

# The Potomac Flyer

**October-November 2021**

**The Newsletter of the Potomac Division, MER, NMRA**



## Inside This Issue:

**The Rolling Stock Challenge**

**Track Making, Part 4**

**Operational Signal Systems**

**Plus Tips and Mat**

**Thompson's Layout Profile**

**And a Tribute to the Late Tom Brodrick So Read On...**

## **COMING IN-PERSON EVENTS:**

**Oct. 21-24 MER Convention, Hunt Valley, Md.**

**Nov. 6 Potomac/James River Joint Meet,  
Warrenton, Va.**

# Bill of Lading:

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*Belida Photo*

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**Cover Photo: Brian Sheron’s Spent Nuclear Fuel Car**

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## The Potomac Flyer

### Submission Deadlines – Issue

**Oct. 30 for Dec.-Jan.      Feb.28 for April-May**

**June 30 for Aug.-Sept.      Dec. 30 for Feb.-Mar.**

**April 30 for June-July      Aug. 30 for Oct.-Nov.**



## From The Business Car: Still at the Intersection of Unsure and Uncertain...

by Martin Brechbiel, MMR, Potomac Division Superintendent



Opening up seems to be continuing, albeit as cautiously as before if not more so. Many venues are now requiring masks regardless of vaccination status in response to the delta variant (with more variants in the wings.) James River Division is about to hold their next meet as I write this, and the owner of venue they are using is requiring vaccination proof. It's unclear as to the need and wisdom to pursue in person events at this time in our Division (other than our Hobby Barn clinics with strict COVID protocols). Again, we need venues that are amenable to our use as well as within our budget. I'm open to hearing any information about anything related to that from any of you!

Now I turn your attention to two upcoming events. First, we have the MER convention still on track for October at Hunt Valley (Oct. 21-24) . I say "still" as the Mid-Atlantic Railroad Prototype Modelers (MARPM) Convention that was to have been held in September was cancelled due to concerns about the pandemic.

This MER convention looks to have something for everyone with many clinics and tours. I look to see you all there as it's a short hop up Rt. 95, etc. and around just north of Baltimore. We missed a convention last year and now that we have one right in what might be considered by many to be within commuting distance, I think that the Potomac Division should be well represented by its attendance.

Secondly, the Potomac Division continues to plan on reprising our joint meet of 2019 with the James River Division at Battlefield Baptist Church in November of this year! The date and other details are elsewhere in The Flyer ([see page 8](#)), and for more information please contact our Paymaster, Jerry Stanley, who has been shouldering coordination of this meet. On that same note, **we need volunteers to help out!** We're also looking to line up a few layouts to visit in the afternoon. So, if you live out

that way, or even on the way back towards the Beltway, we'd love to hear from you so that attendees might visit your layout on their way home.

### Welcome New Member!

September:  
Keith Jordan, Germantown, MD

In parallel, I will note that the Great Scale Train Show will be back at the Timonium fair grounds in October. This time the Potomac Division will have a presence with a recruitment table (**we need volunteers to help out!**). So stop by and check in with the folks manning the table. We plan on having a presence at other trains shows and similar events, and you can help out (and

The Potomac Division, Mid-Eastern Region, National Model Railroad Association includes the District of Columbia; Calvert, Charles, Montgomery, Prince George's and St. Mary's Counties in Maryland; Arlington, Fairfax, Fauquier, Loudoun, Prince William, and Rappahannock Counties in Virginia, as well as all area independent cities.

**The Division Crew:**

Superintendent Martin Brechbiel, MMR, 703-309-3082, [Superintendent@potomac-nmra.org](mailto:Superintendent@potomac-nmra.org)

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Asst. Superintendent Ernie Little, MMR, 571-383-7316, [Asst-Super@potomac-nmra.org](mailto:Asst-Super@potomac-nmra.org)

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Flyer Asst. Editors-Proofreaders: Dan Ebert, Bob Sprague

maybe score a free pass for admission) by signing up for a block of time at the table. Contact our Paymaster, Jerry Stanley, for more details!

Lastly, the 2022 elections are coming up on us quickly and we'll have two positions up for consideration, Assistant Superintendent and Paymaster. Thanks to the changes in our Bylaws, we now elect to specific positions and we will be able to use electronic voting. So look for election news in your email inbox! I cannot overstate the critical importance of having candidates for election to the Board as this directly impacts the very real viability of the Potomac Division. If you fail to step forward, and we lack adequate officials on the Board, then the Division fails too. Contact me directly if you are interested in running for either position or if you are just interested in serving on the Nominations/ Election committee. More information regarding this is elsewhere in The Flyer ([next page](#)). Have I mentioned that **we need volunteers to help out** yet?

The weather seems to oscillate from summer to fall. So either get outside and enjoy what you can or enjoy the air conditioning and build models and layouts! And take photos, write articles, and send those to the Editor of *The Flyer*, Alex Belida, MMR at: [Potomac-Flyer@potomac-nmra.org](mailto:Potomac-Flyer@potomac-nmra.org)



## 2022 Election Process Established

The Potomac Division Board of Directors has established procedures for the 2022 Board of Directors Elections. In 2022, the Division's current bylaws provide for two of the Board of Directors positions to be open to election. These two positions are:

**Division Assistant Superintendent**  
**Division Paymaster**

The following individuals are the Nominations Committee for the 2022 elections: Mark Gionet (Chair), Bill Demas and Brian Sheron. These members are available to answer any questions concerning the duties and activities associated with service on the Board. The following are email addresses for the committee members:

1. Mark Gionet - [mgionet@lsginc.com](mailto:mgionet@lsginc.com)
2. Brian Sheron, MMR - [bwsheron@me.com](mailto:bwsheron@me.com)
3. Bill Demas - [wsdemas@verizon.net](mailto:wsdemas@verizon.net)

Members interested in running for office in the 2022 elections are required by the Division bylaws to notify the Nominations Committee by email, no later than midnight, February 4, 2022, and supply them with a picture, a biography not to exceed 200 words, and a statement about why they are running for a position. Candidates should send their information to all Committee members.

The election will take place in April 2022. Ballots will be sent to members for whom the Division lacks email addresses; voting by everyone else will be done electronically. This provides great convenience for all and a significant cost savings for your Division.

### **Important dates concerning the 2022 election process are as follows:**

- **February 4, 2022 (Midnight)** - Deadline for candidates to notify the Nominations Committee of their intent to run for office and provide a current picture, biography, and statement as to why they are running for office.
- **April 1, 2022** - the Potomac Flyer and emails from the Division will provide a list of candidates for office for the membership to consider. Mailed ballots to those members without email addresses on record will be mailed out.
- **April 15, 2022** - eVoting will commence
- **April 22, 2022** - eVoting will conclude; deadline for receipt of mailed ballots by the Nominations Committee.
- **April 25, 2022** - Candidates will be notified of election results.
- **May 17, 2022** - The new Board of Directors will meet. The new Board of Directors will be announced to the membership by a posting on the Division's [Groups.io](https://groups.io), in emails from the Division sent to the membership, and posting on

the Division's website. The new Board of Directors will be announced to the membership in the next available issue of the Potomac Flyer.

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## **Mt. Clare Junction: It's Nearly There...**



**Oct. 21-24** – Those are the dates of the Mid-Eastern Region Annual Convention you've been waiting for. Early registration has ended but you can still make a "regular fare" booking through Oct. 3 for \$75. If you miss that, you can get the "on-site fare" for \$85 when you show up at the registration desk.

Registration for the convention gives you access to all regular clinics, layout tours, displays and vendor areas, within the occupancy limitations defined by the host hotel Coronavirus policy. Parking at the hotel is free.

One of the highlights will be the convention banquet to be held Saturday evening, Oct. 23. The menu features dining options available to patrons of the Baltimore & Ohio, Pennsylvania and Western Maryland railroads in 1946 – Maryland crab cakes, grilled New York steak or roasted turkey.

The convention organizers say they "want you to be able to attend the convention, and you can help make that possible by following CDC and local guidelines and the recommendations of the scientific medical community. Wear a mask and stay socially distant to reduce transmission of COVID. Wash your hands or use hand sanitizer frequently."

On the [next page](#) are the detailed COVID policies announced by the organizers for the convention

## Convention COVID Policies

The Mount Clare Junction model railroad convention will be setting a Gold Standard for safety protocols in accordance with CDC and local guidelines.

The entire event will operate normally with the added precautions you can expect: extra hand sanitizer throughout the hotel, six feet spacing for lines, chair spacing and so on.

**Everyone must wear a mask.**

Mask removal will only be allowed outside the facility, in designated dining areas and only during those specified dining times. Multilayer cloth, N95 or KN95 or surgical masks must be *properly* worn during all other convention events, on-site and off. No neck gaiters, masks with vents or handkerchiefs tied around one's neck are allowed. Proper usage of masks means coverage of nose and mouth at all times.

At the entry point, everyone will be required to complete an agreement to abide by the convention rules in order to obtain a badge, which may include asking if you have been vaccinated. Yes, we are legally allowed to ask. For clarification, you do have the voluntary right not to answer if you have been vaccinated. Note we are using the word "voluntary" and in no way forcing anyone to show us their vaccination card.

The convention staff have been vaccinated.

If you are feeling ill, have flu-like symptoms or a fever, someone in your house has flu-like symptoms, or you suspect you have been in contact with anyone who might have these symptoms even days before the event, please stay home.

We thank everyone for their participation and understanding. Remember, this allows us to have the event instead of cancelling it.

We will not tolerate temper tantrums at the event. This is a model railroad convention, not a political convention. While we do not anticipate anyone being disrespectful over the weekend, convention and hotel staff have the authority to remove non-compliant persons from the property. There may be police officers (more than one) from Baltimore County inside the hotel throughout all days of the event to escort anyone outside the hotel if they will not honor the mask mandate.

The convention reserves the legal right to deny access to the event to anyone who chooses not to adhere to the safety protocols as indicated above.

## Joint Meet Potomac-James River

This event takes place on **Saturday, Nov. 6** in Warrenton, VA. at the Battlefield Baptist Church starting at 9AM. There will be clinics in the morning and layout tours in the afternoon. **Please note: Masks will be required for all indoor activities during this event.**

### Potomac Clinics

Ken Wilson - N&W Caboose acquisition and restoration

Marty McGuirk - Modeling the October Scene

### James River Clinics

Ed Fischer - A Railroad that Never Was and One that Ain't No Mo

John Vogler - What Are Railroad Signals?

### Layout tours

Cam Green - Maine Central RR (HO)

John Swanson - PRR Cresson Branch (HO)

These members of the NMRA Partnership program have donated door prizes:

Broadway Limited <https://www.broadway-limited.com>

Logic rail <http://www.logicrailtech.com>

Lionel <http://www.lionel.com/>

Micro Trains <https://www.micro-trains.com/>

Rix Products Inc <https://rixproducts.com/>

Show Case Miniatures <http://www.showcaseminatures.net>

Team Track Models <http://teamtrackmodels.com>

TSG Media <http://www.tsgmultimedia.com>

Scale Trains <https://www.scaletrains.com>

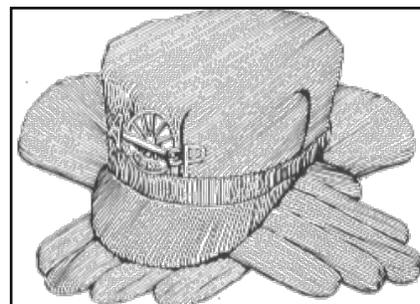
**Remember: November is...**



## Achievement Program Report

by Mat Thompson, MMR, Potomac Division AP Program Coordinator

Jerry Stanley has earned his Volunteer certificate for the work he has done for the Potomac Division. This is his first certificate. He is now working on the requirements for Author.



On August 23 four modelers working on the Master Builder-Cars certificate came to my house for a conversation about the requirements and the evaluation process to earn Merit Awards. In this photo ([below](#)) I am pointing out the underbody detailing needed to maximize the point total.



Participants included Rich Steinmann, Bill Lyders, Pete LaGuardia, and Bob Rodriguez ([who took the picture](#)). I showed cars I built for evaluation, some of which earned Merit Awards and some of which did not. We discussed why they got the scores they did and what could have been done to improve the scores.

Bill Lyders brought an in-progress flat car he has started and explained how he would use that learning experience to build a gondola based on the same frame. We also looked at prototype car plans to understand the level of detail needed to create a model that could earn a Merit Award.

While we talked about cars, the evaluation criteria also apply to Structures and Motive Power. You can see a three-part article on this information at [Merit Awards \(potomac-nmra.org\)](http://potomac-nmra.org).

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## Paymaster's Report:

by Jerry Stanley, Potomac Division Paymaster

1. Checking account	\$5937.73
2. Cash on Hand (Mailed deposit in)	\$70.00
3. Total assets as of 8/31/2021	\$6007.73
4. Deposits by date	
a) 6/11/21 \$120.00	
5. Total Deposits	<u>\$120.00</u>
6. Individual Deposits	
a) 8/25/21 \$120.00	
7. Total Deposits	<u>\$120.00</u>
8. Total payouts	
a) \$0	
9. Total Payouts	<u>\$0.00</u>
10. Checking account balance as of 8/31/2021 (Lines [1+5]-9) =	\$6057.37
11. Total Cash on hand 8/31/2021	\$ 70.00
12. Total Assets (lines 10+11)	<b>\$6127.37</b>

**If anyone is interested in making a donation to support the activities of the Potomac Division, you can always send a check made out to: “Potomac Division NMRA” and mail it to our Paymaster: Jerry Stanley, 11552 Hereford Court, Hume, VA 22639**

## Potomac Division Rolling Stock Challenge

When we asked you to send in photos and a description of your favorite single piece of rolling stock we were hoping we'd get a good response. After all, our request for your layout info and photos generated two *Flyer* issues of entries, 25 layouts in all. (And we'll keep publishing any that come in. There's one in this issue!)



*Belida Photo*

Well, the rolling stock request also triggered a healthy outpouring of entries.

As Editor of *The Flyer* and a member of the Potomac Division Board, all I can say is "Thank you!" You members are the best...and most talented, as these cars show!

So, with no further introduction, here are the submissions. **Enjoy – and then vote for your favorite by sending an email to: [Potomac-Flyer@potomac-nmra.org](mailto:Potomac-Flyer@potomac-nmra.org). Identify the car you like the best by using the number or name of modeler when you vote.**

Our crack *Flyer* editorial team will compile the results and we'll announce the top 2 choices in the December-January issue. **Please get your votes in by November 10th at the latest.** There are no prizes, alas, but we'll recognize the winner and runner-up with special banners when we post photos of the most popular cars.



*Alex Belida, MMR, Flyer Editor*

**Next Challenge: Send us photos and a description of your **favorite trackside structure**. We'll publish the entries in our December-January issue and then ask you to vote for your choice! (Deadline: Nov. 10; Details on Page 27)**

*(The entries appear here in the order in which they were received. All texts and photos are by the modelers who submitted entries unless otherwise noted.)*

## 1. Martin Brechbiel's Pickle Car



This is a scratchbuilt, smaller early pickle car in O scale that features board-by-board construction with styrene shapes, lots of nut-bolt-washers, and a basic K brake underbody with all the truss rods. Assembly with commercial products was limited to a brake casting, brake wheel, ratchet & pawl, queen posts, and four grab irons. It's my favorite since it's the most recent car I've built (last week of July '21) and it goes with the large Lauthers Perfect Pickles building on my layout. **Martin Brechbiel, MMR**



## 2. Ernie Little's Hogshead Tobacco Car



When I think about railroad cars I always seek those that are different. While researching freight cars on my way to the Master Builder-Cars certificate I encountered the Southern Railway Hogshead Tobacco Car. Definitely something different in appearance and in terms of railroad cars .... LARGE! I found an Ambroid model of the car and was able to use the plans to scratchbuild the car by duplicating the provided wooden parts in styrene. The HO scale model secured a Merit Award and was my final scratchbuilt car for the AP certificate. A fun and challenging build for me. It was also the highest score I received on my car builds. *Ernie Little, MMR*



### 3. Brian Sheron's Spent Fuel Transport Car



Once nuclear fuel is used up in a reactor, it must be removed and transported to a safe storage location. Spent nuclear fuel is still highly radioactive and protection is needed when people are nearby and from accident while being transported.

For my Master Builder-Cars AP Certificate I

chose to model a spent fuel transport car that is used by the Department of Energy to transport spent nuclear fuel from its reactors to their storage locations.

The nuclear fuel is contained in zirconium-clad rods. A spent nuclear fuel assembly, which is made of a number of individual fuel rods, is loaded, with several other assemblies, into a transport cask. On each end of the cask are large round discs, called impactors, which are designed to protect the fuel assemblies in the cask from impact in the event of an accident.

Because of its size and weight, the spent fuel shipping cask rides on a specially-designed, four-truck flat car with articulated ends. Since at the time I built this car I worked for the U.S. Nuclear Regulatory Commission, I had access to scale drawings and photos of the cask and the car.

The entire HO scale car was scratch-built. The cask with the impactors was formed on a wood lathe from a single piece of round stock. The cask supports and tie rod system holding the impactors in place on each end of the cask were all scratch-built, as was the flat car with the articulated ends. I also created all the decals on my computer. Only the trucks, couplers, and brake wheel and stand were commercial products.

**Brian Sheron, MMR**

## 4. Ken Nesper's Wood Reefer



My favorite railroad car is this HERX 5021 wood reefer. I like to build O scale wood and wood/cardstock models of freight cars from kits that were mostly produced in the 1980s and early 1990s, before the advent of quality plastic cars. This is my favorite because it was my first. The kit was manufactured by Mainline Models, a division of Ye Olde Huff 'n' Puff

Manufacturing Co. It came with pre-printed sides, a bag of wire grab irons, and the basic brake components (which I ignored). I added Athearn Bettendorf trucks, NWSL steel wheels, and Kadee 805 couplers. Who knows? Some day I might add some rudimentary brake rigging, but I've still got more kits to build.

**Ken Nesper**



## 5. Mat Thompson's Tank Car



My favorite car is this Atlas version of Hooker Chemical's 11,000-gallon tank car #3336. My research says the HO scale car is a highly accurate model to use red paint instead of the normal orange. I added light weathering. The real car carried liquid chlorine produced at Hooker's Tacoma, Washington plant, so it would have served the paper mill on my Oregon Coast Railroad.

John King gave me the car. It was a special run and he had one in his stash. He knew the link that made it perfect for my railroad. He wouldn't let me buy it from him - instead he contracted for lifetime visiting privileges. I now have exactly the right car for my railroad and a constant reminder of the friendships we can build in this hobby.  
*Mat Thompson, MMR*

## 6. Robert Reid's Ventilated Box Car



This car is a scratchbuilt HO 1905 era ventilated box car originally used to haul watermelons. The model was made from styrene and it contains over 300 individually applied pieces. It is one of the models judged for my cars certificate. It sits in front of a classic Fine Scale Miniatures kit.

*Robert N. Reid, MMR*



## 7. Michael Fleming's Pullman



This is my favorite car. It is an HO scale Branchline Trains Pullman built from a kit over the past year. There were numerous parts and steps to the build, much more than I expected. I was planning to build two more but I am going to take a breather. Nice cars but very time consuming. *Michael Fleming*



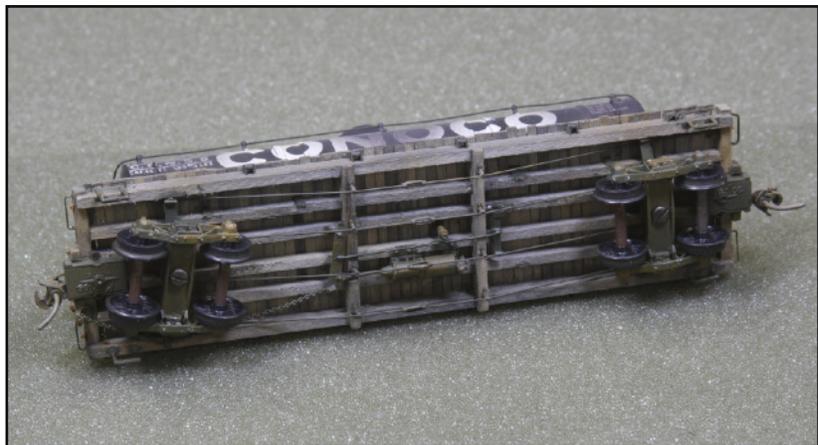
Figure 1

## 8. Ron King's Tank Car



I like all my rolling stock, but I have especially fond memories of one Sn3 tank car that I built. Maybe it's because everyone in my family worked in the oil industry at one time or another and also because of the circumstances during which I built this one – while working as a commercial deep sea diver out of the Beaumont-Port Arthur, Texas area. I had a small attaché case that carried my modeling tools and the supplies needed to build a few models while I was on the rig or in my motel room. The model started out as a kit, but it turned out well enough to become a contest and Merit Award winner. Because the prototype was basically a flat car with a tank on top, the “kit” consisted of a

urethane tank casting, half a dozen strips of basswood, and a drawing of the prototype. The rest was up to me. I had fun building the car while spending most of my time fabricating the brake rigging and other details. Construction info: The flat car was built board by board; the wood was distressed and stained with



leather dyes; the paint and weathering were air-brushed (Floquil).

During those years, I built several Sn3 models, but never built an S scale narrow gauge layout. There were very few of us working in that scale and gauge at the time, so building everything was a challenge. Today, this Conoco tank car still occupies a prime spot in my display cabinet and brings up many fond memories of my time in the Gulf region. *Ron King*



## 9. Stan Knotts' Box Car



Here is one of my favorite cars. It was built by the late Bud Sima following a letter posted long ago in the NMRA Bulletin (predecessor to the NMRA Magazine). That letter commented on something about Bud Sima but misspelled his name as "Bug Sima." The HO scale car actually has a slight depression. *Stan Knotts*

## 10. Jim Novaco's Snow Plow



This HO scale car was given to me for Christmas in 1967 by my wife. It is the first car she gave me but not the last. The car is an old Ambroid. It originally rode on Central Valley Fox trucks. I added the bell and head light. The car is painted Floquil Box Car Red and Floquil Yellow. The decals are by Champion.

In 1996, I decided to make the car more operational. I added the front coupler and replaced the Fox trucks. The rear is a Kemtron sprung arch bar and the front truck is a plastic Bettendorf that I filed off the journal boxes to allow the truck to pivot more. It can now track through a 20 inch curve, carefully.



Misery Bay Copper is a fictitious short line that is wholly owned by the Misery Bay Copper Mining Company. The X in the reporting marks indicate it is not an ICC regulated railroad. Its sole interchange is with the Pearl River & Northern, also a fictitious railroad. *James Novaco*

## 11. Alex Belida's Densmore Tank Car



Because I like early-era railroading, I decided to scratchbuild an original Densmore Tank Car when I was working for my Master Builder-Cars certificate. The car was built using prototype plans and a research paper done for the Petroleum History Society as well as the 1866 U.S. Patent Office submission by the Densmore brothers. The HO scale model was constructed using stripwood, brass wire, and a 3D printer to make the cone-shaped tanks over which I glued individual staves. The hoops are made from painter's masking tape spray painted flat black, trimmed in very thin strips, and fitted over the staves. There are stabilizer bars running from the floor of the flat bed to the tank top beams to hold the tanks in place together with shaped wood blocks on the flat car at each end and in between the tanks. There are brakes on only one truck. Simulated oil spillage was created using authentic oil, purportedly from Drake's Well, that I found in a small bottle on eBay. (The bottle did have a drawing of Drake's Well on it so it must be true, right?) The trucks are Bitter Creek woodbeams. The link-and-pin couplers are from Prescott Hobbies. The car is lettered for the Oil Creek Railroad. It's my favorite because it has a lot of character. **Alex Belida, MMR**

## 12. Paul Hutchins' Gondola



This is my favorite car on my layout due to the fact that I did all the detail work on it myself. The HO scale car was painted with a rust-colored acrylic with decals of my favorite road, the Norfolk Southern. I made the pipe load which was painted using a lighter rust-colored acrylic. I weathered the entire car inside and out with Pan Pastels, including the trucks and couplers. *Paul Hutchins*



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railroading videos to your email  
every month. It's one more  
benefit of NMRA membership!

## 13. Bernard Kempinski's Conductor Car



I scratchbuilt my 0 gauge conductor's car as if it was a converted box car using prototype photos as guides. I laser cut the frame and then planked the deck with scale lumber. The car sides are laser scribed, but engraved on two sides so the joint lines show inside and out. I decided to add a full interior. I know the conductor had some type of desk and they needed a place to store tools and supplies for the crew. Being a converted boxcar, I assumed things were pretty rough. Most everything in the interior is scratch built except for the stove casting, the barrel, lantern and the tools. The chairs, bunk beds, storage chests, and desk are laser cut from my drawings. Making the roof removable to allow people to see the interior made the modeling task considerably tougher. The messages and conductor's report on the desk are scaled down copies of actual USMRR paperwork. The exterior doors slide and the hand brakes work. The couplers and brake wheels are also photo etched from my designs. I use link and pin couplers on my layout. **Bernard Kempinski, MMR**



## 14. Mark Gionet's Milk Car



Twenty-five years ago, I began to contemplate expanding my HO rolling stock roster to include equipment from the 1950s. I wanted to feature earlier diesel-powered operations. So I acquired early Alco road-switchers and EMD F-units. At the same time, I stockpiled resin and 'craftsman' rolling stock kits. One was a Funaro & Camerlengo version of an insulated milk car built for the Erie in the 1930s. The Boston & Maine purchased six of these used in 1955.

It was a fun build, although my decal application skills were sorely tested. Despite a lightly applied protective coat of clear lacquer, I managed to dissolve the decals that came with the kit. Luckily, an eBay seller in western Canada had stockpiled multiple copies of old Microscale Decals for the car.

Most New England modelers own at least one milk car, even if they model modern-day short line operations. They are just too unique. I had previously added a brass replica of this milk car. Now I have two versions!

I'm now really looking forward to two resin boxcars from Yarmouth Model Works – kits that feature exquisite photo-etched metal parts and near microscopic eyebolts to secure corner grabs.

So, I guess my favorite piece of rolling stock is really the one I'm about to build. **Mark Gionet**

## 15. Bill Mosteller's Gondola



This is an imported brass Nickel Plate Products Virginian "battleship" gondola, wearing Great Decals! lettering. I like it because the car is a signature Virginian car. It screams West Virginia coal! The HO scale model sits too high on the trucks, due to pop-off truck attachment hardware (although I worked on this one and it sits lower but still not quite right). The spacing of the vertical rivet lines on the car sides varies and is complicated (unlike a 2-bay, 8-panel hopper, where the spacing is uniform), but differs from the prototype. Unlike the superior Varney paper carsides version, there's not much interior detail, but the Varney sat on Commonwealth trucks, 'cause nobody had Buckeyes when they released that car. *Bill Mosteller*



**Next Challenge: Send us photos and a brief description, including scale and dimensions, of your favorite trackside structure. We'll publish the entries in our December-January issue and then ask you to vote for your top choices!**



**The deadline for submissions is November 10th!** *Belida Photo*

## Logic Rail Technologies' Signal Animator/2 and Block Animator/2

by Brian W. Sheron, MMR



When I began building my current layout in 1988, having an operational signaling system was the farthest thing from my mind. However, once I got my track laid and operational, and some scenery constructed, I then started to add some signals. My main intent was to make the layout look realistic. However, I did not intend to get into the complexities of installing an operating signaling system. Instead, I located my signals next to turnouts, connected the signal lamps to the auxiliary terminals on my turnout machines, and used the signals to indicate the position of the turnout (green for straight, red for diverging). My assumption was that the typical visitor would notice the signals as something that looked prototypic but would not notice that the signals were not operating prototypically.

Recently I saw a review in a model railroad magazine about a product called the Signal Animator/2 (SA/2) made by Logic Rail Technologies, a Houston company that makes model railroad electronics. I recently installed some operational crossbuck flashers, gates, and bells at grade crossings on my layout using Logic Rail Technologies' Grade Crossing Pro/2 circuitry. Being pleased with it, I looked into the SA/2.

### Signal Animator/2

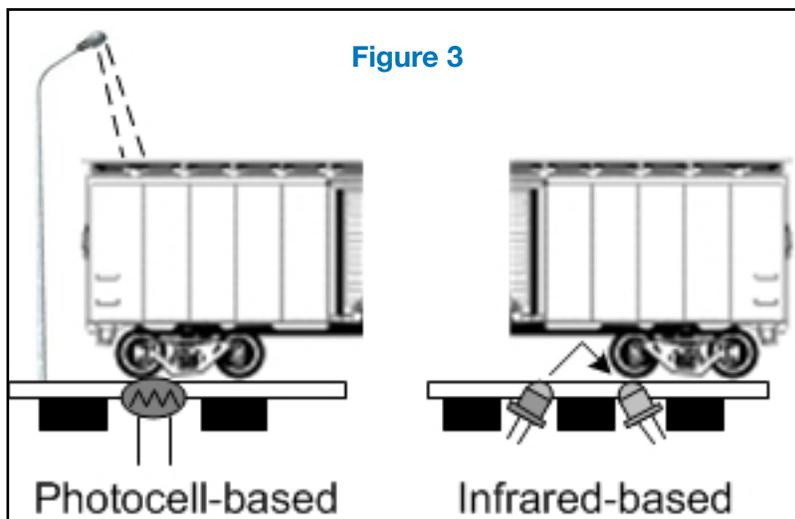


Figure 2

The SA/2 is a circuit that partially mimics a block signal. It consists of a circuit board and a sensor (either photocell or infrared, [see figures 1 and 2](#)). The signal or semaphore that you wish to use with it must be purchased separately. (Logic Rail Technologies also sells signals and semaphores.) The way it works is that you locate the sensor in the track (between the rails, see [figure 3 next page](#)) and you locate the signal next to the sensor. When a train passes by and covers the sensor, the circuit ([figure 4 next page](#)) detects the train and switches the signal from green to red.



Figure 1



Once the train clears the sensor, after a user-specified period of time (1-127 seconds), the signal will turn yellow, and after an equal amount of time it will turn green again.

In addition to the user-specified time for the signal to revert first to yellow and then to green, there is also a switch that allows it to operate in a random mode. In the purely

random mode, the sensor is disconnected, and the circuit will randomly switch the signal to red, then to yellow, and then back to green, with the time delay between each signal color change varying for each random event. This is meant to mimic trains of different lengths downstream of the signal. In the combination mode, the sensor is connected and will operate normally, but the circuit will also randomly switch the signal to red, then after a specified time switch it back to first yellow and then to green.

The SA/2 comes in a number of versions to control various manufacturers' signals and semaphores. The reader should go to the Logic Rail Technologies web page (<https://www.logicrailtech.com>) for detailed information about which versions control which signals and semaphores.

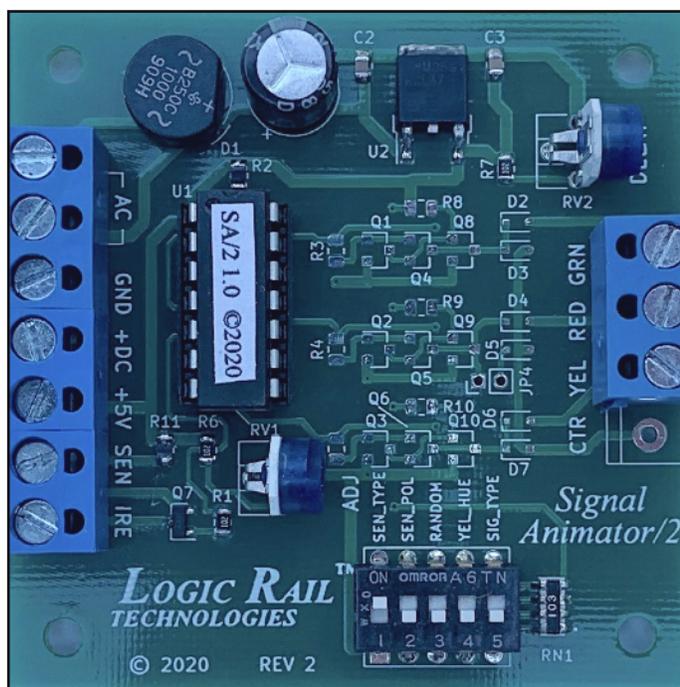
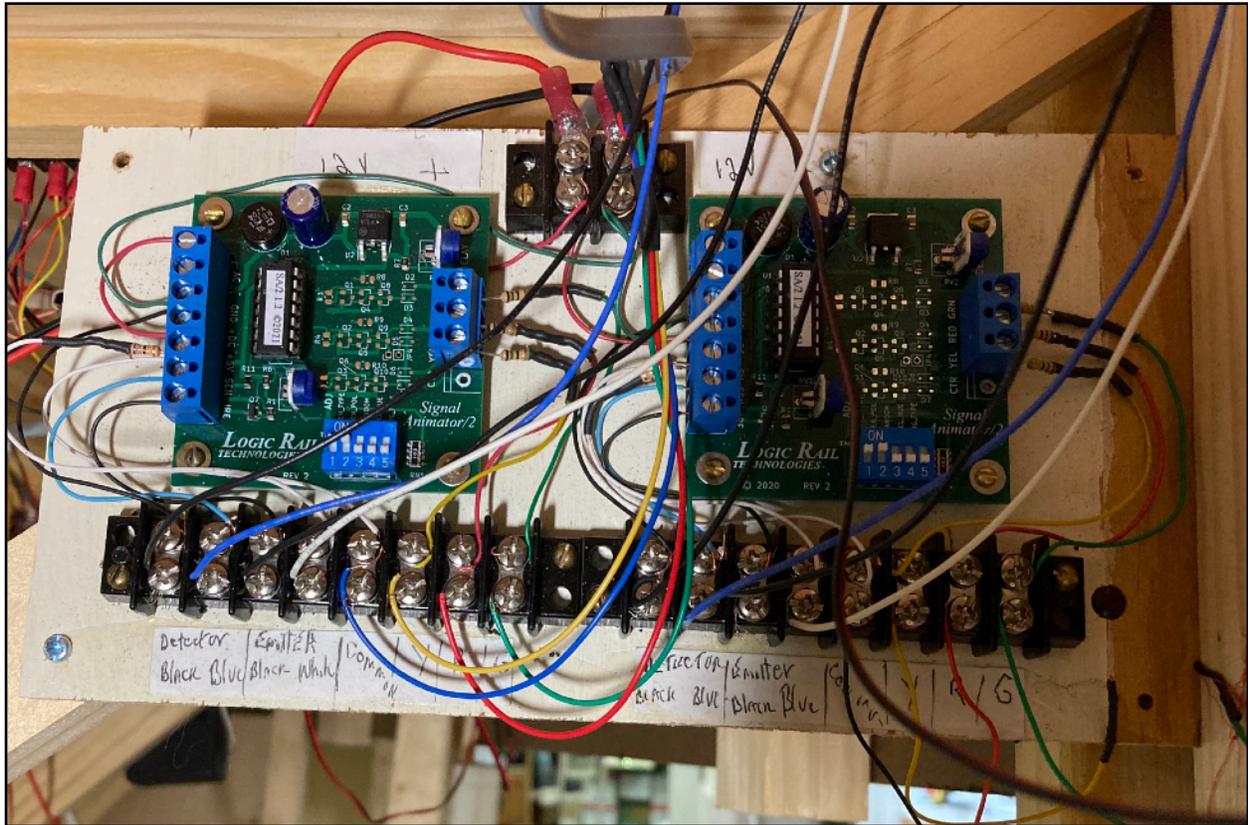


Figure 4

As you can see, the circuit only partially mimics a block signal, because there is no “block” downstream of the signal and sensor. If the train were to clear the sensor but then stop, the signal would still turn yellow and then green after a fixed amount of time, even if the train remained in the downstream “block.”

The benefit of the SA/2 is that it is relatively easy to install because it only requires connecting one sensor and one signal. If you install it on a mainline where the

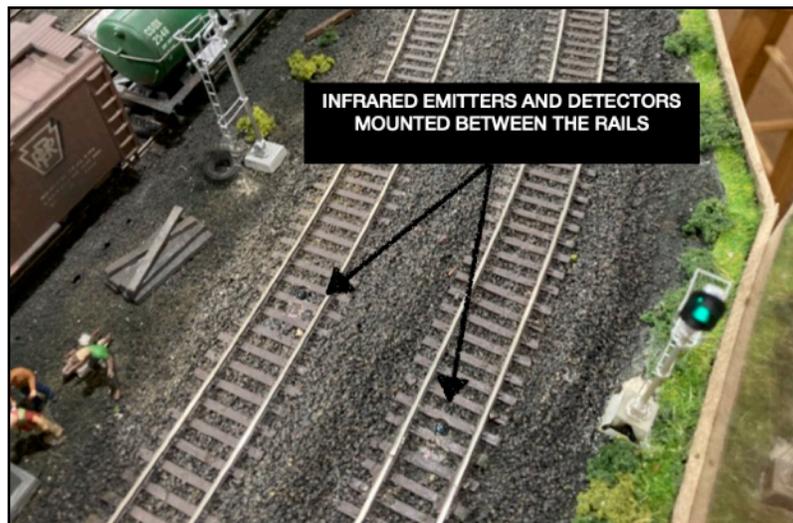
likelihood of a train stopping immediately downstream of the signal is low, then the SA/2 will appear to operate prototypically. However, if you have stop-and-go traffic on your layout, I would recommend you look into the Block Animator/2 (see below).

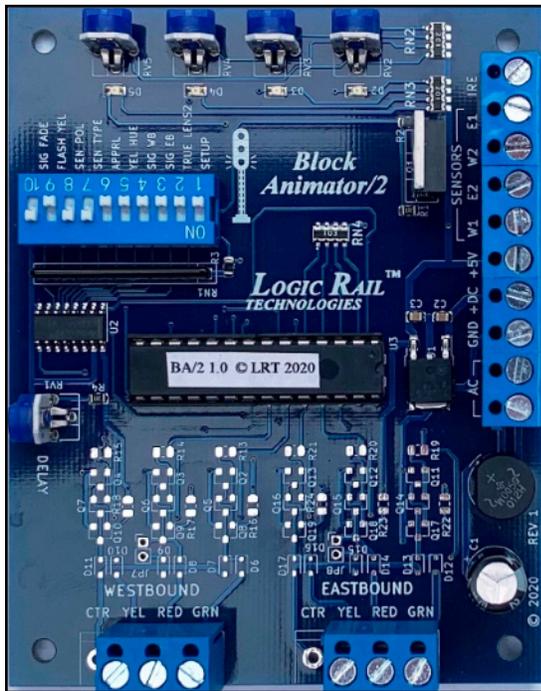


**Figure 5 (above)** shows two SA/2 circuits installed on my layout, and **figure 6 (below)** shows the two Details West three-light signals that they control.

### Block Animator/2

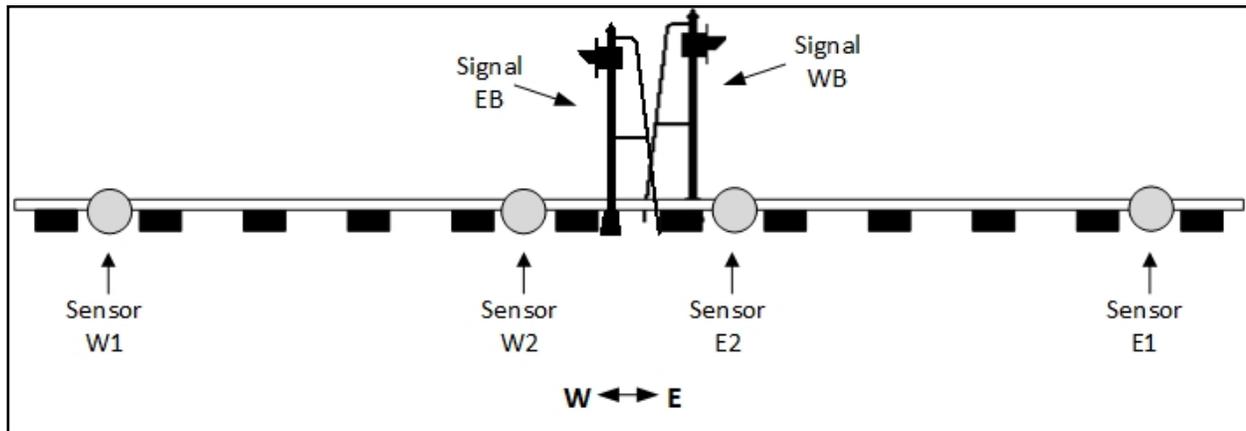
Logic Rail Technologies also makes a signal controller, Block Animator/2 (BA/2) which, while similar to the SA/2, operates in a much more prototypic fashion. As with the SA/2, the BA/2 comes with the circuit board and sensors, but the signals must be purchased separately.





The BA/2 consists of a circuit board (see [figure 7 left](#)) and two sets of sensors. Like the SA/2, the sensors can be either photocell or infrared detectors. What makes the BA/2 more prototypic is that you create actual “blocks,” and the signals will remain red up to 35 seconds as long as there is a train within the block. If the train that enters into the block downstream of the signal trips the first set of sensors but does not trip the second set of sensors further downstream of the signal within 35 seconds, the signal will return to green. This occurs to address the situation when a train passes the first set of sensors but then backs up and does not trip the second set of downstream sensors.

You can use the BA/2 to create blocks on both sides of a single-track line or a single block on one side of a double-track line.



**Figure 8 (above)** shows how the sensors are located when the BA/2 is being used to create blocks on a single-track line. The length of a block is determined by the distance sensors W1 and E1 are placed from sensors W2 and E2 respectively.

An eastbound (left to right) train will cause signal EB to transition from green to red when sensor E2 is covered. EB will remain red until sensor E1 is covered and then uncovered, at which time it will change to yellow. After a delay (which is adjustable from 1-127 seconds), the signal will transition back to green.

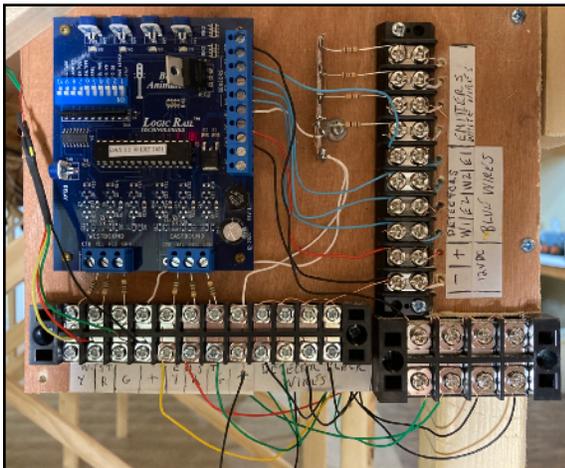
A westbound (right to left) train will cause signal EB to transition from green to red when sensor E1 is covered. It will remain red until sensor E2 is covered and then

uncovered, at which time it will change back to green (like the prototype). Signal WB will behave similarly with respect to the opposite direction of travel and sensors W1 and W2

The BA/2 can also be used on a two-track mainline. In one configuration, if figure 7 now represents a two-track mainline, then the track with traffic running east to west would be the far track, and the track with traffic running west to east would be the near track.

Signal WB would be located on the far side of the track with the east-to-west traffic, and signal EB would be located on the near side of the track with the west-to-east traffic. When a westbound train passes signal WB on its right, then covers sensor W2, signal WB will change to red. Once the westbound train covers and then uncovers sensor W1, signal WB will transition from red to yellow, and then back to green. An eastbound train on the near track would work similarly with signal EB and sensors E2 and E1.

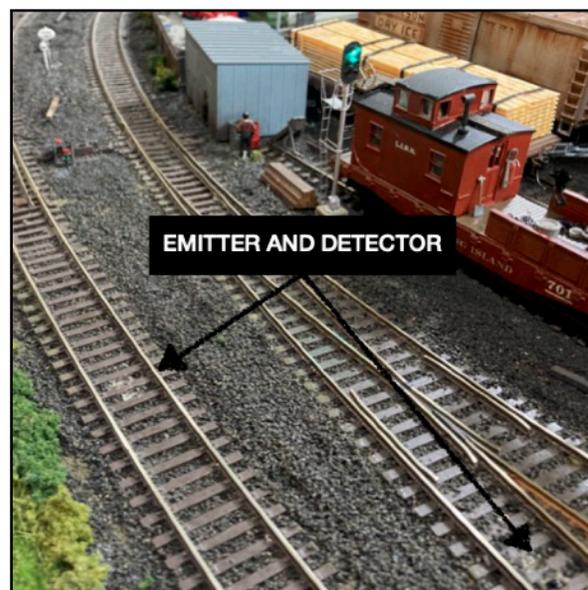
In other two-track configurations, the signals and sensors can be located in parallel on a two-track mainline and would function for trains running in the same direction on both tracks.



The BA/2 also comes in several versions, so it can be used with signals and semaphores from a variety of manufacturers. The Logic Rail Technologies website mentioned earlier in this article provides a description of the various versions, as well as other features of the BA/2 too numerous to mention here.

As you can see, when used in a double-track arrangement, the BA/2 is, in some respects, the same as having two SA/2 circuits, one on each track. [Figure 9 \(above\)](#) shows the BA/2 circuit board mounted on my layout, and [figure 10 \(right\)](#) shows the signals mounted on a double-track mainline.

**Costs**



The SA/2 costs between \$19.95 (purchaser provides the sensor) and \$28.95. The BA/2 costs between \$31.95 (purchaser provides the sensors) and \$55.95. The costs of signals and semaphores can vary.

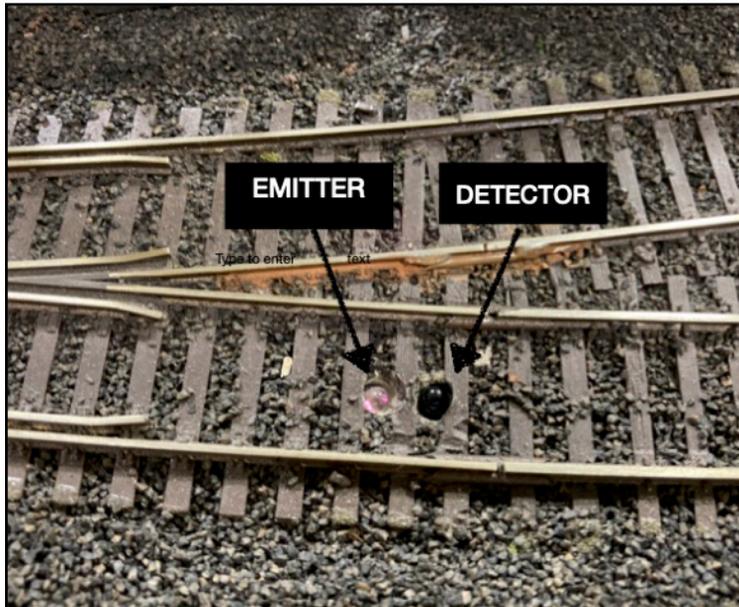
As an example, for my SA/2 signal I used the SA/2-IR ( SA/2 with infrared sensors) and Details West DW-SG-938 3-light signal. The SA/2-IR costs \$24.95 and the DW-SG-938 costs \$34.35, for a total cost of \$59.30 (plus shipping).

For my BA/2 signals, I used the BA/2-IR (\$51.95) and two DW-SG-938 3-light signals (\$68.70), for a total cost of \$120.65 (plus shipping).

## Installation

Both the SA/2 and the BA/2 are relatively easy to install. They only require some of the typical tools used by most model railroaders, such as a drill, soldering iron, solder, screwdriver, etc. The instructions are very thorough and easy to read and understand (and are available on the .Logic Rail Technologies website).

The photocell sensor is mounted between the rails by drilling a 9/16" hole, inserting the photocell lead wires through the hole, and then nesting the photocell between the rails (see figure 3).



The infrared sensors can be mounted either between the rails or across the rails. To mount them between the rails, two 11/16" holes are drilled on each side of a tie and at a slight angle (see figure 3). The sensors are installed by first feeding the wires of each sensor through the hole and making sure that each sensor component (emitter and detector) fits snugly in the hole and just below the surface of the tie that is between them. **Figure 11 (left)** shows the emitters and detectors mounted between the rails.

When mounted across the rails, the infrared emitter and detector will work up to a distance of 16" apart. To mount the emitter and detector across the rails, you will need to mount them on something that is perhaps about 1/2" above the top of the rails. The detector should be mounted slightly higher than the emitter and should have a slightly downward angle. This will minimize any room light from activating it.

As with any above-the-rails electronic component, you will probably need to add camouflage around the emitter and detector so that they are not obvious.

I would recommend that the SA/2 and BA/2 circuit boards be mounted on a piece of plywood, that terminal blocks be mounted on the plywood boards, and that the connections on the circuit boards be extended to the terminal blocks. This is because several of the sensor wires will need to connect to the same terminal on the circuit board, and it is easier to connect them to the terminals of a larger terminal block that have been ganged together rather than try to connect them all to the same small terminal on the circuit board. It is also easier to connect all of the wires to a larger terminal block than to the smaller terminals on a circuit board.

The sensors come with short leads. Since some or all of the sensors will have to be located some distance from the circuit board, you will need to solder additional lengths of wire to these sensors in order for them to reach the circuit board.

Both the SA/2 and the BA/2 can be powered by 7-16 volts AC or DC.

### Conclusion

I found that both the SA/2 and BA/2 will provide semi-realistic automatic signaling on your layout at a reasonable price and can be installed with relative ease. So, if you are thinking about adding an operational signaling system to your layout, I would suggest you look into Logic Rail Technologies' SA/2 or BA/2.

*[Figures 1-4 and 6-8 from Logic Rail Technologies with permission. All others from Brian Sheron.]*

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**Brian Sheron**, MMR, is a former Superintendent of the Potomac Division. His Long Island Rail Road was profiled in the August-September 2021 issue of *The Flyer*.



## Building Track—Part 4

Article and Diagrams by Nigel Phillips

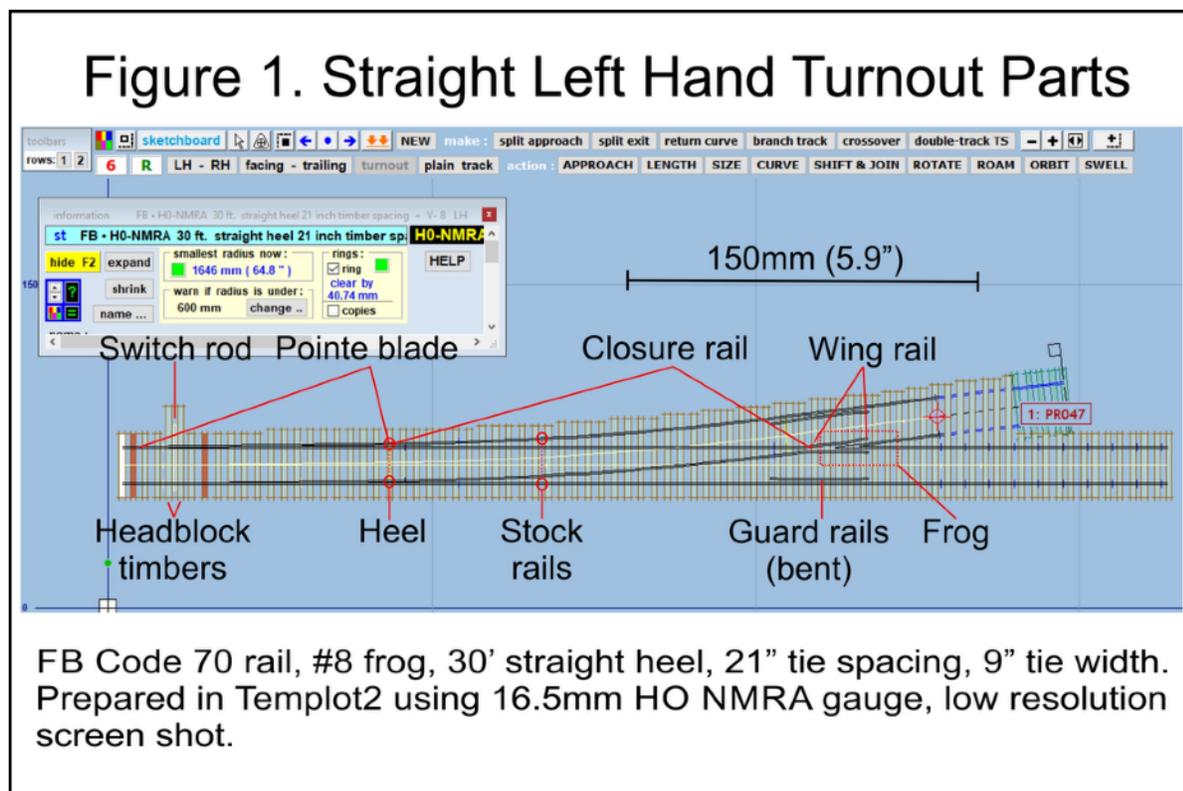


It's finally time to build some track structures. The ones I am going to cover are a scratch-built #8 frog turnout, a kit #6 turnout, and two derails (curved and straight). I'll go into some detail on the #8 frog turnout, as the basic principles are used in all other types of turnouts. I must emphasize that this is my way of building track. I strongly recommend that rather than reading about what other people do, nothing beats some DIY. Rail, ties, and solder are not expensive, and building track is time well spent. The following is written with HO scale in mind. Make appropriate adjustments for other scales.

### Notes/Pointers/Tips:

**Wood ties.** A cautionary note on scale wood ties. They are usually scaled to 7"x9" cross dimensions, a size that matches most, but not all, commercial tracks. Thinner wood ties are also available; for example, Kappler Mill and Lumber (<https://kapplerusa.com>) has scale 4"x9" wood ties which are a slightly better match to copper-clad ties than full-size ones. I like Shinohara turnouts. Matching those with scale wood ties can be an interesting exercise in shimming or removing material. Shinohara Code 70 turnouts have 1.72mm thick ties. Scale 7"x9" wood ties from Mount Albert come in at 2.22mm thick, and copper-clad ties come in at 1.68mm thick. You can get thinner ones from Clover House that are 0.79mm thick (<https://cloverhouse.com>). 7" thick real-world ties come at 2.04mm in 3.5mm/foot. I also like and use Micro Engineering Code 70 flex track, which comes in between 1.9mm and 2.0mm thick. My DIY ties of choice, if trying to match either, would be 100% copper-clad. Check the dimensions of any commercial track or turnout ties before deciding to go wood, copper-clad, or a mixture of both when building any turnout or tangent track that will join with commercial turnouts and track. You can, of course, just build the regular track to match the turnout. I find it easy to shim scratch-built track with PVA glue and thin cardboard or thick paper on the baseboard cork underlay.

**Know the parts of a turnout.** For those unfamiliar with the various parts of a turnout, [Figure 1 \(next page\)](#) shows an HO NMRA straight #8 frog with 30' straight heels, 21" timber spacing (suitable for main tracks), and 9" wide ties, drawn-up using Tplot2®. The various parts of the turnout are shown. Building turnouts requires making four items—the frog, the switchblades/closure rails/wings, the guardrails, and the rail cutouts in the stock rails where the switchblades go, and then forming them to shape by gentle bending (the switchblades/closure rails, the wings, the guardrails, and the stock rails). The bend between the closure and the wing is best helped with a couple of small V sections filed into the outside of the rail foot and head. Whether



you make a junction between the switchblades and the closure rail (the “heel”) is up to you. Code 70 rail with a reasonable length heel is normally flexible enough not to need this. Code 100 rail and above benefits from a junction (use a rail joiner), as does a short heel. You can use a fine triangular file to make an impression of a rail joint in the heel. Add some rail bars as well for a bit more realism.

**Isolating gaps/conductivity issues.** The closure rails and the frog exit rails need isolating cuts. Whether you use plastic rail joiners is up to you, but I don't bother, and simply use a Dremel® with a thin cut-off disc. The gap does not affect running. You can make the switchblade/closure/wing rail slightly longer than required to compensate for the width of the cut. One advantage of using copper-clad ties is that the closure rails are electrically continuous with the respective stock rails. The disadvantage is that an insulating cut needs to be made. Fill the gaps with an appropriate filler if desired. The frog exit rails need to be electrically connected to the corresponding stock rails. This means the connections going under rails of the opposite polarity. I use tinned bus wire and heat shrink tubing for this.

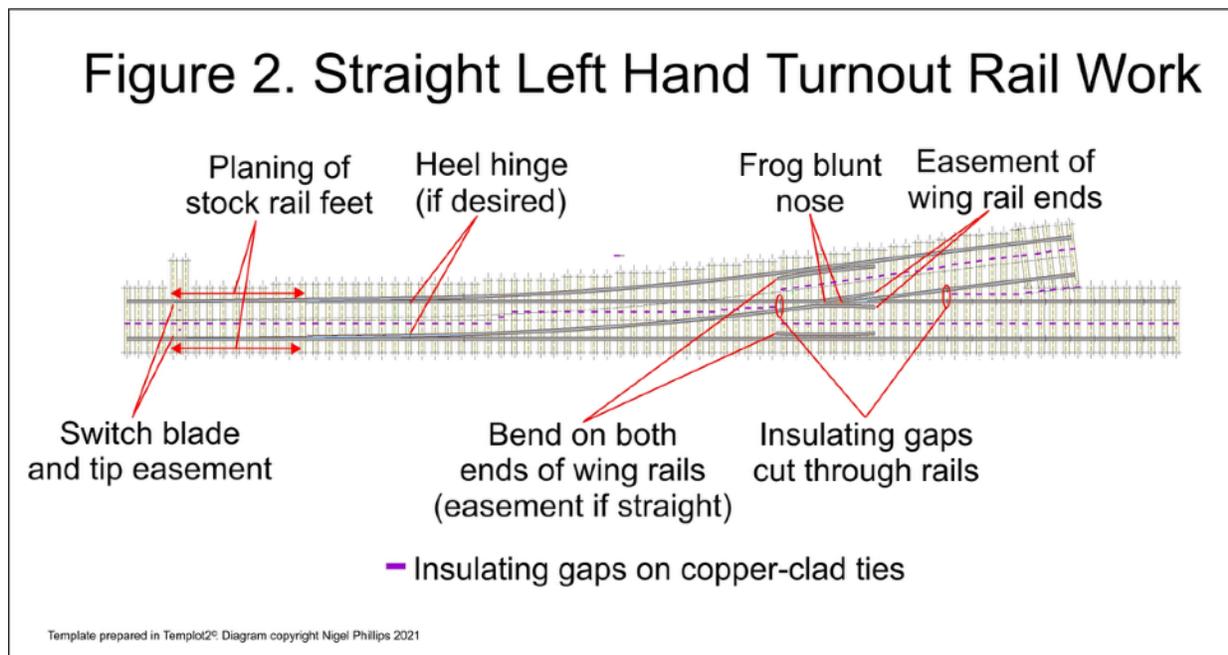
**Frogs—dead or alive?** Whether you wire the frog depends on the wheelbase of the locomotives used and their electrical pickup arrangement. The length of the frog when scratch-building can be made as short as 1.5” between the isolating cuts. Newer B-B or C-C diesel or x-6/8-x steam locomotives do not need a live frog. Older locomotives with pick-ups on alternate sides will need a live frog, or better, rewiring the locomotive to include pickups on both sides. A short-wheelbase 0-4-0 will probably

need a live frog. The polarity of a live frog can be controlled by the switch mechanism (electrical or manual) or by using a frog “juicer” that automatically detects the polarity of the locomotive and switches the frog accordingly. I keep life simple and keep my frogs dead—one less wiring issue to deal with. If I need a live frog, then a “juicer” is not expensive.

**Rail easements.** The frog, when soldered up, will need a small amount of material taken off the tip to make a “blunt end.” I find it useful to also ease a small amount of material off the railhead of the frog tip, as fine-scale wheels in a sprung truck will drop when going through the gap. Regular width 110 wheels will not drop as much; they will ride on the wings. The switchblade, guard, and wing rails also benefit from being eased at the ends, especially if using straight guardrails. Clearances will often be a lot less than found with commercial RTR turnouts, and it pays to check for good running using both 88 (0.088”) and 110 (0.110”) tread wheelsets. I use two sets of 4-wheel sprung trucks for this.

**Tie bars.** You will find that the switch bar ties need to be reduced in width so that the adjacent head block ties are not fouled. This is especially important if using copper-clad bars. The switch bar and rails follow an arc, not a straight line. I usually reduce the width of a piece of copper-clad tie and bevel the edges to expose the underlying fiberglass substrate. Increasing the spacing between the head block ties also helps. It is possible to hinge the tie bar, but tighter clearances between the stock and switchblade rails make this unnecessary.

**Adhesives.** Several kit and tool suppliers use Pliobond®, a flexible adhesive for attaching wooden ties. I don’t use it, as it contains the solvent MEK (methyl ethyl ketone)—one of the items on the “not in my toolbox” list. I also prefer using 100%



copper-clad ties in preference to a mix of copper-clad and wood ties, as there is no risk in distorting the rails when attaching to the ties, and it avoids the issue of differing tie thicknesses. It is also much stronger and less likely to distort, and it is much easier when shimming to match the height of wood ties. I have found that cyanoacrylate adhesives are as effective as Pliobond® in attaching wood ties to rail. Using a piece of wire, just add a small drop to the rail/wood junction. Capillary action will draw the CAA in. If using CAA, glue the stock rails to the ties; then fix the closure rails in place. Otherwise, there is a risk of gluing the heel and blade. How do I know? No prizes...Of course, you can always go old-school and glue the ties to the baseboard and then fix the rails with spikes.

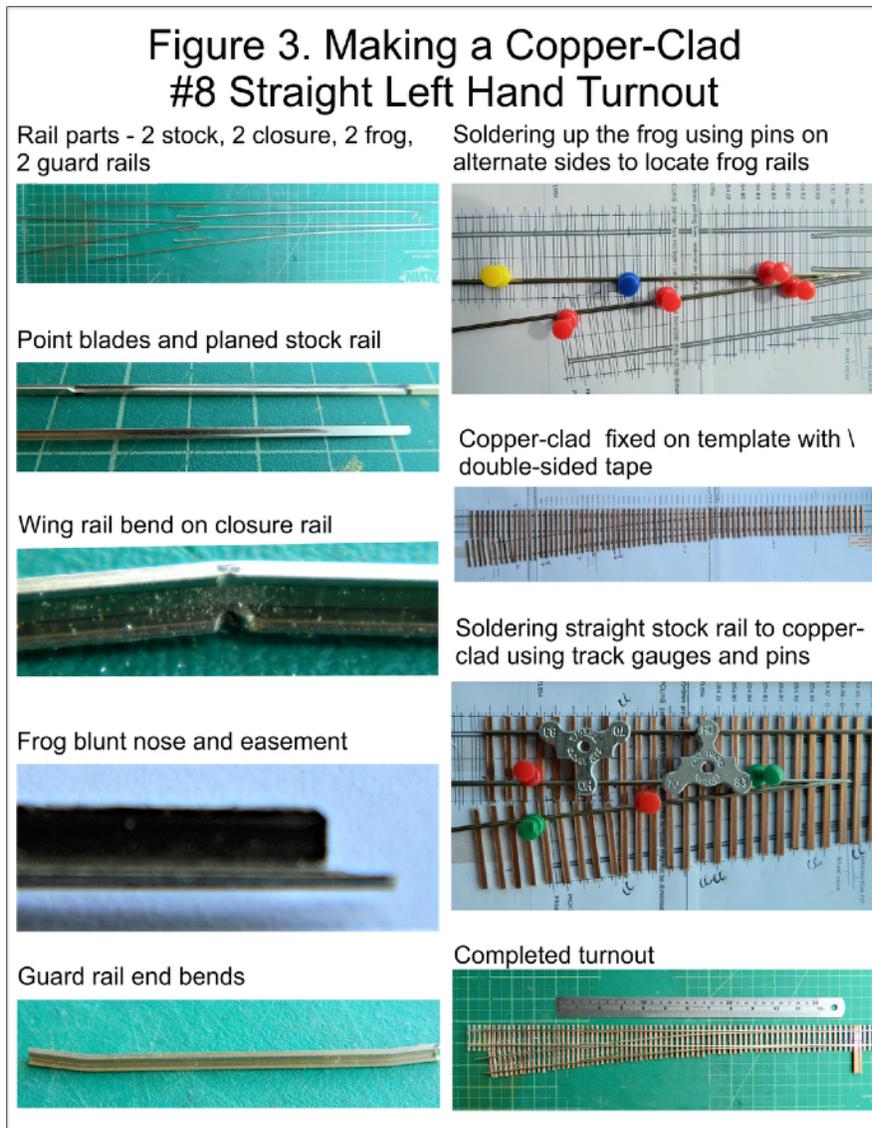
### Scratch-built #8 LH Turnout

**Figure 2 (previous page)** shows the paper template for a code 70 LH turnout. This was prepared in Templot2® and shows where the work on the rails needs to be done. This is quite a long turnout, as it uses a scale 30' long heel (30' from the hinge to the switchblade tip) and comes in at nearly 18" long. It has 21" tie spacing and 9" wide ties, and is scaled to NMRA HO gauge, suitable for fine-scale or regular rolling stock. All of these dimensions are adjustable in the software. I built the turnout using 100% copper-clad ties, as I intend to join the turnout to a Shinohara 3-way turnout. The procedure followed in building the turnout is as follows.

- I used 18" long rail sections. Five pieces were required. The rail foot was prepped with #400 paper and isopropyl alcohol (IPA). A fine-tipped Sharpie® was used to mark the rails for cutting/filing because its marks are easier to see than pencil, and don't rub off with handling. After handling the rails, be sure to remove any hand grease before soldering (just a wipe with IPA is enough).
- A Fast Tracks #8 PointForm® was used for making the switchblades and frog rails.
- The switch blades form the ends of a rail section that also has the closure and the wing rail sections. I cut this slightly over-length. I removed a very small amount of material from the top and inner side of the switch railhead to provide the easement. I gently bent the rail by hand to the profile on the template for the curved closure rail. I cut the stock rails, and gently bent the curved one to the template profile.
- Using the template, I marked the location of the wing rail bend for both closure rails, and filed a small V-shaped section in the rail foot and head on the inside of the bend. I gently bent the wing rails into shape following the template. Doing this often generates a small wrinkle in the rail foot, and I filed this flat. The wing rail section was cut to length following the template, and the inside ends and top of the railhead were eased using a flat needle file to

approximately 22.5°. This allows the smooth entry of stock wheels. Alternatively, you can put a small bend at the end.

- I cut the guardrails to length, and bent the ends using small pliers.
- I marked the location of the rail foot cutouts in the stock rails, and removed the inner part of the rail foot using a file. I tidied up using #400 and then #800 paper. Removing this material enabled the switchblade to fit snugly against the stock rails.
- I attached the working template to the corkboard, and laid double-sided tape between the rails. I placed the frog rails in position and held them in place using board/map pins and a section of steel bar on the top. I soldered up the frog using low residue cored lead/tin solder. After I removed the frog from the template, I removed the rail web and head at the tip using a swiss file, rounding it with the head using #400 paper. I gently eased the frog tip head at a very shallow angle using #400 paper. This allows stock wheels to transition over the frog-closure rail junction without jumping. You can use a jig for soldering up the frog, but using a paper template is just as accurate (and a lot cheaper), as long as the rails are held firmly in place.
- I prepped the copper-clad strip with #400 paper and IPA. I cut ties to the required lengths (and filed to width for the switch tie bar) using the template and fixed them in place on the tape. I wiped the ties with IPA. I located the soldered frog on the copper-clad ties using pins and soldered it in place. I only soldered two ties at this stage, as repositioning is very hard after soldering the frog to all of the ties it is in contact with. I took my time doing this, as the positioning of the frog over the template had to be exact.
- I located the straight stock rail was located over the template. Using 3-point rail gauges, I made sure the stock rail and frog conformed to the template. I then soldered the frog up using all the ties. I removed any excess solder where the wing rails would locate using copper braid. I find that a soldering iron with a fine tip is best for soldering rail to copper clad, but that a chisel tip is best for use with copper braid.
- I then soldered the straight stock rail using 3-point rail gauges and pins located on alternating sides of the rail to keep it in position.
- I located the straight blade/closure/wing rail with 3-point rail gauges and pins after making sure the switchblade tips and the wing rail bend were in position. The bend had to be 100% accurate in its location, otherwise, the rolling stock would derail. I used a flange gauge to make sure stock would pass through. I used 88- and 100-wheel tread trucks to check smooth running before soldering up.

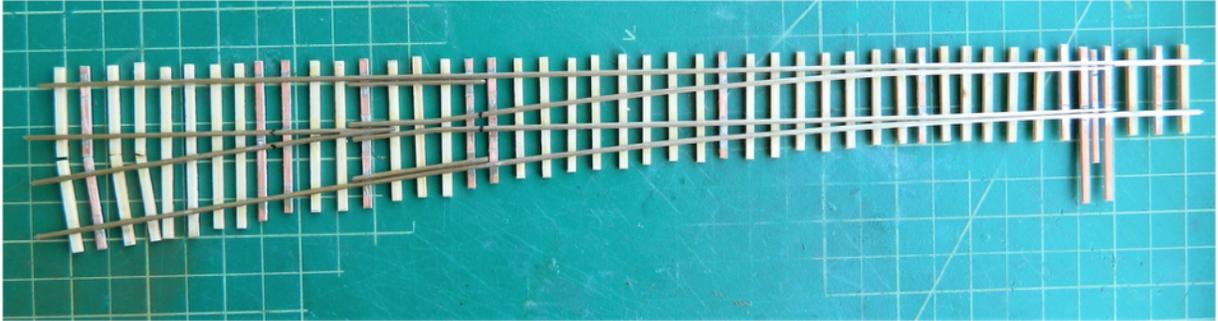


- The same procedure was used for the curved switchblade/closure/wing rail.
- I soldered the switchblades to the tie rod with the rod in a central position between the head blocks. One side was soldered up with the switchblade held tight against the stock rail. A shim was then used on that side to give the desired clearance. I then soldered up the other side. This only requires a small amount of solder, otherwise, it will run to the stock rail. I used a pencil to go over where solder was not needed. The wax in the pencil will stop the solder.

- I soldered up the guardrails using rail rollers to hold them in position. Again, I used a flange gauge to ensure the correct distance.
- Soldering-up rail is normally done from the outside. I soldered the frog exit rails and the closure rails next to the heel on the inside. Excess solder was removed using fluxed copper braid.
- I made insulating gaps in the copper-clad ties using a fine triangular file and a Dremel® with a fine cutoff blade as required.

The steps in making the turnout are shown in [Figure 3 \(above\)](#). A mixed copper-clad/wood tie #8 turnout, this time with a 9-foot-long heel, is shown in [Figure 4 \(next page\)](#).

## Figure 4. Mixed Wood Copper-Clad #8 Straight Left Hand Turnout



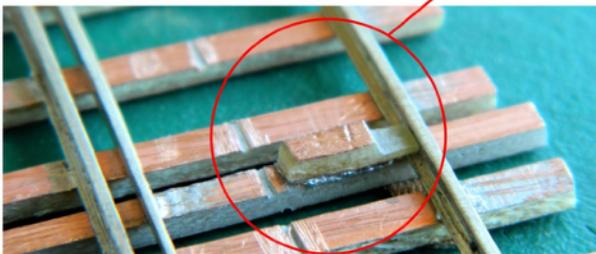
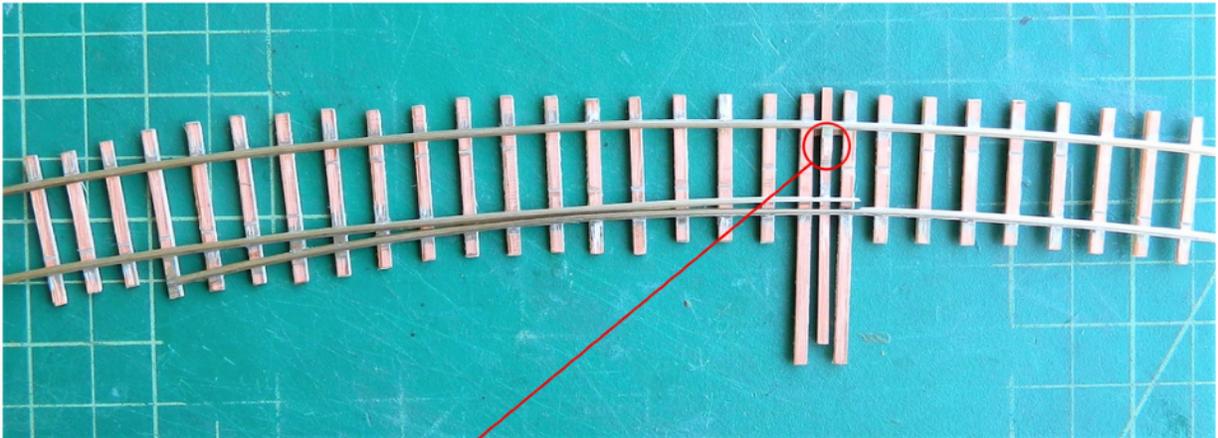
### #6 Turnout—Kit

For this, I used a kit from Oak Hill and a printed template from its website. Unfortunately, the template was missing one tie (since corrected), and I had to extend the heel by one tie. The kit comes with copper-clad and wood ties, a soldered frog, stock rails with planed sections for the switchblades, filed switchblades, and ready-made and filed guardrails. I made my own guardrails, as the ones supplied were too short to fit on the supplied copper-clad ties. I also added a couple of copper-clad ties to give it a bit more strength. In addition, I reduced the width of the supplied switch tie bar to make sure it did not foul the adjacent copper-clad ties. I prepped the rails and copper-clad ties as described above. Next, I started with the straight stock rail and then the frog. Using some 3-point gauge holders, it all went together in about 15 minutes. I've left it as a "skeleton" turnout, as I am still undecided whether to make it 100% copper-clad, mixed copper-clad and wood, or even dress it up with some tie plates from Proto-87 stores. Perhaps I will make it all copper-clad with some "dummy" half tie plates either side. This is an easy kit to make, because all the parts fitted together as intended (the hiccup with the plan excepted).

**Derails.** As I mentioned earlier, in this series of articles, one feature of industrial lines or spurs is a switch point derail that protects the main line. This enables a freight car (or locomotive) to derail away from the mainline. Older switch derails only used one rail ("single rail switch derail point"), but modern ones use both rails ("double rail switch derail point") to accommodate much heavier modern stock. An online search will bring up data on modern derail specifications from many of the major railroad companies. Derails do not usually use a frog, although there are examples where the track ends in a sand or gravel trap, useful if the aim is to stop a runaway locomotive.

**Figure 5 (below)** shows the completed single rail derail. This is a generic curved derail, 36" stock and 24" derail radii, tie spacing for a spur, RIP, or storage track. It is definitely steam era in the 1930s. Templates were drawn up in Templot® based on a #8 frog, which is about the minimum found on prototype spurs. One issue with the

**Figure 5. Copper-Clad #8 Curved Single Rail Derail**



Stop block to control movement of switch bar.

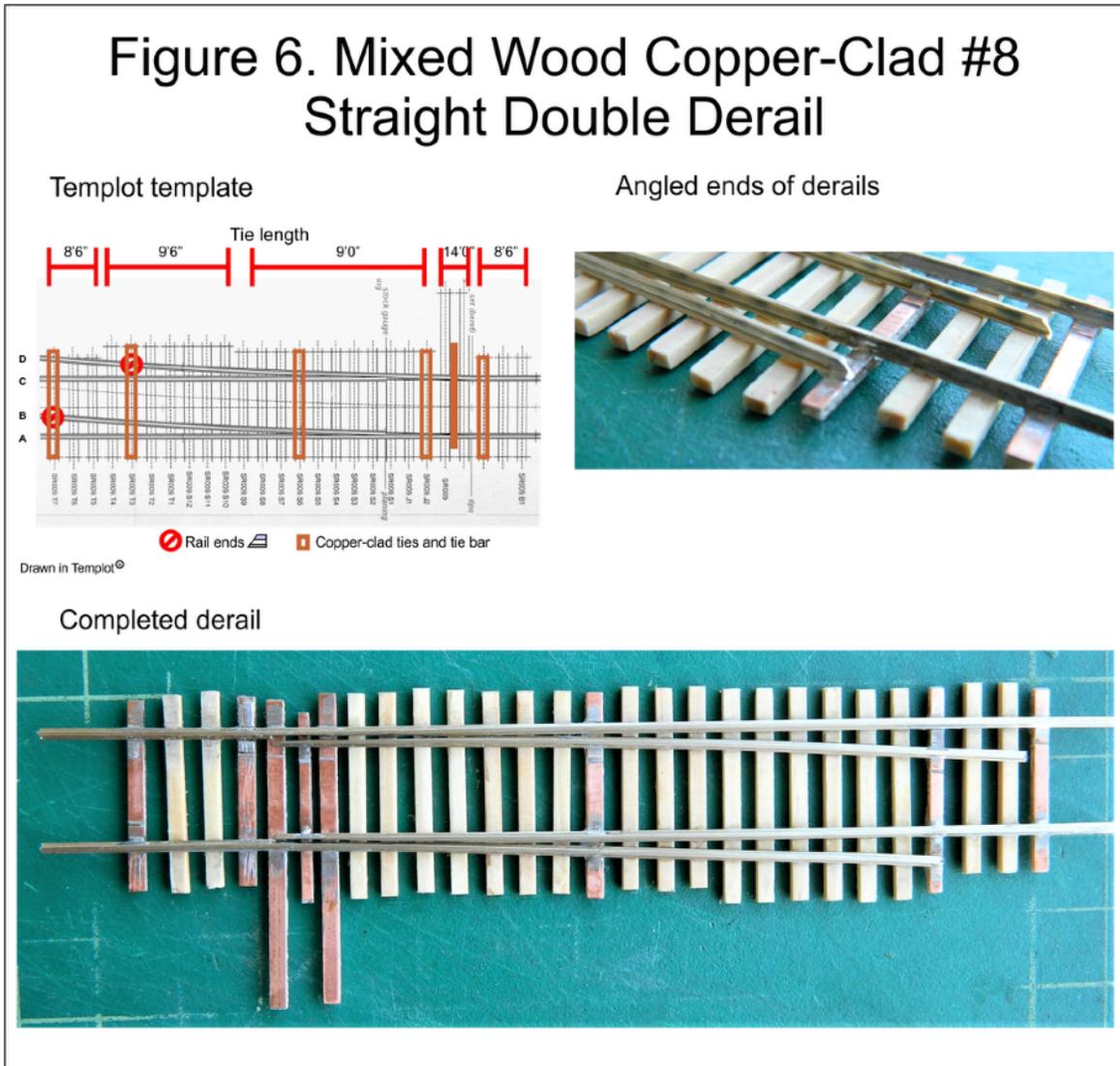
Essential if using point motors.

If using Caboose Industries throws or WIT mechanisms not essential.

single rail derail was that it needed some means of controlling the movement of the switch rod bar. I used a small piece of copper-clad suitably filed to allow wheel rim clearance and then soldered it to the switch rod bar. **Figure 6 (next page)** shows a modern double derail, based on a heavy-duty prototype, hence the tight tie spacing. This was a mixed copper-clad/wood tie construction. Note the sloped ends of the derails.

### Scratch-built Versus Kits—Costs

The Oak Hill turnout cost \$29.99 (plus around \$10 postage), plus the cost of a bit of solder. Scratch-built turnouts using code 70, 83, or 100 rail, copper-clad, and wood ties can cost much less (around \$10-\$15), but only if you are intending to build a lot of turnouts. The materials list for the #8 frog, 30-foot heel LH turnout was:



- Rail. Five pieces 18” long at \$0.90 each: \$4.50
- Copper-clad strip. 4 pieces at \$0.60 each: \$2.40
- Solder (6mm Pb/Sn, fluxed, low residue): \$1.00
- Copper braid for desoldering: \$2.00
- Tool costs amortized over 40 turnouts\*: \$2.50
- Miscellaneous (e.g., #400 paper, IPA, etc.) \$1.00

Total: \$13.40

\*This is my current estimate of the life of the PointForm tool, the soldering iron, and the “big file.”

This price

is not bad when compared with commercial turnouts.

Templot® is currently free but has a steep learning curve. A tool such as the PointForm supplied by Fast Tracks to prepare the point and frog blades is required. Each one runs around \$70 plus postage. You can do it by hand (I have prepared jigs in the past), but a commercial tool/jig is much more accurate. I know that several of the Potomac Division members have these tools and are prepared to lend them to other members. (I have PointForm jigs with #4, #6, and #8 frogs if anybody wants to borrow one.)

### Conclusion

This is the end of the series. I hope you found it constructive (pun intended). The basic techniques described above should allow you to build other types of track structures, such as gauntlet track, dual gauge track, or track scales. If your track plan calls for something that commercial turnouts cannot do (such as derails within turnouts or a specific length heel), then scratch-building is the only way. These techniques also allow you to modify commercial turnouts to make them reliable and realistic. Some examples are the dreadful pressings used for the point blades in Peco products, and the frustrating power routing used in Shinohara turnouts. I'm currently modifying a couple of Shinohara 3-way turnouts to get rid of the power routing and the overscale distance between the switchblades and the stock rails. With the editor's permission, I'll be covering some oddballs and tips in the future.

**Disclaimer.** I have no connection with any of the commercial suppliers mentioned in this article other than as a (generally) satisfied customer and user.

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**Nigel Phillips** is a retired biomedical researcher, professor, and biopharmaceutical company executive. His modeling interests are currently the Great Northern Railway, HO, and the Great Western Railway, 4mm scale, EM gauge.



## Hobby Barn Event: Airbrush Weathering

by Ken Wilson

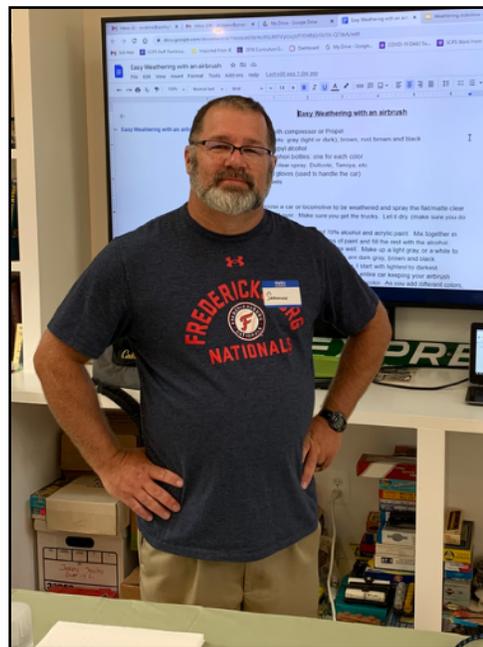


On August 7 another successful Hobby Barn Clinic was conducted, this time by Shannon Crabtree, who is the Assistant Superintendent for the neighboring James River Division of the MER. Shannon’s clinic explained his technique for weathering rail cars, specifically freight cars.

Shannon began with a PowerPoint presentation of prototype photos to help us understand how weathering appears on a variety of rolling stock,

**[photo right: “Shannon Crabtree”]** (Ken Wilson photo)

He then showed photos of cars he has weathered and explained the steps taken to achieve those effects. In addition to the photos, we had the opportunity to view examples of several finished cars that he brought. Delving into the process, he provided clear instructions explaining how he uses artists’ acrylic paints in his airbrush. He thins the paint – not with water – but with 91% alcohol. This was a new technique for me, but seeing his



results I was eager to have a try at experimenting with the process. Shannon places just a few drops (small blobs actually as acrylic paint is thick) into a 1 oz. airbrush bottle, and then fills the rest with the 91% alcohol. Vigorous shaking of the bottle is necessary to achieve the properly thinned color.

**[photo left: “Shannon preparing the first color”]** (Ken Wilson photo)



The weather (real weather - not paint) was cooperative that day, a welcome and required condition for using airbrushes. The Hobby Barn is a beautiful venue for these clinics, and we intend to keep it looking great. “Tagging” the floors or walls would NOT be an enhancement, so we moved outside to apply our weathering.



[photo above: “Compressors humming/air brushes ready” from L to R: Clarence Guenther, Ken Wilson, Ross Kudlick, Shannon Crabtree] *(Rachel Sims photo)*

Each of us brought some inexpensive cars to practice on. It was fun for me to see those old Athearn “blue box” models along with a few Train Miniature cars from the 1970’s. The first step was hosing the model down with a light gray wash. I really do mean hosing! He had us cover the sides, ends, top, and bottom with this thin coat of light color to knock down the shine and the bright colors. Next, we used raw umber, applied with a more sensitive touch. This was to emphasize road grim kicked up on the lower edges and bottom of the car. This brown color was used sparingly, to bring out natural edges of the car features, such as ladders, roof panel patterns, and edges where steel plates meet. The final touch was adding black, but very sparingly just to add a final accent in a limited number of areas. When we tried the black it tended to splatter instead of coming out as a fine mist. Each of us checked our airbrushes to ensure they were not clogged, but we continued to experience the splattering. Shannon checked the paint labels, and noticed the black paint was a different brand than the other colors. Ironically, the black was the more expensive one. Apparently that brand doesn’t like to be mixed with alcohol. All of us brought a higher quality car

to weather after our practice session, but we each decided to tackle those another day when we had a brand of black that was not as fussy being thinned with alcohol.



**Clarence Guenther**

*(Rachel Sims photo)*

One of the benefits of this process of weathering is that you don't have to clean the airbrush between colors. We just shot a little of the next color onto a paper towel (or a piece of Jerry Stanley's lawn) and we were ready to spray the next color. As with other modeling techniques, an assembly line of cars would go very quickly, just so the weathering is varied a little between models to avoid having them all look the same. The acrylic paints are readily available at arts and



**Ross Kudlick**

*(Rachel Sims photo)*

craft stores which fortunately haven't suffered the rampant extinction experienced by our beloved neighborhood "brick-and-mortar" train stores.

Once again, a great hands-on clinic was enjoyed at Jerry's Hobby Barn. Shannon is a wonderful presenter, and his instructions and coaching had each of us doing a presentable job of weathering. Those simple 1970's cars we practiced on achieved a respectable look, which could blend in quite well with the higher detailed cars of today.

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**Ken Wilson**, a school safety specialist and former theater technical director, has enjoyed model railroading since his youth. He does not have a model railroad, but is planning on a fictitious line located in California during World War II. Ken has a particular fondness for the scenic environment that model trains operate in.

\*\*\*\*\*

**Editor's Note:** The final **Hobby Barn** event of 2021 was held on Sept. 18th and featured Potomac Division Clerk and Layout Tour Coordinator **Nick Kalis** discussing "Design Secrets."

## The Flyer Tips Sheet: Use Tongs!

Article and Photo By John Paganoni, MMR

I have been struggling to reach the far back parts of my layout where I need some foliage. There are a few spots that are just impossible for me to reach, and I thought I might make a tool to "plant" some bushes. I tried regular tweezers, but they were too short and the foam "bushes" tended to stick to tweezers rather than stay glued in place. I then thought about using barbecue tongs, and that sounded like a good approach. I checked the grocery stores and found the style in the picture to work best for me. There may be better ones out there, or other more effective tools, but at least I can reach those hard-to-get places now on my layout.



With these tongs, I can pick up a foam cluster, put some tacky glue on it and set the foam in place. Don't get the glue on the tongs or the foam will surely stick to them instead the layout.

The tongs can have other uses on the layout. Putting soft foam rubber on the jaws would make them useful for moving structures and vehicles. Also, they could be used to reach in a tunnel to haul out derailed cars and engines.



## Another Tip: Recycling for Modeling

Article and Photos by Alex Belida, MMR

In the past I've turned old, used coffee filters into worn canvas tarps and curtains. My latest recycling "saves" involve turning a large cork that was being tossed out into a beehive-shaped charcoal oven that now sits over by one of the mines on my layout, a tribute to the Nevada charcoal burners who provided the fuel for the gold, silver and lead smelters. I also used some discarded plastic packaging to cast Sculptamold to make a dome-shaped smelter.



Here is the cork charcoal oven (Photo left). It was a tapered cork from a scented candle bottle, much larger than a standard wine bottle cork. All I did was shave off more of the top, drill a "smoke hole" at the peak, cut a doorway on the front, and carve rough simulated stone all over. I then added

several layers of paint and stain and some Pan Pastels. To complete the scene, I added a figure toting some firewood into the doorway, a shovel, and a rusty canister, along with a wood pile.



The smelter (Photo left) was made of Sculptamold poured into an oddly-shaped piece of plastic packaging. (I think it was from a lemon-squeezer we ordered for cooking.)

For this mini-project I cut a hole in the front and used scrap plastic to create a door panel, hinges, a clasp and the metal piece for the door to close on. I also took a small piece of foam insulation and cut and shaped it to glue to the back as a chimney. Both the furnace and the chimney were scored with a hobby tool to simulate stone and brickwork.

I again used copious amounts of paint and stain and weathering powders. I put another workman in front along some tools, two ancient ore wagons, and coal dust on the ground. Although not fully visible in the photo, a horse-drawn wagon is pulling up with a barrel of some ore for processing.

The lesson: *Don't toss out items meant for recycling before first examining them to see if they can be put to use in your modeling.*

## Book Review: How to Design a Model Railroad by Lance Mindheim

Article and Photos by Mat Thompson, MMR

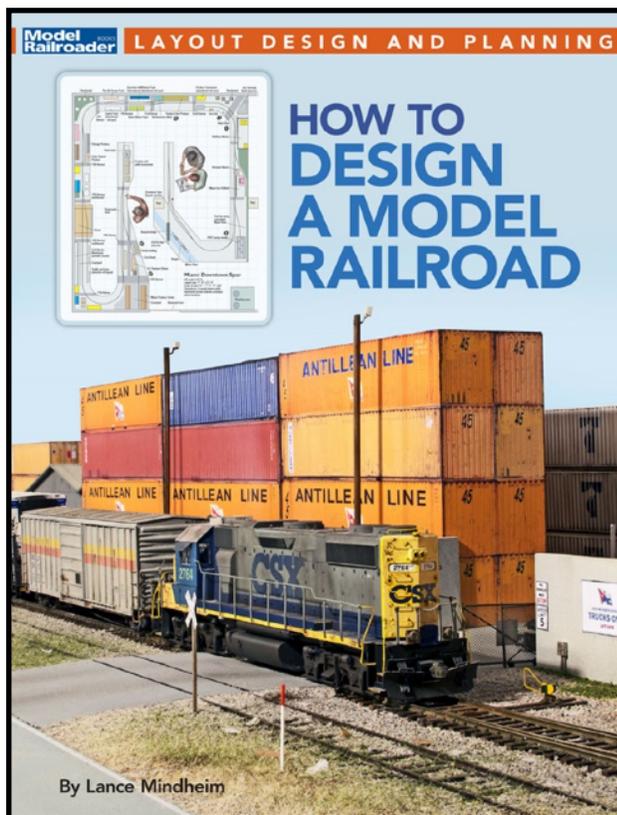
Lance Mindheim is smart, creative, and practical. All three traits shine in his new book, *How to Design a Model Railroad* (Kalmbach, 2021, \$24.99).

I call “*How to Design*” a “book” advisedly. As enjoyable and interesting as many of the Kalmbach offerings may be, they tend to be less than a hundred pages, and the pictures are the attraction. As with all Kalmbach books, the photos are numerous and superbly reproduced. But *How to Design* is 143 pages of well-written, thought-provoking text supported by carefully chosen pictures and diagrams that complement the points made in the narrative.

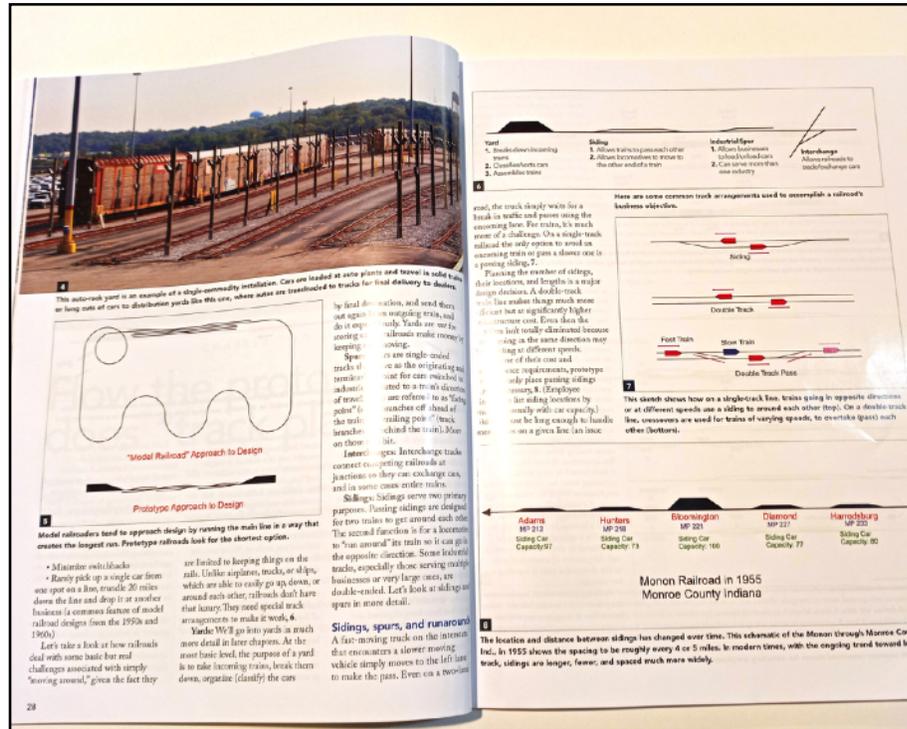
Those planning a layout will find that Lance focuses model railroading urges within the realities of time, money, skills, and space, and such focus will ultimately result in a satisfying layout. Many modelers with a layout will be inspired to reexamine their work. Some of us, myself included, need the pain of making some bad choices before we fully appreciate the better ideas that Lance presents in this book.

The starting point is a strategic plan that defines the goal of the model railroad. As Lance guides the reader through this approach, he takes us on a much deeper dive than simply wanting to run 80-foot passenger cars or use Number 6 turnouts. It’s about understanding your own interests, resources, and constraints and how they can be fit together to match your expectations.

In this process, one of Lance’s themes is to build in a way that will introduce some train movements and modeled scenes relatively early so enthusiasm remains high throughout construction. He also makes the point several times that the complexity of the design should match the designer’s skills and knowledge, and several pages are devoted to managing complexity. Lance is a professional layout designer and builder,



and it's obvious that he has been called in often to salvage layouts that haven't met this criterion.



This two-page spread shows how Lance uses text, carefully chosen photographs, and simple, clear diagrams to explain his approach to model railroad design.

tools. He explains how combining them can create the desired layout – that is, the layout that satisfies the builder's model railroad interests. Lance's approach is to design and plan first, and only then is it time to use the tools. It isn't until then, on page 78, that Lance suggests best practice specifications for turnouts, grades, curves, layout height and similar tactical details that too often are the beginning of many people's design efforts.

In the final chapters, he ties it all together, showing several different layouts, big and small, finished and under construction. This is also where Lance's mastery of diagrams clearly and simply illustrates concepts and shows the differences between options. Combined with the narrative and photographs, the diagrams produce a book of great value to anyone thinking about building a layout and good food for thought for those of us who already have.

Chapter Two, "How the prototype does 'track planning'" is a good read for any model railroader. Track costs money, takes time to install and maintain, and can complicate the movement of trains for real railroads and model railroads alike. Understanding this subject is both a key to a workable track plan and a part of managing complexity.

In the following chapters he uses track configurations – curves, straight track, radii, and grades – as design

Some readers will be familiar with two other Kalmbach books on this subject, *Realistic Model Railroad Design* (2004) and *Planning Your Model Railroad* (2015), both by Tony Koester.

Tony and Lance are equally masters of the subject. Both of Tony's books are more focused on modeling realism and prototype operations. He is accepting, but not enthusiastic, about other layout possibilities.

Lance is more universal. He doesn't advocate layouts that are train-watching versus ops-oriented, prototype versus free-lanced, or finished to be admired versus a long-term construction project. Instead, he advocates a hobby self-examination to determine what the modeler really wants, and he provides in depth considerations to help the definition process.

Any future model railroad baron would do well to read all three.

—

**Mat Thompson**, MMR, is the Potomac Division's Achievement Program Coordinator. His layout, the Oregon Coast Railroad, is profiled on the next pages.

## **NMRA Partnership Program**

Just a reminder about using the NMRA Partnership program! This program is available for you to use when you buy products from the participating vendors. Discounts from 5% to 25% are available to you! Goes without saying that the more you participate, the more you can save. The participating companies give discounts to NMRA members when orders are placed using a special discount code. You can find descriptions of these companies and their products, links to their websites, and the discount codes on the NMRA Partnership Page at [nmra.org/partnerships](http://nmra.org/partnerships). You need to be logged in as an NMRA member to see the codes!

Participating firms include CMR, LaBelle, Micro-Mark, Motrak, Nick & Nora, MRC, Rusty Stumps, Scalecoat, Tichy and many more.

## Another Potomac Division Layout: Mat Thompson's OCRR



1. What is the name of your layout? Oregon Coast Railroad.

2. What scale is your layout? HO.

3. Does your layout have a specific era and/or location? Portland, Oregon, in 1957 (more or less).

4. What are the overall dimensions of your layout? Free standing 30x32 feet in one room and c-shaped 50x2 feet along the walls in the second room.

5. How do you control your layout? Digitrax DCC radio, simplex and duplex.

6. When did you start making your layout? May 2005. I decided the layout was finished in February 2019 but am always making changes.

7. Do you host operating sessions, or would you consider doing so? Yes.





8. What type of track (sectional, flex track or hand laid) and switches are on your layout and what is its code? Atlas code 83 flex track, turnouts from Walthers and Peco plus some scratch built. All track is on N-scale roadbed.

9. If you were to brag about your layout what would you describe as its outstanding feature(s)? I did it! I learned wiring, DCC, and all those other things you need to know to have layout I am proud of and happy to share with my friends. *Mat Thompson MMR*

**If you have a layout that you want to show in *The Flyer*, just answer the questions on the next page and send your reply along with two or three photos to *The Flyer* at: [Potomac-Flyer@potomac-nmra.org](mailto:Potomac-Flyer@potomac-nmra.org)**

## Layout Questionnaire

If you have a layout, take a look at the questions below. Answer as many or as few as you want and send us two to three photos, confirming that you took them or crediting the person who did.

Your submission will go into a future issue of *The Flyer* and we'll showcase it on our website.

### Layout Questions to be accompanied by photos

Please keep your answers brief. If you have a track plan, you can send it with your photos.

1. What is the name of your layout?
2. What scale is your layout?
3. Does your layout have a specific era and/or location?
4. What are the overall dimensions of your layout?
5. How do you control your layout?
6. When did you start making your layout?
7. Do you host operating sessions or would you consider doing so?
8. What type of track (sectional, flex track or hand laid) and switches are on your layout and what is its code?
9. If you were to brag about your layout what would you describe as its outstanding feature(s)

Send your submissions to: [Potomac-Flyer@potomac-nmra.org](mailto:Potomac-Flyer@potomac-nmra.org)



Another Mat Thompson photo from his OCRR layout

## In Memoriam: Tom Brodrick



The members of the Anachronistic Era Operating Group sadly announce that our friend and fellow model railroader Tom Brodrick, 71, passed away Sunday September 19 of colon cancer.

Tom was an enthusiastic model railroader who always strived to improve on his modeling skills. He built at least five incarnations of the Providence and Worcester Railroad located in his native Massachusetts, the most recent being the double-deck version that virtually filled the entire basement of his Damascus, Maryland home.

His enthusiasm for the hobby extended to his support and engagement within the Potomac Division. He served on the Potomac Division board as Paymaster, Clerk and Assistant Superintendent, and also served as Layout Tour Coordinator. He hosted Division Board meetings, layout ops sessions and layout tours and regional convention committee meetings. He made significant contributions to the division MiniCons as a clinician, site coordinator and site liaison. He also served on the lead committees of several MER conventions hosted by the Potomac Division, acting as hotel liaison, operations coordinator, and fixer for anything that needed doing immediately, often behind the scenes.

Tom had a great knack for being able to dispassionately define an issue and offer a practical solution. No doubt his career as a high steel man, iron worker and crane operator contributed to this talent. In his modeling, it helped him to excel in figuring out in what order to move cars in the least amount of time in rail operations. Drawing on his vast knowledge of steel construction methods, he assisted the late Marshall Abrams in modeling the construction site featuring the high crane and steel skeleton frame of Marshall's ARE Railroad headquarters building. Tom assisted in drafting Marshall's article that appeared in the NMRA Magazine about this model.

In addition to his modeling skills, Tom was extremely well read and could authoritatively converse on a wide variety of topics, especially those of an historical nature. He was also a great raconteur with a vast repertoire of amusing tales from his work experiences.

It is our understanding there will be no memorial service held locally. Tom's wishes were for some of his ashes to be sprinkled off the New River Gorge Bridge where he was a member of the construction crew and some ashes in the cemetery in

Massachusetts where his parents are buried and where a memorial service is tentatively planned.

He is survived by his wife Gail, their son Sean and his wife Robin and two grandchildren.

He will be sorely missed.

The Anachronistic Era Operations Group: Bill Demas, Marv Zelkowitz, Ken Nesper, Dean Ripple, Tony Jenkins, Gil Fuchs, Brian Sheron, Joseph Ripple



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It's never too late to start improving your modeling skills. And your hobby.



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## Potomac Division Calendar of Events

**Oct. 2-3 Great Scale Model Train Show**

Md. State Fair, Timonium, MD

**October 21-24 MER "Mount Clare Junction" Convention**

Delta Marriott Hunt Valley, MD - Chesapeake Division

**Saturday Nov 6<sup>th</sup> November 2021 9AM**

Joint James River Potomac Division Meet  
Warrenton, VA

**Sunday Nov 27-28<sup>th</sup>, 2021 NMRax**

**Dec. 18-19 Greenberg Train & Toy Show**

Dulles Expo Center, Chantilly, VA

**Sunday Dec 19<sup>th</sup>, 2021 Virtual clinic 3PM**

Virtual - Alex Belida - Prototype Models

**Sunday, Jan. 16, 2022 Virtual clinic 3PM**

Virtual - Patrick Bentz - Nortlandz

**Saturday Jan 22<sup>nd</sup>, 2022 Make and Take clinic 10am**

In Person - Jeffrey Fleisher, Norm Reid, Model Railroad Photography  
Jerry Stanley's Hobby Barn, Hume, VA

**Sunday Feb 20<sup>th</sup> , 2022 Virtual clinic 3PM**

Virtual - Robert Conley - Tank Cars

**Saturday March 12<sup>th</sup> , 2022 Make and Take clinic 10am**

In Person - Cam Green - Landscape scenery techniques  
Jerry Stanley's Hobby Barn, Hume, VA

**Sunday, March 20<sup>th</sup>, 2022 Virtual Clinic 3PM**

Virtual - Brian Sheron - Building an operational crossing

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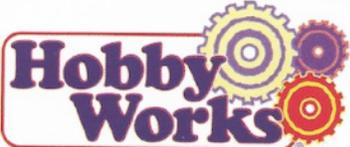
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