often thought of as a craftsman scale because of relatively fewer ready-to-run offerings (structures, locos, rolling stock, etc).

Today there is a small but

strong group of scale modelers in S who prefer it because it's more substantial than HO without requiring the space of O scale.



Layout Summary

Layout name: New York Central
Locale: Catskill Mountains of upstate New York
Era: 1948-1958
Scale: S (1:64)
Track style: multi-lap
Mainline length: 305' double tracked
Min turnout: 8 (mainline), 6 (yard), 4 (industrial track)
Min radius: 48" hidden, 54" visible
Max grade: 1.4%
Control: DC with Aristo Craft radio throttles (converting to NCE DCC)
Turnout control: Switch Master machines controlled from local panels or by the dispatcher
Signalling: Under installation using C/MRI and JMRI
Track elevation: 42" to 61"



going around the Christmas tree. I came down in the morning and there it was in all its glory. Man it was neat, the horn tooted and the smoke and the lights. Every month or so there'd be a little more track or another switch or this or that and it expanded.

MRH: So after the Lionel where did it go?

EL: Well the Lionel got sold off in Jr. High School and I moved on into HO. HO looked more realistic - it had 2 rails instead of 3 rails. It also had more detail. I liked building kits and I liked building a layout - I had a layout on a 4x8 sheet of plywood - and it was a lot of fun.

MRH: But now you're in S scale. How did that happen?

EL: That started when I moved. I used

to live in upstate New York, now I'm in California. I got married, moved out here and started a job. The trains got unpacked about 2 years later when I bought a house. I looked at this stuff and all of a sudden some memories came flooding back.

MRH: What were those?

EL: Operational difficulties - things like brass track and brass wheels.

This was in a basement that was pretty dusty, lots of cobwebs, dirt and ash from a coal furnace. I was spending more time cleaning track than running trains. In my ignorance I concluded the problem was that it was HO (and had nothing to do with all the dust). In my mind the solution was [getting] bigger [trains] - then the dirt wouldn't bother it so much.

Well the choices were limited - it was S, On3 or O. O is very large and very expensive and I was a young feller at the time, didn't have too much money. On3 is just about the right size but I didn't like narrow gauge that much. So S scale seemed to be exactly right. It was the same size physically as On3, the structures were smaller, I could do mainline railroading and there were a half dozen engines available. What more could a guy possible want?

Two of 'em [the engines] I had no interest in at all but the other four engines were pretty decent so I thought I could get by. There was one caboose available not counting the American Flyer conversions people did back then. [I thought] let's give it a try so I bought a kit, built it and never

FIGURE 4: Engine 1859 passes Kingston station before heading across the tall stone viaduct. This is the major industrial area on the layout.

looked back. I've been in S scale since 1969 and I've loved every minute of it.

MRH: Is this your first S scale layout?

EL: Actually it's the third. The first one was a little 4x6 layout. It had a figure 8 and a loop around that - an over/under figure 8, a couple of mountains, tunnel portals, and all that. That was a test layout - I believe everybody should build a test layout!

I wanted to see what it [S scale] was like so I didn't want a humongous layout. A 4x6 on removable legs I could carry around in



the back of my car worked great. I could set it up at the club and run trains.

My second layout was similar to this layout except that it had a single track mainline instead of double track. It was a little bit smaller [than this layout] but it basically wrapped around the room three times the way this layout does. Job changes and relocations brought me to this house and I started over again with a similar concept except I like the double track mainline. I had a little more room so that all fit comfortably.

All the rolling stock and structures came here pretty well finished. We've added a few [new] things but by-and-large the rolling stock was [already] finished.

MRH: When did you start this layout?

EL: In 1987, but I had two periods of inactivity - each about 6 months for some health issues and medical problems - it was one thing after another and you have to just rest and take it easy.

MRH: What style of modeling would you say you're doing here?

EL: Let me tell you about my philosophy of modeling and maybe that will answer your question.

The underlying goal I'm [seeking] is to have fun. I'm not trying to recreate a location at a specific time or specific this or

FIGURE 5: Crossing The Bridge. Look carefully at the waterfall - how many sightseers are climbing nearby? Hope nobody slips!

specific that and there are a lot of things on the layout that are absolutely not authentic - so they [can] fit into the space appropriately. My style is the locomotives and the cabooses and the rolling stock and the passenger cars are all New York Central because that's my favorite road and everybody has I think a favorite road but the layout itself is free lanced - set in a mountain setting which I call the Catskill mountains. The town doesn't

"... the rolling stock and the passenger cars are all New York Central because that's my favorite road ..."

really exist in the real world. There's [even] a Westside Lumber Company operation (on the 'west side' of the Catskills...) adjacent to the New York Central tracks. Everything about the layout itself

is somewhat hypothetical.

MRH: But it does seem to have a New York feel to it...

EL: Everything has an East Coast flavor. All the structures, all the vehicles, all the trains are appropriate for the late '40s and early '50s, so in that sense I've tried to make things realistic, but it is not prototypically authentic.

MRH: So you're modeling a feel...

EL: Exactly! That's a good way to put it. I'm giving you the feel of the east coast from 1948 to 1954 (approximately) along some New York Central tracks. Everything is pretty generic.

MRH: Where did the track plan come from?

EL: Well, the track plan came from me. I took out some large quadrille paper and

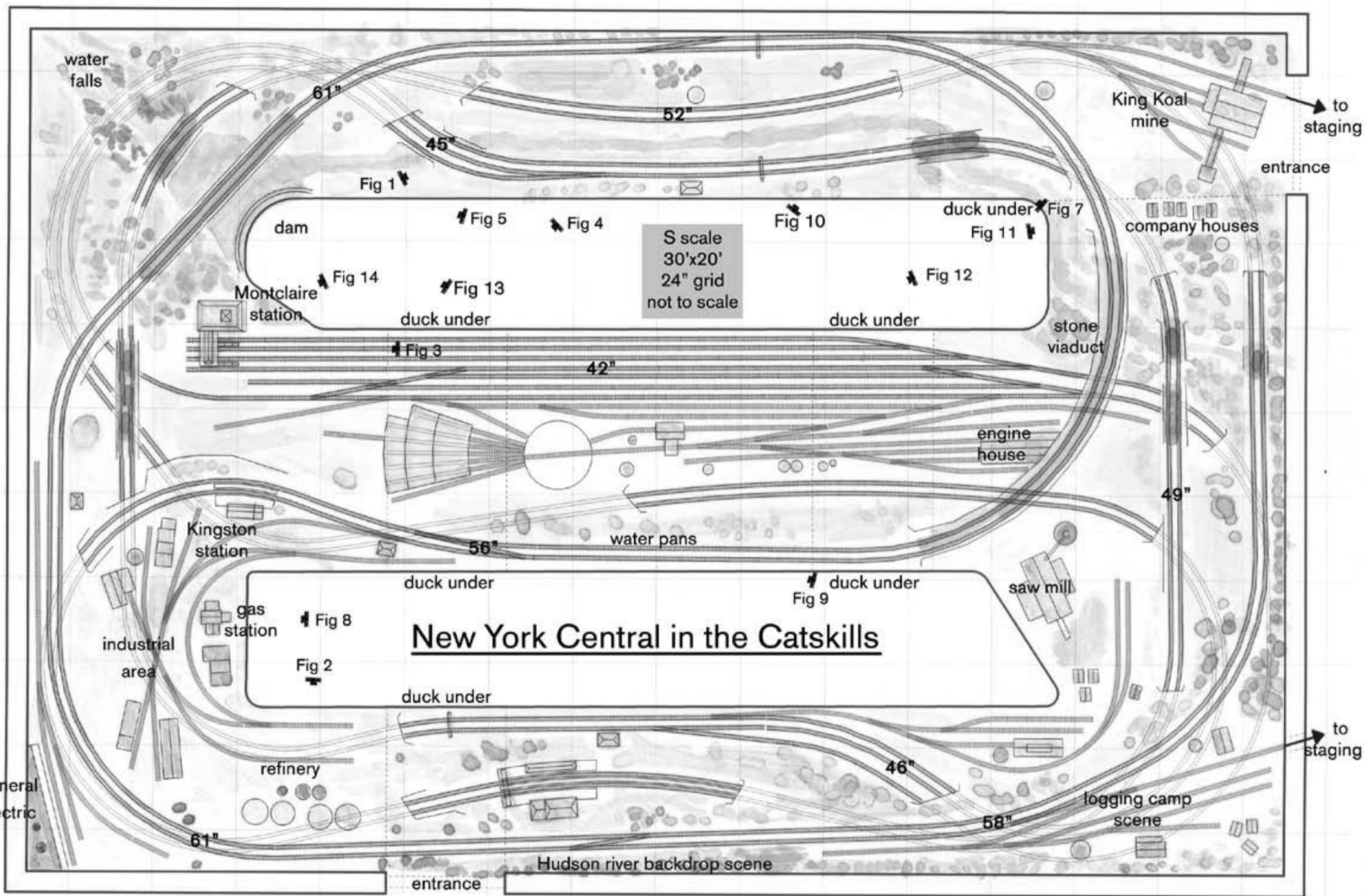


FIGURE 6: Track plan of Ed Loizeaux's S scale New York Central layout

started doodling. I think all of us model railroaders doodle track plans [until] we're blue in the face. I designed my layout to have a long mainline run - I didn't want a small layout - to fit a long mainline run in a moderate [space] the easiest way is to wrap around the walls 2 or 3 times .

MRH: About how many feet long is your mainline?

EL: The mainline is 305' long, a little bit longer than a football field (editor: about 3.7 scale miles) .

MRH: What's your minimum radius?

EL: The minimum radius is hidden and is 48" (about 122 cm). I've 2 of them and they're under the mountains so you don't really see them.

FIGURE 8: S scale readily lends itself to super detailing!

MRH: Do you have a cosmetic minimum radius for visible scenes?

EL: Yes, [on] visible track the minimum would probably be about 54". I also have a nice large 6' radius that goes over that stone arch bridge and some broad curves that are 20' radius.

"... I didn't want a small layout - to fit a long mainline run in a moderate [space] the easiest way is to wrap around the walls 2 or 3 times ..."

MRH: What turnout sizes do you use?

EL: The smallest turnouts are #4 in the industrial switching areas. The coal mine

and the sawmill, have #4's. I used #6's in the main yard. The mainline turnouts are all #8s.



MRH: What about grades?

EL: The grade is 1.4%. The yard is flat at the bottom and the steel mill is flat at the top - almost everything else is on a grade.

MRH: As I look around the room, I see some really outstanding scenery here. The combination of trees, vegetation, rocks, cuts and fills, and weathering on the structures all holds together. Plus you've got this really great backdrop here. Who did the scenery?

EL: The scenery was done by lots of people. One fellow in Arizona did the large trees. The rock castings were done by **Keith White** right here in Santa Clara, California. The backdrop painting was done by **Michael Kotowski**, also local. The silver bridge over the water fall was done

FIGURE 7: A lazy day railfanning down by the creek.

by **Don Ledger** who also lives in Arizona. I did most of the trackwork and ballasting myself. The structures were largely kit-built by a variety of different people from all over the place. **Dave Adams** of On3 fame (editor: his Durlin Branch layout will be coming soon to the pages of MRH) did the Montclair station with the red roof on it. In total around 55 people from all over the world built something for this layout.

MRH: It's good to have friends!

EL: Very good friends to put it mildly. I feel a little like a general contractor with a team of highly qualified sub-contractors. .

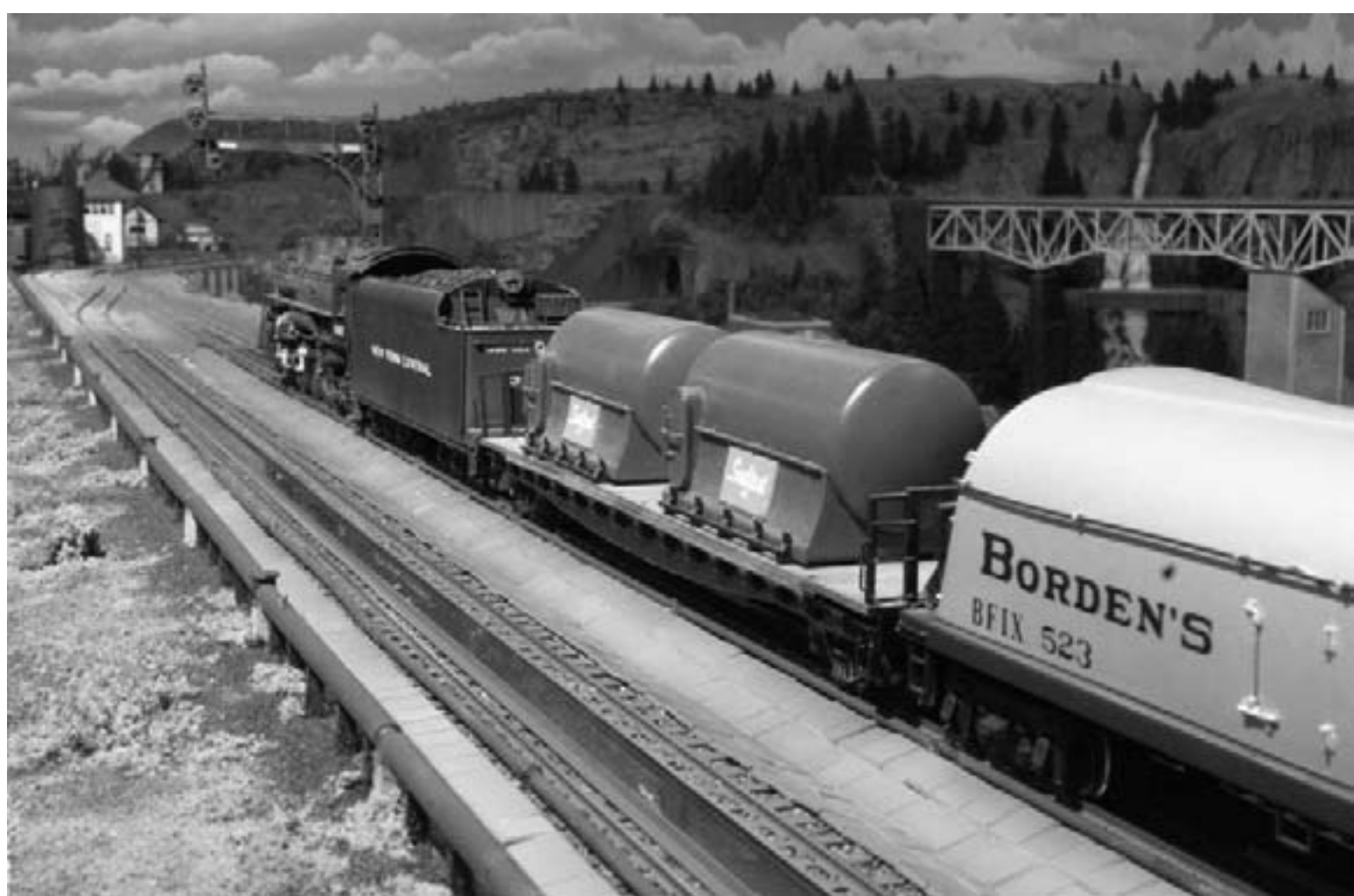
MRH: The Hudson River scene intrigues me. **Mike Kotowski** did something extra tricky there?

EL: It was a difficult artistic feat because the track [in front of the backdrop] is going uphill but the river [on the backdrop] is



Ed Loizeaux was born in New York State where he fell in love with the smoke and lightning stripes of the NYC at an early age. After graduating from college, he moved to the Los Angeles area. When smog caused allergy problems Ed moved to the cleaner environment of the San Francisco Bay Area raised five kids and is helping out with four grandkids. Ed feels it is now time to concentrate on finishing his NYC-themed S scale layout.

Ed invites you to come visit his layout during the NMRA 2011 national convention in Sacramento.



level. The idea was to make it appear to the casual viewer that the track is level and it's going right along the edge of the river and everything is level. So how do you accomplish that? He started where the [opposite river bank] land is up close to the track and as you move to the right the land keeps moving farther and farther back into the distance. (*editor: see the video clip at the end of this interview*)

MRH: So it looks like the river is receding into those distant hills.

EL: Right! [But] you're right up close to the

land on the other side there. You have a strip of river that's about 3/4" [wide] that's almost a constant width, yet the illusion is that it's going back into the distance. So your mind tricks you and you assume the water is flat yet it's parallel to the track so you assume the track must [also] be flat.

So it looks like the track is following a flat river but in reality it's going up a grade. It's an optical illusion and Mike's very good at that kind of stuff.

MRH: What kind of control system are you using to run trains?

EL: Right at the moment I'm using DC. I have a couple of Aristo Craft wireless throttles so I can walk around and do switching from anywhere in the room. The goal for the end of the year or early next year is to have DCC installed and operational. I've got all the wiring for it in place for it so it's just a matter of hooking up the command station and attaching it to the track, putting decoders in the engines and so forth. Once that's done we'll be up and running with DCC. I like the NCE system. I'll have operating signalling

FIGURE 9: The NYC signature track pans used by passenger trains to replenish the water in their tenders - without stopping! (Mike Kotowski photo)

which accommodates bidirectional signals on both mainlines using **C/MRI** and **JMRI** tied together to make the layout fully functional.

MRH: So you're using Bruce Chubb's **C/MRI** (*Computer Model Railroad Interface* www.jlcenterprises.net) system?

EL: Chubb's hardware, **JMRI** (Java Model

Railroad Interface - jmri.org) software. I'm using **Panel Pro** to put the track diagram on the computer screen the dispatcher uses. You can just do a mouse click to change [mainline] turnouts or change signals and so forth.

MRH: How do your crews operate turnouts?

EL: There's two ways. There are control panels along the edge of the layout and I can throw these turnouts by using the push buttons on these panels.

If we have a dispatcher then the [mainline] panels can be disabled so they don't do anything and the dispatcher throws them from [the] computer screen.

The yard turnouts and the switching turnouts at the local industries are [always] thrown by the local operator.

MRH: How do you move the points?

FIGURE 10: Example of the superb rocks on Ed's layout!

EL: All of the turnouts have a Switch Master machine with two auxiliary sets of contacts on them. One set of contacts communicates to the computer (through the **C/MRI** hardware) the turnout positions. The other set of contacts is used to illuminate [position indicator] LEDs on the [local] control panels.

Panel Pro is used to show the dispatcher the signal aspects and the positions of all the turnouts [on the layout].

MRH: You're moving toward hosting organized operating sessions on your layout?

EL: Correct. I hope to have formal op sessions within 18 months after I finish the layout.

I have a sort of vision that says we'll have anywhere between 5 and 12 people involved in an op session all doing their



jobs whether its yard master, dispatcher, engineer, conductor or whatever [with] time tables and car forwarding systems. We're going to try to do it all.

MRH: The original track plan didn't have any staging areas in it?

EL: That's true. A friend suggested I should have some staging yards. There's no space in the [layout] room for them so I had to go elsewhere. After a serious conference with the wife and keeper of the financial keys around here we agreed it was OK if I



FIGURE 11: Company houses for the King Koal mine.



FIGURE 12: Kingston station and downtown area.



FIGURE 13: Ed made use of forced perspective in this scene using progressively smaller trees toward the back. There's a row of N-scale hikers on the skyline to the left of the waterfall.

poked a hole in the wall and went through into the adjacent room with a modular staging yard that I can put up during an op session. I can have as many as 12 tracks each one capable of a full length train of about 24 cars. When the op session ends

I just take it down and put it into a closet. It's all modular sections on legs and highly portable so as long as I only do it for a few days here and a few days there [it's OK].

MRH: Do you get together on a regular basis with other S scalers?

EL: Well there's a club here in the San Francisco bay area. We've got about 40 members and we

do get together - we rotate around to different homes. Most of us have a layout, some of them are quite small, some of

“... HO targets on an O scale Plasticville signal bridge put together to resemble something that looks like S scale ...”

them are sizeable, and we just have fun doing our little S scale stuff. I think in the big picture we represent only about 3% of the hobby and so it's

really a small group of people. We all know each other. I know probably

every serious S scaler in the whole country at least by name and by sight.

We probably have more brass imports per capita than any other scale. Have you ever thought about that?

MRH: Maybe that's the reason I don't want to be an S scaler, I can't afford it!

EL: Not much plastic but lots of brass. If you can do it in short volumes it's worth doing in S scale, there's a pent-up demand for products. But you're never going to sell as many as you would in HO so if you're into short-run production and brass is sort of inclined in that direction they do very well in S scale.

MRH: Do you find that you can sometimes use items from other scales on your layout?

EL: I use things all the way from N scale to G scale. Just one example is a signal bridge. The basic bridge itself is Plasticville. I cut off the bottom to lower it a little bit and built bases to set it on. The [signal] targets are Tomar. They're sold as an HO product but believe it or not, if you measure

them they're just about perfect for S scale. There's also a relay rack here which is HO.

So I have HO targets on an O scale Plasticville signal bridge put together to resemble something that looks like S scale.

MRH: Your oil refinery isn't completely S scale either is it?

EL: The oil refinery is actually mostly HO parts. It is up on a hill so everything is taller than it might normally be. It's mostly Walthers HO, the oil refinery kit. Two



FIGURE 14: The interior of the Montclair station is fully detailed!


smaller tanks are Rix, they're sold as silos for a farm scene! But there were oil tanks of that size and shape.

MRH: It looks like the layout is almost complete. What's next?

EL: I think the plan for the future is to finish the layout!

MRH: Well thank you very much for having me here Ed. I really appreciate it.

EL: That's quite OK, come back any time.

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Ed tells how the Hudson River backdrop was painted and about his between - the - rails water pans - plus clips of his trains in action!

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REVERSE RUNNING: Dare to be different

Stepping outside the box with a contrary view



— by Joe Fugate

What's mainstream in the hobby of "scale" model railroading these days?

While you can do tinplate and garden railroading in a more "scale" fashion, most in these groups take a less serious, more fun-loving approach when doing tinplate or garden railroading. For the purposes of this discussion, we'll ignore tinplate and garden railroading.

Okay then – if you're a scale model railroader and in the majority (we'll call you a "mainstreamer"), then you model in HO standard gauge and you follow a particular prototype, either faithfully or as a strongly prototype-influenced freelance.

Mainstreamers model the steam-to-diesel transition era.

A mainstreamer layout design typically has a main yard, and one or more towns with small-to-medium-

sized industries for some interesting switching.

Many mainstreamers have elected to go DCC and choose to deal with the associated is-

sues of DCC-friendly turnouts, using short management strategies, and deciding how much to make sound a part of your loco fleet.

But what about taking the road less traveled? How about not being a "mainstreamer"?

There's modeling in a scale beside HO or trying a different era than steam-to-diesel, but let's be more radical than that. How about a focus on the "dare" part of "dare to be different"?

For instance, if you have electronics skill, how about delving into HO radio-controlled battery-powered locos? Join the [Yahoo Group](#) that's discussing this and/or hook up with other modelers with a like passion over the internet. Build some working prototypes and then tell us all about it.

What does the "perfect" RC battery-powered HO system look like?

The batteries and RC receiver hook to the red and black wires on a DCC de-

coder using two wires. All power now comes from the batteries – and the RC signal looks to the loco like a regular DCC rails signal: but no rails needed!

Ideally, the batteries and RC receiver will fit into a powered loco, but if they'll fit into a steam loco tender, that's a move in the right direction. For diesel locos, fitting into a B unit or a dummy works although not ideal.

For an RC battery system to be successful in today's model railroading market, it needs to work with DCC.

Or how about adapting the best of the modular model railroading practices to a permanent home layout?

Rather than do your layout benchwork the way everyone else does, design your layout as portable sections you can remove and take to the workbench to lay the track and do the scenery detailing. Call it a "sectional layout" if you will – David Barrow's dominos¹ approach on steroids.

¹ Well-known modeler David Barrow introduced the domino concept in the 1990s. The idea is to build a simple small box frame, put some plywood on top, and then lay track on that at the workbench. These boxes can be arranged or rearranged like dominoes to get a layout up and running quickly, hence the name.

David also introduced using minimalist modeling techniques on these dominoes, using just a bit of scenery and detailing to convey the essence of a scene. He has taken some flak for his minimalist ap-

proach by the more craftsman element in the hobby. Regardless of your position on minimalist modeling, you have to admit David "dared to be different" with his minimalist domino concept.

Most of us do our best modeling at the workbench as compared to the all-too-common situation of trying to impersonate a contortionist while working on the layout in the train room.

The Free-Mo, FREMO, and oNeTRAK movements have shown us how appealing a single track module can be. Why not take the concept one step further and build a permanent home layout in small portable sections?

While doing this, how about developing some new materials and methods for making lightweight benchwork that's both strong and easy to transport?

The point is, why do your model railroading the way everyone else is doing it? *Dare to be different* – and then tell the rest of us about it so we can share in the fun!



Article feedback!

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proach by the more craftsman element in the hobby. Regardless of your position on minimalist modeling, you have to admit David "dared to be different" with his minimalist domino concept.

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- SP 4449 Excursion on Joe Fugate's Siskiyou Line
- CSX SD38 painting
- Operating switch stands
- Next installment of the Turntable/Roundhouse Series
- Craig Bisgeier's 1890's Housatonic Railroad
- Dick Grinyer's gorgeous On30 layout

... and lots more!



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