

THE

O

RESOURCE

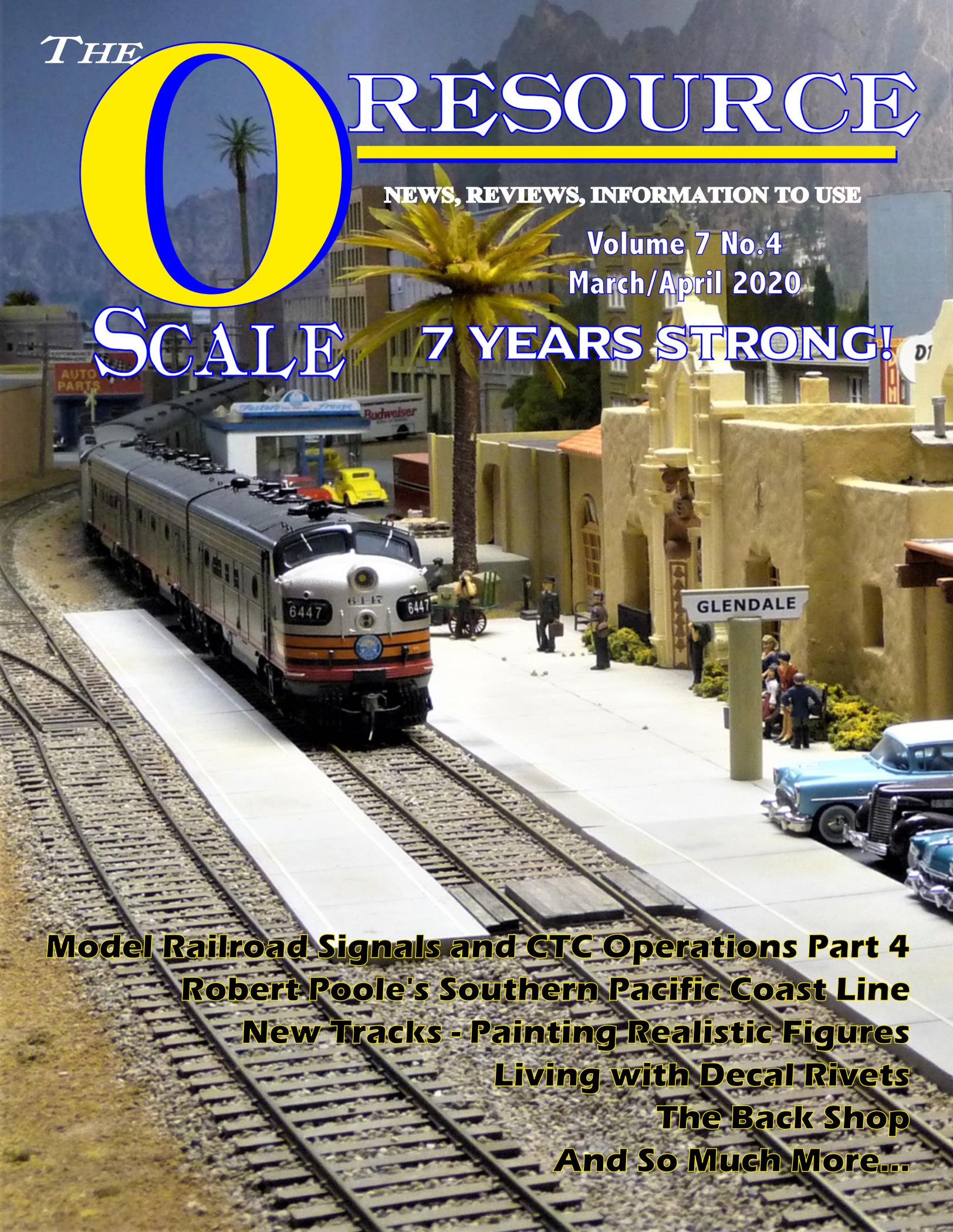
NEWS, REVIEWS, INFORMATION TO USE

Volume 7 No.4

March/April 2020

SCALE

7 YEARS STRONG!



Model Railroad Signals and CTC Operations Part 4
Robert Poole's Southern Pacific Coast Line
New Tracks - Painting Realistic Figures
Living with Decal Rivets
The Back Shop
And So Much More...

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O&S Scale Midwest Show



It's September! Time to kick off your modeling season!

THE BEST OF O SCALE AND S SCALE IN ONE SHOW SEPTEMBER 18-20, 2020

WYNDHAM INDIANAPOLIS WEST 2544 EXECUTIVE DR. INDIANAPOLIS, IN

DEALER SETUP

Friday 4pm - 9pm

Saturday 7:30am - 9am

Room Rate \$125.00* per night (until 8/21/20) Reference O/S Scale Show when calling

***Based on availability**

317-248-2481 / 877-361-4511

SHOW TIMES

Saturday 9am - 5pm

Sunday 9am - 2pm

MEET OLD FRIENDS AND MAKE NEW ONES

Please print clearly – Detach and return lower portion with payment

Name: _____
(Exactly as you would like badge printed)

Business: _____
(Exactly as you would like badge printed - table holders only)

MAILING ADDRESS

CITY/STATE/ZIP

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Email: _____

Make checks payable to: Model Railroad Resource LLC
Mail registration form to: 407 East Chippewa St
Dwight, IL 60420

Or register and pay online at:

Registration (Both days included) \$25.00 \$ 25.00

(Table holders must pay the \$25.00 registration fee)

Of 8 ft. Tables ____ \$50.00 ea/\$60 after 8/1/20 \$ _____

O Scale vendor S Scale vendor No preference

Number of add'l registrants ____ @ \$25 each \$ _____

(Please list below/Use back if needed/Spouse/Children 15 and under free)

Name: _____

Name: _____

Name: _____

TOTAL AMOUNT ENCLOSED: \$ _____

(No refunds after 8/20/20)

Electrical needed? Yes
(Subject to availability)

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CONTACT INFO@OSCALEMIDWEST.COM OR CALL 815-584-1577 WITH ANY QUESTIONS

The parties, whose names appear on this registration form, have agreed to hold harmless all of the organizers, sponsors, Model Railroad Resource, LLC, The Wyndham Indianapolis West, and others, single and collectively, for any injury, harm, loss, damage, misadventure, or other inconvenience suffered or sustained as a result of participating in the Indianapolis O Scale Show and S Scale Midwest Show 2019 or in connection with any activity related to this event, whether of negligence by agents under their employ or otherwise.



Published Bi Monthly

The Model Railroad Resource LLC
407 East Chippewa Street
Dwight, Illinois 60420
815-584-1577

March/April 2020

Volume 7 No. 4

Owner / Publisher
Amy Dawdy

Managing Editor
Daniel Dawdy

Advertising Manager
Jeb Kriigel

Welcome to the online O Scale Resource magazine. The magazine is presented in an easy to use format. The blue bar above the magazine has commands for previewing all the pages, advancing the pages forward or back, searching to go to a specific page, enlarging pages, printing pages, enlarging the view to full screen, and downloading a copy to your computer.

Front Cover Photo

*Southern Pacific passenger train pulls into
Glendale, CA on Bob Poole's Southern Pacific
Coast Line.*

Rear Cover Photo

*The O Scale Kings
O Scale 2 Railers*

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The Model Railroad Resource, LLC publishes *The O Scale Resource* and *The S Scale Resource*. Be sure to look at both of our magazines. There are many articles in our magazines that are not scale specific and will be of interest to you. Click the magazine title in this announcement to see the magazine.



From the Publisher's Desk



It's the end of an era. For those who may not know, this will be the last March Meet run by the Hill family, and probably the *final* March Meet. First off, we want to thank the Hills for their tireless work over the years to maintain and grow the show. It's sad, but unfortunately reflects the costs of finding a location large enough to hold such an event. When Amy and I thought we may lose the O and S Scale Midwest Show hotel, formally the Indy Show, we looked at a lot of venues within a 200 miles radius, including the greater Chicago area. Fairgrounds have many hidden costs that when tallied up, wound up being much more than what we were currently paying, plus we did not have the convenience of a host hotel. Convention Centers had the same hidden costs, charges for parking, set up and tear down, extra security, table cost and linens just mention a few.

Amy spent over 10 years working in the hotel industry first at Hilton National Sales in downtown Chicago and then in the suburbs, including the hotel where the March Meet was held before its current location. Even back then, weddings were running between \$30,000 and \$40,000. If you look at the Westin Lombard and realize that main ballroom can be sectioned off into at least three rooms and then to the math for three weddings, well you see the problem.

Others have suggested that a one day show would work or a church location. A one day show makes it hard for the large dealers to come in realizing they will have at best 6 hours to sell. Think of the large dealers at Chicago and Indy. Also think of the room layout and the space needed for tables. Our O and S Scale Midwest Show is about 17,000 square feet with Chicago being a bit larger. No churches, or even small college gymnasiums come close. Believe me, if anyone wants to try and find a venue that accommodates all the needs of a large show, go for it. Putting on a show, even a smaller one is extremely time consuming and a lot of work.

That leaves two major shows left, our O and S Scale Midwest Show and O Scale West. We have been working very hard to build up Indy and have seen some results. We don't have a vendor problem, we have an attendance problem, and unless we see larger numbers of attendees, we may be forced to close up as well. I don't expect to get rich doing a show of this type; however, I'm not going to lose money either.

We'll see what happens, and hope something does; but in the meantime, please support the shows both large and regional that we now have, or they too will disappear.

All is not doom and gloom as we did see many new and younger people at Indy last year, and I see that on social media as well. There is a lot more building and fine scale modeling than you may think going on, and that is a good thing.

Finally, if you plan to enter a model at the March Meet all the forms are in this issue, as well as on their Website www.marchmeet.net/. It's a whole lot easier do have these filled out ahead of time then trying to do it all at the contest table. See you at the March Meet!

Happy Reading & Happy Modeling,

Dan Dawdy

NEWS YOU CAN USE

Mike O'Connell, founder and the creative force behind [Chooch Enterprises](#) is announcing his retirement. Since the launch in 1974, Mike's focus has been to bring his strict attention to detail and quality in all his products to the modeler. Chooch was an early pioneer in resin and vinyl items, and has created hundreds of products over the years.



After 46 years in business, it's time to pursue other fun things like finishing my layout! It's been a wonderful journey and I want to thank you so much for all your support over the years. Thanks for all the good times and we will keep in touch.

Current Chooch products are in full stock and will be available while supplies last. [See their Website here.](#)

[Bill Basden of Delta Models](#) says: In August, I moved south of Portland 50 miles to Wood Burn, Oregon. I had a 25 x 20 shop built to give us a larger foot print to do manufacturing of our product line. New equipment was purchased and older upgraded.

We are going to start adding more resin parts to the line and have many new ideas to offer. I feel there is a resurgence in O scale modeling for passenger cars parts, and I will fill the niche where possible.

We are always looking for new ideas to add parts not readily available, so if you have ideas, just let us know and provide a photo if you have one.

The website is the best way to stay current on what is new and for placing orders. I went through our shopping cart for shipping costs. It was decided to lower our cost to you, so we have done that by 15% for USA orders. I felt this was more in line with what the trend in business is. I can not do anything with overseas orders, sorry.

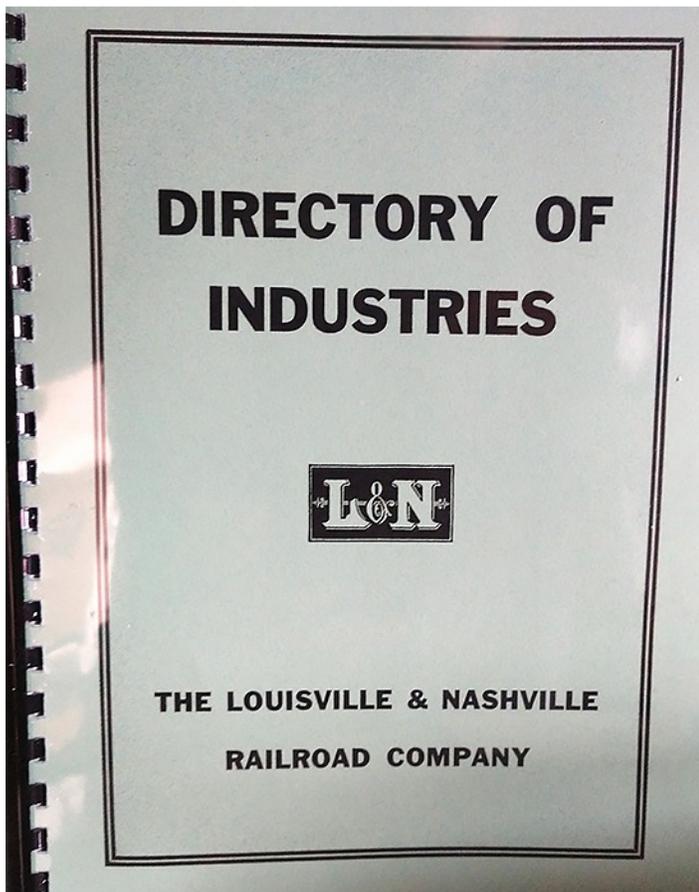
Bill Basden
Delta Models
P O Box 631
Wood Burn, Oregon 97071
Phone 503 443 5230
[See his Website here.](#)

[Ted Schnepf of Rails Unlimited](#) has a new Shippers Guide available.

The Louisville and Nashville, is my first guide covering part of the southeastern US.

It covers the Louisville and Nashville RR, all the way from Illinois and Ohio to Florida and Louisiana, and all states in between. There are only two dates in the book, with the L&N map being dated 1939, so am guessing a pre war publication date of 1940. The book has 163 pages, with a comb binding, so it opens flat for easy use.

The book is produced by Reynolds & Reynolds (printing) of Dayton, Oh. They have published several other books I sell, such as, UP, CNW, RI, and Milwaukee. The industries are listed by type, and then by state and town in alphabetical order.



This L&N book seems to be more elaborate with a larger forward section, explaining industries along the L&N. There is also 6 pages listing LCL routes. There are now a total of 21 shippers guides to chose from covering coast to coast. [See Ted's Website](#) for more information.

Ted Schnepf also has some other news he sent along. "There is news from InterMountain Railway Company. IM started by producing O scale models in the 1990, and then latter added HO and N scale models. Approximately a dozen years ago, IM sold the O scale line to Atlas O. IM continues to make their reasonable priced, O scale metal wheels, and just today got in another shipment of the popular scale wheels.

At the end of January, 2020, InterMountain moved into a new office and warehouse in Longmont, Colorado. The move allowed closing scattered facilities. The move also caused IM to sort out all the remaining O scale parts and cars. All of InterMountain's remaining O scale stock was shipped to Rails Unlimited, in Elgin, Illinois.

The five large pallets, containing 180 large boxes, filled the front end of a semi, and now fill an area of my facility. As I gradually unpack the shipment, I am making many discoveries. Luckily, the boxes are well marked.

The first offerings are "ready to run" cars produced in the mid 1990's. These were "pre-production samples", sent to IM from the assemblers in China. The cars all have Kadee couplers and plastic, two rail, wheels. I believe some of the road names listed, are special runs from 25 years ago, as I do not remember selling those models. Possibly some of the car numbers are also unique. In this first listing, most of the single door, 1937, box cars, have just one model, when it sells there will be no more. Some of these cars have unique slogans and two tone paint schemes. These special cars I am selling for \$45.00 each, plus shipping if needed. I can add the IM metal wheels for \$8.00 per car.

Future listings will be other car types and road names where there are multiple car numbers. This is an excellent opportunity to get rare, 25 year old models at reasonable prices. Contact me at Railsunl@sbcglobal.net with questions.

[Steve Moore from K.I.S.S. Method Inc.](#) has some new loads.

Scrap Metal for all scales, steel mills, scrap metal dealers and processing plants, and to make car loads.



All the materials are cleaned and ready to go. Bags are 6 1/4" X 5 7/8" and sell for \$9.95 each plus shipping up to 5 bags for \$8.45 per order. Contact us at our E-Mail address for more information: kiss@kissmethodinc.com



[Art Fahie of Bar Mills Scale Models](#) has a new building. "Jerry's Small Engine & Tractor Repair" will be the latest Bar Mills release in O-Scale. This new offering, combined with "O-Doul's Flophouse", released just this past month will mark an active year in the line of new craftsman structures from Bar Mills.



Complete with details, the structure measures approx. 9"W x 5"D. Complete with signs, resin details, assorted roofing & instructions. This is the 24th O-scale craftsman kit available from the company. Price: TBA. [See their Website](#) for more great products.



[Todd Architectural Models](#) has produced the fourth in a series of historic warehouses modeled in O Scale: the built-up Paterson Mill-Art Factory shadowbox. You can now have one of the classic mill warehouses on your layout from Paterson (NJ), known as the home of Lou Costello and Larry Doby, location of the first documented manned submarine submersion and onetime silk capital of the world.

The shadowbox model features laser scored and cut elevation and window elements, and built-up laser scored/cut and styrene cornice detail. The massive 4-story building main street-facing elevation has been modeled from architectural drawings that were produced for historical documentation. The model measures 27" long overall, is made in three sections, and measures 16-1/2" high at the eave and 17-1/2" high at the peak. The quoins and brownstone bands are individually applied. The shadowbox comes standard at 1" deep and may be special ordered to your depth specification. This model has also been produced in S Scale. The structure is so large that the S Scale version would work really well to force perspective on an O Scale layout.



Contact Todd Architectural Models by email (toddmodel@mac.com) to discuss the project, specify choice of clear, translucent or Roscolux Grey glazing and lighting preferences.



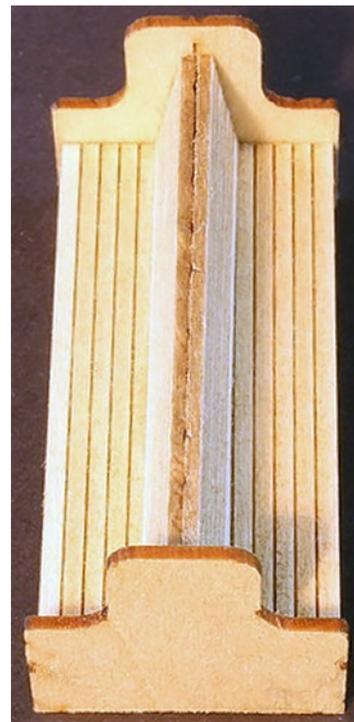
[Richard Segal of Right On Track Models](#) has announced upcoming products for O and S scale.



Tuckahoe Station: The Pennsylvania-Reading Seashore Lines, introduced in town in 1893, reinvigorated the immediate area. Today, it is still a beautiful and fun attraction to visit. Not only was Tuckahoe Station a stop between Philadelphia and Cape May for vacationers, it was also a hub for produce and grains, connecting the seashore with the city.

O-2001 O scale price \$148.95
S-2001 S scale price \$118.95

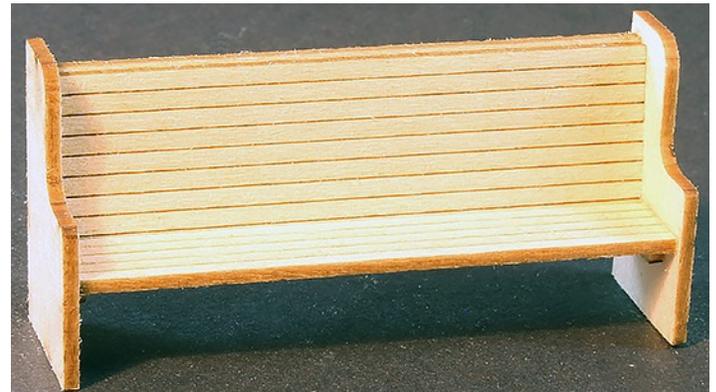
[See their Website for more information.](#)



[Richard Rands of Berkshire Valley Models](#) has released two styles of benches. Perfect for station scenes.

#663 Double Bench, pkg. of 1 \$3.00
#664 Benches, pkg. of 2 \$3.50

[See their Website](#) for these and other great products.



[Atlas Model Railroad Company, Inc.](#) announces O Scale 1/48 Scale 1973 Ford® F-100 Pick-up Trucks.

1953 was the birth year for the Ford F-100 series of trucks. The designs were pivotal in Ford's line of pickups, as they made significant improvements and

body changes which included the design being a bit more “boxy” with less curves. By 1973, Ford had advanced to the “Sixth Generation” of the F-series line. This venerable truck saw improvements over the previous generation’s, with front disc brakes, gas tank relocation under the bed, better air conditioning and heating systems, and increased space inside the cab. The F-100 could be found almost anywhere, from commercial use, maintenance of way for railroads, public works, etc. Atlas’ recreation of the F-100 would look right at home on your layout parked in a driveway, making a convenience store run, or in service for the car department in a yard.



Features:

- Chrome plated grille and bumpers
- Plastic headlight and rear tail light lenses
- 1/48th scale

[See their Website for more details.](#)

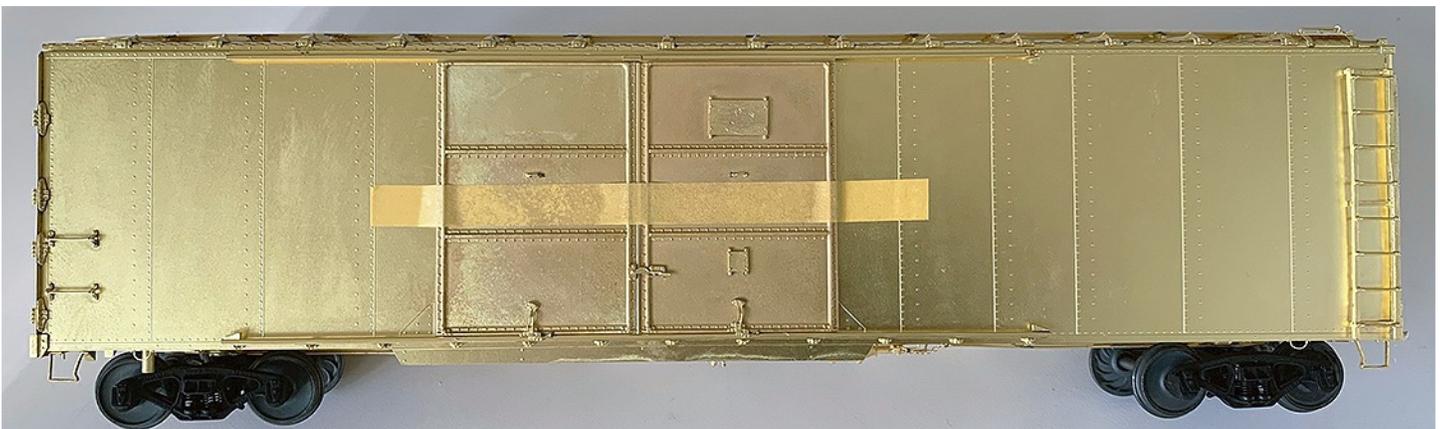


[Norm Buckhart of Protocraft](#) has some beautiful new cars. Norm says: For the first time in O scale

history, with very few exceptions of about 30 years ago: notably a rather generic model by PSC and X31/X32s’ by N. J. International, an accurate number of all-brass models of 50’ automobile/furniture and 50’ express boxcars have been brought forward by Norm Buckhart of Protocraft to fill this void in the hobby. This fairly comprehensive array includes 24 different versions of individual railroad’s initial venture into the all-steel automobile car. These were built over the period of 1936 through 1946, and thousands of these cars were to be found in revenue service through the late 1950’s. Often assigned to pool service, a mix of various road’s automobile cars were to be found in many cross-country consists.

Automobile cars are a must for any model railroad. Producing a brass model project is a 2-year undertaking, involving the collection of vast amounts of prototype data, drawings from the Museum of Transportation in St. Louis (AC&F), the Pullman Library in Union, Illinois; the Barringer Library at the University of Missouri, and the Smithsonian Railroad Library in Washington, D.C.; plus thousands of 8 x 10 glossy photographs from various collectors and especially the National Archives of Canada, a great source of builder photographs of American car builders. And last, but not least, consultations with freight car historian Ed Hawkins. These builder drawings, reproduced from 3’ tall linens, with dimensions, combined with photographs, especially contributed to very accurate models being produced by well known Korean builder, Boo Rim Precision. This is the 8th project for Protocraft by Boo Rim and they continue to out perform themselves in producing exquisite models.

An example of Nickel Plate’s first all-steel automobile car with end doors and Viking roof built by Ralston Steel Car Co. in 1937 is shown herein. Five years later, the Nickel Plate ordered an additional 100 cars but with new improved W corner ends,



Viking roofs and without end doors. Protocraft has included both of these cars in this project. Each rivet and side panels are very accurately reproduced in all models, and all models are inherently different. All models are factory coated with a clear sealer that, after washing with a soap bath, are ready for paint and decals.

The progress of the project is close to fruition with the pilot models of each of the 24 versions having been received at Protocraft in Sonoma and undergoing close scrutiny with a number of corrections being sent back to Korea. This is pretty normal and should be followed with full production with the idea that models should be in stock before Summer.

A list of the models soon to be available can be viewed by going to:

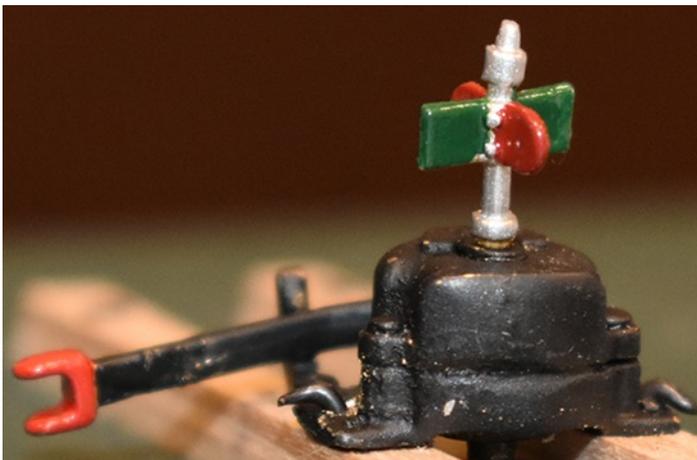
<https://www.protocraft.com/category.cfm?CategoryId=53>

Deposits are not required, but those desiring specific models should email their reservations in the form of an email to: norm@protocraft.com, including any questions regarding them. Invoicing has not been received and hence no pricing is available at this time. Accurate decals (over 60) for all models and decals for various repaint schemes for each railroad will be available from Protocraft Decals.



[Larry Stanley of All Aboard Trains](#) has a new product. All Aboard Trains announces the New Century Model 53A brass, switch stand.

Fully functional, with day target. The first time it has been produced for applications in O, On3, S, and small enough for HO scale also. \$28.95 ea. It will be introduced at the Chicago O Scale Show Mar. 13-15.



The O Scale Resource March/April 2020

[Marty Milner Jr. From Scale City Designs](#) has some exciting news: Here is a name you haven't heard in a while... American Standard Car Company!



Well...Scale City Designs is pleased to announce we have acquired all of the pattern work for these beautiful heavyweight cars from David Duncan of Pullman Scale Car Manufacturing Co. Those of you not familiar, the original patterns were done by Ralph Brown of Illinois. Ralph was a meticulous pattern & model maker. He spent countless hours of research to produce probably the best, most accurate models of these beautiful Pullman heavyweight cars. Throughout the 80's and 90's, he was able to produce about 70 cars including the absolutely amazing C&O George Washington Set.

Over the next few months, we will be making all new molds of the kits to produce nice crisp castings as you are to expect from the quality we already produce within the Scale City Designs line. The kits will be supplied with ends, sides, roof, floor, and some basic details. We will be assembling upgrade underbody kits and accurate levels of interior kits from basic to extreme. Mr. Duncan is one of the most knowledgeable people on the Pullman cars as he has studied them his entire life. We will be working with him and our ability to do in house 3D design to make some incredibly detailed add on kits for those wanting to bring the cars to the next level. We know paint and decals is also what makes it hesitant to build a kit, that's why we carry the complete line of Tru-Color paint and have finished the artwork for fresh new Pullman decals. We are doing our best to make sure this will be a kit you can order, build, and enjoy quickly!

Now for the best news, we are making an introductory offer on the kits! Until May 1, we are offering most cars at the 20+ year old price for the basic kit which starts at \$85. You can reserve them at our website, by phone, or at the Chicago March Meet. They are offered at NO MONEY UPFRONT, we only

ask that you order what you are really plan on buying. We plan to start shipping kits in summer of 2020. The cars with high demand will be made first, so head on over to scalecitydesigns.com and preorder your wish list.

Find the line at:

<https://www.scalecitydesigns.com/american-standard-heavyweight/> or call us at 330-574-4050

Also new is bumper is made of resin with a white



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Soo Line boxcars limited run - SP FMC boxcars very limited run
 Soo Line and SP kits will be available for the Chicago March Meet and available online afterwards.

Thanks for your continued patience. The kits will be out soon!



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In Memoriam

Gregory Anderson

By Frank McCabe

The Rockford O Scalers are very sorry to report the passing of Gregory Anderson, age 60, of Janesville, WI, on January 15, 2020, of natural causes.

Greg lived his whole life in Janesville, was an accomplished modeler in both HO and 2 Rail O Scale, and was a founding member of the Rockford O Scalers.

Greg possessed a vast knowledge of the history of the Milwaukee Road with a special interest in their passenger train operations. In addition, the Chicago & Northwestern and New York Central were other railroads that he studied and modeled.

In addition to model railroading, Greg was also very active in his church, and volunteered at many church sponsored activities that benefited the community. He was always willing to help others and will be greatly missed by his many friends and family.

The Rockford O Scalers send our sincere condolences to the Anderson family.



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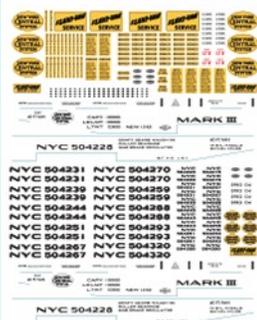
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O Scale

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Visit our website: altoonamodelworks.net

AltoonaModelWorks / 2172 Cross Cove Rd
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WWW.SBS4DCC.COM

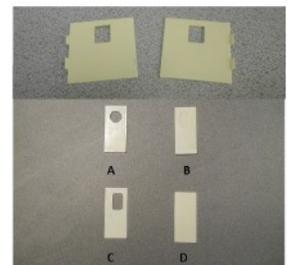


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State of Two-Rail O Scale, an Update

By David Vaughn

A Blog was set up to figure out how best to revitalize and improve two-rail O Scale (“2ROS”). The Blog was announced in the [September/October 2019 issue of OSR](#). It is still open at: tworailoscaleblog.wordpress.com/. I have served as host of the blog. Approximately 25 O Scalers have participated in the Blog, either directly or through email. I thank those who have participated.

The feedback - primarily positive but with undertones of pessimism - is that people really enjoy modeling in 2ROS and want this little end of the hobby to be vital and growing. People also understand that the Scale is currently facing some real challenges.

The call in the kickoff column was to “Save Our Scale.” There has been a certain amount of pushback against the title as being too pessimistic, since “SOS” is used to signal an emergency. And there are, in fact, some good things happening in O Scale. You can read some in this Magazine. But there are signals flashing red; and for those of use who want to save our Scale, it’s wake up time.



For many years, Chicago’s March Meet has brought together the 2ROS community. This photo shows the trading hall in 2017. The last Meet will be March 13-15, 2020 at Lombard, Illinois.

An example: One of the true linchpins of the Scale has been the March Meet, the Chicago O Scale show. Along with O Scale West, it has been a central meeting place for O Scalers, not only to buy and sell but to gather, have fellowship and catch up. The March Meet will be held again this year at the Westin in Lombard, Illinois March 13-15, 2020. Try and get there - because it will be the last one. No March Meet next year. Or after that, unless something changes dramatically.

It has been hoped that someone would pick up the show from the Hill family which has sponsored the Meet for many years. And it may still happen. But hotel ballrooms are expensive and room guarantees are risky. The aging attendees and declining numbers make picking up the show a crap shoot. Other shows

are also having to fight to survive. Fight they will, but make no mistake: these shows are a labor of love for which there is lots of risk and not enough support. Do not take them for granted if you want them to be around in the future.

The Scale O National Convention (“SONC”) will likely be co-hosted with the NMRA as an adjunct to NMRA’s National Convention to be held in St. Louis. The O Scale program will be July 16, 17 and 18, 2020. Co-hosting will reduce some of the risks of a free-standing convention. The NMRA’s larger program (which begins July 12) will provide more program opportunities than O Scale could do on its own; and 2ROS will have a great opportunity to showcase O Scale to 1,500 non-2ROS attendees. It’s a different, creative approach. But it also signals that freestanding SONCs are no longer practical.



The 50th O Scale National Convention Program
Aug. 22-26
Rockville, MD

	Wednesday (8/22)	Thursday (8/23)				Friday (8/24)				Saturday (8/25)				Sunday (8/26)									
		Trading Halls	Jefferson Room	Washington Room	Tours	Trading Halls	Jefferson Room	Adams Room	Washington Room	Tours	Trading Halls	Jefferson Room	Adams Room	Washington Room	Tours	Tours							
08:00 AM																							
08:30 AM																							
09:00 AM																							
09:30 AM		Dealer Setup				Trading Hall Open	Weathering Mix R. Hunter	Building in Paper Gore J. Beckham	The B&O in Pictures Ivica Elisek		Trading Hall Open	Layout Planning & Design A. Dodge	Hands-On Build a Loading Dock Blackwood R. Kidday	Why O Scale? T. Terrance	Carpool to Hagerstown Roundhouse								
10:00 AM																							
10:30 AM																							
11:00 AM																							
11:30 AM																							
12:00 PM		Lunch Break				Lunch Break				Lunch Break													
12:30 PM																							
01:00 PM		Trading Hall Open	Buying Your First 3D Printer T. Terrance	Atlas "O" Reefers & Lancers B. Lawless		Trading Hall Open	DCC M. Heman Loiksond	Hands-On Clinic Cardstock Structures J. Gore	Washington Trolleys J. Hogan	Carpool to B&O Museum	Trading Hall Open	Improving Commercial Models Friedlander	Transit Modeling in 'O' Lorenzen	How to Purchase O Scale on the Secondary Market J. McCarty	Layout Tours	Local Layout Tours							
01:30 PM																							
02:00 PM																							
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03:00 PM																							
03:30 PM																							
04:00 PM			Narrow Gauge D. McRee	Legacy Of John Armstrong Vaughn			Build a Kingpost Truss R. Hunter	Proto 48 J. Lincoln	Traction Modeling Hogan			Scenery Geldmacher	Update on the Aquia Line Kempinski	Dead Rail D. McRee	Layout Tours	Getaway Day Layout Tours							
04:30 PM																							
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05:30 PM		Dinner Break				Banquet				Keynote Address T. Koester													
06:00 PM																							
06:30 PM	Dealer Reception																						
07:00 PM																							
07:30 PM																							
08:00 PM	Dealer Layout Tour																						
08:30 PM																							
09:00 PM																							

SONC offers a once each year opportunity for 2ROSers to have it all: trading hall, clinics, open houses, trips, banquet, social interaction and vacation. This is the program from SONC 2018, held in Rockville, Maryland.



Manufacturers are quiet. Anybody who tries to do business in China must deal with tariffs, price instability, labor instability and now the coronavirus - challenges far beyond those faced by domestic producers. Bravo to those manufacturers who take the risks; they need and deserve our support. But it can't be easy. Smaller manufacturers are also reluctant to launch new products in the face of uncertainties in the Scale, which decreases products available and reduces magazine advertising, putting strains on profitability.

Not all of the news is bad, and not all parts of the Scale are suffering to the same extent as transition era standard gauge modelers. Three-foot narrow gauge and On30 continue to do well. Proto 48 appears to be stable, at the least, and attracts a certain number of new modelers looking for the highest standards of fidelity. Modern prototype modelers and scale three railers (who run trains on three rail track but use Kadee couplers and closer to scale models and wheels) appear to be doing all right too.

Support from manufacturers is a key to the revitalization of 2ROS. Here is the booth Atlas brought to SONC 2018. Manufacturer involvement is a two-way street: we need them and they need us.

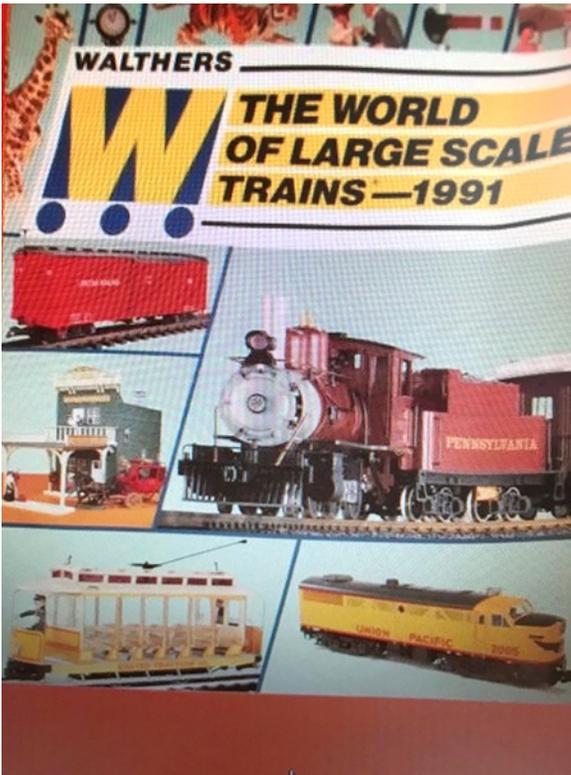


Modelers are drawn to the mass and visual impact of 2ROS. Here, newer modelers operate a 2ROS version of John Allen's Timesaver layout, built and displayed by the Baltimore Society of Model Engineers at the Timonium (Maryland) Great Scale Train Show in January of 2020.

That said, there has been a significant decline in the numbers of transition era standard gauge modelers, exit by a number of manufacturers, the disappearance of 2ROS at the retail level and significant reductions in resale prices. Some of this is generational: people model what they see, and the people who lived through the transition era are approaching the end of their modeling careers. Some of what is happening is that O Scale manufacturers have not kept up with quality and innovation. The neighborhood hobby shop has virtually disappeared. Causes of the decline include the lack of visibility in the Scale and difficulties of accessing information about the scale and figuring out to find stuff to get started. It's chicken and egg. And no turnaround will happen by itself.

Using input from the Blog, I have been building a Plan to revitalize and improve O Scale. I claim no exclusivity and welcome anybody else working in the same direction, either in coordination or independently. The Plan has evolved and will evolve more. People can pick up on parts of it and leave other parts to others.

The Plan has narrowed in scope, as it has become clear that resources are limited. More people recognize a problem than there are people who are willing to do something about it. We need to pick our battles carefully and go for easy targets. So, the primary focus of the Plan will be to find and convert existing HO and Three-rail O Scale modelers, using the O Scale Kings, an existing non-profit organization, and their website (OscaleKings.org) as the platform to advance the Plan. O Scale Kings has new leadership and has upped its



The Walther's Large Scale Catalog was a central place to find and order 2ROS rolling stock, track and accessories. It was not perfect and most of the models were old school, but it was the go to place for modelers and dealers to find 2ROS.

game. So as a first step, join and support OSK. It is our only 2ROS-wide organization. It is dedicated to advancing 2ROS. I am offering the Plan to O Scale Kings and will work with them if asked.

The Plan - which can be checked out on the Blog - has as its signature project - constructing an electronic Walther's Catalog and keeping it updated. The Large Scale Catalog (which included 2ROS) was discontinued, leaving O Scalers, hobby shops (remember them?) and people interested in getting into the Scale without a central place to go to check out and order O Scale track, rolling stock, scenery and accessories. A contemporary, organized, upscale, personal Walther's Catalog is needed to provide one-stop access to available products. It will take work, but will help present 2ROS modelers and those considering converting.

The Plan will also attach to the O Scale Kings Website a library of CDs and links on how to get started in two rail O Scale, dispelling the bad myths about 2ROS and making available both Scale-specific skill-building material and CDs showing the power and beauty of 2ROS layouts and models. The CD which Terry Terrance did on O Scale Layouts 2016 has received over 120,000 hits; think about it. 2ROS needs to harness the power of the Internet to spread the word about our Scale.

The Website cannot be our only portal to the rest of the hobby. HO Scalers and three-rail O Scalers are found at all-scale train shows and conventions, reading magazines and electronic magazines and surfing the web. So 2ROS needs to build a bigger



2ROS models make impressive displays at RPM meets. Here are David Vaughn's NKP models displayed at the 2019 Cocoa Beach RPM Meet



2ROS offers unparalleled opportunity for detail. Here, cowboys drive cattle into stock pens for loading onto stock cars on Marty Megregian's Merritt Island, Florida Union Pacific layout. Photographed during an open house held in January of 2020.

presence at these venues, including “retail” spaces like all scale train shows. Railroad Prototype Modelers - who are hooked on detail and scale fidelity and are active kitbashers - are 2ROSers natural constituency: O Scale models dwarf the smaller models displayed at RPM Meets and offer a much bigger and better base for conversion and detail. At all-scale shows and RPM Meets, 2ROS needs booths, literature, videos, modular and display layouts, scale-specific clinics and model entries.

2ROS layouts are impressive, as are the models running on them. So developing standards, constructing, portable and modular layouts and displaying them at all scale shows will be important. Portable layouts will show that large areas are not required for satisfying operation and display in 2ROS. An integrated marketing campaign must be in place to make these activities most effective: literature, posters and CD displays at the booths will be necessary. And volunteers enthusiastic about the Scale to talk it up.

There are, of course, other areas in which 2ROS can leave a larger footprint, in magazines, home layout tours, clubs and modular clubs. As indicated, good CDs on 2ROS subjects can be eye-catching introductions to the Scale for modelers who may never have seen O Scale without a third rail running down the middle. In magazines, articles on getting started in 2ROS as well as construction, conversion and layout articles are needed. Such a campaign must be developed and coordinated.

2ROS also needs more support from and for manufacturers. Encouraging manufacturers to offer 2ROS train sets - the entry drug that got so many of us started - and to engage in more outreach may also be helpful.



Start 'em young. Seven year olds quickly get the hang of a North Coast throttle and develop good train handling skills. Beatrice Schafer works a long freight upgrade on her Grandfather's layout. If the scenery looks familiar, it is photographer's curve from the late John Armstrong's layout, restored and operational.

Even in its reduced version, the Plan is ambitious. Not everyone will be up for it. But make no mistake: 2ROS transition era modeling is in decline. That decline will continue unless affirmative action is taken. If 2ROS is worth fighting for, present 2ROS modelers need to get in the fight. If you worry about who is gonna share the satisfaction of working in the Scale, treasuring what you build, keeping models available and, in the end, who is gonna buy your stuff, the answer is to bring new people in. A way to get them in is to join up, support and work on the Plan.

Volunteers to grow the hobby are needed with marketing skills, Internet skills, layout design and construction skills, videotaping experience and enthusiasm to go out and sell the Scale. Don't have the skills or don't have them at the level you would like? Join up and work with people who can teach you. The equivalent of an hour a week for the next year will help the cause. Email me (David Vaughn) at 2railsos@gmail.com or call David Vaughn at (301) 529-9974 to volunteer or learn more. Leave a message if no answer. Save Our Scale!



Double-headed UP 4-12-2s haul freight on Marty Megregian's layout during a January 2020 RPM open house.

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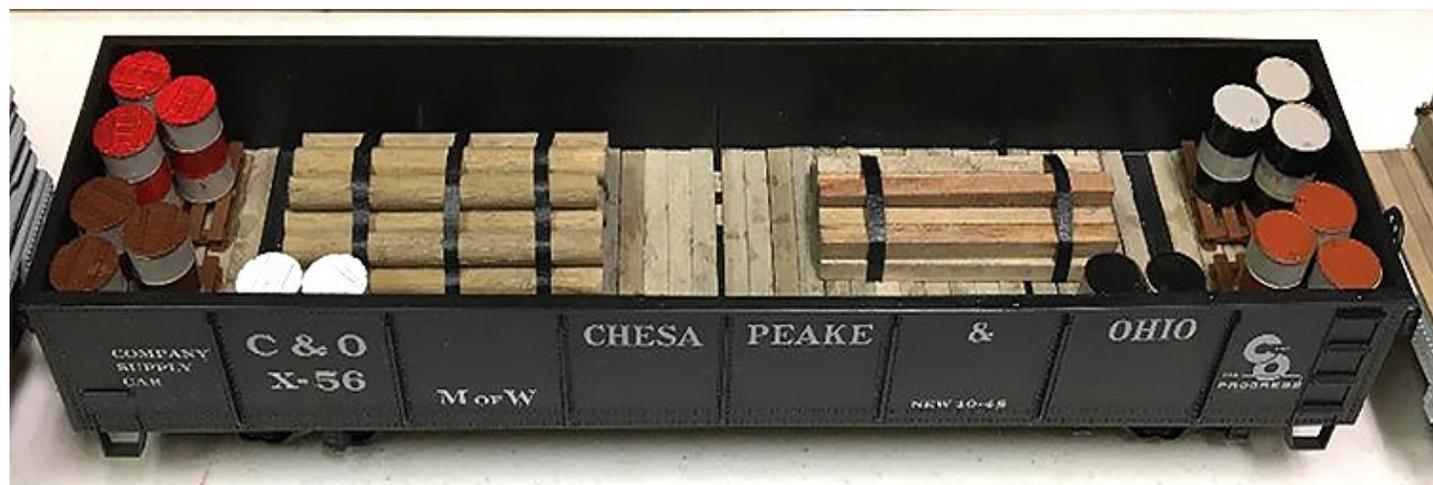
Southwest O Scale and Oklahoma Narrow Gauge Group Combined Meet

In the [January/February issue of The O Scale Resource](#), we showed some pictures we were sent from the Southwest O Scale and Oklahoma Narrow Gauge Group Combined Meet. Unfortunately, we were not given much information. Well, some of you spoke up and we are happy to give credit where credit is due.

First from Phil Camp:



The MKT Inspection Car was scratch-built by Perry Jakl. See another shot of this later in this article.



The C&O MW gondola was customized by me - description later in this article.



The A.T. & S. F. caboose (with bench on top) was entered by John Smith of The Colony, TX.



The S.P. gondola with load was built by Brady McGuire of Sherman, TX. More on this later in this article.

For my C&O gondola, here is what I did:

- Started with an early AHM gondola, added Kadee couplers, Athearn sprung Bettendorf trucks, painted and decaled.
- Weathered Kappler Scale wood strips (2 x 8) and glued in place for the flooring.
- The (real) wood ties and poles were cut to length, weathered and glued together in bundles with pin stripe tape to represent steel banding.
- The drums were an unpainted set of plastic barrels that I glued together and painted in different colored bands to represent different fluids (hydraulic, used oil, grease, cleaning solvent, etc.)
- The drum kit also came with plastic platforms/skids to place the drums for securing.
- There was no limitation as to the number of items that could be entered, so I entered thirteen (13) MOW cars (various roads) - it is my collection of customized MOW cars.)

On a side note, each entry on the display table had information about that entry including name, description, details of construction or customizing.

Ed Jakl wrote in:

I am enjoying the latest *O Scale Resource*, as always. You asked for captions for the OKC meet. My Dad, Bob Jakl and I attended the show, but I can only add information for one of the pictures, the Katy Inspection car. That car was built by my brother, Perry Jakl. He could not attend the show, but we brought it because it had a connection with Oklahoma City. The prototype for that car was acquired by the Oklahoma Railway Museum and completely restored.

Also, the model won first place in the model contest. Attached are photos of the first place plaque and a picture of the model along with the real thing at the museum.



And from Brady McGuire:

The Bar Joist load shown in Joe Grillo's photo on page 85, [Jan/Feb 2020, *The O Scale Resource Magazine*](#) is mine. Thanks to Joe for doing the photo essay on the recent OKC Southwest O scale Meet.



I made the load from 12 Plastruct bar joists (part #OWTA-32 1 inch x 12 inch Open Web Truss Warren style 2) based on a photo I saw a while back. The bar joists are 4 feet tall x 48 feet long in O scale, just right for an Atlas O 52 foot gon.

I sprayed the joists with auto red primer. After drying a few days, I used a small table saw and a fine tooth blade to carefully cut a lengthwise slot centered in the top chords. I chose to cut the slots after painting so that the dark grey plastic would show and simulate the actual void and separation between the two angles forming the prototype's chord.

The wood blocking was created using AAR Standard blocking diagrams and good ole common sense. Most of the blocking is built up from O scale wood 2x4s. Smaller wood strips are used to make the tee shape separators. These separators prevent the joist from rubbing against each other during transport. The vertical safety stakes are made from 4x6 scale wood.

The black "steel banding" is elastic thread. The safety stakes are drawn tight at the top using the older method of 5 stands of wire then twisted by a 1x2.

We appreciate you writing and filling in some information. We enjoy show reports from shows we can't attend, and pictures are even better. But, we also like to give credit to the the models shown. And, don't forget shots of people. Without people there is no show.

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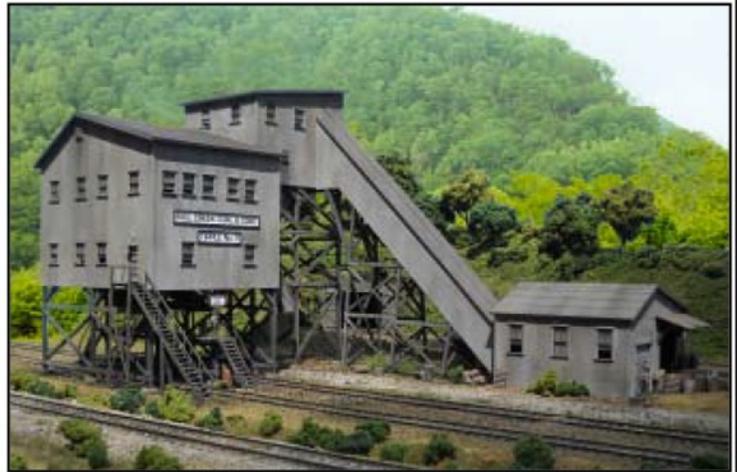
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Cabin Creek Coal Tipple

This is a freelanced tipple representing one where the mine is further up the hill. This tipple services three tracks. The power house and a small storage shed are included.

#14105 O Scale \$ 689.95



Mill Creek Coal & Coke Tipple No. 2

Tipple No. 2 is a freelanced composite of several different tipples located in West Virginia. The design has two tracks serviced under the tipple. There is room for a stub track if desired under the fixed chute on the back. Two narrow gauge (30") mine cars are included.

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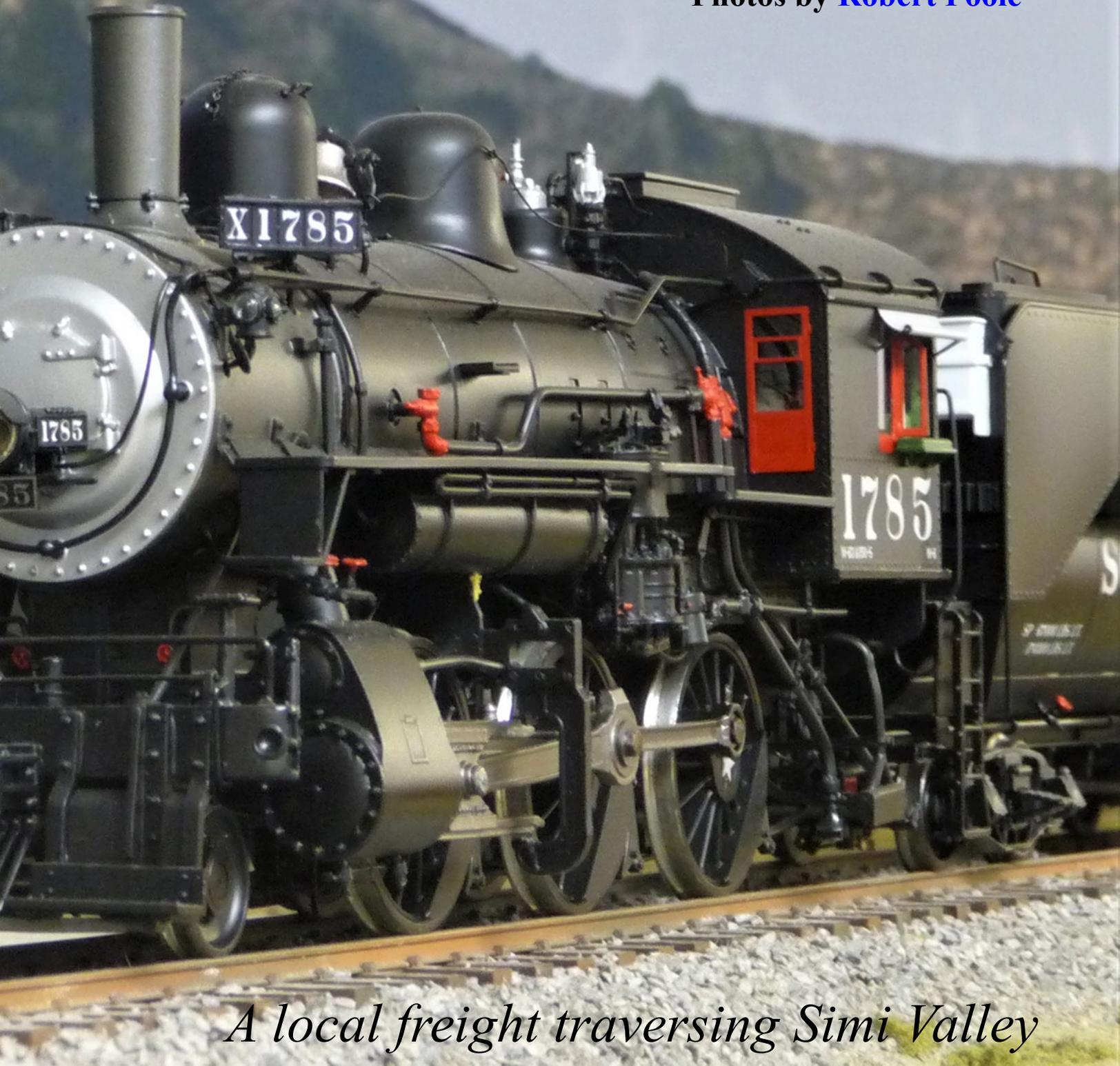
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FIC COAST LINE

Article by [Amy Dawdy](#)
Photos by [Robert Poole](#)



A local freight traversing Simi Valley

Bob started modeling as a child, and had a Lionel train layout starting at age 10. He has never considered a smaller scale and transitioned from tinplate to O scale. His Southern Pacific Coast Line is prototypical Southern Pacific, recreating the actual SP coast route from Los Angeles Taylor Yard to the historic depot in Santa Barbara circa 1956, the last year of steam power on the SP mainline.

Bob's inspiration for his model railroading has come from many areas, first, photos of John Allen's Gorre & Dapheti, in Varney ads in *Model Railroader*. He then discovered actual O scale via the All Nation catalog in the early 1960s. After attending college (MIT), when he had a house with a garage, Bob discovered the new Atlas O in the early 1970s and bought some locos, freight cars, and track. Attending O Scale National Conventions, led Bob to visit much larger layouts, including Lorell Joiner's huge layout in San Antonio.

Bob told us that he enjoys model railroading because it's a complete diversion from his full-time job as a transportation policy researcher: research, number-crunching, and lots of writing. Model railroading engages his design-engineering abilities and artistic abilities. Every project involves solving design problems, so it's a set of ongoing challenges, with great rewards from the finished product.

Bob began with a 4' x 20' switching layout in his garage, and many years later, expanded it to an around-the-room layout in a new house's former garage. He and his wife, Lou, selected their current Florida house, in part, because of its 5-car garage, which became the 30' x 50' train room. They added a new garage for their cars. At a layout visit at O Scale West around 2002 (the year before he moved), Bob toured a layout designed by John Armstrong – it was large and very impressive. Bob asked the owner for John's contact information and got in touch with John to have him design the layout to fit the floor plan of the new train room. After filling out John's Givens & Druthers questionnaire, they went through two iterations of the design.



Moorpark depot; the town of Moorpark is planned but not yet built.

The DCC layout is set in 1956, the last year of steam locos on the SP, and as stated previously, represents the actual SP coast route from Los Angeles Taylor Yard to the historic depot in Santa Barbara. Bob stated that his favorite part of the layout is constructing buildings and scenery, seeking to create the look of coastal California in the 1950s. The scenery is mostly Styrofoam with Sculptamold for the basic terrain, and hardshell for hills and tunnels. The track is Old Pullman code .125 flextrack, as are the turnouts.

Prior to moving from Los Angeles to Florida, Bob and Lou spent several weekends driving the SP coast route from LA to Santa Barbara, taking numerous photos of the hills behind each of the cities & towns the route passes through. Selected scenes for each part of the layout were then photo-shopped by a friend to produce a relatively seamless panorama to go behind each scene.

Bob explained, “For each area, I take a flash drive with that set of photos to the local Fedex Office and have them printed in 18 x 24 format. After cutting off the sky, I use wallpaper paste to affix them to the styrene backdrop”.

Bob also gives credit to Tom Yorke (who is his cousin; they grew up together). Tom taught him a lot about weathering, and as a fellow O scaler, “He’s been a sounding board for my various model railroading projects over the years.” Bob’s layout includes a number of his hydrocal kits from the 1980s, as well as half a dozen custom-built projects that Bob commissioned him to design and build. The Glendale depot was featured in an article by Tom in *RMC* about a decade ago. He also built depots for Oxnard and Santa Barbara, but they are not included in the photos since those towns have not yet been developed. Bob scratchbuilt the Chatsworth depot and built the Moorpark one from a kit. Tom also built the sugar beet loader.

Bob also sent us drawings of the layout which appear after the pictures.

Thanks, Bob, for sharing your layout with our readers.

Locomotive Roster

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4-8-4 Daylight	U.S. Hobbies	Painted by Whistle Stop, Pasadena, CA
2-8-0	PFM	
4-8-2	PSC	Factory painted
4-8-8-2 cab fwd	PSC	Painted by Whistle Stop, Pasadena, CA
4-10-2	Sunset/3 rd Rail	Factory painted
0-6-0	Glacier Park	Factory painted
2-6-0	Glacier Park	Factory painted

Diesel locos

F-7 A/B	P&D Hobbies	Painted by Whistle Stop, Pasadena, CA
GE 44-tonner	Yoder	Unpainted
GP-9	Red Caboose	Factory painted
SW-7	Oriental	Painted by Whistle Stop, Pasadena, CA
RSD-4/5	Atlas O	Factory painted
PA/PB	Overland	Painted by Whistle Stop, Pasadena, CA
RS-3	Weaver	Unpainted
FP-7 A-B-A	Sunset/3 rd Rail	Factory painted

All the locos have been DCC and sound-equipped by Rod Miller, who does great work.







Camarillo sugar beet loader (Tom Yorke custom-built) and beet fields.



Grain elevator and agricultural chemical supplier in Camarillo (Yorke buildings)



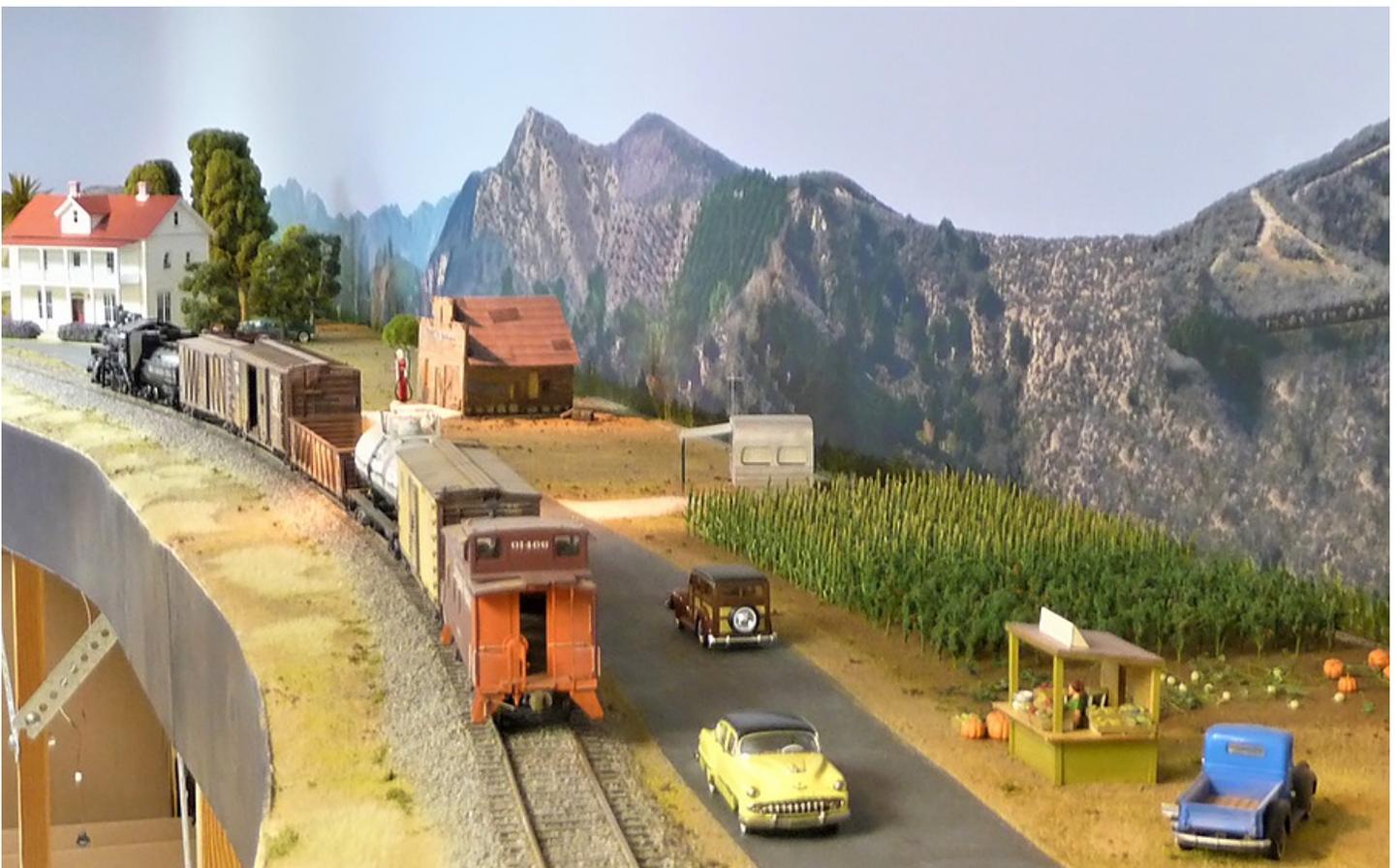
Van Nuys overview; buildings partly from kits, partly scratch-built.



Van Nuys gas station, from a kit.



Chatsworth depot and view of a rural portion of the San Fernando Valley in 1956.



A local freight traversing Simi Valley, before it became suburbia.



Taylor Yard roundhouse (Los Angeles), scratch-built by Bob from SP plans.



Taylor Yard (Los Angeles) icing platform, kit-bashed to fit the curved yard track.



Glendale car dealer, scratch-built by Bob.



An overview of the little town of Santa Susana.



Burbank main street, all buildings from kits.



Burbank gas stations, typical of the 1950s.

Canadian National Railways Sanmore Subdivision

Model railroad signals and CTC operations Part 4 : Putting it all together

By **Serge Lebel** (photos and sketches by the author)



The sketches and drawings are placed where called for, however, to make it easier, all these are available in the download section at the end of the article.

I hope you have enjoyed scratchbuilding your signals and bungalows and are excited to see this whole system come to life! This is the final part of the signaling system and the most rewarding as you will now see the fruit of all your efforts. Once this is done and working, you will never look at operations (or your layout) the same way. So let's get this phase going!

As mentioned in my previous article, signals are usually accompanied by a bungalow that holds all the fragile electronic and electrical components. The scaled down models of these bungalows were built as part of



the signaling system. But because the actual signaling system we are building does have a lot of small electronic components, why not build a "working sized" version of the signal bungalow (we will call it the relay cabinet) and install the actual components in it? This will make the wiring much easier, will give you access to the components without having to duck under the layout, and can be locked and identified just like the real thing, again adding some realism to your operations.

This relay cabinet can be built many different ways, so here is how I went about making mine and what they look like.



Making the relay cabinets and electric switch locks:

I know a lot of modelers feel they are building the fascia of their layout as part of the scenery stage of construction. In my case, I consider it more as being part of the signaling stage. This is because my relay cabinets are attached to the fascia and are a big part of the look of the layout's cosmetics, as well as serving an operational purpose. So, if your layout is still under construction and you have not yet done your fascia, this is a good time to plan ahead for the cabinet placement. Integrating the cabinet in the fascia will give your layout that "well-planned" look. If your layout's fascia is already in place, you can still add the cabinets by modifying your fascia to fit them.



I built my cabinets by using some pine boards and Masonite. It is a very simple design of a shallow box, 11 inches wide by 22 inches high, 2-1/2 inches deep. I drilled a large hole on the top edge of the box (one of the 11 inch pieces) for all the wires coming from the tracks, switch motors, and controls in the CTC machine. I also made a slot for the door lock that was cut out from one of the longer pieces using a router and a milling bit, prior to assembling the frames. Of course, this step will depend on the type of locks you chose for your cabinets. In my case, I purchased some keyed drawer locks which have a locking tab.

I then cut an 11" x 22" Masonite board which I glued and screwed to the back of the pine board frame. Using Masonite again, I made a front panel contour by cutting the

board 1 inch larger than the frame all around, and then cutting the opening in the front panel flush with the inside of the frame. I also made some small incisions in the panel contour to install ¾" hinges for the front door. This is not necessary, but I liked having the hinges flush with the contour so there are no gaps between the contour and my front panel door. I then created a front panel door using Masonite, cutting it slightly larger than the opening in the front panel. I then test fitted my drawer locks (you can get these from your local hardware store or on-line) and drilled a hole in my door to install the locks.

You will notice my cabinets have a manufacturer logo on the front door. This was done in order to give the cabinets an industrial feel to them and to honor the memory of a great friend at the same time. The name "Brown Industrial Advanced Rail Technologies" is dedicated to my dear friend and mentor Delos "Ben" Brown, who introduced me to many of the great facets of this hobby, and always insisted that I should have a functional signaling system instead of a static display. Unfortunately, Ben passed away before I could get anywhere close to having signals on my layout. This article is dedicated to him for his inspiration to build the signaling system. I am hoping to follow in his footsteps in inspiring others by sharing my layout through the written word.



Another component I needed to build was the "off-power" lock selector switch box, which is used when the controlled location needs to be taken manually to handle the turnout. On the prototype, this is done right at the switch motor. On the switch motor, there is a lever that allows a crew to select the method of orienting the switch. This is either in power mode, which is then controlled by the dispatcher, or in manual mode, where the

crew in the field can handle the turnout by hand. This lever is under lock, and the crew needs to have authority by the dispatcher before unlocking and switching modes.



Because my turnouts are controlled by a Tortoise switch machine, I do not have the option of controlling the switch "manually". The only way a crew will be able to control the turnout in the field is if they have access to a switch lever that will operate the Tortoise. In keeping with the idea of a lock and authority aspect, I decided to make a switch power selector / lock box that needs to be unlocked, and where the crew will have a selector lever to change the mode of operation of the switch motor from remote to manual (or local).



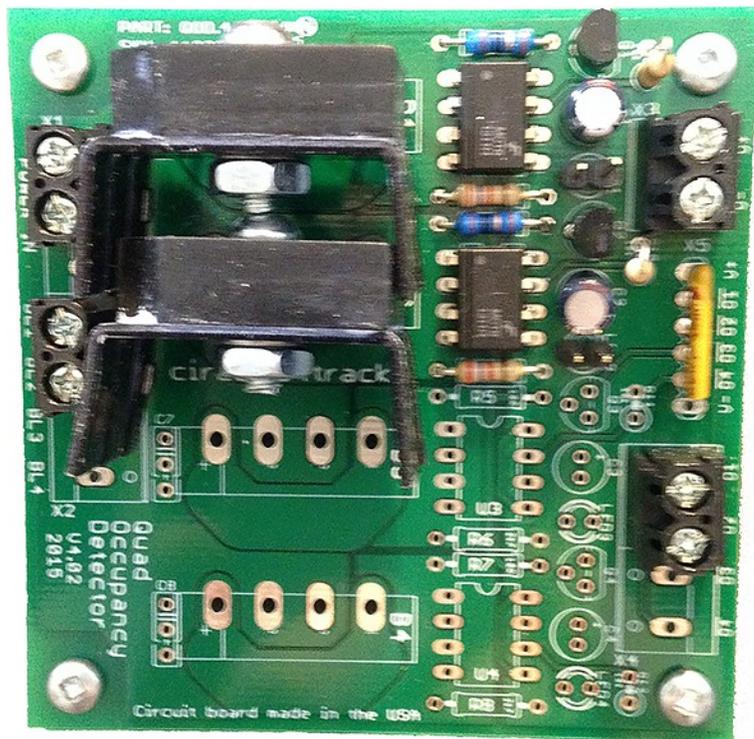
This box is made in the same way as the relay cabinets, using pine boards and Masonite board. The box measures 4 inches by 4 inches by 2-1/2 inches deep, and is covered in the same way with a Masonite front panel and door.

For the locks, I am using small keyed locks which I found on-line, with all 14 locks having the same key. This way, my operators only have one key for all the locks, the same way the prototype only has one key for all switch locks.

When making the fascia, I take care of having a good spot for this lock box in a location as close as possible to the turnout. I label the lock cover with the controlled location home signal number.

Making the PC boards for the various control components.

As you must have figured out by now, I am probably the least knowledgeable person in history when it comes to electronics. Before I started this project, I only knew of resistors and on/off switches. A bit of research on the web allowed me to learn a little more, mostly about relays. I also learned how to make my own PC boards using very basic materials found on-line. Because electronics is really not my passion, I stopped my research when I discovered relays. These are simply on/off switches that can be activated by an electrical current. So I designed my entire system around the use of relays only. I am sure many of you are better informed than I am, and will look at my design and figure out a simple way to do all this with 80% less components, and if so, please go ahead and skip this entire section of the article. For the rest of you who are still at the on/off switch in your journey in electronics, just follow these steps and you will be able to build a few control boards that will animate your signals the right way.



I guess the first step here is to try to explain how my system works, and what each component does.

This system is based on current-sensing detection. For this, I am using a commercial detector board sold by Circuits4tracks (called the Quad Occupancy Detector in their parts list). I don't know much about how it works other than it monitors the current in a determined section of track, and the moment the current is disturbed by resistance like a locomotive motor, or a resistor mounted between the metal wheels of a car, it gets triggered by bringing its terminal output pins to ground (also called active low). This triggering action is what I use to activate a small relay.

Relays are nothing more than an on/off switch that gets activated by passing current through their coil. Look at it as the current being your fingers, flicking the switch on or off. In order to get the system to work, I need to activate a series of

relays, but the detection circuit's limited current can only activate one relay... No problem, as this relay is then used as a flood gate to activate all the other relays. This is why my design has three circuit boards with different number of relays.

The system I designed has two key elements that makes everything possible. One of these elements, as you saw when you built your signals, is the LED's have diodes which allows individual feeds to light up the same LED without interfering with each other. The second element is the use of a Tortoise switch machine to route the power from the power supply as if it were two separate power sources. It is important to know that this Tortoise switch machine is NOT the one activating the switch points. It is simply used in this circuit as a power selector switch, we will call it the "occupancy Tortoise". The power supply is also divided in two separate circuits... One for the 12 volts, and one for the 5 volts. Because of the distance between the O/S section on my layout and the CTC machine, I opted to install one power supply for each siding (which has two O/S sections and bungalows). Power supply A is the power supply that is located at the bungalow relay box on the layout, while power supply B is the one previously installed inside the CTC machine. These power supplies are old computer power supplies which are available for very cheap at recycling outfits. I got all mine for free!

To put things in a simple view, the 12 volts from both power supplies A and B activates the relays on all the various boards, while the 5 volts from each power supply is required for powering up the detector board. With that in mind, let's look at what happens at an O/S section.

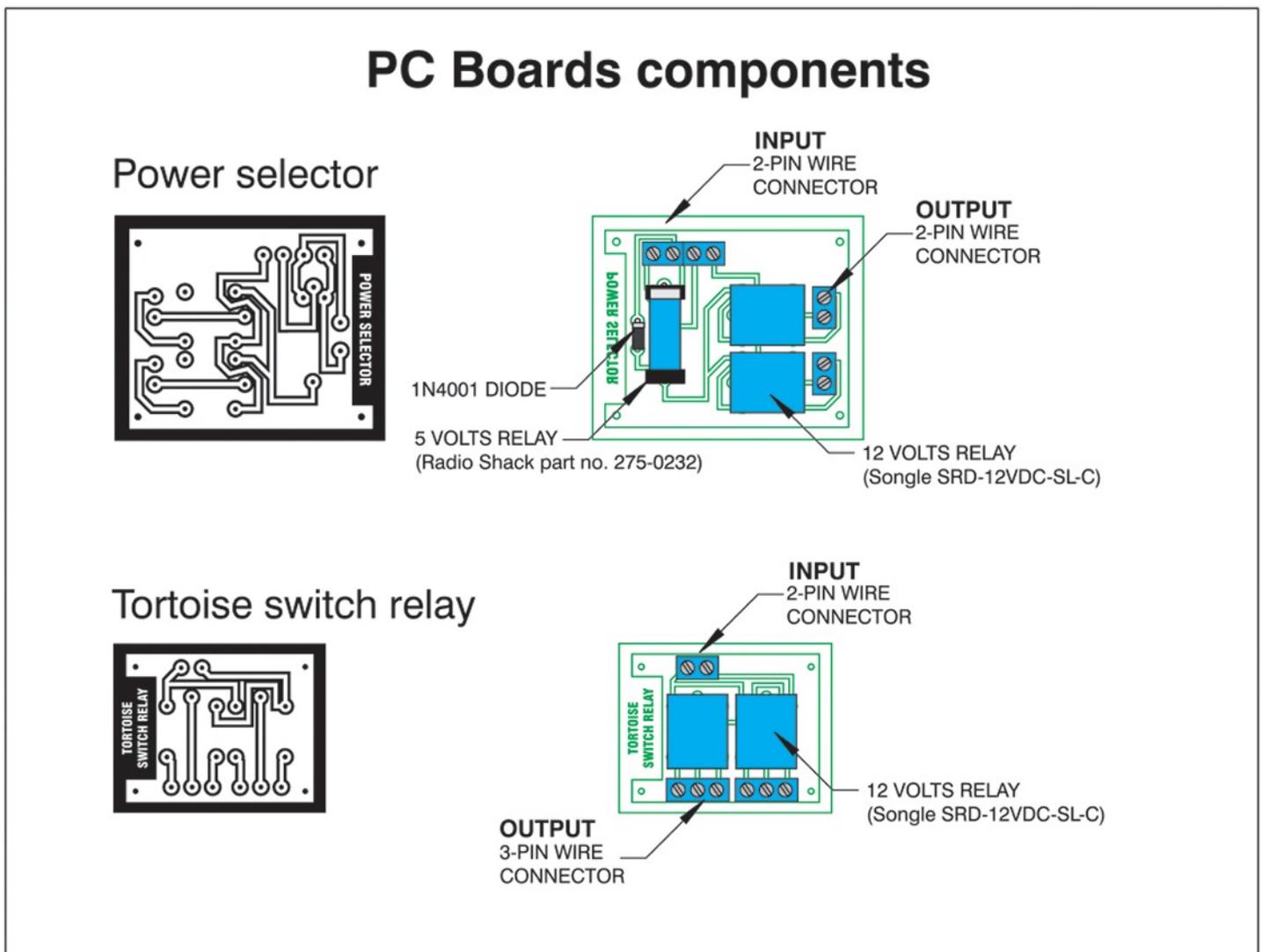
Looking at one O/S section on the layout, the status of the detection being normal (no detection), the 12 volts power from power supply is currently feeding the aspects on the signals at the O/S and its approach signal. The moment a train enters the O/S block (switch) the detector board activates the small relay on the power selector board, which activates the two larger 12 volts relays on that same board. This puts the "occupancy Tortoise" in motion, making it move from its current normal position to the reverse position. The power coming from power supply A that was feeding signals has now been cut off, causing the signals to go dark, and the power is now transferred (via the occupancy tortoise) directly to all the red aspects on the three signals at the O/S block. You now have an occupancy (all red on the signals, and a flashing red light over the traffic switch on the CTC machine), and no other traffic can go through in either direction. To clear this occupancy, the dispatcher will set the traffic switch to the desired position (to allow traffic to flow right or left) and will set the turnout switch to the desired position (normal or reverse) and will push the code button.

Pushing the code button will undo all that the detector board did; it activates the "occupancy Tortoise" to move back to its normal position, thus switching the power feeding the red aspects on the signals to off and allow the power routed through the "normal" position of the Tortoise to take over and light up the correct "permissive" signal aspect again.

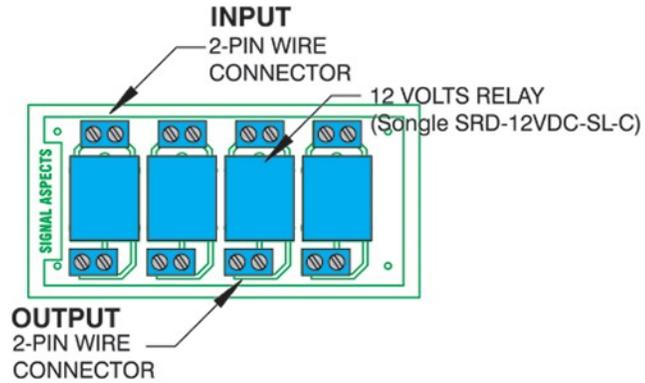
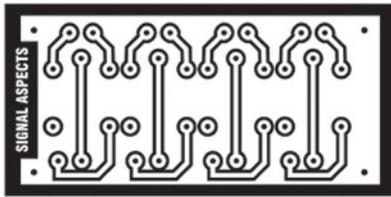
Now that you have a basic understanding of how the system works, let's build the boards and wire them.

Making the printed circuit boards is done the same way and using the same tools as the signal parts, except it is simpler because we are only etching one side of the board. This is where your brass etching tools come in handy! I attached the PC board designs shown below as a separate file so you can load them up in your computer and print them to make the negatives, the same way you made the negatives for your signal parts.

Take a minute to familiarize yourself with the different boards shown in the PC Boards components sketch. This sketch lists all the part numbers for the components to be used on these boards. You can get these components from sources like Mouser, Key Electronics or even on eBay.

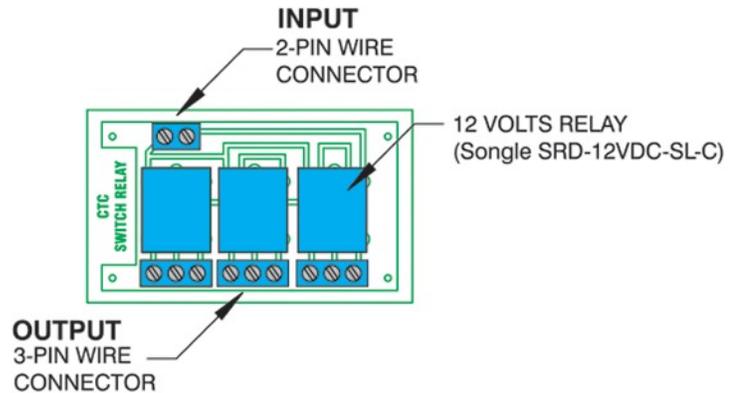
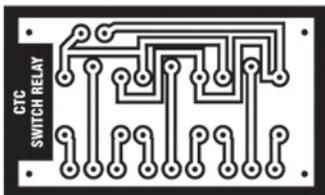


Signal aspects



PC Boards components

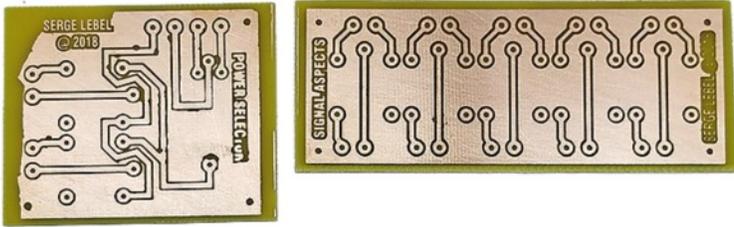
CTC Relay



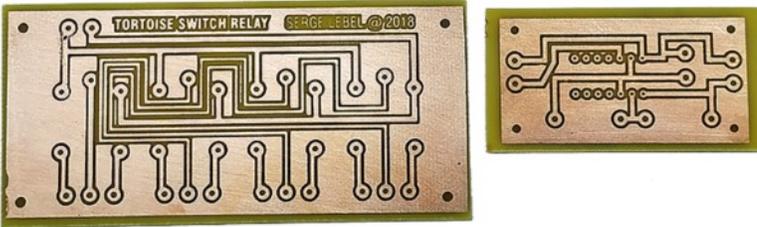
For this, you will need to use some single sided PC board material. Print the four PC boards on a plain sheet of paper to make patterns. Using these patterns, cut the copper clad PC board material to the correct size. I did mine on the table saw, filing all edges to a smooth finish.

Then, print a second set of this design file, this time on the clear material to create the exposure negatives. Once this is done, rinse the copper clad and apply the photo resist film, and expose to the UV light with the

negative placed so that you can read the text on the board. Rinse the unexposed board in the developer solution to remove the unexposed film, then etch the board in the Sodium Persulfate until the copper has etched away. Rinse in acetone to remove the rest of the photo resist film.



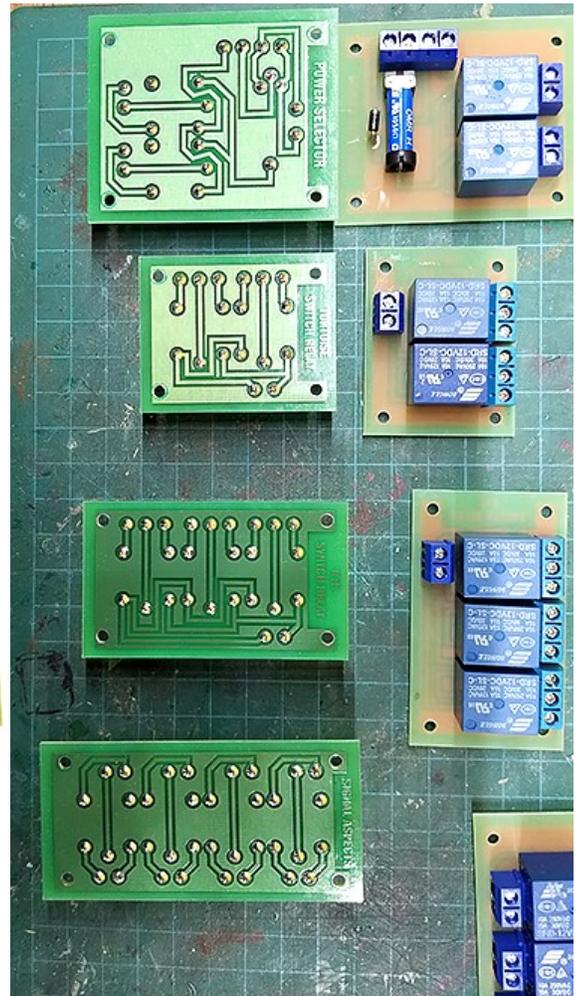
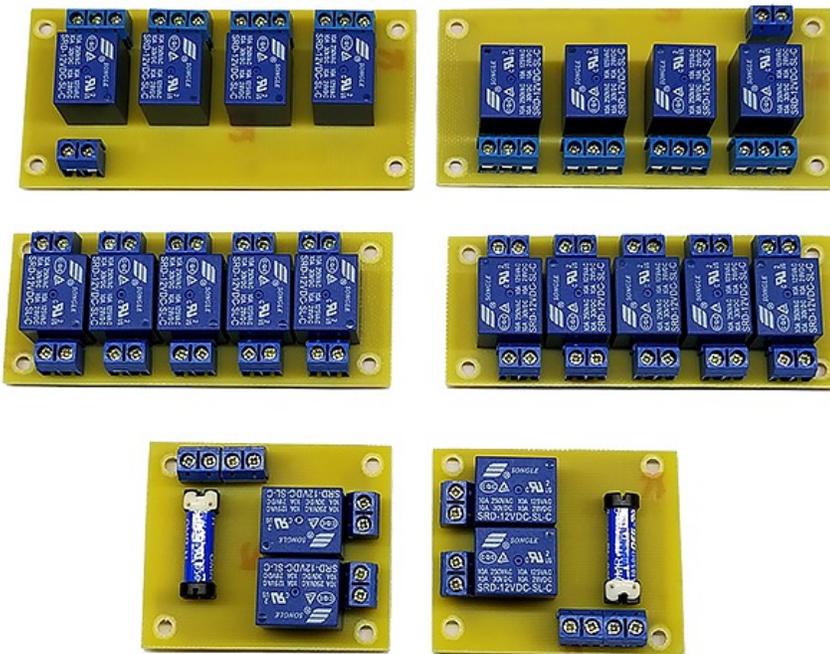
Next, print a second set of this design file, this time on the clear material to create the exposure negatives. Once this is done, rinse the copper clad and apply the photo resist film, and expose to the UV light with the negative placed so that you can read the text on the board. Rinse the unexposed board in the developer solution to remove the unexposed film, then etch the board in the Sodium Persulfate until the copper has etched away. Rinse in acetone to remove the rest of the photo resist film.



(These boards may differ a bit in design, they are the first generation I made)

Once you have all your boards etched, it is simply a matter of placing the components and soldering them. Refer to the PC boards components sketch for the placement of the parts.

To speed up my project, once I had the boards designed and tested, I sent my design files to a PC board manufacturer and had them made. This saved me a lot of time and gave the best result. But if you only need a few, it is faster and more economical to make them yourself.

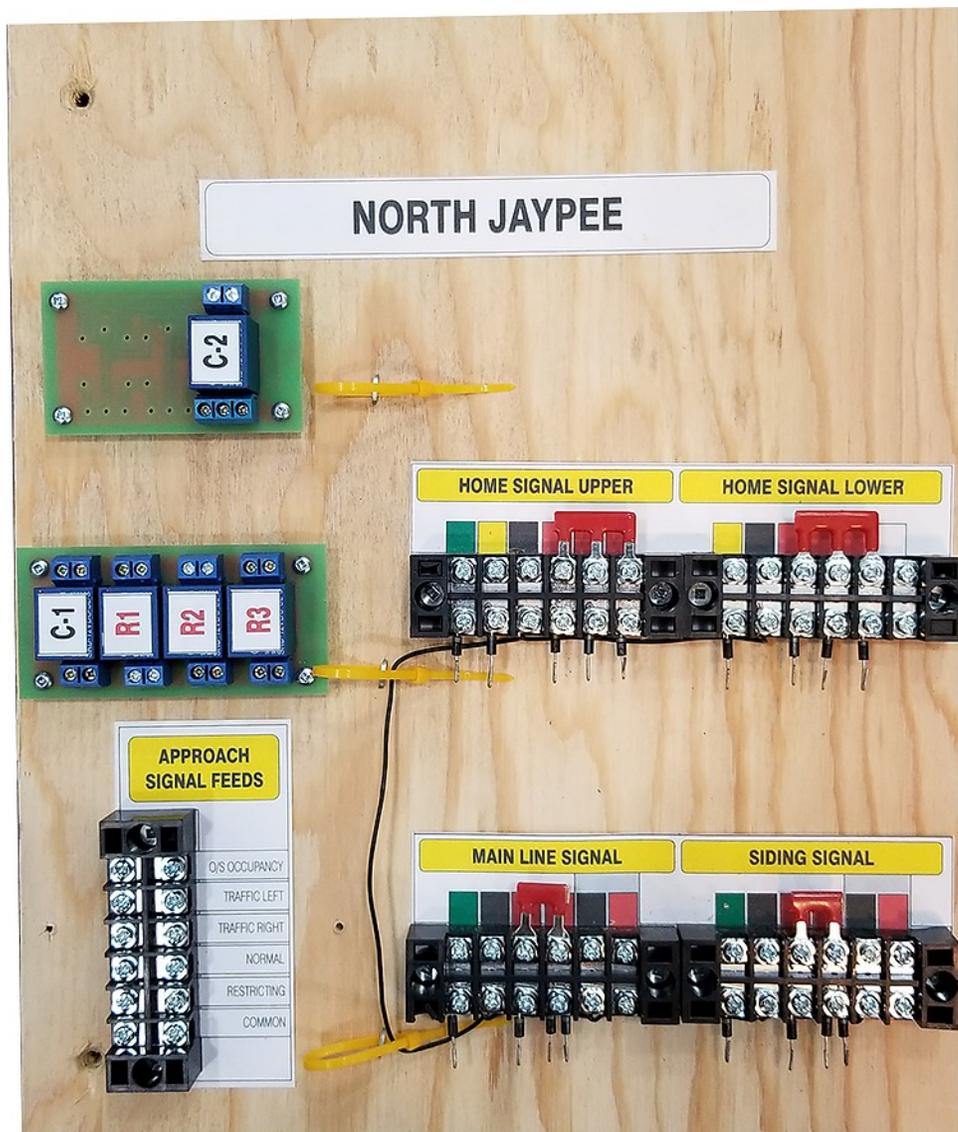


...And now the wiring!

We are finally at the last phase of this project; the wiring of all the components. After building several layouts, I now have a new approach to wiring: making it modular! As many times as I have told myself "*this is my last house, this is my last layout*", life had a way to give me better opportunities and I jumped on them. So in making my wiring modular using screw terminals, I can now be ready just in case I decide to move or expand my layout. With that in mind, I tried my best to simplify the wiring instructions, but because there is a lot of wiring involved, it is still a bit of a long instruction. I revised these instructions 8 times as I used my own instructions to wire my 8 controlled locations on my layout and found some confusion every time! So here are the steps to follow...

Step 1 – Install your signals.

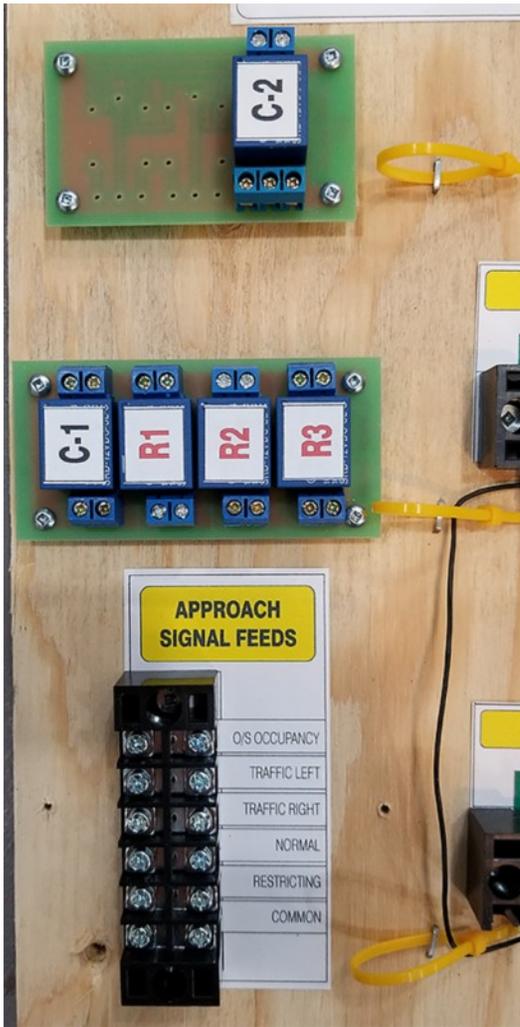
If your signals are not already on the layout, now is the time to install them. Once they are in place, find a clear spot under your layout that is easy to access, and is close enough to your signals (the 3 signals that form the controlled location, for example) so that all the signal wires meet in that spot. Using screw terminals, attach each wire to a terminal and identify them correctly. See photo below. I made a simple coloured chart that matches the screw terminals and identified each signal (home, main and siding) and each coloured aspect, along with it's matching common wire. This is a good time to install some current limiting resistors to protect your signal LEDs. I used 1k Ohm resistors on each of the positive terminal (coloured wires) of my signals, so I could power them up with either 5 or 12 volts without any risk of damaging the LEDs. Don't forget to have an extra



feed for your approach signals. Each aspect of the home signal needs to be extended to this terminal, which will then be wired to the approach signal terminals, further up the track on your layout.

Two of your signals will have a target with a fixed red aspect that is on all the time. These are the small round targets on the main line and passing siding signals. You can connect these to a separate terminal and feed them the 12 volts and common right away. These are always on, always red, so we will not need to have them connected to any signal aspect control relay. If you look at my photo of the signal terminal connectors, these are the red and black connectors that have a grey shadow box (to the right of the terminal strips).

The home signal at a controlled location will display a clear signal if the next signal (main line signal at the other end of the siding) is permissive. But in the case where this signal is a stop signal, the home signal needs to display a “clear to stop” (yellow over red) aspect.



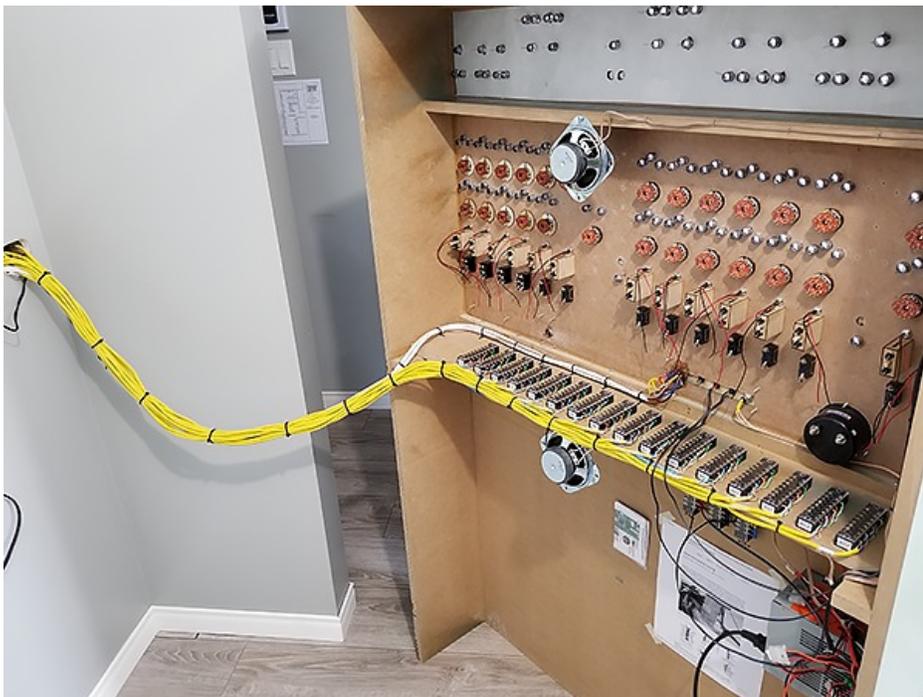
Since both a clear aspect, and a clear to stop aspect are equally permissive, the signaling system will not see a difference and will always display a clear aspect. So you need to find a way to turn the green LED off and the yellow LED on. This is done by adding a small relay (which I called C-2) which can light up the green LED when in normal operation, and the yellow LED when triggered. This relay is triggered by the red aspect on the main line signal at the other end. So R1, R2 and R3 are the red aspects from that signal, all connected to relay C1. To get all this working, I used the signal aspect relay card, wired to a CTC relay card populated with only one relay. I installed all of these on the same board as my signal terminal connections under the layout where it was easy to access.

Step 2 – Installing the relay box and the off-power control box.

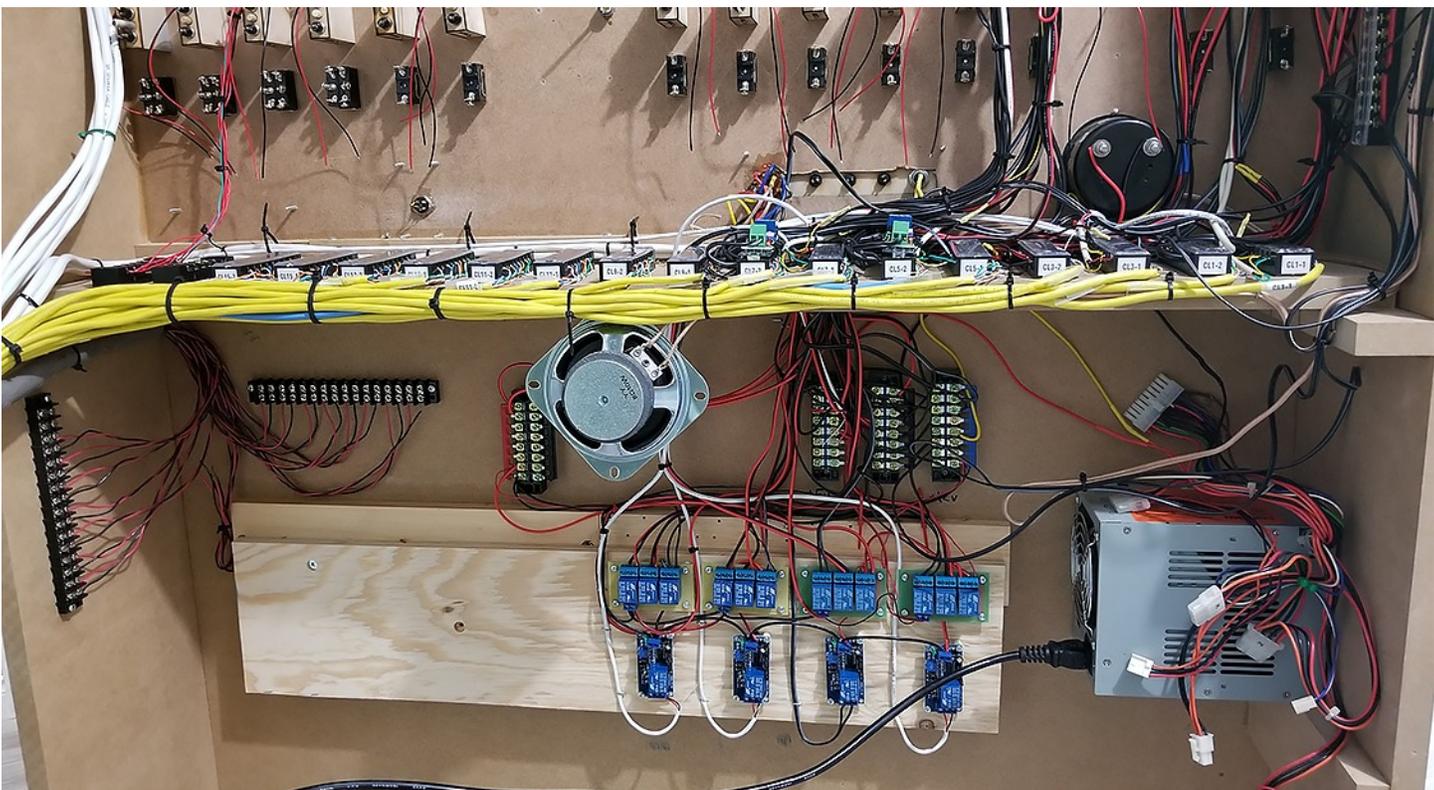
If you took the time to build a signal relay box like I showed in my article, then you now have a clean, dedicated place to install all your electronic components.

If you made some off-power control locks, install them on your layout fascia, in close proximity to the relay box and the controlled location it serves, and install the two toggle switches and LED's inside the box.

As for the CTC machine, you can now install the CTC switch relay boards in the CTC cabinet. I placed mine under the shelf, close to the power supply. You will need one board for each O/S row on your machine. If you wish to make the CTC machine moveable or modular, I suggest installing 2 – 8 position screw terminal blocks for each controlled location. Run a set of 8 wires for every CL-1 and CL-2 terminals in your CTC machine. There is a CL-1 and CL-2 for each controlled location in your CTC machine. You will also need an additional set of 4 wires for each controlled location. Run these from the CTC machine to each controlled location on your layout. Label one set for CL-1, one set for CL-2, at both ends of the wires so you know exactly which is what when you get to your wiring. (example : I labeled my wires CL-1 of 1 and CL-2 of 1 for O/S No.1, then CL-1 of 3 and CL-2 of 3 for O/S No.3, using the row numbers on the CTC machine numbered odd 1-3-5-7-9-11-13 and 15)



Photos left and next page show the terminal blocks for CL-1 and CL-2 (bottom shelf) and all the switches and LEDs in place. Other photo shows the CTC relays and delay circuits I started to install under the shelf.



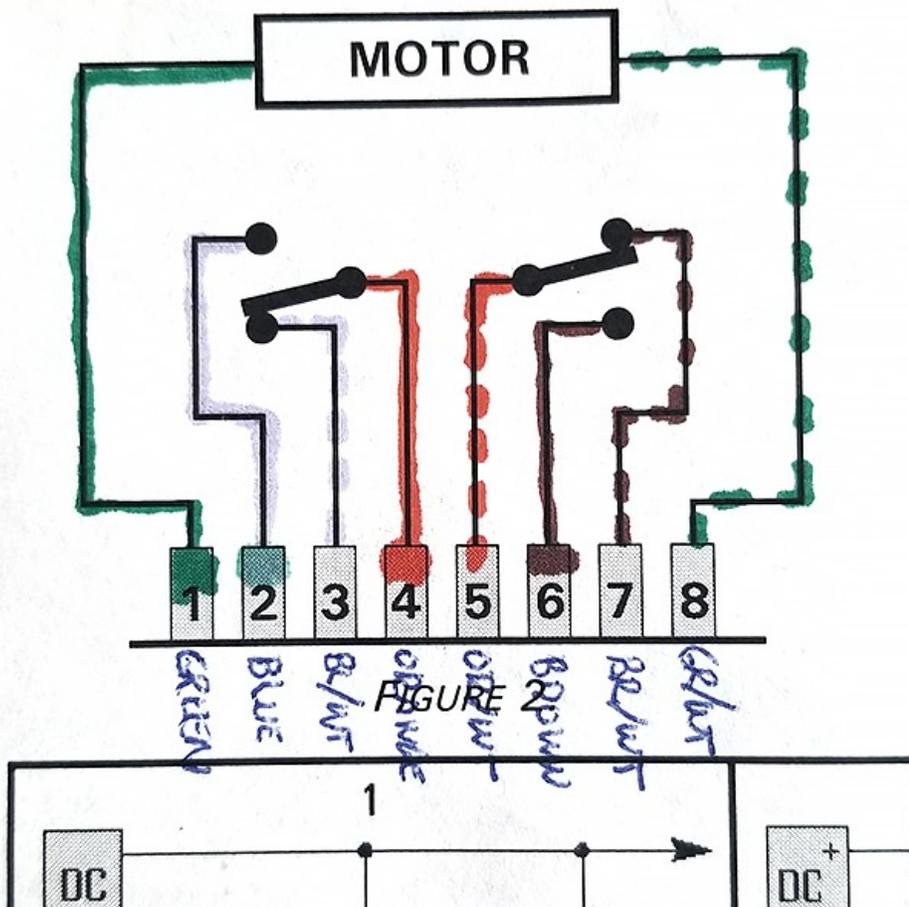
Before we go any further...

The instructions below are the steps I followed when I wired my layout. I made several updates on these in order to streamline the process and to be able to test the wiring between certain steps. Testing when prompted in these instructions is important as it is much easier to figure out what needs fixing before you add more and more wires and components. Also, I don't know about you, but for me, reading a wiring diagram is something I cannot understand. Most times, the component in the diagram does not look at all like the physical part, and I have no idea where the wires go. So in order to make this as clear as possible (both for you as a reader and for me in case I need to do some troubleshooting in ten years!), I made all the sketches by drawing the actual parts as they look when you are working on them. Wires are drawn in simple lines (sometimes colour coded in black for the common and red for the voltage+, while blue or grey lines are wires that have no specific polarity to them), and will show a large dot when crossing wires are to be connected. If there is no dot where wires cross, they simply do not connect. Each step refers to one or more sketches, so you can follow the steps and refer to the sketches if you need assistance. I hope this will work as well for you as it did for me. For those of you who can read diagrams, please try to understand the rest of us and be patient with my very primitive work!

The relay box is where all the components are installed and where most of the connections take place. This is where we will start this process.

Step 3 - Wiring instructions:

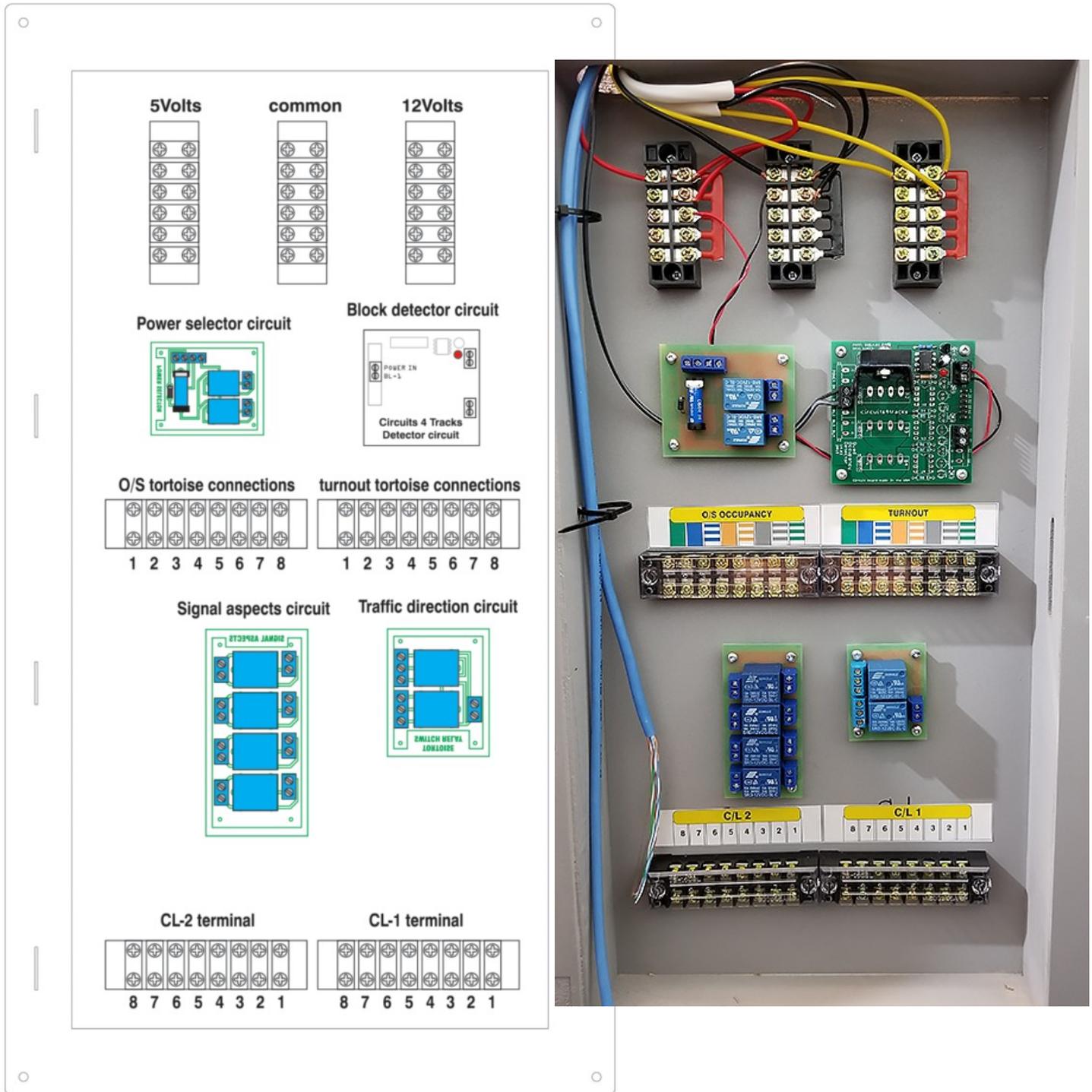
1) The first step in my opinion is to prepare your two Tortoise switch machines at the work bench, where it is easier to do. I used a 4-pair wire, which is 4 sets of colour coded gauge 22 wire. The colour of wire you use might be different from mine, so I will not go into detail about this, but it is important that you make a note or a sketch of the colours you used. I simply used the instruction sheet and noted my colour of wires on there, see photo.



Have long enough wires to be able to reach inside the relay box. Install the turnout Tortoise first, then find a suitable spot for the O/S Tortoise under the layout where it will not be disturbed, but is still accessible if you ever need to work on it.

2) Install all the components in the relay box. I have included is a sketch of how I placed my components in my cabinets for easy access and wiring: Place all your components and terminals, by screwing them in place using some #4 screws and small PC board spacers so that the boards have some breathing space. Labelling your terminals will make things easier in the long run. The photo on next page shows how it looks when all done.

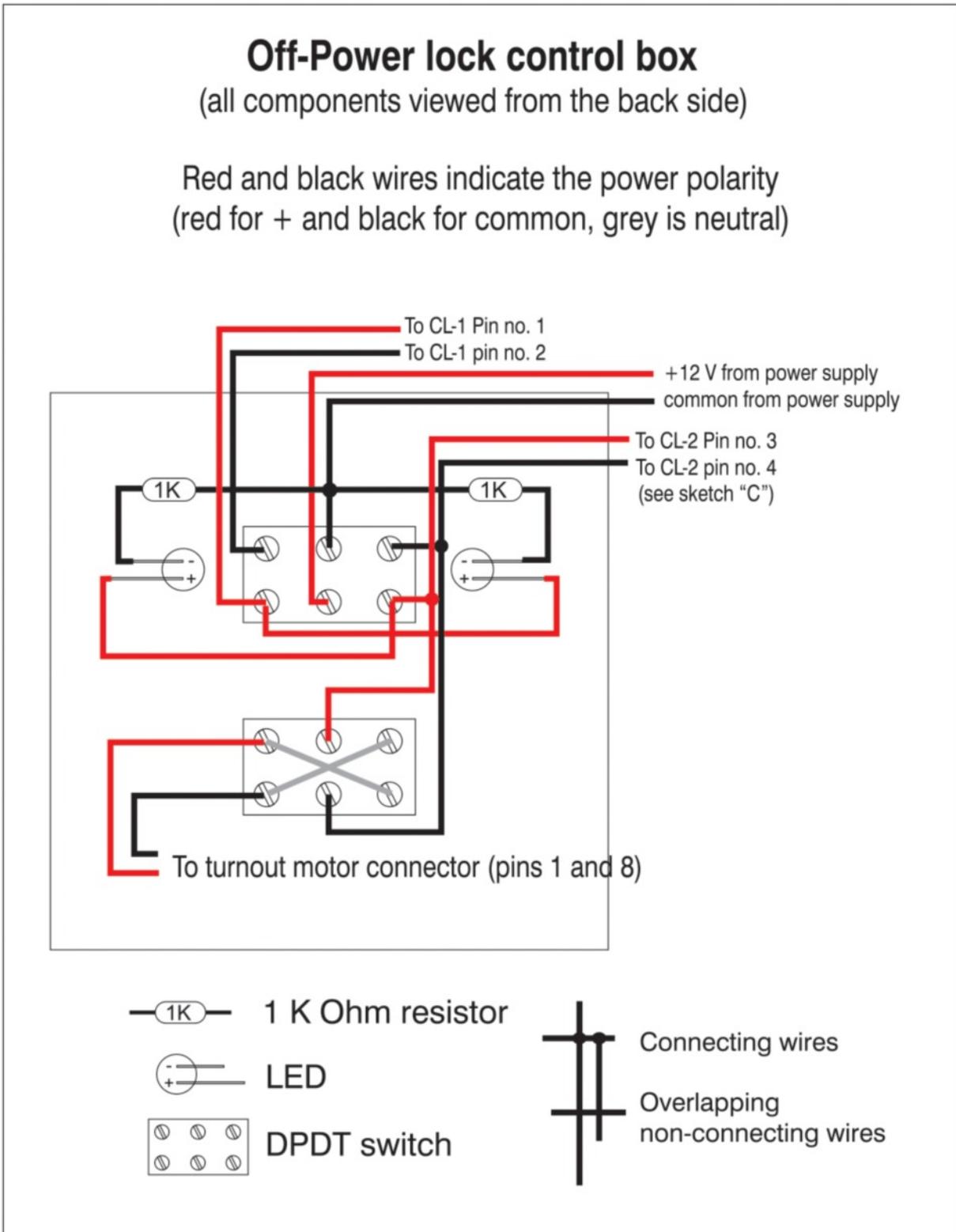
Sketch no.1 : O/S relay box components



3) Wire the +5v, +12v and common to the screw terminals in the relay box. I used a 6 position terminal block for each, and installed jumper connectors in order to have electrical contact everywhere on that terminal block. That way, you have plenty of screw terminals to use, because many will be needed.

4) It is now time to connect the CL-1 and CL-2 wires for this O/S section. Taking the CL-1 wire, connect it to the CL-1 terminal at the bottom of the relay box, and do the same for the CL-2 wire. Again, make good note of the colour codes used and the numbering sequence. I chose to number these from right to left (backwards) in order to make them different from the Tortoise connections we will be doing in the next step.

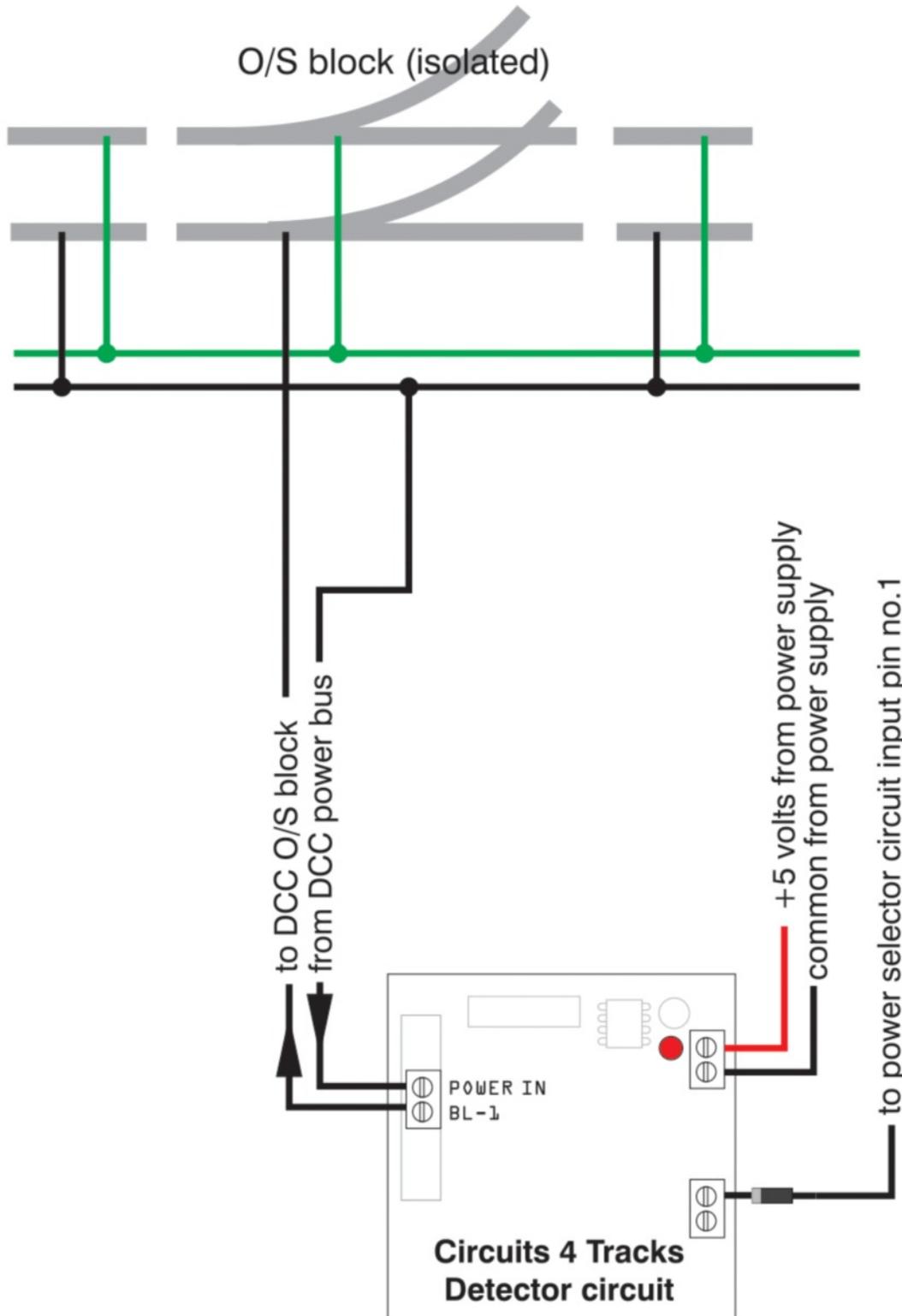
- 5) Connect both Tortoise wires to the Tortoise terminal in the relay box. For these, I labeled them O/S Tortoise and Turnout Tortoise, and numbered the screw terminals from left to right. Follow your colour codes so you have these screw terminals in the same order as they are on the Tortoise.
- 6) Connect +12 volts from power supply to terminal pins 4 and 5 on both Tortoise terminals.
- 7) Wire the off-power control lock box. Here, there are no specific steps. Just follow my sketch and be mindful of the polarity of the wires, the switch terminals and the LEDs. Refer to sketch No. 3 below.



Time for testing: Once this is all wired, place the toggle switch to manual position. The LED on that side of the toggle should light up. Test the operation of the turnout toggle to see if the turnout travels to normal and reverse position. If the positions are reversed, simply loosen the toggle switch and rotate it. Always place the turnout toggle to the center position (off) before placing the power switch back to remote. Failing to do this will have both LED's on at the same time. Place the power toggle to remote and confirm that only the LED on

that side of the toggle is lit up.

Sketch no.4 Detector circuit connections



When testing, if something does not work, I always check my connections first. When removing the insulation off a wire, it often happens that the copper wire is scored. This score is just like cutting styrene: it will break very easily when folded. 99% of the times I had a fail, it was a wire that had broken. This is hard to see, but if you pull gently on the wires, you will find it if it is broken. The second culprit is the polarity of the wires, which sometimes gets crossed over by mistake.

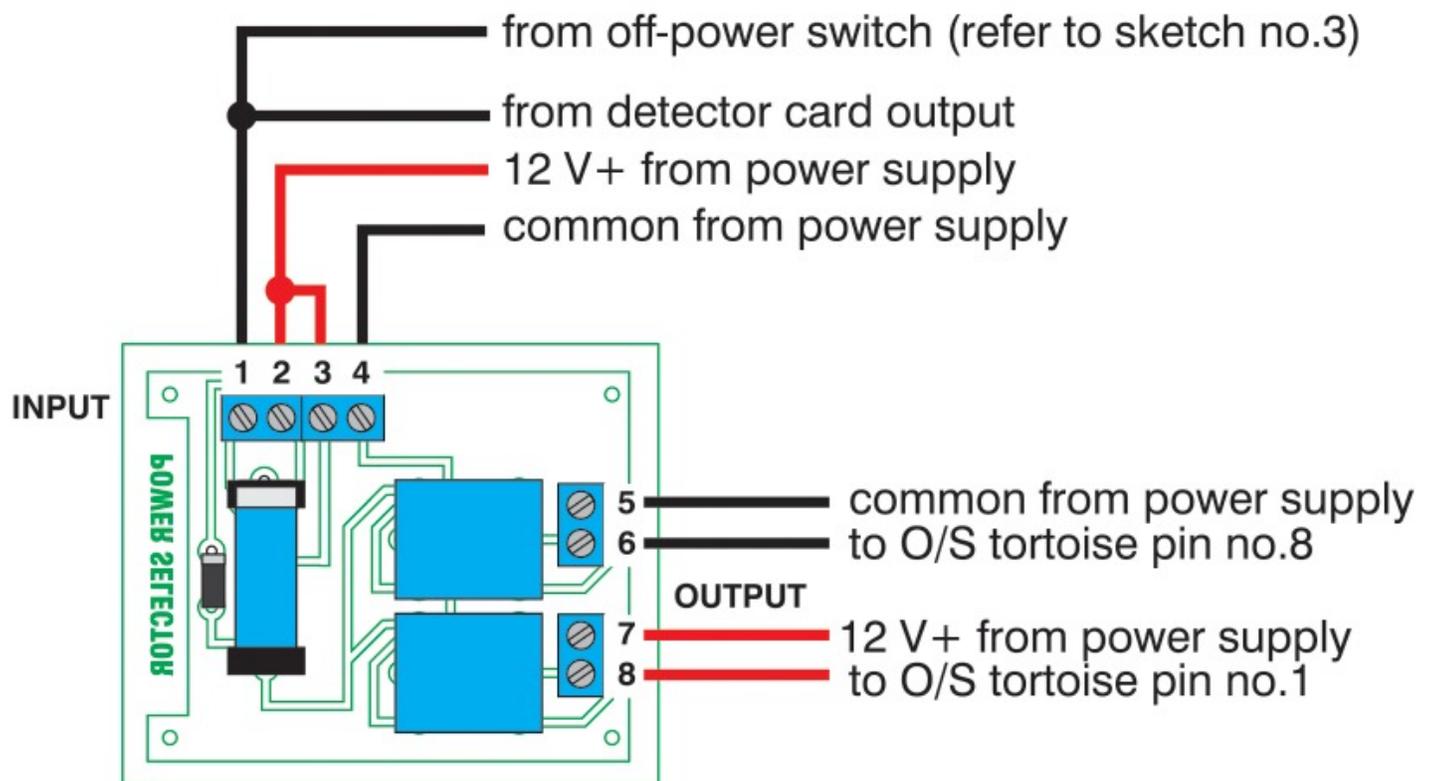
8) The detector circuit: If you decided to buy the same detector circuit as mine, then this will be a very simple step. If you are using a different detector circuit, refer to your instructions in order to find the same functions that I am using on mine. Start by connecting the +5 volts and common to the board, and connect the DCC bus leads to and from the O/S section. Install a diode on the output of the circuit. This will be needed later. Refer to sketch No.4 on left.

Time for testing: Power up the layout and run a loco through the O/S section. The small LED on the board should light up when detecting, and off when standing by.

9) The power selector: Not that the steps are all that important, but here is how I wired this circuit... Refer to sketch No.5 below.

- Connect the detector board's output (where you just installed a diode) to pin No.1 on the power selector circuit.
- Connect +12 volts from power supply to pins 2 and 3.
- Connect common from power supply to pin 4.
- Connect common from power supply to pin 5.
- Connect +12 volts from power supply to pin 7.
- Connect pin 6 to pin No.8 on the O/S Tortoise terminal.
- Connect pin 8 to pin No.1 on the O/S Tortoise terminal.

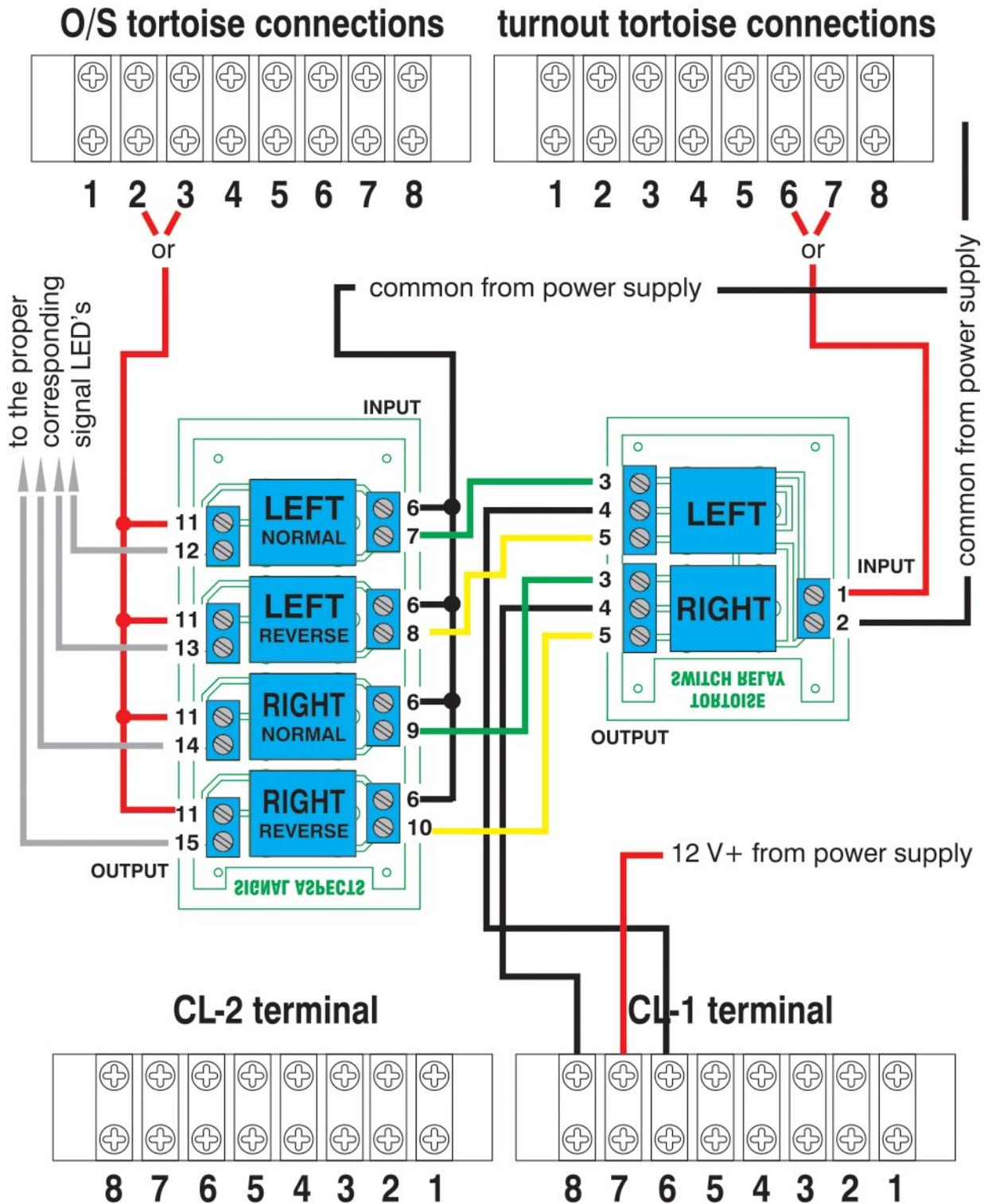
Power selector relay card



Time for testing: Turn power on. Run a loco over the O/S section. When the detector goes into occupancy, listen for a reaction from the O/S Tortoise. It should move from one side to the other. Reset by hand, pushing the throw mechanism back to the opposite side, when the O/S section is free from any occupancy.

10) Tortoise switch relay and signal aspects circuits: Refer to sketch No.6 below.

Traffic direction and signal aspects cards

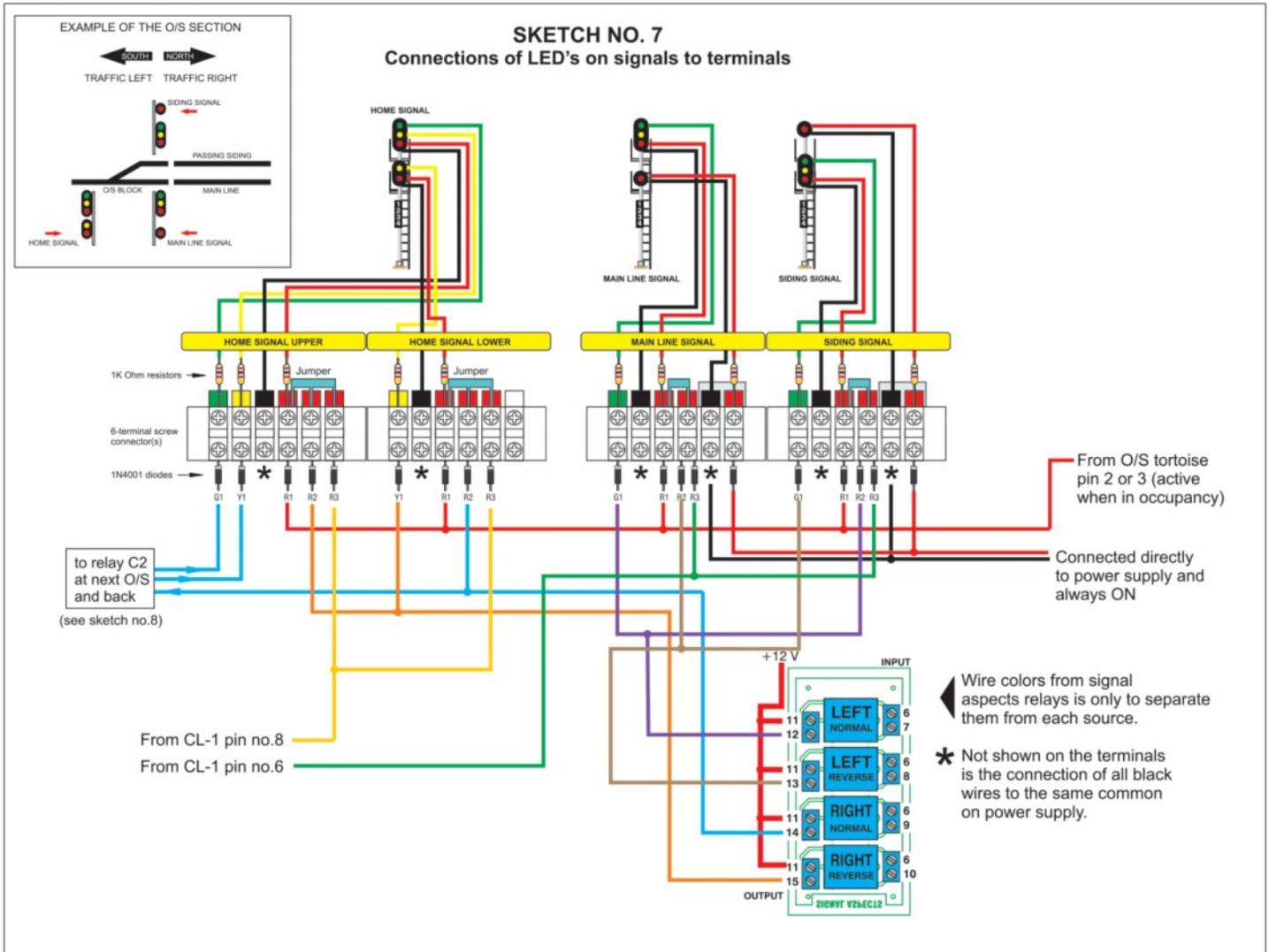


- Connect common from power supply to switch relay input pin No.1
- Connect switch relay input pin No.2 to either pin No.6 or 7 on the turnout Tortoise terminal. To find which one is to be used, turn power on, and place the turnout in normal position. You want the pin that will allow power to connect. I use a spare LED with a resistor attached to it to do this type of testing. Connect the common of the LED to the common of the power supply and then find the “live” pin by connecting the other lead of the LED to either pins on the terminal.
- Connect common from power supply to all pins No.6 in the sketch (four in total).
- On the CL-1 connector, three pins are used as a selector for the traffic direction (which signals will be permissive in the chosen traffic direction). These pins are pins No.6, 7 and 8. Connect pin No.7 to the 12 volts power supply.
- Now, coming back to the relay circuits in sketch No.6, looking at the Tortoise switch relay circuit (the one that has only two relays), label the relay on the left with a “L” and the relay on the right with a “R”. These are the left and right traffic relays. Connect pin No.4 on the “L” relay (center pin on the output connector) to pin No.8 on terminal CL-1. Connect pin No.4 on the “R” relay to pin No.6 on terminal CL-1.
- Now, let's label the four relays on the signal aspects relay card. In no absolute order, label the four relays as following: Normal Right, Reverse Right, Normal Left and Reverse Left. These are the turnout position (normal and reverse) and the traffic direction, that will be used to select the signal aspects at the controlled location.
- With the labeling done, connect output pin No.3 on the left “L” relay to the input pin (the pin to the right of pin No.6) on the “Normal Left” relay.
- Connect output pin No.5 on the left “L” relay to the input pin on the “Reverse Left” relay.
- Connect output pin No.3 on the right “R” relay to the input pin on the “Normal Right” relay.
- Connect output pin No.5 on the right “R” relay to the input pin on the “Reverse Right” relay. Now all four signal aspect relays have an input to get them active.
- It is time to bring some power to the signals. What drives the signals is 12 volts power from the power supply, which passes through each of the four signal aspect relays. Since only one relay is active at a time, only the LEDs connected to one of the four relays will be on. Because we need to be able to “cut” the power to the signals when wanting to show an occupancy (all red LEDs only) we need to feed the 12 volts through the position of the O/S tortoise. So with the O/S tortoise in normal operation (not being triggered by the detection card), find the pin on the O/S tortoise connector that is active, which should be pin No.2 or 3... Connect this active pin to all pins No.11 (four in total) on the output connectors of the four signal aspect relays.

Time for testing: Turn power on. Using a jumper cable, connect pin no.7 on CL-1 to pin No.6 right next to it. This is a temporary replacement for the traffic (signal) switch on the CTC machine. You should hear a click of the relays when making this connection. Throw the turnout in opposite position and you should hear a click of the relays again. To have a visual confirmation, connect the common side of a LED to the common on the power supply, and positive side of that LED to the first relay, “Normal Left”, and place the turnout in normal position. Now connect CL-1 pins 7 and 8 together (for selecting traffic left) and you should see the LED turn on. Do the same for all four relays, placing the turnout and the traffic selector in the correct position for the desired active relay.

Now that you know which relay does what, run a wire from each relay to the correct LEDs on your signals. Do only the signals in the direction you are wanting to have the traffic flowing. As for the opposed direction signal(s), connect the red LEDs directly to pin 6 or 8 on CL-1.

Refer to sketch No.7 below for an example of how I wired each aspect of my signals including the connections to the approach signal (in relation to the home signal) and the preceding signal (in relation to the main line signal).



With all your permissive aspects connected and working properly, the only thing left to do now is to connect the all red (all stop) O/S occupancy. When in occupancy, all signals of the controlled location need to turn to red, in all directions. In order to do this, turn power on and run a loco over the O/S, creating an occupancy. You will hear the O/S tortoise move from its normal position to its occupancy position. Now, using the same technique as before with a test LED, find the pin on the O/S tortoise connector that is live, usually either pin 2 or 3. Connect a wire from this live pin to all the red LEDs on the controlled location, including a connection to the wire going to the approach signal. You have now connected all the aspects on your signals.

Finishing up the connections...

Let's take a look at each pin on the CL connectors and check, or finish the wiring.

ON CL-1:

Pins No. 1 and 2 have been connected to the switch in the control lock box, then to the turnout connector terminals, pins 1 and 8. This is the turnout control that is connected to the manual position of the off-power switch in the lock box.

Pins 3, 4 and 5: connect common from power supply to pin No.4, turn power on and place turnout in normal position. Find which pin on the tortoise turnout terminal strip that is the live one (using a test LED as always). A good indicator is that it should be the same pin that connects to the input on the tortoise switch relay circuit. Connect this pin to CL-1 pin No. 3, and then reverse the turnout and connect the other live turnout pin to CL-1 pin No.5

Pins 6, 7 and 8 are the traffic right (pin 6) power (pin 7) and traffic left (pin 8) for connection to the traffic (signal) switch on the CTC machine (will do that at a later step). Pins 6 and 8 also feed the power to the red LEDs on the signals, depending on their direction. Connect +12 volts to pin 7.

ON CL-2:

Pins 1 and 2 are connected to the turnout connector terminals, this is the turnout control coming from the CTC machine.

Pins 3 and 4 are connected to the “manual” terminals or side of the off-power switch in the lock box (upper switch right side on sketch No. 3) These will turn on a LED in the CTC machine when the lock is place in manual mode of operation. We will see this again in detail in the CTC machine wiring in a further step.

Pins 5 and 6 are connected to the O/S tortoise connector’s pins no, 1 and 8, in a polarity that resets the O/S tortoise back to it’s normal position after it has been in occupancy position.

Pin 7 is connected to the same pin on the O/S tortoise terminal that is the connection to the “all red” LEDs on all the signals under occupancy.

Pin 8 is connected to the common from the power supply.

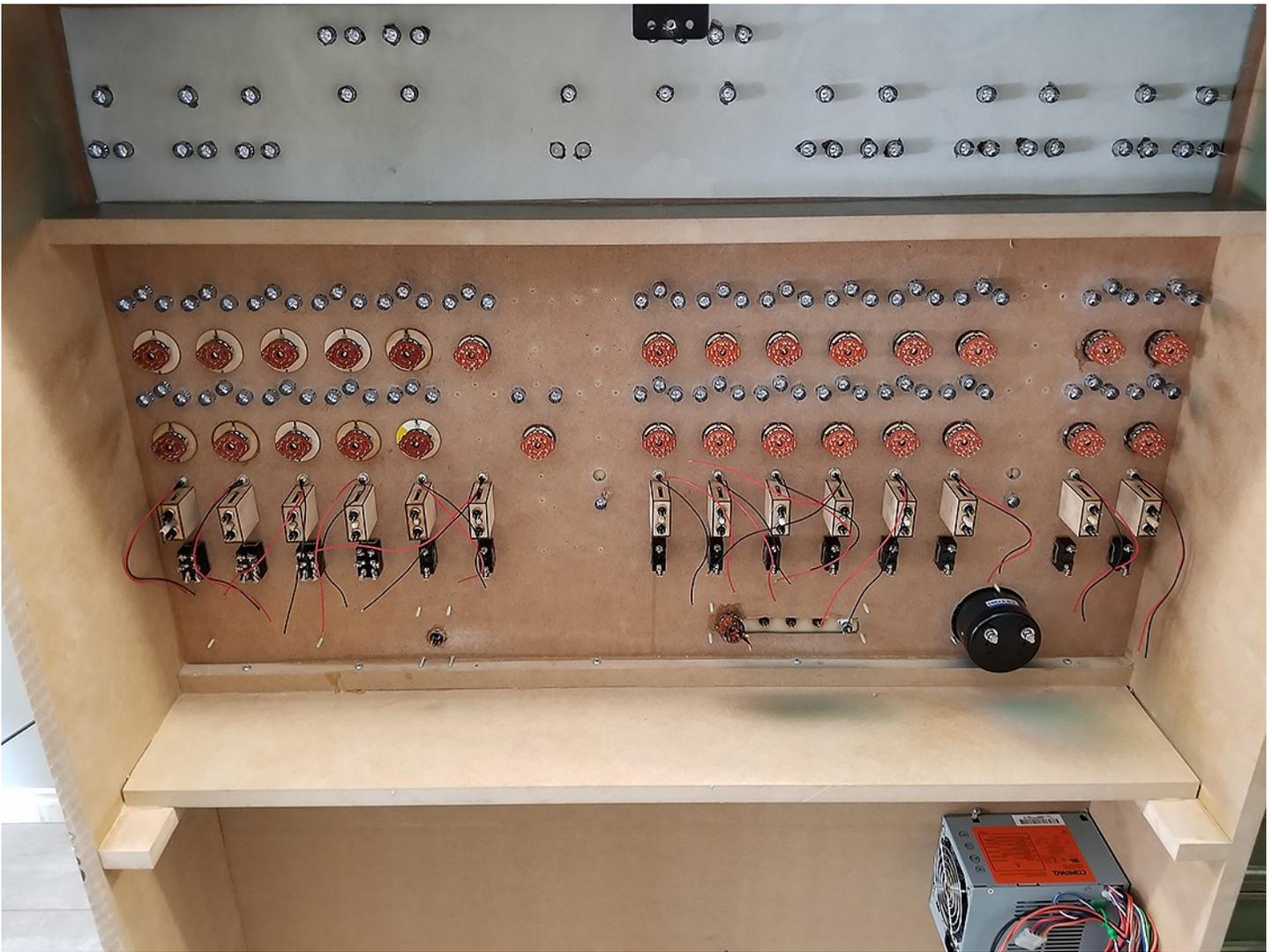
Wiring the CTC machine.

The final step in getting this system to work is connecting it all to the CTC machine. Here again, I have prepared a lot of sketches as a visual aid to my instructions. Sketches here are labeled with alphabetic letters to make them different from the previous ones to avoid confusion.

When referring to connections to the power supply, I am referring to a power supply installed in the CTC machine, for the purpose of feeding all the circuits and most of the LEDs in the CTC machine. In my case, this is just another old computer power supply where I am using the common, +12 volts and in some cases the +5 volts.

Assuming that you placed all your switches and LEDs in your CTC machine when you built it, things should look like my photo on the next page, when looking at the inside of the machine. Not shown in this early photo, I installed a terminal for the volt meter because every row on the CTC machine needs to connect to it. I did the same with the O/S bell and CTC coding sound cards.

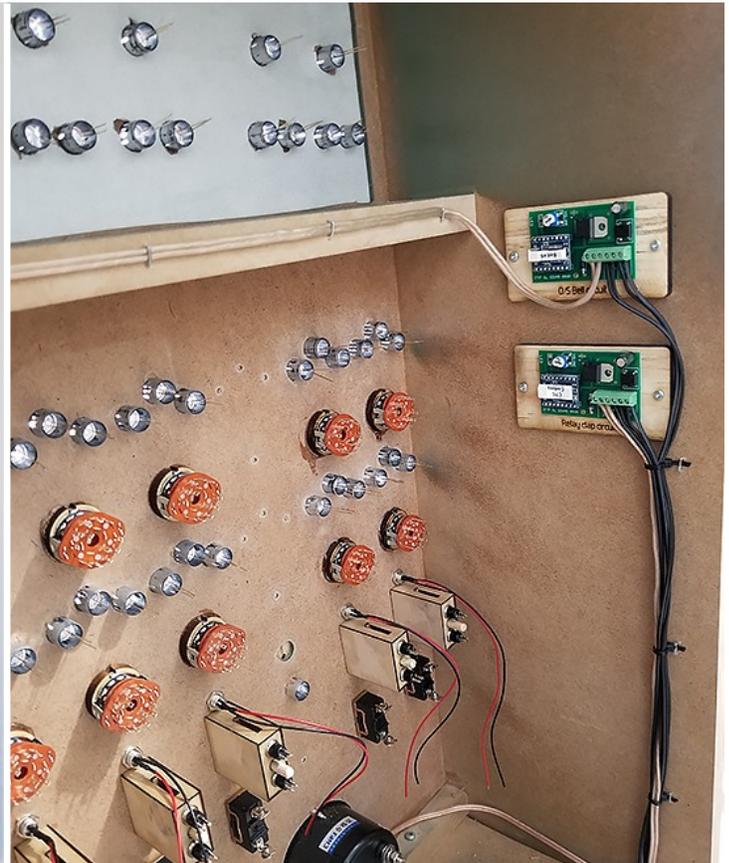
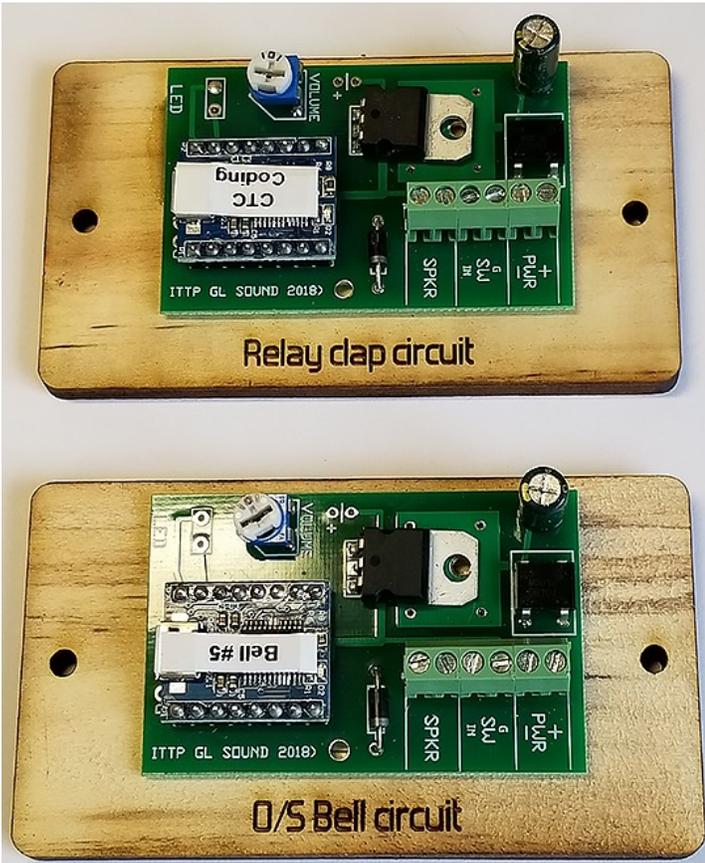
Also not shown are the CTC machine relay circuits. You need to install one CTC relay circuit card for each row in your CTC machine, as well as one “power delay” circuit (circuit purchased ready built, see parts list).



This is also a good time to install the CTC coding and CTC bell sound cards. These two sound cards were purchased from Innovative Train Technology Products (also known as ITT Products) from West Hills, California. George at ITT Products is a true gentleman and such a pleasure to deal with. I had these sound cards custom made for me, but if you contact George you can ask for these, he will make them available for you. You can see the website at www.ittproducts.com

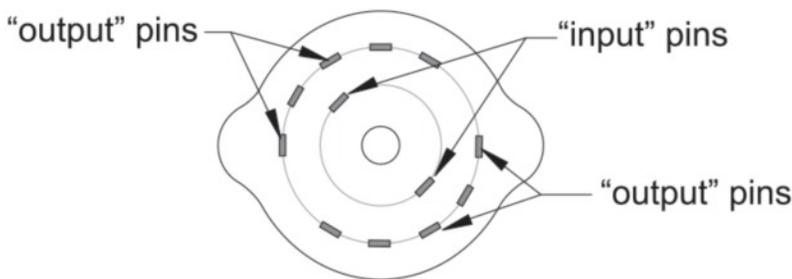
They have a great selection of sound cards already made for you, and they are great for adding a touch of realism to your projects. I am already working on a scratchbuilt rotary dumper which will use two of George's sound cards, and I am planning to add more to other animation projects in the future.

Coming back to the CTC machine sound cards, install them in a place where you can have a terminal strip nearby because every O/S section will need to be wired to the sound cards. I mounted mine on a small piece of wood so I could screw them in place. See photos on next page..



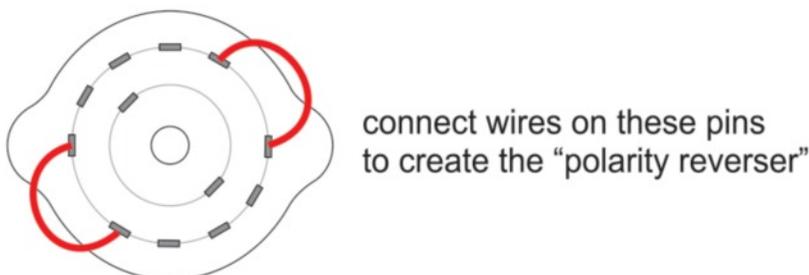
Sketch A

Back view of a 2 pole 5 position rotary switch



TURNOUT SWITCH

Rotary switch cross-connection



Again, I will describe the steps I developed in an effort to save some problems in further steps.

Rotary switches can be used to reverse polarity in the same way a toggle switch is used. If you remember sketch No.3, the lock control box, had one toggle that controlled the tortoise for the turnout position. By crossing the wires at opposed terminals, we could reverse the polarity of the power. In the case of a rotary switch, this can be done just the same, but it will look different. **Sketch "A"** shows how to make the cross connections. Do this on all the turnout (or switch) rotary switches on your CTC machine (in my case, all the upper row of switches).

The push buttons: Refer to sketches "B" and "C" on next page.

1) Connect 12 volts from the power supply to push button No.1, then from the other pin on this push button connect to the CTC relay's input pin (left pin on the input terminal).

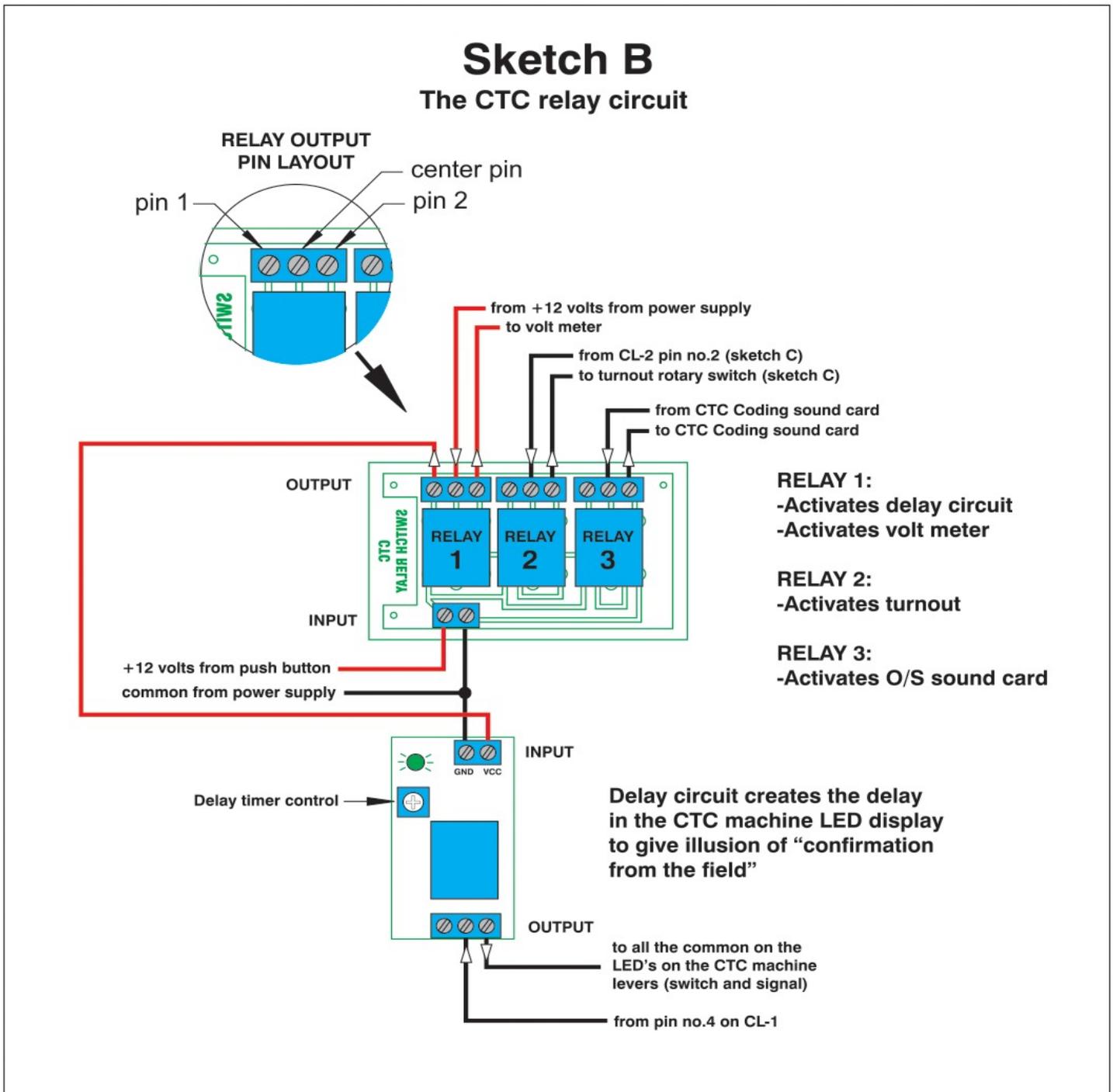
2) Connect common from power supply to the other input pin on the CTC relay.

3) Connect 12 volts from power supply to push button No.2, then from the other pin on this push button connect it to pin No.6 on CL-2.

4) Connect pin No.5 on CL-2 to the common on the power supply.

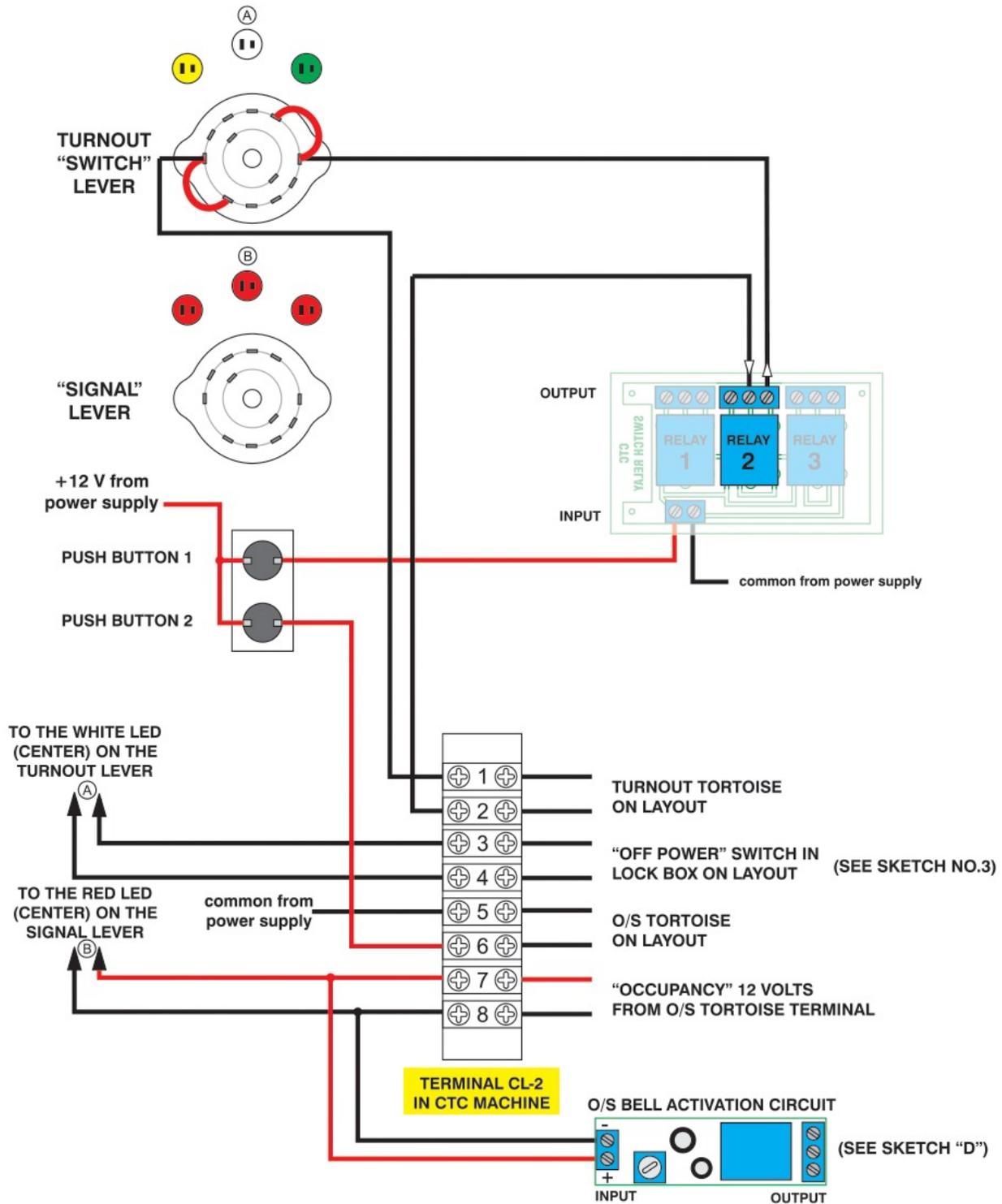
5) As described above, I installed a “power delay” circuit in the system in order to give the illusion of the delay in the coding reaching the location in the field and returning with a confirmation. This circuit is listed in the parts list and quoted as the “power delay” even if this is not it’s real name. I install this circuit just below the CTC relay circuit for easy wiring. Now, connect the common from the power supply to the “GND” terminal on the power delay circuit’s input terminal.

6) Connect CTC relay No.1, pin No.1 to “VCC” input terminal of the power delay circuit. Turn the small “timer” knob all the way clockwise.



Sketch C

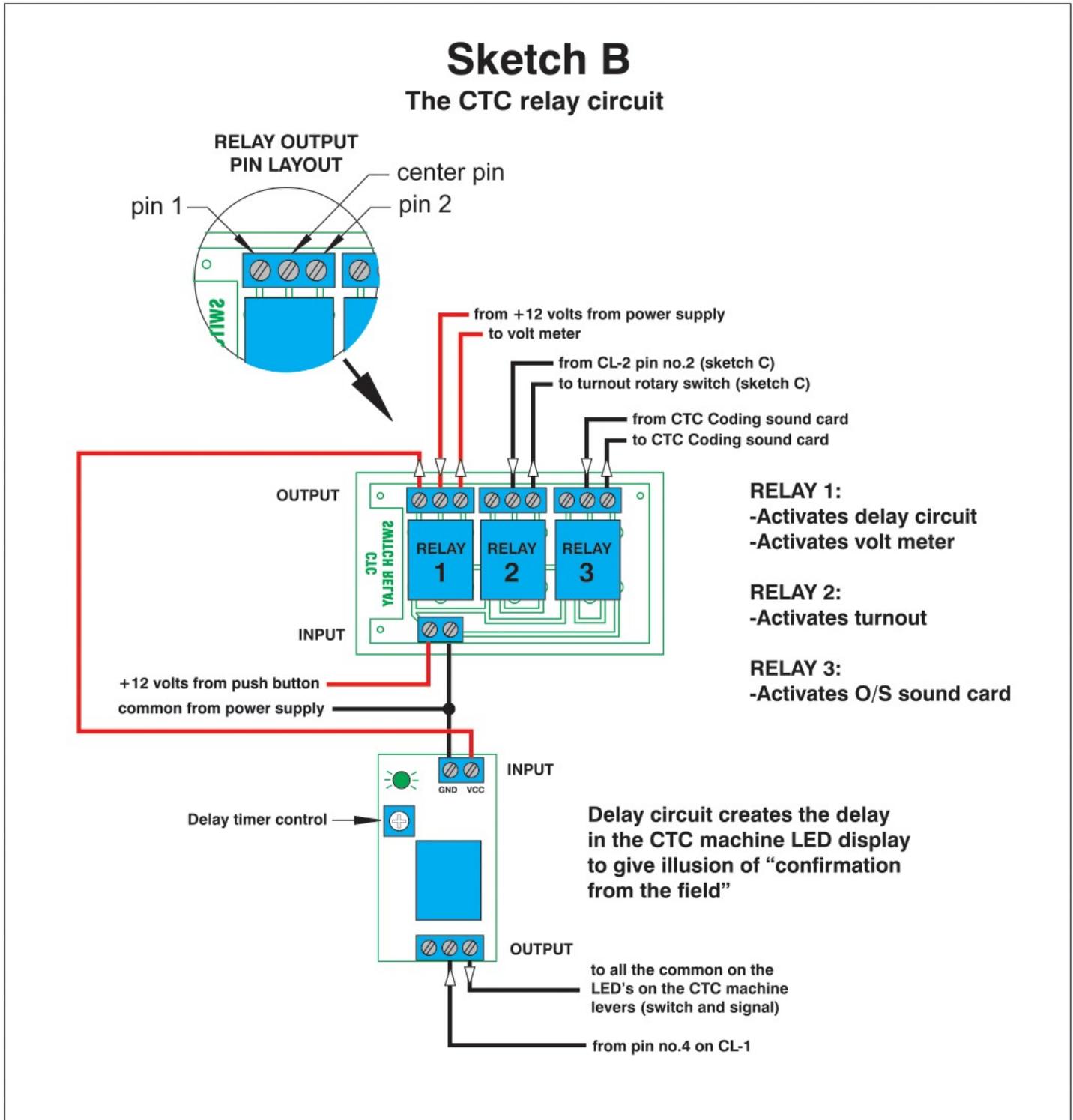
The CL-2 terminal connections



Time for testing : Turn power on and press the push button, you should hear a click of the relays and see the green light on the power delay circuit stay on for a few seconds.

The CTC relay circuit: Refer to sketch “B”

Since all the connections on the CTC relay circuit will be done in further steps in the CL-1 and CL-2 wiring, we will not waste any time doing these connections for the moment. But it is a good time to look at the sketch and get familiar with the relay numbers and what they will be used for.



The CL-2 terminal: Refer to sketches “C”, “D” and “G”

We begin with CL-2 because we will need some of these connections to be done prior to wiring CL-1.

1) Connect pin No.1 to the turnout rotary switch. If you have the same type of switch that I have (2 pole 5 positions), you will see I am using the first pin on the dial.

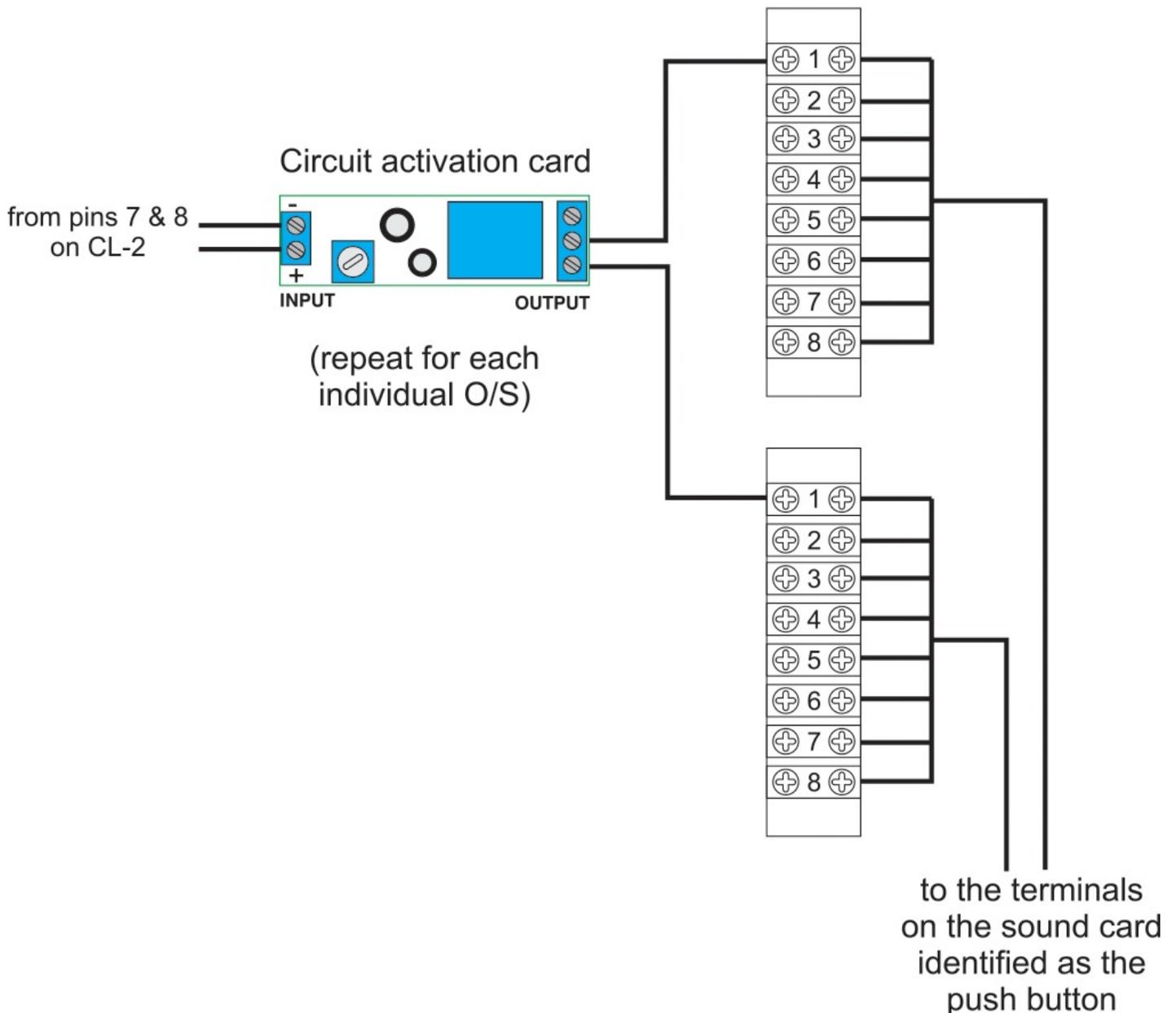
2) Connect pin No.2 to CTC relay circuit, relay no.2, center pin on the output terminal.

3) Connect CTC relay No.2, output pin No.2 to turnout switch on the opposed side of the connection you made in step 1 above.

Sketch D

O/S bell circuit

The O/S bell sound card is activated by creating a momentary contact between (instructions on card). The circuit activation card is used as a momentary contact. The system requires one such activation card per O/S, all connected to the same sound card.



4) Connect pins 3 and 4 to the center LED on the turnout switch. When this LED is on, it tells the dispatcher that the controls have been set to “manual” on the off power lock in the field. You may have to turn the power on in order to find the correct polarity to light up the LED (by placing the switch to manual in the lock box). Don’t forget to place the switch back to “remote” after, and check if the LED has turned off in the CTC display.

5) Connect pin No. 5 to common on power supply.

6) Connect pin No. 6 to push button No.2 (should already be done from previous steps).

7) Connect pins No.7 and 8 to the center LED on the signal switch. You may have to turn the power on and run a loco over the O/S to create an occupancy; then test the LED to get the correct polarity.

8) With the O/S still in occupancy mode, connect pins No.7 and 8 to the input terminal of the activator circuit that will be wired to the O/S bell sound card. This circuit is listed in the parts list as the “O/S bell activator circuit” but it is a simple timer circuit purchased already built (see part number for reference). This is shown in sketch “D”... connect the output pins of this circuit (find the two pins that make the connection live when activated) to the O/S bell sound card. Again, since there will be as many wires going to the sound card as there are rows on the CTC machine, I used terminals to converge all the wires down to two wires.

Sketch G

The CL-1 terminal: Refer to sketches “D”, “E” and “G”

1) Connect CL-1 pins No. 1 and 2 to the turnout switch’s input (center) pins.

2) Connect pin 4 to the delay circuit’s center pin on the output terminal.

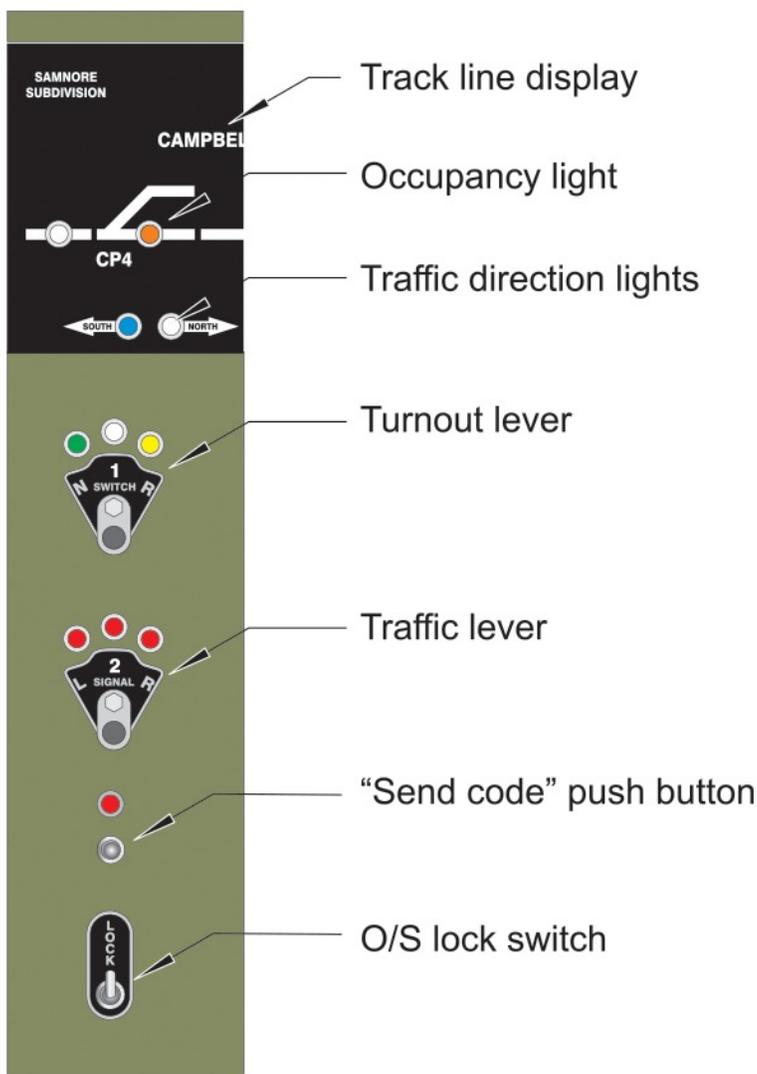
3) Connect output pin No. 2 from the delay circuit to the common on the LEDs of the turnout switch left and right LEDs and the signal switch left and right LEDs.

4) Pins No. 3 and 5 are the turnout position LED indicators. Connect each pin to its matching LED, depending on the position of the turnout (normal or reverse).

5) Connect pin No.7 to either one of the input (center) pins on the signal switch.

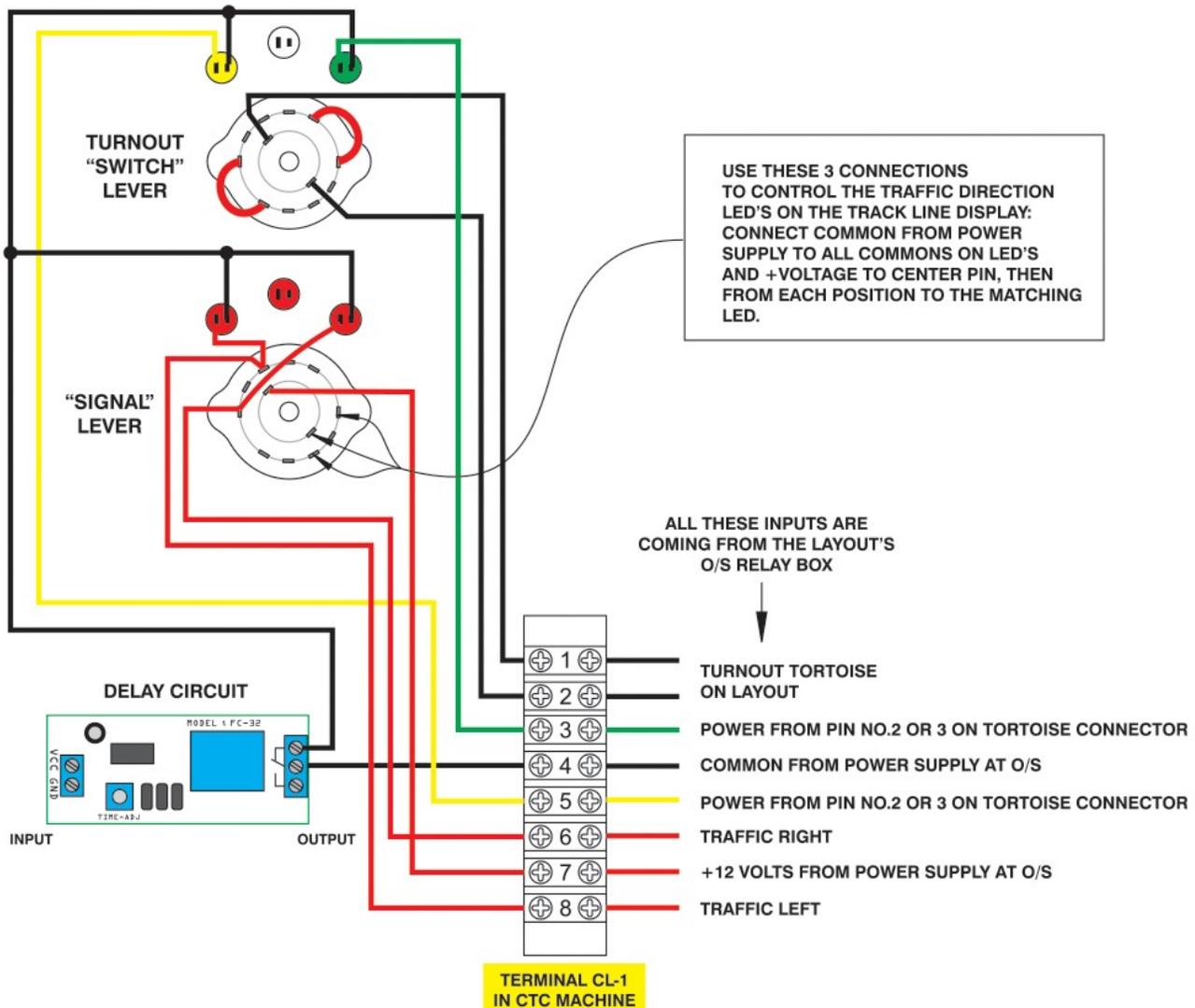
6) Pin No.6 is the “right traffic” direction, coming from the O/S on the layout. Connect this pin to the matching position LED on the traffic switch, and also on the matching direction LED on the trackline display.

7) Pin No.8 is the “left traffic” direction coming from the O/S on the layout. Connect this pin to the matching position LED on the traffic switch, and also on the matching direction LED on the trackline display.



Sketch E

The CL-1 terminal connections



Various final connections.

O/S occupancy LED on the track line display: This LED will turn on when a locomotive or a piece of equipment equipped with a resistor is occupying the O/S section, and will turn off when the O/S is free, in contrast to the center LED on the traffic switch, which stays on all the time once the O/S has been occupied. The difference for the dispatcher is that the center LED on the traffic switch means the signals have now turned to red and need to be re-set for any further movement to happen, while the O/S occupancy LED on the track line display tells the dispatcher if the movement has cleared the switch or not.

This LED is driven by the occupancy detector's output. This will require a separate set of wires which are not part of the CL-1 and CL-2 terminals. Refer to sketch No.5 "power selector relay card". Connect two wires from the power selector relay card's pins No. 6 and 8 (common and +12) to the LED on the CTC machine's track line display that matches the correct O/S location.

O/S drop function: This function is used by the dispatcher to bring any controlled location to an absolute stop on all the signals. It is used when the dispatcher issues a track warrant to a work crew, and needs to protect the crew from any traffic entering their work section. What it does is simply short the O/S section and create an occupancy the same way a passing train would. This also requires two additional wires from the O/S location to the CTC machine. The lever on the CTC machine used for this function is the on/off toggle switch below the signal switch.

Refer to sketch “F” Next Page: To make this connection, you will first have to go to the layout’s relay box and connect a wire from the common on the power supply and run it to the CTC machine’s on/off switch, and from the other pole of the on/off switch, run a wire back to the layout’s relay box and connect it to input pin No.1 on the power selector relay card (same pin that is connected to the occupancy detector card).

If you want to have a visual confirmation of the O/S being dropped by the dispatcher (in order not to forget that there is a work permit in that sector!), use the second set of contacts from that same on/off switch (I use a double-pole single throw switch) and connect a LED placed right above the switch lever. I used a blinking white LED so it catches the dispatcher’s attention when on.

Volt meter action: Refer back to sketch “B”. This is just another way of making this CTC machine exciting to look at, and it is not a must. But if you chose to install a volt meter, it is now time to get it wired and working. This is to simulate the line condition and the confirmation that the “code” is actually going out on the code line. When pressing the send code push button to activate the tortoise switch machines at the O/S location on the layout, the volt meter will give a reading of the power going through it.

This is done by getting a voltage input from the CTC relay circuit. Connect output pin No.2 on relay No.1 to the volt meter. Refer to your specific volt meter for proper connections.

In conclusion...

This completes the last segment of this series on my signaling system. Building this signaling system has been a long process, but I learned a lot from it. I hope you have enjoyed it, and that some of you will walk away from this with having a new feature to your layout that you will enjoy for years to come, new tools to create more exciting things, or an inspiration to give your layout a different role in your hobby life. As for myself, it has been now over 18 months since I have done anything else on my layout, and I am more than ready to put this phase behind me and start a new project!

Parts list:

- Detector board: Quad Occupancy Detector Board www.circuits4tracks.daxack.ca
- Sound cards: CTC Coding sound card, and Bell # 5 sound card www.itproducts.com
- Power delay circuit: circuit purchased on eBay, identified as "12 volt DC Delay Relay on/off switch module with timer"
- O/S bell sound card activation circuit: circuit purchased on eBay. Identified as "12 volts Timer Adjustable Delay"

Downloads:

[PC Board Design Files AI File](#)
[PC Board Design Files PDF File](#)
[PC Board Design Files JPG File](#)

Downloads:

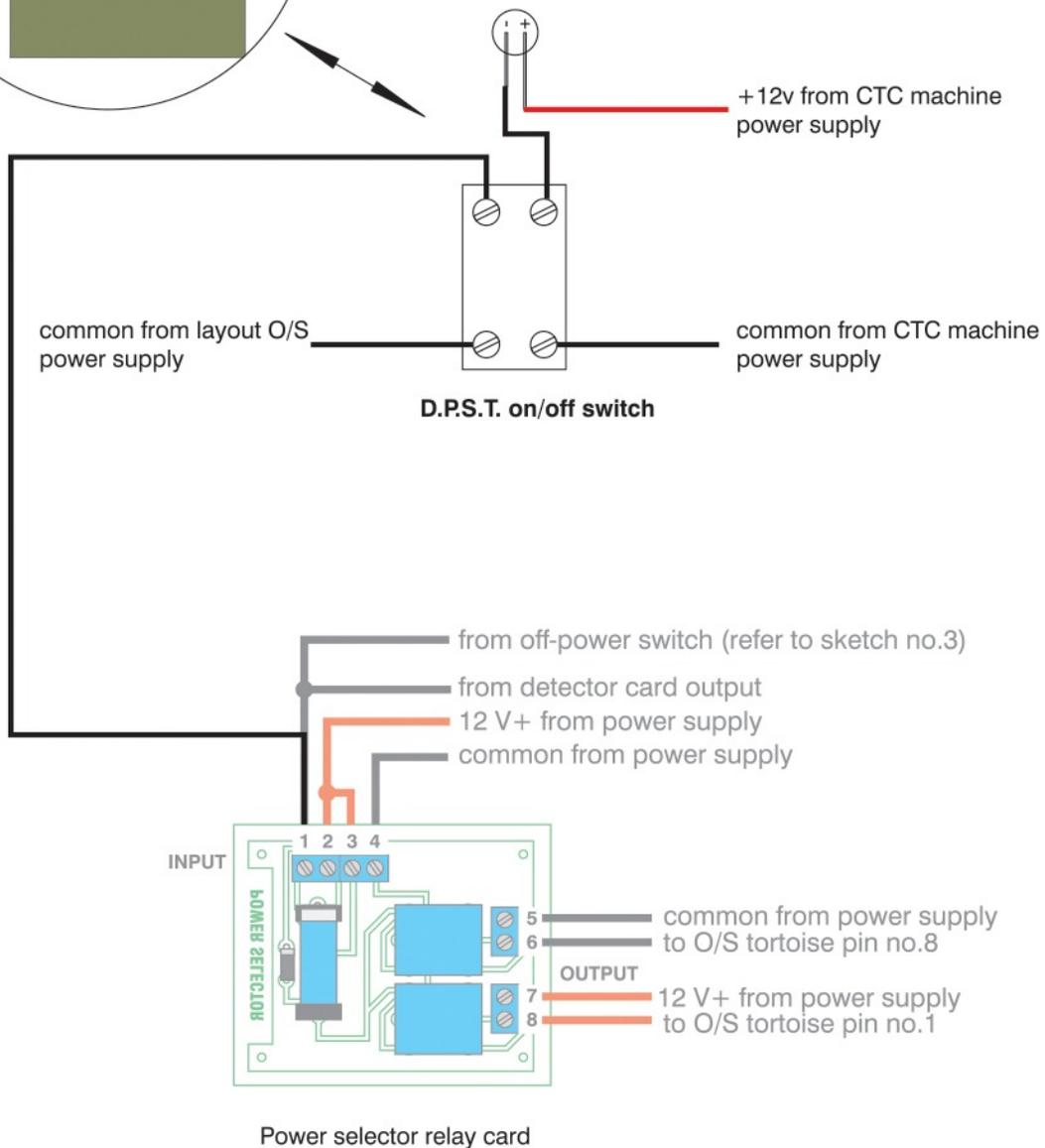
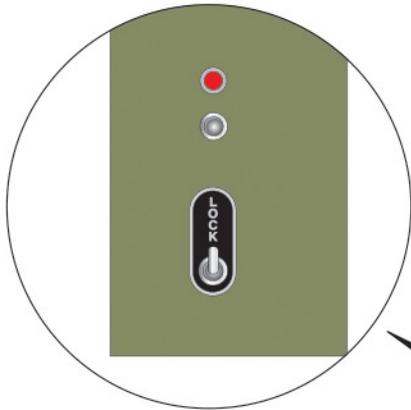
[Terminal Labelling Files AI File](#)
[Terminal Labelling Files PDF File](#)
[Terminal Labelling Files JPG File](#)

Sketch F

O/S drop function switch

Turning on the toggle switch located on the CTC machine creates the same effect as having the detector card detect a train on the O/S, bringing the O/S to it's state of "occupancy". One side of the switch is connected to the

O/S power supply to serve this purpose, while the other is connected to the CTC machine power supply and only serves to turn on the LED above the switch.



LIVING WITH DECAL RIVETS WHILE FINISHING A PITTSBURGH INTERURBAN CAR

By George Paxon

In previous articles here in *The O Scale Resource*, I have mentioned decal rivets as a great addition to a modeler's kit. I have been using them for a while and think a lot of them. They are much faster and easier than pressing rivets into brass and styrene. And, I don't throw away as near as many parts as I once did.

But, since they are decals, they are not as durable as pressed rivets would be. I have not had any problems with the rivets falling off from normal use and handling though. I take great care when applying them to increase their durability. I always prime the surface first. And, I paint on some household floor wax before applying the decal rivets to increase the adhesion. I just use the floor wax as I would a decal set solution. Floor wax is not much more than a dilute solution of PVA, the same stuff as white glue. I got that idea from Archer who are makers of decal rivets, so it's no something I thought up.

One area I have found that requires great care is painting a two color car though. The rivets do not like masking. They seem to have a tendency to stick better to tape than to the car sides. An ongoing project has been scratch building a model of a Pittsburgh Railways 3700 class interurban car. Photo 1 is a shot of the prototype. There were 15 of these Brill built cars that were used on the interurban lines south of Pittsburgh. They ran down into the boondocks where I came from. And, Photo 2 (next page) shows my in-work model of the 3700 after the rivets were applied to the primed surface and before an overspray to help lock the rivet decals into the paint layer.

The project was started several years ago, has progressed off and on, but has been on idle for some time as I have been pondering how to paint the model. As you can see from the prototype photo, these cars were two-tone of cream and red. And the cars had about a zillion rivets. I could not see how I was going to mask with tape as it would be necessary to apply the tape over many of the rivets. I sensed a disaster approaching. Not wanting to risk pulling the rivets off, I have been searching for a better method of masking the car for the second color.



Photo 1



Photo 2

I ran across the partially completed Pittsburgh 3700 car model again a few weeks ago while unsuccessfully searching for something else I have misplaced. And, since I had it in hand, I decided to give the painting task some more thought. After pouring the obligatory glass of red, I began to ponder the problem again. What eventually came to mind was as follows.

I decided to make masks of card to fit into recess between the letterboard at the car top and the window sill below the windows as this would cover the cream window band and hopefully provide a sharp edge between the colors. A major problem was covering the double stepped rows of steel with rivets below the windows as these needed to be cream.

I came up with the idea of making extensions to the cards in the recess to extend them down and cover the rows of rivets below the window. To do this, I added a 3/8 inch wide strip of the card to the bottom edge of the cards that fit over the windows to bring the top surface of the card up to the height of the steel and rivet detail. Then I added a 1/2 inch wide strip of card on top the 3/8 carefully aligning it with the bottom edge of the steel and rivets that I wanted to mask. Care was needed to glue these strips of card together to avoid warping the card and making it more difficult to seal. I applied the white glue very sparingly and then clamped the card between two steel rulers and used clothes pegs to hold this all flat while the glue dried. It seemed to work. I was using file folder card material. I like this card as it is very hard faced and cuts with a nice sharp and square edge. I

FIGURE 1. CAR SIDE CROSS SECTION

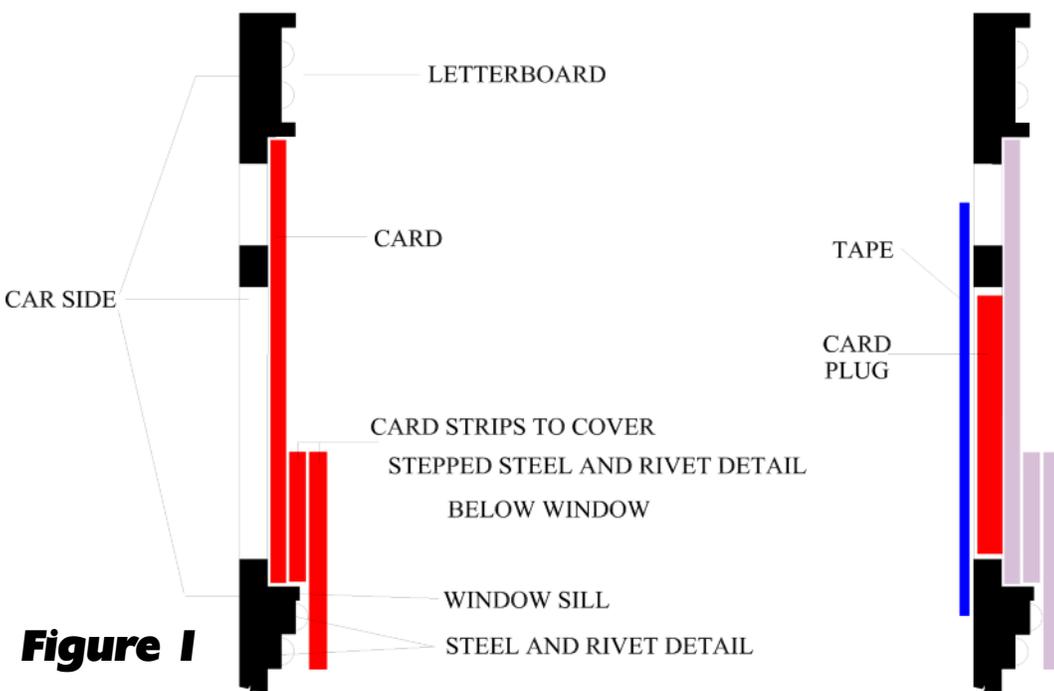


Figure 1

could have found a thicker card somewhere and avoided the need to build up the thickness I guess, but, then again, this project was happening in real time and on the fly. See sketch at Figure 1 which I hope explains this better than the above dribble.

It was my hope that by painting with low pressure and taking care with the spray angle I could apply the red without blowing it under the card. Well, it was definitely worth a try. Certainly a better alternative than taping and tearing the rivets off the car!

One issue was the need to keep the masking card, inserted into the recess between the letterboard and the window sill, down tight on the windows to minimize the chance of paint blowing under the card. To do this, I made plugs of thicker card to fit into many of the window openings. This would make the card where the plugs were placed approximately the thickness of the car sides. I wanted this so that I could apply tape to the inside surface of the car side to hold the card in place. Again, refer to the sketch at Figure 1 for a better understanding of this second perverted idea. I made the plugs from some card, hand cutting them to fit reasonably tightly in the window openings. But the card I chose was not quite thick enough to reach all the way through the car side. I added shims cut from thinner card to the tops of the plugs to bring them up to the appropriate thickness. This might have been easier if I had carefully measured and used the right thickness of card in the first place. But this project idea was developing as I went along. I will know better next time. I did want to keep the card thickness just a little bit less than the car side though.

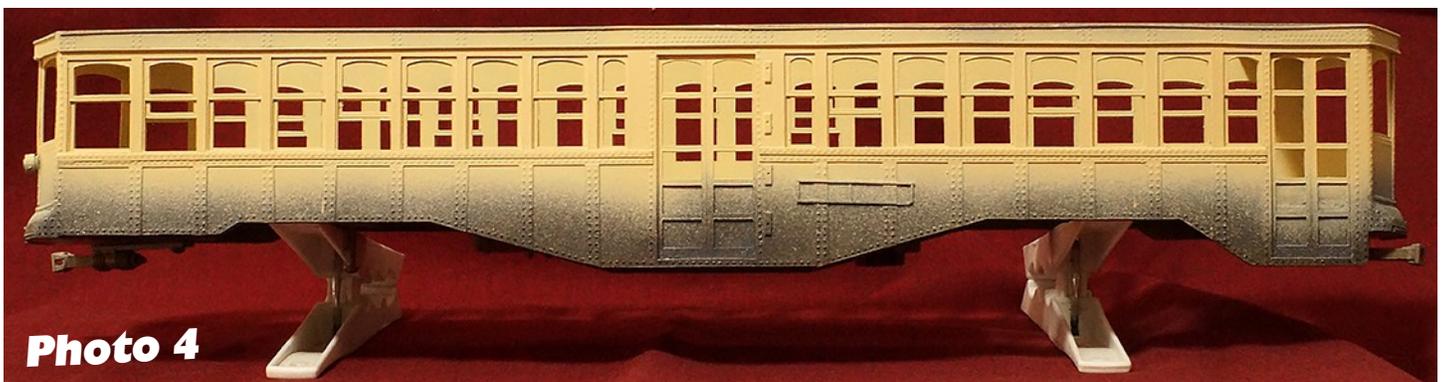
The reason I wanted the plugs to reach almost all the way through the window openings was two two fold. First, I wanted to provide as large an area on the plugs as was possible for the tape inside the car to adhere to. But, second, having the card thickness just a little less than the car side thickness would help the tape pull the card down. My theory was that a good grip on the somewhat lower plugs would pull the card mask tightly onto the outside surface of the windows to provide a better seal against paint blow-by.

I made three such card masks. One long one for the doorless side of the car, and two shorter ones for each side of the center door. Photo 3 shows the three card masks with plugs.

The next step was to apply the cream to the window band. Photo 4 shows the car after applying this first color.



With the cream well cured, we set about masking the car with the card masks. To cover the doors I made separate tight fitting pieces of card and gently tapped them into place between the door jams. Individual pieces of card were similarly fitted into window frames on the front and back of the car. The three card masks made above were then installed on the car sides. Tape was applied to the inside of the sides to hold the three card

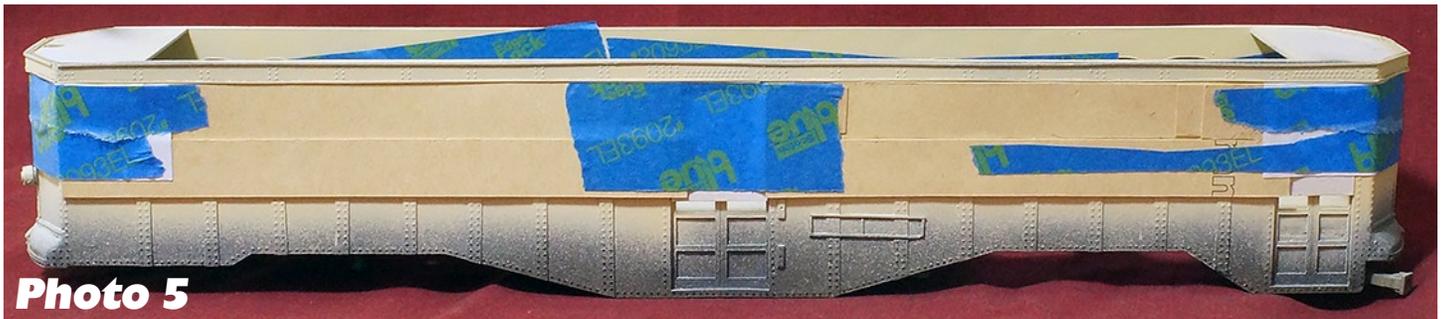


masks in place. This tape was pressed down firmly onto the plugs to pull the card masks tightly to the outside of the windows and get a good seal. Long strips of bond paper were used to wrap around the car ends with these cut to fit to provide a sharp edge to mask the cream paint. The bond paper was glued with white glue to the back

of the three card masks. Tape was applied over all to make the masking system more durable as none of the tape would be sticking to any riveted surfaces.

Photo 5 shows the car masked and ready for painting. The car was painted using as low a pressure as I could. I took great care with the spray angles to try and keep from blowing paint under the card. A steel rule was used to help hold the card as tight as possible. For example, where I wanted to get a clean line between the cream and red on the underside of the letterboard, the steel rule helped to keep the card straight for this. The steel rule also helped keep the card extending down over the rivets under the windows tight against the car to get a nice straight line there. The painting was done in quite a few stages. This was not a project to do in a hurry as I did not want to do it again.

Photo 6 was taken just after the masking system was removed from the model. I was pleasantly surprised to see how well it worked. A few spots needed a touch up with both cream and red paint, but this was a small price to pay for avoiding wrecking the rivet job. About an hours work total, which was several short sessions over



two days, was needed to apply a few very light coats here and there to fix the spots. The red was not too difficult to fix, but several coats of the cream were needed to cover some of the errant red.

All the masking was a throw away which was a shame as it all took quite a while to do. But, it sure nice to have this painting job done with the rivets still firmly in place on the car sides and ends.



Now I need to do some hand painting with black here and there, spray the decal areas with some gloss, and apply the decals, signs, etc., weather the car, and overspray with flat. This will then just leave me the window glazing and assembly. After the lights and decoder are in, she will be ready to rock and roll! This will be another half-done project DONE! Oops: just forgot – I need to make the window guards! This will be a major projects in its own right. I'll need to have another glass a red and get an inspiration for how I am going to pull that off... maybe more news about that later.

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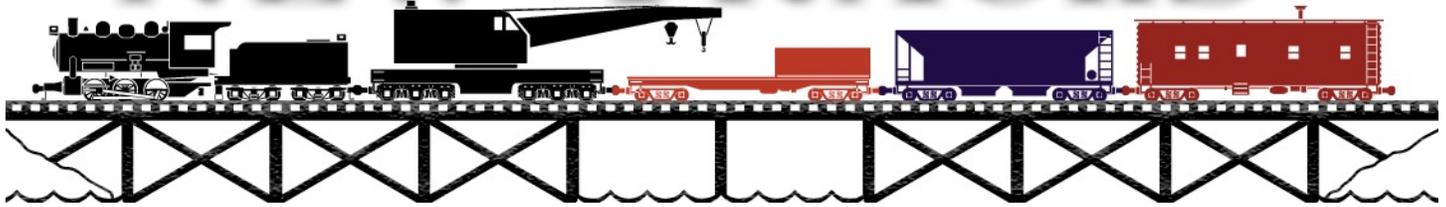
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NEW TRACKS



Mentor Definition: A Trusted Counselor or Guide

By Contributing Editor Jim Kellow MMR

Painting Realistic figures. A Mentor's help.

I recently profiled a great S Scale figure painter, [Warren Judge](#), in a "New Tracks" article in [S Scale Resource Magazine](#). Warren was kind enough to even write an article for S Scale Resource magazine on his painting methods. I learned a lot from Warren and decided to look for other talented figure painters who might also help me.

I have never been happy with my figure painting and would love to improve my efforts. Part of my problem is probably that I have scratch built the structure, car, or trolley, and am always more interested in how the structure, car, or trolley looks, and the figures are just secondary. Warren made me see that figures should be taken more seriously in my modeling.

I joined some figure painting Facebook sites to see who I could meet and what I could learn about figure painting and figure sculpting from modelers in various hobbies. I found some other highly talented modelers that I believe can help all of us improve our figure painting/sculpting, and modeling; thus this article was started.

I learned a lot. For example: (1) Sculpting or modifying O Scale figures is possible and being done by modelers to get a figure in whatever position they want. (2) Non model railroad figure painters have a lot to teach us about their craft that can significantly improve the looks of our O scale figures. (3) I found that taking model figures, from other hobbies, like war fighting, and sculpting them into a model railroad figure that I need is possible. I think I could even learn to sculpt, maybe!

I even found a product I am going to use to try sculpting. I will let you know how it goes. Based on suggestions I got from a really talented sculpture modeler first I need to get familiar with human anatomy, using diagrams, anatomy books and even an anatomy figure I can touch. Then I need to get a mentor and follow his advice. Good ideas. I have research to do. More in a future article about my figure sculpting efforts.

I also heard from some O Scale modelers who believe we need figure manufacturers to offer some better looking figures for us to use. I am not certain what this means, but my best guess is that any improvement in the O Scale figures that are currently available will only happen if we, as modelers, take more interest in the model figures we want and communicate our needs to the manufacturers. Let me know how you feel about this matter and I will include your ideas in a future article. My email is: jimkellow@oscaleresource.com

Figure Modeling Companies

Aspen Modeling Company was recommended for me to profile by a modeler from one of the Facebook pages I searched during my research for this article. The company is owned by two brothers, Lyle and Alan Anderson. Alan provided the information for this profile. Please meet Lyle and Alan, and their Company Aspen Modeling Company. I am really glad I found them.

Aspen Modeling Company

“Lyle is the train guy. He started out in HO many years ago and then switched to S scale 20 years ago. I paint figures for his layout and mentioned to him once how poor I thought the figures were and that we could do a better job. We started out casting figures in metal, but soon realized that was too much trouble to haul around lots of metal figures to shows, to say nothing of the extra expense it added when shipping figures for orders. So before too long, we switched to resin figures which weigh almost nothing and are easier to work with and modify.

We started out just doing S and O figures, but now all our figures are 3D printed and we do them in HO, O, S, 20.3 or any other scale requested. We recently printed some of our horses in 1/56 for a war gamer.

We have autos, wagons and other "hardware" in the works in addition to lots of new figures.”

Please visit their web site <https://www.theaspenmodelingcompany.com/> or Contact Alan at Alan.Anderson@oscaleresource.com.

After looking at their website, I asked Alan some questions: Do you sell painted and unpainted figures? If not, do you do custom painting? Do you do custom figures for modelers?

Alan replied:” Our figures are sold unpainted. Occasionally, we will paint figures, but it is rare and expensive. We do custom figures. Again, it's not cheap.”

I then asked Alan if he would sponsor a contest drawing and he immediately said he would. The prize will be a \$10.00 credit toward the cost of their figures. Alan told me most of their figures cost less than that. This could be the first O Scale figure you paint with all the new skills learned from the talented mentors included in this article.

HOW TO ENTER THE ASPEN MODELING COMPANY CONTEST

Modelers fill out form, agree to photograph the model and write an article on their experience that I will include in one of my future “New Tracks” articles. Good luck to all of you!

Please show your appreciation to Lyle and Alan by entering the contest. I look forward to seeing the figure you selected and painted. Good luck

to everyone and happy modeling. Thanks Lyle and Alan for your help with his article.

Another company recommended by several modelers is Andlan Models in Australia. The owner could not have been more gracious and interested in being a part of this article.

Andlan Models

Ian Phemister, the owner of Andlan Models, just notified me that the fires in Australia, where he is located, have him so busy helping people who have had to leave their homes he is not able to complete his profile for this article. All of our prayers are with Ian and the Australian people through this tragic fire. I will include his and his company's profile in a future issue. Ian Fainges, who does custom painting for Andlan Models is profiled below. My original plan was to profile them together. Oh well.

Individuals:

I found some outstanding figure painters, by visiting many different Facebook sites, who can certainly be my mentors anytime. To say I was impressed with their talent and skill is an understatement. I think you will enjoy meeting them, and hope you benefit from their skills, knowledge, and techniques, and travel some "New Tracks" with me.



Ian Fainges

I am a figure modeler who has found the 2 hobbies that need lots of figures. Model Trains and wargaming, I find therapy and relaxation in Painting personality and character into my figures which flows over to my models and layout.

I am the son of a modeler, therefore have been around model kit construction and scratch building ALL my life, watching my late dad turn things into miniature representation of life. I built, painted and decaled my first model at 10... what a mess, but built models working up to the large 1/12 Tamiya Racing cars where I painted my first large figure. This was the start of my journey as I started to play wargames and learnt that I loved painting the tiny details on my little armies of men. Just before my son was born, my Dad and I decided to do a layout together and exhibit it, I would do the figures and he would build the layout , so we chose ON30 as it was close to the large



28mm figures that I was painting. Boy what a change, it became something the two of us had in common, and I started to ask how I could do this and that. In the end, I was scratchbuilding locos, buildings and scenery. We built many exhibition layouts together, but never got to build either of us a home layout. I then was challenged by my 10 year old daughter to build a layout with lots of colour, bright grass, colourful buildings and NO rust or dust.. and 1/48 scale Teddy Bears. Let's just say the next year at our annual show I helped my 11 year old



This is my Father and I own these buildings.

daughter and friend exhibit a layout called 'Bearima' which I have some shots on YouTube. I have been learning of others and refining my skills until 2015 when my father passed away. I miss him and still do, but I now have over 20 of his detailed buildings that I will lovingly incorporate into my soon to be constructed home layout

I learnt a lot of my skills by trial and error, but also through my Dad, then several others, always asking, reading, conventions, magazines and recently even going to classes to learn.

I have also had some very special people in my life who have helped me. My Dad is most special even when I wish he had taught me more; Phil Walden, an amazing sculptor and figure painter who passed on his passion to me; my mate, Peter Sanderson, who showed me to stop, put something down and start again and how to actually make a layout that operates rather than trains going round and round; Phil Hadley who challenged me to do more resin work and soldering and also got me into painting backdrops for layouts.



What areas can I help others by mentoring: I have been teaching others how I paint backdrops and paint figures at several conventions, and have had some of my models in magazines. I am happy to teach one on one or to a packed room how I do what I do. I would do tutorials but don't have the camera skills.

If you think I can help you please contact me at Ian.Fainges@oscaleresource.com.



Guy Estes



Hello, my name is Guy Estes. I go by HowdyCreative in reference to my online presence. I've been building and painting miniatures/scenery for around 20 years irregularly.

I started with tabletop wargaming and moved to scenery for tabletop games then to diorama building and general sculpting, as well as, some model modification and wiring projects for Leeds in diorama work.

I learned from a mixture of magazines, books, YouTube videos and being coached by other artists. I've had a few mentors in modeling in the past, the most recent and more significant one being Trovarion, who is a multiple award winning painter and sculptor. He has helped me with figure painting and sculpting as well as scenery building.



I've learned some by coaching, in addition to the frequent trial and error involved in practice. I enjoy utilizing mixed media and combining as many formats as I can into making my miniature art diverse and different. I primarily do work on 28mm miniatures as that is the most common to find, but I do enjoy larger scales as well. I feel like I can assist other modelers with painting miniatures and scratch building terrain as well as modifying pre-made kits for increased realism.

I can also provide coaching related to figure sculpting in reference to building your own models. I'm additionally experienced with resin work and water effects for layouts and dioramas.

Please let me know if I can help further. You can contact me at: Guy.Estes@oscaleresource.com.



Richard Doležálek

Ricdox Painter: My name is Richard Doležálek and I am from Slovakia. I would like to tell you that I mainly focus on painting, not on modeling or building models, but like most modelers, I also started with models of not good quality (as a child).

I tried to build many types of models (tanks, ships, railroad and aircraft models...), but I was always most fascinated by miniatures.

Talking about how I had come to this hobby, I would say that my very careful father brought the idea of kind of modeling in my early years when we were playing with toys. We were always frustrated of "not detailed toys", and we wanted to remake, recreate it or make it more detailed, so we started. We

tried to make it more and more detailed until I recognized that by upgrading your toys, you are nearer and nearer to the reality. It can be the way by which you can create your own "little world". Then, when I was older, I started to build Revell models; and for the first time, I recognized that I love it and that was the thing which I want to do as my hobby.

When someone asks me the question: "Did you have a mentor or did you learn alone?", I always answer that I didn't have mentor, but also I have never been alone because father was also interested in modeling so we were learning together.

I like to paint and build O scale (which is most likely consider with 1:45), because I think it is scale that can be well detailed and doesn't take a lot of place. I paint also smaller scales because it is much harder to make it detailed and that's what I like on painting miniatures.



For figure painting you will only need:

1. paints (I use acrylic because care is so easy and it exist in many types or shades).
2. Only three types of brushes (one small brush for details, one for larger surfaces and one for dry brushing).
3. Palette (for mixing water with colours and creating a good condition for painting).
4. Water.
5. Part of old cloth.

That is basic stuff that you need for painting miniatures.

The hardest thing about painting miniatures for me is painting, for example, big hordes of very similar models. The problem with it is that you need to be very patient for a long time.

Talking about changing posture of miniatures, I would say it change often the quality of miniatures



so I do not prefer it, but if you are able do it in a very detailed way and you will spend lot of time by doing details, I think you can create nicer product that it was before.



I protect my figures by varnishing. I mostly use the matte varnish.

When you want to make miniatures to look used or not news you should know about 1) dry brush technique and 2) wash technique.

By "dry brush" technique, you can highlight some places by frequent wiping with dry brush to the surface of model.

By "wash" method, there are some special colours which can be used. They have a very waxy consistency and create perfect shades in a model.

Please contact me at ricdox.painter@oscaleresource.com.
Thanks Richard for your help and advice.



Wendy van Schaijk

Hi, I 'm Wendy van Schaijk, 52 years young and married to Frank van Schaijk. Together we have a web shop in figures, www.Wendysminiatures.nl. You can find us on modeling events almost every weekend with our shop. Because of our shop, we can afford our own hobby: painting miniatures.

My husband has painted miniatures his whole life and I've started now 3 years ago. I've had many hobbies in the past, but this one is the most diverse. It's imagining a story about the figure so I know how to paint it. Where and who was this figure (man, woman, beast or creature): indoors, outdoors, what kind of colours for clothing and were they clean, wet or dirty. It's also building a surrounding for the figure, trees, water, grass etc.

Off course, I am painting the figure as best as I can and always trying to do better and I am learning more every day. The most important thing is to have fun, it's a hobby.



How I paint?

I paint with acrylics. When I have chosen a new figure to paint, I Google on the Internet for inspiration. For example, the Svitiaz Nymph from Creepy Tables.

I Googled for pictures of roses and pictures of a swamp. Then I made a colour plan. What colour for the roses the dress and the skin, I mean bones, and the bunny. I need to make this plan up front so every item pops out properly. When you use colours that are too close to another then the story and the details can't be seen from a distance.

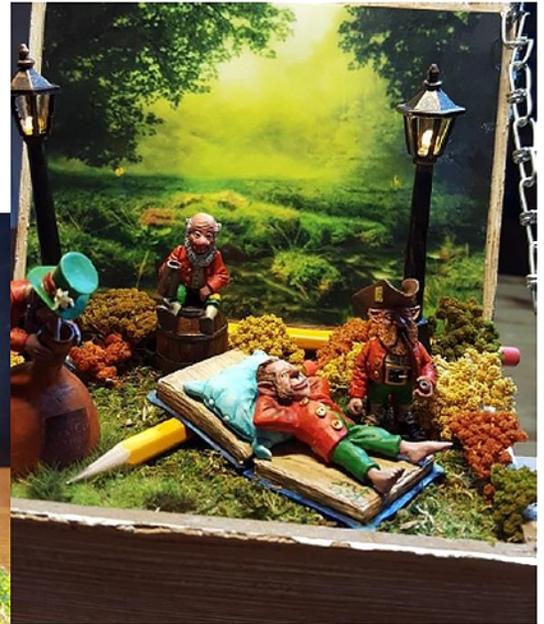
I start with cleaning and fitting the figure, dispose the figure of all the casting leftovers and making sure that all the parts fit good together. You cannot always glue the whole figure together up front because then it's not always possible to paint everything properly.

Next, clean the figure with water and dishwasher fluid to remove all the grease and let it dry by air. Then spray primer on it, and let this also dry on air.

The next step is to choose more colours for example the dress has many colours of blue: a base blue colour, a dark blue for the shades and a light blue for the highlights. I always use a wet pallet (so the paint doesn't dry to soon). I put a bit of the paint I need on it. For example for the dress I've put a bit of dark blue, base blue and light blue on it, with room

between the colours. I started with painting the whole dress with the base blue colour. The next step is to make the shades so I start on my pallet to make a colour between the base and the dark blue. Then I look under a lamp

where the shades are and how dark. Then start painting these from base blue to dark blue with the colours in between to make a fluid transition to dark. The same construction I use for the highlights, I look under a lamp where are the highlights and how light, then start painting these from base blue to light blue with the colours in between to make a fluid transition to light.



Always keep in mind when it's not going as you wish, you just clean the figure with thinner and start over again. When you are having fun, you never can go wrong.

Here are a few examples of my work.

I always keep in mind that when I think I am ready: it isn't ready and I go on. Then, it becomes better and better.

I belong by far not to the best, but I have fun with it and can be creative in my spare time.

Have fun and maybe I will see you on one of the events we visit. My Email is wmvanschajjk@oscaleresource.com if you have any questions.



Marion Ball- Ebensperger

I was born in Zurich 1963, and am the oldest of six Children. At this time, families had a lot of children and not as much TV... that's probably why families were so big.

I was really totally different from my sisters, instead of playing with dolls etc; I played football, cowboys and Indians, built aeroplanes, castles and other things like that. I still remember very well my first Diorama, which was only a mountain of plaster, (unpainted), covered with soldiers and groundwork, and I thought it looked fantastic. I was so full of joy and I showed my "masterpiece" to my parentsthey probably wondered when I would finally start to act like a normal girl.



When I left school at sixteen, I met my first great love, which lasted till a few years ago. At that time, my then to be husband (Erwin) was running an Italian restaurant, which we ended up running together for the next seventeen years.

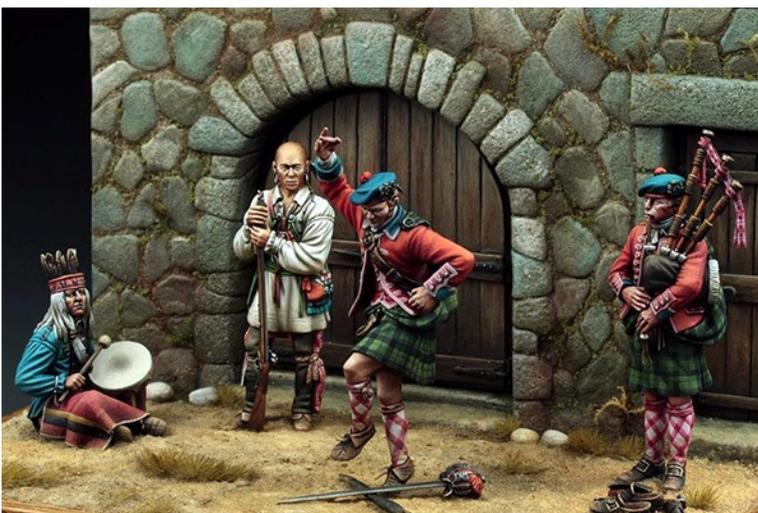
It was Erwin who gave me my first historic wooden ship kit for one of my birthdays, and from that moment on, I left the plastic kits behind and built wooden ships for the next ten years.

When I had my first experience with figures, it was more of an accident than anything else. I was at a Placido Domingo concert in Vienna when I discovered a figure shop. I always looked for sailors to populate my ships, and thought that this was the perfect opportunity to find some (I found them, and still have them). Over the years, I always wished to have my own little army of soldier figures, but I never had the slightest idea that the "little men" existed, so very quickly I bought my first two figures and was very excited. I couldn't wait to go home and start to paint them.

At that time, I didn't know any other paints than Humbrol, which I used for my wooden ships, and didn't know, or have, any literature about figures or uniforms.

There were no teachers or books in German which could have helped me to start with that hobby.

So I started to look for information, and found the English "Military Modelling" and the American "Campaigns" magazines, which were my guides. The problem was my English at that time was pretty poor, or should I say almost non





existent, and there was no other way than to learn the language step by step. These days, I am really glad that I was forced to learn English.

Even if I didn't understand what they were describing, I still saw the pictures and used them as my guide.

I experimented and tried to achieve the same results like on those pictures.

I had no idea about highlights and shadows, colours or shading, if the uniform was red, I just painted them Red, with no shading or highlights. Even worse, the figures were glossy in the end, but nonetheless, I still remember how I felt on completing my first figure, it was a fantastic and incredibly satisfying feeling, which gave me a real push to go on.

But, of course, it didn't work properly for the first few years. It was really hard and I needed much more time than you would need today with all those good books and Internet forums where you get such great help from other modelers. However, slowly I found my own way to paint and learnt everything by myself.

I got my first important award at Euro in 1997, my first Silver medalfrom that year on everything was on the up.

The joy I had at getting my first Silver medal I will remember all my life. Some years later, I made the decision to change my painting style to that which I am using today. I have to admit, that changing to acrylics was really difficult for me, it required a totally different technique, and I had very big problems at the beginning, but finally got used to it.

Things went on this way for several years until I was hit by a stroke of destiny; my husband became seriously ill and never recovered from that. My whole life was turned inside out and I noticed with total clarity how quickly life can be over, from one hour to the next everything changed. I gave up my job, and wanted to take care of my husband at home, but that didn't happen as he died.

I really thought that everything was lost, but there is always a light at the end of the tunnel, destiny gave me another chance, and some time later, I met my present husband, Alan Ball.



Together with him, it has now been possible to make our Hobby our profession... a dream for many people. Since 2003, we have been married and work as a sculptor and painter happily together at home, with our three cats.

In the meantime, I think I achieved almost everything in historical figure painting what you can get. I got Worldmaster, Grandmaster, won medals in the most imported competitions, being a judge in all the major shows are just a few honors I got. And my most emotional experience to get the honor to set down, with Alan, a wreath at the tomb of the Unknown Soldier in Arlington. That was a surprise of two American friends who arranged that for us, I will never ever forget that moment. Thanks Joe and Norb.

That's the most important thing to me to know people around the world know my work, love it and like to share their time with me. There is no better feeling then knowing that you and your work is admired, appreciated and loved. Somebody told me once at an American show that he printed some of my work out and hangs all his favorite ones into his office. People came by asking and he told them about me and how I influenced his own painting. I never met this man before, and when he told me I was so surprised and proud at the same time. To give people joy with my work is the biggest gift for me. I hope this continues into my future being connected with people making new friends and being a role model and, of course, being able to paint as long as possible.



When I paint a figure I almost always begin with the face, on which I lay the basic colour and then completely paint the eyes first. More exactly, the eyes and the position of the pupils are painted in this stage, rather than at the end. This way I can correct anything I don't like over and over again without worrying about damaging anything. Because I find the chances of painting the eyes correctly the first time improbable, since the left side is always seemingly more difficult than the right, I always need several attempts, until I am finally content.

I have a rule of thumb, which I apply to all basics mixtures, whether it is a face, an article of clothing or anything else I paint. I always begin with the middle tone and work up to the "brighter" or highlight, like the structure of a pyramid. Usually four or five stages are enough for me to get what I want, and get to the brightest highlights. I take a little of the last colour to be used and add that to blend away any obvious lines between the layers of colours. Later I follow the same procedure in the reverse

sequence, and start with the brightest shade, whereby I make certain that the colour is kept extremely aqueous and very thin on the brush. I also make four to five layers, until I arrive at the deepest shade. Afterwards, I correct the whole thing again, by lightening again a little the appropriate places, since by shading, highlights were automatically slightly darkened.

When I am finished with the face and the head, I work downward and from left to the right from above. This is my habitual way of painting a figure; and I would never begin with the trousers for instance. In this way, I can still touch the figure on unpainted parts, if I must, without worrying about anything happening. I like to stress all transitions of clothing or body parts, by taking the respective colour and under-painting it with a thin line.

It is a little, like a relief, by after-drawing everything with the brush. The whole figure is outlined. The trick, of course, is that the brush line must be kept absolutely as thin as possible.

At the conclusion of each figure, I use just a little gloss or silk matte lacquer, in order to stress eyes, mouth, hands and any sweat, the remainder of the figure stays as it is and is not varnished or lacquered in any way.

At the very last, I install the finished figure onto the base and weather it according to the groundwork and any other circumstances that would effect it with Pastels and Oils which I lay on with White Spirit.

Over the years, I tried many brushes, the best ones which work always for me are “Windsor&Newton Series 7” long bristles. My preferred sizes are No.1 & No.2, which I can use to paint from 54mm to 120mm figures problem-free, smaller brush numbers I only very rarely use, since the brushes lose their hair anyway with time and so automatically become thinner.

As with the brushes, naturally I also have my favourite colours, there are small differences with these paints also. I personally use Andrea, Vallejo and Scale colours and some oil paints as well.

Also my favourite scale is definitely 75mm and 54mm in these sizes you can see enough details to make a figure breathtaking. 90mm is too big and sometimes it can get very difficult to handling the figure when painting it.

And never forget patience, passion and friendship are the most important things in our hobby. Nobody is falling from sky with all the knowledge or talent. Everything is lifelong exercise and hard work to achieve something.

I asked for comments specifically about issues with painting O Scale figures. Her reply: To your other question what your modelers may occur when painting bigger scale figures. They really have to be aware that in bigger scale figures, you have to paint highlights and shadows, and more importantly, also the medium lights and shadows as well. On the small scale, you don’t have much space to do so and you can’t really see it as well, but on the bigger scale, it is crucial to paint them. The other thing will be that to finish figure it will take much more time. It absolutely needs patience and controlled painting, don’t rush, and take your time. It also helps if you have a good box art picture you can use as a reference to compare with your own painting and check where the lights and shadows are painted on if you struggle with that.

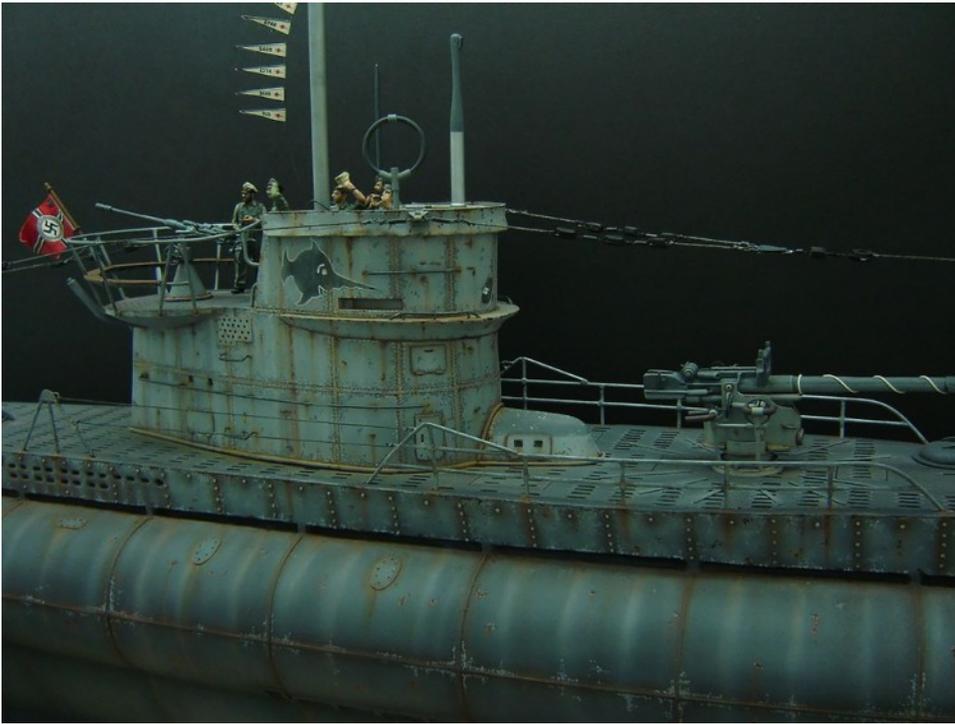
Hope that helps you a bit, cheers Marion



If you think I can help your painting please contact me at Marion.Ebensperger@oscaleresource.com.

Frederick Perez

Hello my fellow model enthusiasts, my name is Federico Perez, and I have been a scale modeler now for almost 38 years. I love scale modeling in almost any field and enjoy building almost anything If I find it interesting and/or like it so much that it sparks the interest to build a replica in scale, will do so. I started with model kits, then marveled at the great scale modeling works of great ones like Sheppard Paine, his instructional books where the first I got that started the path towards more adventures and projects that I could ever imagine; Bob Letterman with his magnificent scratchbuilt dioramas; Gerald Windgrove superb



scratch built classic model cars; and many, many great artisans in the art of scale modeling, which share with passion their works and techniques and allow me, as well as many others, to learn and progress in the field of model making. And of course, the two most important persons in my life, my Father and Mother, which not only support me in my hobby/passion for model making, but also gave me a wonderful childhood to be able to expand my mind and abilities.

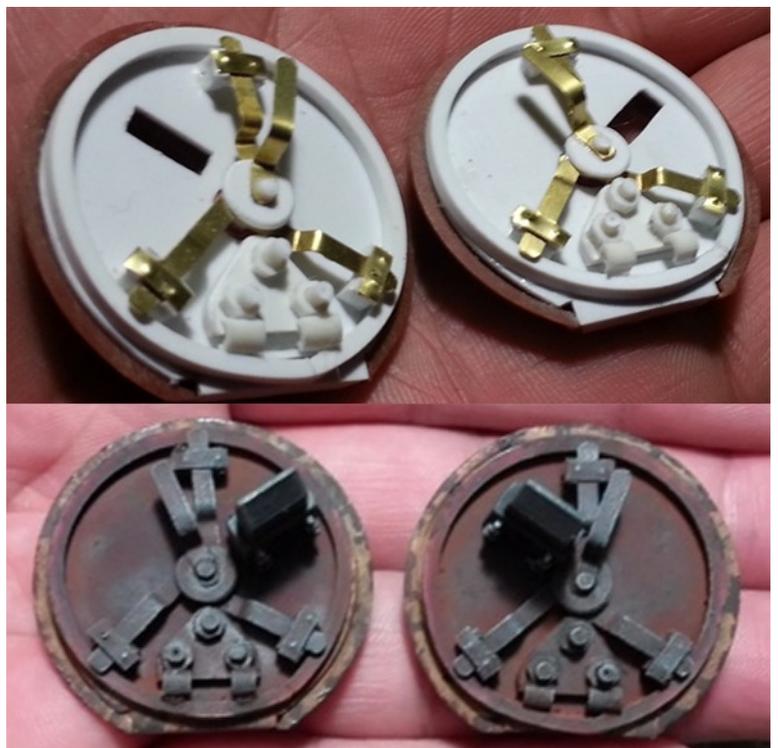
I love to scratchbuild in plastic and metal, mostly brass, copper or aluminum, depending the subject; love building parts from styrene plastic cards and assorted shapes and sizes; modifications; making

masters for small resin castings if necessary, then giving appropriate paint jobs and also weathering, from the light treatment to the full ravage of time!!

I call myself a Frugal Scale Modeler, always trying to get more for the dollar, now even more with the high cost of life and materials, so very rarely you will see me spending a lot of money for detailing sets or expensive tools, like old school technicians/mechanics, invention is the mother of necessity!! So I use a lot of things that yes, are a little harder



to make or fabricate, but the satisfaction of making it by hand and finishing it, with the knowledge that it did not cost you an arm and a leg, is priceless, so I use a lot of technics and materials and to date, have worked like a charm in my projects.





I have made many models for fellow enthusiasts that simply do not have the time to build them, but are passionate about the hobby; many are good friends now and I enjoy helping them bring their dreams to reality as much as I can. If by any reason I cannot help in what they want, I try to find someone that can or at least point them in that direction. In the age of 3D printing and prototyping, scratchbuilding is becoming a "outdated craft" for some. Well, I am old school, while I can, I will try to prevent that from becoming a reality, there is nothing more satisfactory than building something with your own hands and knowledge!

I have included some photos of my modeling works, as you can see, I love scale models in almost all fields!

If you believe I can help you improve your modeling contact me at Federico.Perez@oscaleresource.com.



Matt Wellhouser

I have been modeling most of my life. As a kid, started with airplanes and cars, then migrated to military subjects. When I was about 9 to 10 years old, I was really staring to get interested in model railroading. Locally there was a big model railroad club. I would visit often. Being pretty young, the older guys were not too thrilled to let a kid run their trains. My interest was (and still is) narrow gauge logging and D&RGW subjects. When I was a teenager, some of the interest waned and I did not do much modeling. About 20 years ago, I began painting figures. They have an interest because of the "human" element. Fine scale figures (not toy soldiers) had a very realistic quality. Massive amounts of detail. I started out painting WWII subjects, mostly German. This subject seems to be common with a lot of modelers because they come from building tanks, etc. I since have branched out to many different subjects. I have written several articles on figure painting and do commission work.

I was primarily self-taught in painting figures. We had a local club, and I gained tips and advice from more experienced members. Traveling



Air Cave. Young Miniatures Bust, 1/10 scale acrylics.



*“100 Yard Dash into Hell”
1/6 scale, acrylics.*



Bomber crew with camera, Young Miniature 1/10 scale acrylics



*Cavalry Sergeant, 54mm Romeo
Models, oils and acrylics.*

to shows allowed me to see others work, and ask questions. Like a lot of hobbies, or even vocations, trial and error is the main way I learned. I entered into competitions. Eventually, I have garnered gold medals at most of the major US shows and a Masters award. I enjoy larger scales, 1/6, 1/10, 1/9 and a few 1/6 scale figures (GI Joe size). The larger scales allow easier painting of details and are more impressive in presentation. It's also easier on the eyes while trying to paint eyeballs. For new painters, I would recommend developing techniques on larger figures – you will have a larger canvas to see what you are doing and see the effects of blending shades and colors. The techniques I learned can be adapted to any scale, any subject.

I have not done a lot of figure sculpting. I'm not brave enough. But I have done modifications and conversions. Again, trial and error. In the past few years, YouTube videos are abundant on sculpting and painting and are very helpful. Model railroad figures that have good anatomy are rare. In O scale (1/48), you can convert military figures. There has been an explosion of figures available since Tamiya led the way with 1/48 military subjects. There are several types of two part putties that can be used to sculpt and modify with. They are like a clay that hardens.

Figures for Scale Model Railroads



Matt Wellhouser

I have included several examples of my work. All photos by me. If you think I can help with your modeling please contact me at Matt.Wellhouser@oscaleresource.com

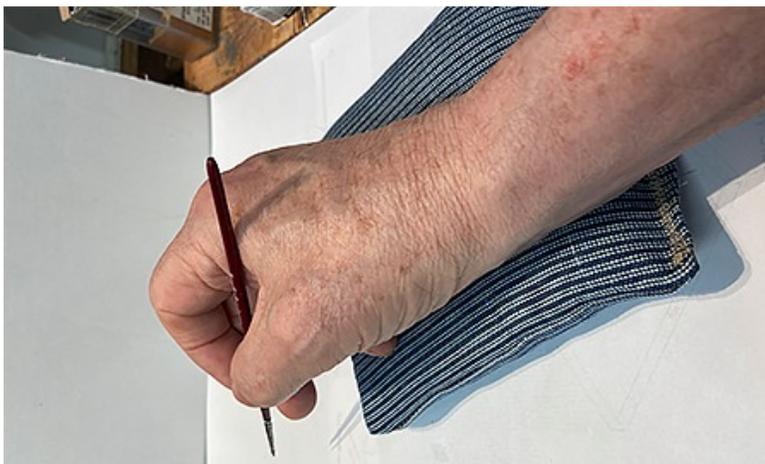
Matt also sent us a fantastic PowerPoint presentation on Figures for Scale Model Railroads. Matt allowed us to convert that presentation to a downloadable PDF for our readers. [Click here to read and download this for yourself.](#) Well worth the time and a big thank you to Matt for allowing us to share this with our readers.



I just had to try what I was hearing and paint a figure!

After seeing beautiful figures and hearing advice from outstanding painters I decided I had to try out my new knowledge. I found a new paint source during my search for figure painting information. The Army Painter, who sent me his "Wargames Starter Hobby Set" of acrylic paints, his "Army Painter Guide", and his final full coat "Quickshade" product.

I later found out that at least one 28mm figure manufacturer recommends "The Army Painter System" to his customers to help them improve the appearance of their figures. So "The Army Painter" system is what I used, combined with my newfound painting knowledge. Here is one of the painted figures I just finished.



I believe it is better than the previous figures I have painted, but I believe I can do better, so I need to keep practicing. I really like the greying to his white facial beard. Also best of all for my painting effort, my wife just made me a bean bag half filled with rice that I can rest my hand on as I paint. I think this bean bag is really going to be a major help as it keeps my hand rested and reduces any shaking in my hand. In my opinion, this aide could help any modeler keep their hand steady and free of stress. If you haven't yet used this, or a similar aide, give it a try. I would love to see some



of your painted figures. Please send me a photo so I can include it in a future article to jimkellow@oscaleresource.com

Well that's it for this time. Thanks for reading this far. I hope this helps your confidence in figure painting/sculpting skills, and gives you some "New Tracks" to travel. Time for me to get back to the workbench. Till next time, good luck in your modeling, and check out my new Facebook page: Jim Kellow MMR and like it so we can stay in touch between articles. Also, please leave me any comments or suggestions on the page.



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Don't forget we also publish The S Scale Resource Magazine. Click here to see what's going on in the scale S world as well as other articles of interest to all model railroaders.

BACKSHOP SOLUTIONS

By Ross Dando

Have a modeling question for our experts? Please send your description of your modeling problem to backshopsolutions@oscaleresource.com.

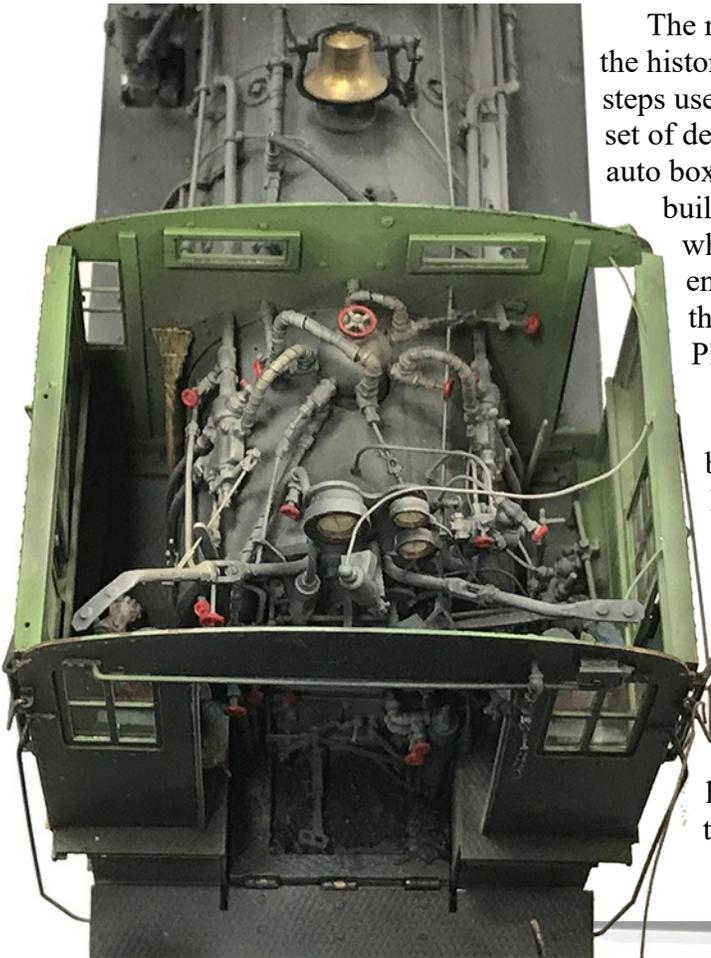
PROTOTYPE RAILS 2020 or What's An RPM?

There is generally a blank stare or a puzzled look when you start talking RPM with a model railroader. They usually think you are talking automobiles. Then you start to explain and they shut you down and say, "Oh, those crazy rivet counters". Let's look a little deeper.

There are RPMs (Railroad Prototype Modelers Meets) all over the country each year. As a convert from HO to Proto 48, I have spent many years with a list of RPMs that for me are a pilgrimage. Why you ask? Well, there are amazing modelers that show up and share their models, they are excited to discuss them and you can meet lots of manufacturers who focus on fine detail. We should be clear, we are all modelers. We have the same skills, abilities and desire to build a model. Where things diverge is research and execution. The purist RPM bunch is a group to be admired. I must say that there are degrees, but these modelers are focused on creating a second in time. There are different aspects of this focus, operations, layout design, setting the scene and finally the equipment. You see, the RPM thing is about recreating reality?? exactly! The RPM meets bring these like minded people together to share and ask questions. Now let's look at models, or, at least talk about them and why they are different. Personally, I enjoy seeing the level of detail people put into their models. It is crazy! Every aspect of the model can be compared to a general arrangement drawing and are spot on.

Growing up as a kid, there were always those articles in the magazines showing how this modeler or that modeler kit bashed a given car, and then there was *Mainline Modeler* with the amazing scratch building articles. As a kid, these articles inspired me to cut up Athearn blue box kits to make a longer flat car or to have a different door configuration. I was not focused on the rivets or reinforcement panels. I was getting the car close and making sure the paint and decals were correct. I did not start learning about the true differences in the corrugations of the ends of a box car until I really started to pay attention to my new focus on Rock Island box cars and started to see that I have collected a lot of very well decorated cars, but they were very wrong when it came to comparing them to prototype pictures. Then, it was time to decide what to do.

I unloaded hundreds of models and started to ask questions on the Yahoo groups and historical society groups. Most of what I heard coming back I didn't understand until they mentioned a specific model or part of a model. I would then go amass a collection of that to go cut up and glue back together. I had a list of RPM events that I heard about where the experts went, and I swore that someday I would go. Life just always seemed to get in the way. Fast forward to January, 2016. My first pilgrimage event!! But let's go back a year. The event I was going to attend has a special clinic called "Shake N Take" that is a special clinic that has become a smash hit. Someone spends a lot of brain cells to research a production model and how it can be transformed into a prototype model. It may be a series of cuts and gluing it back together, it may be changing production parts from various manufacturers to create a specific car or it may be cutting up a car and adding several resin castings produced to make a specific car. In times past, if you did not sit in the room or know a guy, you could not get the model. Times have changed a bit and now there are sign up sheets on the "Shake N Take" group so they can plan the resin part run. Oh, I forgot to mention, for those attending the clinics, the model parts are free as manufacturers donate them for those that attend.



The room is generally packed, and at the clinic goes through the history of the car, where it was primarily used and finally the steps used to convert the model. In many cases, there is a custom set of decals printed. The model I took to my first RPM was an auto box car. I spent literally a year doing the research and building four fine scale HO models. It was a chance to show what I was capable of, and that hopefully I was good enough to be there; having never went, I had poured over the pictures like a preteen that had found his dad's Playboy.

So that's a lot of hot air explaining why I am going, but where you ask. Florida!! The first RPM each year is held in Cocoa Beach, Florida at the Hilton. It is located on the beach and the weather can be hit and miss. My first year it was 65 and windy most of the time; this year, they heard we were coming and my wife was not going to accept sitting inside with a bunch or model railroaders. The weather was perfect; the day we arrived, the direction of the stream literally changed direction, the clouds left and the temps shot up into the high 70s. By the time we left five days later, it was in the mid 80s. My wife approved.



*Wabash Mogul 573 - Built my Louis Bartag from a Kemtron kit.
Collection of David Vaughn*

I bet your next question is, “What the heck does this have to do with O Scale?”. Well, as a convert to 1/48 and yes, Proto 48, which we can argue about later, it is a platform to grow the hobby. I have focused for the last three years to build and create a kit of a flat car I wanted in HO, but did not have the drawings to move forward. I spent hours creating 3D masters and a lot of money to create an inaccurate model. After I did that, someone sent me a drawing right before I was getting ready to have castings made. Life got in the way, and when I came back to modeling, it was in 1/48 and I made the decision to do the car I had wanted so bad. So as you may have read or heard I created what I think is a great fine scale model worthy of showing at a RPM. The next thing about RPMs is that depending on what you model, you will find that one model you really like and yes, models you don't. Some may say that all they see is a bunch of old crap or a lot of graffiti.

This year was great for the Cocoa Beach meet as well as the O scale community. There were a number of us that made the trip and it was great to get together and talk about the hobby, the changes, the models that are coming, the models that are needed and, finally, what we are working on personally. We did not have a dedicated P48 or OW5 meeting, but we got together in a group around the tables several times and admired the models. Along with yours truly, there was the great master Jim Zwernemann, the master molder Jon Cagle, Marty Megregian, Harz Sondericker, Steve Kerr, David Vaughn, James Lincoln, Tony Koester and Mike Skibbe. We all enjoyed talking models. The P48 crowd talked about taking a picture throughout the weekend and it was a last minute picture we grabbed finally. I cannot tell you how much it means to have the opportunity to just sit and talk about how models are conceived and executed. The time to learn why someone builds primarily cabooses or the transformation journey from N scale to P48. Each is a history lesson, and helps to focus one on making decisions and choices of their own.



The above models are by Jim Zwernemann. We'll take a closer look at a few of them.

The list of clinics to attend was lengthy and very educational. Since electrons are cheap and Dan likes lots of pages here is the list of what we had to choose from.

PROTOTYPE RAILS 2020

Mark Amfahr: The Surprisingly Fascinating Story of the UP's First 20 Years.

The late 1800's were a surprisingly interesting time for the railroads. Join Union Pacific historian Mark Amfahr to learn about this fascinating era that few have researched. Imagine an era when gauge, couplers and airbrakes were not standardized. How did they operate railroads under such conditions? Come to the clinic and find out!

Frank Angstead: Manufacturing the Intermountain Way.

Intermountain Railway Company returns to Prototype Rails with the latest info on how they manufacture and import scale model trains.



PC18090: Scratchbuilt styrene roof cut from old Atlas boxcar and modified. Steps scratchbuilt styrene. Handrail stanchions are brass castings. Railings are brass wire, all joints soldered. Painted with Polly Scale acrylic. "PC" lettering on sides (both sizes) accomplished by airbrushing sides white then applying masks cut from adhesive backed labels and then over-spraying green. Weathering with airbrush, acrylic washes and drybrush. Protocraft P48 trucks.

John Barry: Shake-N-Take: Santa Fe's BX-34 40-foot Single Door Boxcar.

The Prototype Rails tradition of Shake-N-Take continues! The project for 2020 will be a quick and easy conversion of an IM Modified AAR 1937 10'6" box with a complete Duryea underframe and brake rigging from modified commercially available parts. The clinic and handout will provide historical prototype information as well as how to build the model. Parts will only be provided to the first 35 clinic registrants (25 pre-registered online and 10 who register in-person at Prototype Rails).

Craig Bisgeier: Now What? What to Do With Your New 3D Printer.

This clinic goes through how 3D printers work, what are the strong and weak points of different types of printers on the market, what's best for modeling, lists good printers available at entry-level prices and tips on how to get the best out of your prints. This clinic is fresh and up to date as well, as there has been so many changes of late in the market that the emphasis has shifted from Filament-based printing to UV-sensitive liquid resin printing in just the last few months.

George Bogatiuk: The Nuts and Bolts of DCC.

In this clinic, George Bogatiuk of SoundTraxx will take you behind the scenes to show you how DCC actually works. We'll look behind the curtain to see the DCC signal, how it is sent, differences between different DCC systems and how knowing these details can help remove much of the frustration DCC can cause. Learn to operate your layout with the mastery of an industry insider!

George Bogatiuk: Tsunami2 and You.

In this clinic, we'll look at some prototypical operating scenarios and how we can duplicate these using the Tsunami2 decoders. We'll discuss steam locomotives, diesel locomotives, brakes and how they are used, yard scenarios and how the Tsunami2 will be able to bring more operational realism and more fun to your railroad operations!



MKT 1009: Entire care body and major features such as windows, doors, steps, cupola and underframe scratchbuilt from styrene. Roof cut from old Atlas boxcar and modified. All rivets formed with male and female dies in a Unimat drill press. Painted with Floquil, lettered with Bruce Blalock decals. Weathered with airbrush and acrylic washes. P48 trucks.

Mike Boland: Long Island RR Multiple Unit (MU) cars.

For over a century the Long Island Rail Road has operated many types of multiple-unit (MU) passenger cars in many classes on its electrified territory. In this clinic, LIRR author, fan, rider and modeler Mike Boland will present a review from the early MP41 Gibbs cars that began electrification in 1905 to the present day M9's. No railroad had the fleet of cars that the LIRR had--and has--and this presentation, perhaps the first of its kind, will cover ALL MU's--control motors, motor trailers, trailers, coaches, combines, baggage-mail cars and a host of others, including the presenter's favorite: the double-deckers.

Al Brown: Building a PRR X23b Boxcar.

Start with a single-sheathed boxcar (PRR X23). Turn the sheathing 90 degrees, remove some of the side trusswork, replace the roof with a "turtleback" model, and you have an X23b. (There were 756 of them.) The process of parts- and part-scratch-building an X23b will be described, along with recovery from mistakes of which there were many.

Jeff Cauthen: The SP Starlight, 1949-57.

This clinic will cover the Southern Pacific post WWII passenger train, The Starlight, Nos. 94-95. This is NOT the Amtrak train of the same name. Coverage of locomotives, cars, and other interesting tidbits for the period 1949-1957. Will include information on HO brass cars, which may be used to model the train.

Ted Culotta: Thoughts and Considerations for Scratchbuilding Freight Cars.

This discussion focuses on how to make parts from scratch for use in enhancing existing models or making models entirely from scratch, both for one-off instances as well as for duplication by casting. Tools and materials will be covered in addition to reference materials and techniques.

Andrew Dahm: Tips on Building Westerfield Resin Kits and New Patterns.

Join Andrew Dahm, owner of Westerfield Models, as he shares his tips on building resin kits. If you haven't tried it, you'll find that it's easier than you think! He'll also give advice on building new master patterns for resin casting.



MILW 104440: Used Rails Unlimited urethane castings for roof, sides, ends and floor. Modeled prototype with 4 doors in floor by cutting openings and scratchbuilt door with latches, support angles and stops. Scratchbuilt side doors. Thinned roof casting 50% and notched ends of boards. Scratchbuilt draft gear housings and strikers. Operating cut levers. Full air brake system. Painted with Polly Scale acrylic. Weathered with acrylic washes and airbrush. Distressed decals by sanding. P48 trucks.

Bill Darnaby: Nearing the End (of Scenery).

An update on Bill's famous HO scale Maumee layout that will focus on scenery techniques and photo backdrops.

George Eichelberger: Prototype Modeling - Beyond Rolling Stock.

Asheville, NC - From Murphy Jct. to Old Fort

This is NOT a clinic on benchwork, scenery building structures or track work. It shows an example of using whatever data and photos can be found to create a layout based on a specific prototype. In addition to the physical design of the Southern "S Line" between Murphy Junction and Old Fort, it discusses prototype operations on the line over time to help decide which features should be included in the most detail.

Randy Hammill: New Britain Station: My Journey into Prototype Model Railroad.

A look at what prototype modeling is, and why and how I'm modeling the New Haven Railroad in New Britain, CT c1946-1954.

Steve Hile: Modeling Bureau Junction, Illinois.

Steve will share the story of his research into Bureau Junction, Illinois and his plans for an operating diorama layout based on this busy location at the steam/diesel transition on the Rock Island.

Roger Hinman: New Haven Baggage Cars 1900-1967.

A look at the baggage cars of this high traffic volume New England railroad and how it changed over the decades.

Thomas Klimoski: Filming and Producing Model RR Videos.

In the presentation Tom outlines the benefits of making videos and reviews the equipment needed to produce high quality videos. In addition, Tom will cover various filming, editing, and post production procedures to make interesting and engaging videos that viewers will enjoy. Video samples will highlight the techniques presented in the presentation.



FW&D 8518: Very old (approximately 40 years) Atlas plastic car. Originally had 8' doors. Door openings closed in with styrene, scratchbuilt 6' superior doors, and 8 rung ladders. Painted with Floquil. Lettered with CDS dry transfers. Lettering distressed by sanding. Weathered with airbrush, acrylic washes and drybrush. P48 trucks.

Tony Koester: Wingate: A One-Town O Scale Project Railroad.

Model Railroader contributing editor Tony Koester provides an overview of the portable O scale (Proto:48, actually) project railroad he built for a series of articles that began in the January 2020 MR covering research, planning, construction, scenery, structures, and operation.

Greg Komar: Drone Photography as a Modeling Tool.

Greg, a licensed pilot, will give an overview of the potential of "flying cameras" for the planning and building a model railroad. Examples from a 20 day road trip to the Finger Lakes Region of New York State to document the look of the area and create photo backdrops for the Sequoia Buoyant Transfer Company, loosely based on the Pennsylvania's Elmira Branch.

Dave Lambert: Mail and Express Trains 1a: East and Southeast of Chicago & St. Louis. This clinic is Part I(a) of a multi-part series dealing with the Mail and Express trains of the United States. The clinic series is designed for prototype modelers interested in accurately modeling these very interesting trains. This session covers the trains east and southeast of St. Louis and Chicago. Specific railroads covered (or mentioned) are the New York Central, Pennsylvania, Baltimore & Ohio, Richmond, Fredericksburg & Potomac, Washington Terminal, Southern, Atlantic Coast Line and Seaboard Air Line. Where available, typical and actual consists are shown and summaries of most common home road and foreign line headend cars are given.

Jim Langston, III: Modelling Amtrak 1971 ? 1982.

An in depth overview of modeling Amtrak from 1971 to 1982. 80% new and revised material and never-before seen prototype photos. Comprehensive review of sources of information and detailed listing of models made in last 30+ years. Detailed new free handouts on available models by manufacturer (cross-listed with actual Amtrak roster) and consists.

David Leider: Modeling the Vinegar Industry.

Come to this clinic to learn how vinegar was made, what it was used for and how it was transported. Since it is corrosive, it had to be shipped in wooden tank cars. David will also show examples of vinegar cars and who owned them.



RI 17771: Modified San Juan Fowler Clone styrene boxcar kit. Extensive rebuild to include moving ends inward, relocating 1 body bolster, fabricating platforms, steps, door and cupola from styrene. All modifications bases of measurements and photos of prototype at North Freedom, WI. Painted with Polly Scale acrylic. Lettered with decals from multiple sources. Weathered with airbrush, acrylic washes and color pencils. P48 trucks.

Tom Madden: Recent Adventures in 3D Printing.

It's been three years since I retired from the 3D printing business and became a customer instead of a provider. In those three years the technology has advanced well beyond my most optimistic expectations and is now a very useful tool. I'll show some of my recent 3D printed projects, both large and small, and discuss how the improved technology made them possible.

Carl Marchand: Using the ESU LokProgrammer ? A Closer Look.

The ESU LokProgrammer is a great tool to have if you have ESU Loksound or LokPilot equipped motive power and rolling stock. More than a CV programmer, it allows you to upgrade the decoder's sounds and / or add features as they become available. We will take a deep dive into the LokProgrammer software, with step by step demonstration, learning some tips and tricks along the way. A MUST if you want to get the most out of your ESU decoders.

Greg Martin: Modeling the Santa Fe Fe-26 Box Car.

Greg will show how he modeled an AT&SF Fe-26 boxcar in HO scale, starting with the C&BT shops kit.

Ryan Mendell: Machinist's Tools for Modelling - Part 1 Hand Tools.

Ryan will introduce various machinists hand tools he uses to make modelling easier and more precise. Techniques to use each tool will be presented, with a focus on how these methods can be applied to kit-bashing, scratch building and pattern making.

Lance Mindheim: Color Strategies.

Aside from composition, no other factor contributes more to the visual success of a model than color treatment. Clinic covers: understanding prototype colors, color selection, inserting contrast, transitions and edges, and overall application techniques. We'll also delve into techniques for modeling some of the more commonly found surfaces such as concrete, metallic, and masonry.



WIF 724: Modified Chooch Ultra Scale II urethane FGEX kit which used my master patterns. Section was cut from body to reduce height and side sills were modified. Painted with Polly Scale acrylic. Lettered with Protocraft decals. Weathered with airbrush, acrylic washes and drybrush. P48 trucks.

Jim Murrie and Naomi Petersen: Pullmans For Patients.

A brief history of how railroads handled disabled passengers during the "Golden Era". In 1930 Pullman built two sleepers, Joseph Lister and Ephraim McDowell, specifically to handle passengers to the Mayo Clinic from Chicago. They continued in that assignment for 20 years. In 1937 the San Lucas was used to transport a polio patient in an iron lung. It continued in that role for 17 years. This clinic is a history of those three cars, their use, and the issue of accessibility in the early 20th Century.

Bill Neale: Coal, Zinc, and Moly - The Burgetts Branch.

The Burgetts Branch was a coal centric series of short branch lines in southwestern Pennsylvania. This was one of the most productive coal producing areas in the world for a time. Great photos of mines, tipples and yards. Some operations information. This branch also serviced American Zinc and Climax Molybdenum plant. Good photos of those industries also. This clinic is prototype only. Anyone who has interest in coal mines and branch line operations would find this interesting.

Joe Oates: How the Railroads Handled Mail and Express.

Joe will review 155 years of Mail and Express operations in 60 minutes! Come and learn about this fascinating and lucrative business. You may find some new and interesting ways to model this traffic.

Steve Orth: Kitbashing 1970's Brass Passenger Cars.

Learn how to totally re-work an older brass model. More than just adding a few detail parts, you'll learn how Steve started with a Soho diner and replaced the poorly rendered roof, added air conditioning, interiors, and replaced the trucks. At the end, you'll know how to bring a 1970's brass model up to today's standards.

Frank Peacock: Box Car Parts and Fittings 1920's - 1950's.

This clinic will cover box car parts and fittings in the following order: sides, doors, ends, roofs and under frames. Auto cars will also be mentioned. There will be a handout.

Clark Propst: Building A Granger Branch Freight Car Roster.

Attendees will learn how to build a prototypical freight car roster based on prototype documents. Clark will show how he used lists of customers and station agent records as a guide for his freight car roster.



SSW 2332: Scratchbuilt styrene including car body, underframe, doors, windows, steps and cupola. Scratchbuilt brass railings and smoke jacks. Painted with Polly Scale acrylic. Lettered with Champ decals. Weathered with airbrush, acrylic washes and drybrush. P48 trucks.

Alex Schneider: Rebuilt Heavyweight Pullman Sleepers Assigned to the New York Central. This clinic discusses heavyweight Pullman sleeping cars which were rebuilt and modernized in the 1930s. The primary motivation for undertaking this was to offer double bedrooms on selected trains, an accommodation intermediate in space and price between a section and a compartment or drawing room, and offering private toilet and washbowl. Although coverage is focused on cars assigned to NYC service, additional plans used elsewhere will be discussed. The mechanical features, train assignments, and modeling opportunities will be discussed, as well as the business case for retaining or rejecting cars at the time of the 1948 divestiture of the Pullman operating company and the sale of its cars to the railroads.

Jim Singer: Early 1960's Midwestern Passenger Specials (Revised).
A look at passenger traffic opportunities by the CB&Q at a time of change for passenger traffic. Generating business for yourself and others(connections) in the Upper Midwest and Southeast through Chicago, St. Louis, Kansas City and Omaha. Boy Scouts, Rail Fans, Shriner's, and Luther Leaguers. Jim Singer: Lakes States Railway Historical Societies Photo Collections Part II. All new material! Newly Scanned items from the Ed Willkommen Collection, F.R. Ritzman Collection, and F.A. Cole which between them all covers mostly Midwestern roads during a period of the 1920's to the 1960's.

Bruce Smith: WWII Military Loads Part 3.
This clinic will feature a wide variety of military loads from the WWII era. Prototype data will be used to illustrate potential traffic patterns and photos will demonstrate loads and how they were secured. Modeling approaches and resources will also be discussed.

Al Sohl: How to Add an Interior to a Kit- or Scratch-built Structure.
Learn from Master Model Railroader Al Sohl as he presents his approach to adding interiors to structures. Whether kit-built or scratch-built, interior details add realism for viewers and satisfaction for the modeler. A few samples will be provided for attendees to practice with. You can do it!

Mont Switzer: Favorite Freight Car Projects 9: the Nickel Plate Road.
This clinic is a review of the Nickel Plate freight car, locomotive and cabooses projects that I have completed over the years complete with prototype documentation.



Built by Bill Darby



Ross's own Twin Star Cars were well represented as expected.

Gil Thomas: Modeling Considerations for the 1950's modeler.

American railroads are quickly retiring their steam locomotives and purchasing new diesel locomotives. This clinic will review the major changes in railroading and help to give the 1950's modeler a clearer focus for their modeling efforts.

Tony Thompson: Transition-era Freight Traffic on SP's Coast Route.

The patterns of freight traffic of this specific part of the Southern Pacific are described and analyzed, both in terms of trains and the traffic they carried. This includes discussion of the distinctive yards and terminals on the route, the steam and diesel power used on the trains, helper operations, and freight movement patterns.



*Above left to right:
Jim Zwernemann, Ross Dando, Jon Cagle, Harz Sodenriker and Jim Lincoln (kneeling)*

Tony Thompson: Using Typography in Model Railroading.

We need to understand lettering in time and place. This means use of fonts of the correct era and style for the modeling we are trying to achieve. That's an aspect of typography. Typography is design with type, essentially the arrangement and use of letters. This sounds remote from model railroading, but in fact modeling contains lettering in many places, from freight and passenger cars to layout elements such as billboards, industrial signs and logos, highway signs, and location names. And we may also prepare timetables, train orders, waybills, or track bulletins. For all of this, we need some knowledge of typography.

Bob Webber: Pullman Operated and Built More Than Sleepers and Parlors.

In addition to the more mainstream Operations, Pullman Co. was involved with head end, coach, chair, dining and other passenger car operations, and Pullman-Standard Manufacturing was involved with other than the construction of passenger and freight cars. This clinic introduces some of the more obscure passenger related Operations and Manufacturing processes and products not normally associated with these two companies.

Bill Welch: Louisville & Nashville House Cars: 1935–55.

One of the largest railroads in the southeast and typically associated with hauling coal, the L&N operated a diverse fleet of rolling stock to serve "The New South." The L&N owned 36-ft., 40-ft. and 50-ft. house cars to serve the mixed economy of their territory.



*Ross and his lovely
wife Debbie*

Bill Welch: Louisville & Nashville Open-Top Cars: 1935–55.

One of the largest railroads in the southeast and typically associated with hauling coal, the L&N operated a diverse fleet of rolling stock to serve “The New South.” While owning a very large number of coal hoppers, the L&N fleet also included large numbers of other open-top cars.

John Wilkes: Aging Models with Alcohol.

This is a 'hands on' clinic. Anyone who wants to try their hand at 'fading' a model should bring a model that has been sprayed with Testors Dullcote or Model Master Lusterless Flat. I'll have airbrushes, alcohol, alcohol washes and clamps. If your model is already Dullcoted, you should be able to participate. Others will be able to observe. A 'first come' sign in sheet will be used.

Tom Wilson: Mifflin Jct. – Implementing an LDE.

Tom will show how he developed the LDE for Mifflin Jct. on his P&WV and Union Railroad. He'll show how he fit it into the layout and how he used a Cricut machine to build the buildings.

Craig Zeni: Building a Penn Central F7.

Craig will share prototype information and modeling using the Highliners body kit. Emphasis is on the ex-NYC units as they made up about 3/4 of the PC F7 fleet.

WOW! What a list, and once you read through it, you then have to make choices of what you will actually attend. They are good enough to break for lunch and dinner so you can recharge and hydrate before learning even more.

At the end of the day, the event is just a great place to form and keep friendships going while looking at some absolutely incredible models. Never mind that the majority of the models are HO right now, in time the mix will change as we 1/48's start to participate more and share the larger view of the world. In the mean time, its all about the clinics! I would encourage all of you to take the time to attend a RPM close to you and do it with an open mind. You always learn something about something you may not have known about previously.

WHAT'S ON YOUR WORKBENCH?

This series shows our readers what other modelers are working on, and we need your help to make it successful. All that's needed is a simple snapshot of what your workbench looks like and the project on it. Send us a picture or two along with a short description of what you are working on so we can share it here. If it's a project under construction, send it in. Repair job, send it in. Completed project, send it in. Send your pictures and descriptions to daniel@modelrailroadresource.com

Re-built Mobilgas tank car SWRX 238 arrives at Post Oak Fuel Supply with first load of gasoline.

The Laurel Valley Secondary shop crews report that all re-building and repairs have been completed on red Mobilgas tank car SWRX 238 and it was released back in service yesterday. Repairs included new Kaydee couplers and draft gear, new trucks and InterMountain metal wheelsets, new placard boards, repaired ladders and new corner sill steps and grab irons. The original underframe and end sills were re-built and repaired. Originally it was thought that the underframe would have to be replaced, thus many dollars were saved on this re-build project. The car was given a new coat of dull varnish in our paint shop.

This tank car had been sitting out of service for many years. It was clear that the car was salvageable, but the prior super had not made any effort to tackle the project during the years it was parked on his dead track. Tank car is an older Kusan model found as a basket case at recent OKC O Scale Meet. The tank was already painted and decaled by prior shop. The frame was broken, trucks and couplers missing, etc.

LVS Car Shop Supervisor, Brady McGuire



O SCALE SHOWS & MEETS

Have an upcoming O Scale event? We would like to help publicize it. Send us the information up to one year in advance, and we'll place it here along with a direct link to your Website and/or Email.

[Click here to send us your information.](#)

The Rocky Mountain Train Show

March 8th, 2020

Denver Mart 451 East 58th Avenue Denver, CO 80216-8470

All Scale Train Show

Website: RockyMountainTrainShow.com

Email: Information@RockyMountainTrainShow.com

Chicago March Meet

March, 13, 14 and 15th, 2020

Westin Lombard Yorktown Center

Lombard, IL

The Chicago O Scale Meet is a 3 day gathering of vendors, customers, clinics, and fun held annually in March in the Chicagoland area. This is the Chicago O Scale train show you've heard of.

Website: <http://marchmeet.net/>

Email: info@marchmeet.net

Greater Grand Rapids Spring Train Show

April 18th, 2020

HSB, Inc 5625 Burlingame Ave SW Wyoming, MI

All Scale Train Show

Website: <http://grvrrc.org>

Email: kwskopp@gmail.com

Eastern PA 2 Rail O Scale Train Show and Swap Meet

Strasburg, PA

April 18, 2020

Strasburg Train Show: Two-rail swap meet at the Strasburg Fire Co, 203 W. Franklin St, Strasburg, Pennsylvania. 9 am-1 pm.

Admission \$5, wives/children/military w. ID free, tables \$25 for first table, additional \$20 per. Great food, modular layout, clinics. Contact John Dunn (609-432-2871) [Click here for map](#)

O Scale West - S West and Narrow Gauge West

May 21-23, 2020

Hyatt Regency Santa Clara (San Francisco area)

Swap Meet, Vendor participation, Contests

Website: www.oscalewest.com

Email: rdunniii@mac.com

Harrisburg Narrow O Summer Meet 2020

Harrisburg, PA June 12th and 13th

On3 - On30 - On2 - On18

New Hope Church

584 Colonial Club Drive

Harrisburg, PA

[Facebook page](#)

The SONC 2020 Convention

July 16-18, 2020: St. Louis, Missouri

For more information contact John Wubbel: cell phone/text message (570-580-7406); e-mail jwubbel@gmail.com

Website: <http://sonc2020.com/>

Eastern PA 2 Rail O Scale Train Show and Swap Meet

Strasburg, PA

August 8, 2020

Strasburg Train Show: Two-rail swap meet at the Strasburg Fire Co, 203 W. Franklin St, Strasburg, Pennsylvania. 9 am-1 pm. Admission \$5, wives/children/military w. ID free, tables \$25 for first table, additional \$20 per. Great food, modular layout, clinics. Contact John Dunn (609-432-2871) [Click here for map](#)

O & S Scale Midwest Show

Saturday and Sunday, September 18-20, 2020

Formerly the Indianapolis O Scale Show / S Scale Midwest Show New name but the same great show! This is a dedicated 2 rail O Scale and S Scale show; however, we encourage and welcome the many modelers and collectors from the 3 rail and high rail side of the hobby to attend. There are many aspects of the hobby, including building, scenery and more that applies to any scale. Moreover, this show is a great place to get inspired while meeting old friends and making new ones!

Website: oscalemidwest.com/

Email: info@oscalemidwest.com

Eastern PA 2 Rail O Scale Train Show and Swap Meet

Strasburg, PA

October 17, 2020

Strasburg Train Show: Two-rail swap meet at the Strasburg Fire Co, 203 W. Franklin St, Strasburg, Pennsylvania. 9 am-1 pm. Admission \$5, wives/children/military w. ID free, tables \$25 for first table, additional \$20 per. Great food, modular layout, clinics. Contact John Dunn (609-432-2871) [Click here for map](#)

The Cleveland 2 Rail O Scale Meet

Saturday, November 7, 2020

Cleveland O Scale Meet our 37th annual show

9:00 AM to 2:00PM at the UAW Hall

5615 Chevrolet Blvd. Parma, OH 44130

Admission \$6, free parking, large facility

Please note show time changes

Dealer load in Friday Nov 1 1-4PM & Saturday 7-9AM

440-248-3055 email j3a5436@gmail.com

Website: <http://www.cleveshows.com>



March Meet Model Contest

March 14th, 2020 at the Chicago O Scale Meet

Categories

- Diesel
- Steam
- Passenger Cars
- Single Structure
- Display/Diorama
- Traction/Trolley
- Freight Cars
- Heavy Electric
- Gas-powered
- Caboose
- Non-revenue

1. The model contest will be held Saturday March 14th, 2020 at the Chicago O Scale Meet. Models must be entered prior to 11:00 AM on that day. Once entered in the contest, the models must remain in the contest area until 4:00 PM on Saturday, March 14th, 2020. Awards will be presented at 3:30 PM on Saturday, March 14th, 2020, and models may be picked up at that time.

2. All models will be judged by a team of judges using nationally established judging guidelines. Categories that have only one model will not be judged, and no placement will be given. In these cases, The O Scale Resource gift certificate will be awarded to the sole entrant in that category. Best of show will be a popular vote.

3. Judging will start at the judge's discretion, and will be finished by 3:00 PM on Saturday March 14th, 2020.

4. All models must be put in the display position by the modeler, and only the modeler may handle the model.

5. Any descriptions, photos, or other information relevant to your model will be attached to this entry for the duration of the contest, and will be made available to the judges at their request. The material will be returned after the contest.

6. I hereby certify that the model entered is my work. I also hereby release *The O Scale Resource Magazine* (the contest sponsor), Hobby Hill Inc. (the show promoter), and all persons connected with the contest from any liability due to damage or loss of the model entered.

7. I hereby grant The Model Railroad Resource, LLC photo reproduction rights for publication of this entry in *The O Scale Resource Magazine*.

Chicago O Scale Meet 2020

Model Contest

Thanks for entering the model contest at the Chicago O Scale Show on Saturday, March 14th, 2020. The following pages are the Model Contest Entry Form and the Model Contest Judging Form. You may fill them out prior to coming to the show, and that is recommended to save you time at the show.

The Contest Entry Form identifies your model and is your receipt for your model. When you place your model in the contest, this form will acknowledge that you have a model in the contest. When you pick up your model, you will need to sign this form in the Claim Check area. This tells us that you have picked up your model, and it is no longer in the contest. The form also explains the rules for the contest. You will notice that there is a category for Single Structure and one for Display/Diorama. There needs to be a distinction between when a Structure model becomes a Diorama. For the purpose of this contest, a Single Structure is a stand alone building with no base. The building may have all the interior partitions and trim, but no other details. For example, a clock on a wall or a person on a platform will move your model into the Display/Diorama category. If the building is mounted on a base with scenery, that will move the building into the Display/Diorama category. This may seem awkward, but it is the simplest way to make the distinction. The other categories should be clear. If not, contact us for help.

The Contest Judging Form will be used by the judges when looking at your model. You need to fill this out in as much detail as you would like. **In addition, we would encourage you to supply more information on separate pages.** Title any additional pages with the title of the judging box they apply to. For example, titling the page Construction will tell the judges that the information applies to the first box of the judging form which is titled Construction. If you supply photos or drawings, they will be used by the judges and returned to you when you pick up your model. The first box titled Construction explains how you built your model. For example, if your model is more than 90% scratch built, you would check off that the model is scratch built. In the construction techniques section, you may check off more than one item. The last item in this box is the description of how you built the model. The space is short, and we would recommend more explanation on a separate page. Make a note on the line to see the attached pages. The next box titled Detail is where you will describe the detail and what it took to create it. Again, we would recommend a separate page for your explanation. Any photos or drawings you used would be a help to show how you replicated features in your model. The next box titled Conformity is where you will describe how your model matches a prototype. If your model is entirely free lance, that is OK. Just describe how your model would match a prototype construction. Again, we would recommend a separate page. The next box titled Finish and Lettering has some items that can be checked. Check as many as apply to your model. A separate page may be required to explain all your techniques. The last box that you will need to fill out is the Scratch Built box. Describe any parts of your model that you made from scratch, along with how you made them. A separate sheet will help here as well. Any information that you can give the judges will help them to understand your model and how you built it.

The two judges will each make their own observations and assessment of your model. They will then confer with each other to give you a total score. You will get the contest judging form back with your model, and your information when you pick up your model. All decisions by the judges are final.

If you have any questions, please do not hesitate to contact us.

Amy Dawdy amy@oscaleresource.com

Dan Dawdy dan@oscaleresource.com



Chicago O Scale Meet 2020 Model Contest Entry Form

Entry No.

ENTRANT / MODELER (please print legibly)

Name _____ Category _____
Address _____ City _____
State/Province _____ Zip Code _____ Country _____
Phone (____) _____, _____ Email _____

CONTEST EVENTS (please print legibly)

Enter your model description, number, or railroad name in the event you would like to enter.

Diesel _____
Passenger Car _____
Steam _____
Single Structure _____
Display/Diorama _____
Traction/Trolley _____
Freight Car _____
Heavy Electric _____
Gas-powered _____
Caboose _____
Non-revenue _____

CONDITIONS OF ENTRY

1. The model contest will be held Saturday March 14th, 2020 at the Chicago O Scale Meet. Models must be entered prior to 11:00 AM on that day. Once entered in the contest, the models must remain in the contest area until 4:00 PM on Saturday, March 14th, 2020. Awards will be presented at 3:30 PM on Saturday, March 14th, 2020, and models may be picked up at that time.
2. All models will be judged by a team of judges using nationally established judging guidelines. Categories that have only one model will not be judged, and no placement will be given. In these cases, *The O Scale Resource* gift certificate will be awarded to the sole entrant in that category. Best of show will be a popular vote.
3. Judging will start at the judge's discretion, and will be finished by 3:30 PM on Saturday Saturday, March 14th, 2020.
4. All models must be put in the display position by the modeler, and only the modeler may handle the model.
5. Any descriptions, photos, or other information relevant to your model will be attached to this entry for the duration of the contest, and will be made available to the judges at their request. The material will be returned after the contest.
6. I hereby certify that the model entered is my work. I also hereby release *The O Scale Resource Magazine* (the contest sponsor), Hobby Hill Inc. (the show promoter), and all persons connected with the contest from any liability due to damage or loss of the model entered.
7. I hereby grant The Model Railroad Resource, LLC photo reproduction rights for publication of this entry in *The O Scale Resource* magazine and/or use on their Website.

Entrant Signature _____ Sponsor _____ Date _____

CLAIM CHECK

I hereby certify that my entry # _____ entered in the model contest has been returned to me.

Entrant Signature _____ Sponsor _____ Date _____



Chicago O Scale Meet 2020

Contest Judging Form

Entry No.

1. Construction (Maximum 40 points)

Points Awarded

Select the construction that best describes your model

- | | |
|--|--|
| <input type="checkbox"/> Scratch built complete model and details >90% | <input type="checkbox"/> Kit bash commercial model not per the kit plan |
| <input type="checkbox"/> Scratch built partial model and details <90% | <input type="checkbox"/> Kit built per the kit plan >90% some modification |
| <input type="checkbox"/> Modified commercial model >50% modified | <input type="checkbox"/> RTR model with some modification <20% |

Name of kit or commercial model used as basis if applicable _____

Construction techniques—Select the methods and materials that apply to your model

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Drew own plans | <input type="checkbox"/> Followed construction article | <input type="checkbox"/> Cut & fit wood | <input type="checkbox"/> Soldered metal |
| <input type="checkbox"/> Used proto/com plans | <input type="checkbox"/> Cut & fit metal | <input type="checkbox"/> Cut & fit cardstock | <input type="checkbox"/> Made patterns |
| <input type="checkbox"/> Used kit plans | <input type="checkbox"/> Cut & fit plastic | <input type="checkbox"/> Cut & fit glass | <input type="checkbox"/> Made molds |

Describe how model was built, complexity, and materials _____

2. Detail (Maximum 20 points)

Points Awarded

Describe complexity, difficulty, & quantity of detail parts added by you. Identify commercial parts.

3. Conformity (Maximum 25 points)

Points Awarded

Describe how your model conforms to a prototype. Include prototype documentation other than supplied with kit.

4. Finish & Lettering (Maximum 25 points)

Points Awarded

- | | | | | | | | |
|--|--|---------------------------------|------------------------------------|--------------------------------|-----------------------------------|------------------------------------|--------------------------------|
| <input type="checkbox"/> Weathered | <input type="checkbox"/> Hand Lettered | <input type="checkbox"/> Decals | <input type="checkbox"/> Transfers | <input type="checkbox"/> Spray | <input type="checkbox"/> Airbrush | <input type="checkbox"/> Dry brush | <input type="checkbox"/> Stain |
| <input type="checkbox"/> Non weathered | Describe methods and materials _____ | | | | | | |

5. Scratch built (Maximum 15 points)

Points Awarded

List all parts scratch built and note special refinements. _____

6. Total Points (Judges only here)

Total Points

Tabulated by _____ Verified by _____

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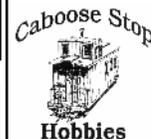
Chicago "O" Scale

March 13-15 2020

www.marchmeet.net

Ph. 630-745-7600

DEALERS



Caboose Stop Hobbies

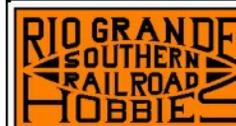
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Cedar Falls, IA 50613

Phone: 319-277-1754

trainguy34@mchsi.com

Web: www.caboosetophobbies.com



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Whitewater, CO 81527

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www.rgsrrhobbies.com

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Sonoma, CA 95476-4835

Phone: 707-935-7011

Email: norm@protocraft.com

Web: www.protocraft48.com

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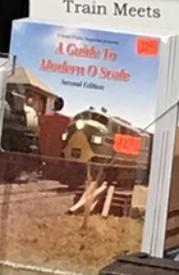
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