Photo 1—by Tim Pavlik

Round the Curve to Altoona 2023: Convention Guide

By Greg Warth

Inside this Print Issue of The Local

Inside this Issue of the eLocal

The Mid-Eastern Region (MER) annual convention, "Round the Curve to Altoona", hosted by the Susquehanna Division, is only a few months away, scheduled for October 19-22, 2023, at the Altoona Grand Hotel. It will be here before you know it. We hope you are gearing up for the big event. There are lots of things to do to get ready. Here is a checklist to use as you plan for the trip:

- Registration – If you haven't done this yet, do it right now!

- Make an Altoona folder where you can keep all the paperwork.

- Don't forget to reserve a room at the Altoona Grand Hotel.

- Here's the Schedule: Print it and save it in your Altoona folder.

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- Sign up for all the clinics, and select the layout tours you wish to attend.

- Sign up for one of the several operating sessions available.

- Pack up the tools you may need for the hands-on clinics.

- Order your convention shirt on the Registration Page.

- Sign up for the Western Maryland and/or the East Broad Top rail tour.

- Bring your best camera (or smartphone) to capture the memories.

- Finish up on the model or diorama you're going to enter for one of the contests.

- Schedule a visit to the Horseshoe Curve. **(Photo 1)**

- Contact your friends and plan to meet up with them somewhere at the convention.

- Check out the surrounding area and make plans to visit one or more of the special attractions around Altoona (See "Surrounding Attractions" below).

- Plan to write an article for *The Local* about one or more of your experiences at the convention.

Clinics

I love everything about the conventions, but one of my favorite things are the clinics. There are more clinics than I will have time to see. One suggestion would be to have volunteers make videos of all the clinics, put them together on one or more DVDs and make them available at the end of the convention for those who are interested, perhaps even sell them for a nominal fee or place them on YouTube. There is so much information here, it would be great to save them on videos that could be shared with others in your Division who were not able to attend the convention. If you are attending one or both Make-n-Take Clinics, here are the handouts for you to print out. They are on the convention website as well.

Handouts for the Make-n-Take Clinics:

> Tool Shed
>
> Freight Car Kits

Layout Room(s) in the Hotel

In addition to the **Clinics**, the **Layout Room(s)** are always excellent at these conventions. I am always inspired by what the local modelers have created for modular displays. I usually take a lot of pictures of those layouts, some of which may end up in these pages.

Contest Room

The **Contest Room** is always worth a visit or two to get inspired by what other modelers have accomplished. Hopefully one of your entries will be in there as well. There were not that many entries last year, so we're looking for a lot more this time around.

Sales Room

And don't forget about the "White Elephant Room," whose name has been changed to "**Sales Room**" where you might just find that one item you've been looking for, maybe even a lot less expensive than you thought it would be. Bring your own items to sell here as well. Sell something you don't need and use that money to buy something that you do need.

Model Railroad Open Houses (Layout Tours)

The outside layout tours are always fantastic and inspirational. I learn so much from them, including new ideas for track plans, scenery, and models of structures and bridges. The Altoona Association of Model Railroaders (**Photo 2**) heads up the list, followed by the Clinton Central Model Railroad Club (**Photo 3**). Lee Rainey's *East Broad Top* (**Photo 4**) and Gary Nastase's *Forks Ridge Railway* (**Photo 5**) will both be a delight to see. The *Foxdale Model Railroad* by the Resident Model Railroaders (**Photo 6**), John Kocet's *Norton Division (Photo 7)*, and, of course, Jerry Lauchle's *Galeton and Chestnut Lake* (**Photo 8**) will be wonders to behold. Saving some of the best for last, you won't want to miss the tours for Dave Baker's C&LE (**Photo 9**), Frank Coat's LMD of PRR (**Photo 10**), and John Bennett's B&O (**Photo 11**). In addition, you definitely need to visit to the Altoona Model Train Museum Association featuring multiple layouts in N, HO, S, and O scales (**Photo 12**). Photos 2-12 can be seen on pages 13-23.

The **Op Sessions** and **Rail Excursions** were reviewed in detail in prior recent issues of *The Local*. They are, of course, two of the most exciting categories of the convention. If you have not already signed up for these events, make sure you do so right away. These are very popular, and positions are limited.

> **Note: Correction on Op Sessions times:**
>
> **The starting time for all afternoon sessions is 1:00 p.m. and ending time is 5:00 p.m.**
>
> **The starting time for all evening sessions is 7:00 p.m. and ending time is 11:00 p.m.**
>
> (The times were listed incorrectly in the previous edition of *The Local*)

Surrounding Attractions

The National Parks in Western Pennsylvania are open and just waiting for your visit. Here are some of the best sites to see here:

> Flight 93 – Learn about the passengers who gave their own lives to save the lives of so many others by attacking the terrorists on this plane on September 11, 2001.
>
> Allegheny Portland Railroad – the first one to get around the Allegheny Mountains in 1834, connecting Pittsburgh to Philadelphia.

Fort Necessity – the site of the first battlefield of the French and Indian War.

Friendship Hill – home of Albert Gallatin, who was instrumental in the Louisiana Purchase.

Johnstown Flood Memorial – where the South Fork Dam failed and killed 2,209 people in 1889.

Altoona Railroaders Memorial Museum – Explore Railroad City: Learn about the history of Altoona and the Pennsy Railroad

Horseshoe Curve – World famous engineering marvel, a MUST SEE if you are in Altoona. Learn about it here.

DelGrosso's Amusement Park – It might be too cool in October to visit the Laguna Water Park here, but there are lots of other things to do!

Southern Alleghenies Museum of Art

Multiple Museums at Penn State University

Hobby Shops in Altoona

Crazy Train Hobbies: 2606 Plank Road, 814-943-5023

Shaffer's Full Steam Ahead Hobby Shop: 630 N 4th Ave, 814-942-4390

Neely's Train Shop: 1538 E Pleasant Valley Blvd, 814-942-2652

Gilbert's Hobby Shop: 346 E Water St, Gettysburg, PA, 717-337-1992

Mainline Hobby Supply: 15066 Buchanan Trl E, Blue Ridge Summit, PA, (717) 794-2860

Banquet

Of course, the **Banquet** is always fun for everyone. It is exciting to see who gets the awards, even more so if you have entered one of the contests. The **Keynote Speaker** is always someone you won't want to miss.

Annual Business Meeting

If you can stay till the end of the conference, you may wish to attend the **Annual Business Meeting** to see what is new in the MER, find out our future plans, and see the changing of the guard, this time the newly elected Directors-at-Large.

So, there you have it – your guide to the Altoona Convention with everything you need to know. Get organized and ready to go. Fill up your Altoona folder and be sure to bring it with you. You don't want to miss anything!

Troubleshooting Your Model Railroad

By Greg Warth

According to Murphy's Law, something will inevitably go wrong with your railroad, especially when you are just getting ready to show your layout to someone, or when the judges come over to inspect it for your next Achievement Program award! You need to know how to troubleshoot it, and sometimes that has to be done very quickly, like when your open house starts in 30 minutes. When troubleshooting, you need to have a systematic approach, or basically a checklist, to help you eliminate the possibilities one at a time. Sometimes the problem is obvious, and sometimes not so much. The latter is the one that requires the checklist.

Power Problems:

Identify the problem, or at least the category of the problem. Does it originate from the track, electrical supply, or is it a locomotive or rolling stock issue?

Check the power supply. Is it on and plugged in (don't laugh!)? Use a multimeter to check the voltage and amps at the output terminals. Check the track to be sure the power is actually getting there. Check the track in different areas to be sure the power is distributed throughout your layout or where it is supposed to be delivered.

If the power is off in all blocks, check the wiring from the power pack to the track. If the power is off in just one block, check the wiring to that power district, or check the track for a loose joint. Check the power switch to that block of track. Make sure all the track feeders are intact and connected. Check to be sure you don't have a stray wire strand causing a short. Also, be sure there are no tools lying across the tracks somewhere. A derailed locomotive may be sitting on a turnout incorrectly and causing a short. This usually occurs in the back corner of the layout where you can't see it (see Murphy…).

Inspect the track. Clean it. Remove any scenery or rocks that may be in the way. Again, look for loose joints.

Check the locomotive. Test it on a different track that you are sure has power to it (a test track, for example). If it is a DCC loco, make sure you have entered the proper code in your command module. You may have to reprogram it. Clean the wheels of the locomotive. Check to see if there is a piece of scenery hung up in the gears or wheels. Use your gauge to check the wheel alignment. Stuttering locomotives are usually due to dirty wheels, dirty track, or a loose wire somewhere either inside the locomotive or associated with the track feeder.

Check the lighting inside railcars or in the caboose if you have them. Replace the light bulbs (if possible) or repair any loose connections.

If your locomotive stops every time at a specific point like at a rail gap or a turnout, connect a second locomotive to push it through the isolated power gap (or fix that specific point!). A second option is to install a "stay alive" capacitor to keep the wheels turning for a few seconds after the brief power interruption.

Derailments:

Check the track carefully in the area where the derailments occur. Look for poorly aligned or loose rail joints or big gaps in the joints. Use a straight edge or small level to be sure the tracks are straight and level. Use an NMRA gauge to be sure the rails are the correct distance apart, especially around turnouts, crossings, or curves. If the track is not level, add wood or cork support underneath the rail that is low to bring it up to level.

Check the turnouts carefully to see if the wheel flanges are engaging properly with the frog and the points. Sometimes a little filing is necessary to prevent the frog or the points on the turnout from interfering with wheels of a railcar or the cowcatcher of the locomotive. Sometimes, you just have to replace the turnout.

Check clearances to be sure there is enough room for locomotives or rolling cars to pass by cliffs, rocks, scenery, bridges, passing trains or other objects.

Inspect the wheels and trucks of rolling stock. Look for damage and misalignment. Clean the wheels or replace them if necessary.

Make sure your rolling stock cars are the proper weight according to the NMRA guidelines and be sure the weight is distributed evenly across all wheels. Test different rolling stock over the derailment area. Is it just certain types or brands of rolling stock that derail? Replace the plastic wheels with metal wheels. Read Freight Cars Parts I & II by Jim Fisher.

Consider adjusting the speed of your trains when passing through problem areas.

Coupler problems can be an issue. If the coupling tension between cars is too tight going around a curve, it could cause a derailment. If coupler heights are not even, you may end up losing cars from your train.

If the railcars in the middle of a long turning train are lighter than the ones at either end, it could cause "stringlining," resulting in the middle cars being pulled off the track as the train is going around the bend. For proper weighting, see and apply the NMRA recommended practices to obviate this issue.

Learn more about troubleshooting here…

Also, sign up for Kevin O'Connor's clinic on "Make-N-Take Freight Car" at the Altoona Convention: https://www.mer2023.org/clinics.html.

Mid-Eastern Region, NMRA 2023 Convention
Round the Curve to Altoona
October 19th to 22nd, 2023
https://mer2023.org/

Use Online Registration for Secure Payment and Most Up-To-Date Activity Availability

Please enter (print legibly) all names **as you wish them to appear on your registration badge(s).** They will not be changed at the convention.

Primary Registrant: _____**MMR? Y / N**, Title for Badge _____

Significant Other Attending (living at same address): _____

Children Attending (18 & under - list all **+** age):_____

Registrar's Use Only!	
	Address: _____
	City: _____ State: _____ Zip : _____
	Phone #: _____ E-mail:_____
	NMRA #: _____ Region: _____ Division: _____
	Favorite Scale: _____ Is this your first MER Convention? _____

Description	ID	Cost	Qty	Paying
Registration				
NMRA Member: ___ $70 thru Aug 31, ___ $80 Sep 1 – Oct 5, ___ $90 On-Site Oct 19 – 22				
Non-Member*: ___ $90 thru Aug 31, ___ $100 Sep 1 – Oct 5, ___ $110 On-Site Oct 19 – 22				
One-Day (circle day) | NMRA Member: $45 Fri Sat | Non-Member*: $65 Fri Sat				
Spouse/Significant Other (Name)		$5		
Children 18 and Under (Name & Age)		$5		
Banquet – Saturday Night ____ Fillet Mignon ____ Herb Encrusted Salmon ____ Penne Pasta Primevera ____ Roasted Chicken Veloute	401	$57		
A Grand Start Breakfast ____ Fri ____ Sat ____ Sun	402-4	$17		
Editors' Breakfast ____ Fri (Division Editors and Webmasters)	420	$0		
Superintendents' Breakfast _____ Sat (Division Superintendents)	421	$0		
Call Boards / Ops – See Convention Web Site for Latest Information	--------	--------	----	-----------
Lee Rainey's East Broad Top	801	$5		
John Bennett's B&O-WM-PWV (Section 1)	802	$5		
John Bennett's B&O-WM-PWV (Section 2)	803	$5		
John Bennett's B&O-WM-PWV (Section 3)	804	$5		
David Baker's Cumberland & Lake Erie (Section 1)	805	$5		
David Baker's Cumberland & Lake Erie (Section 2)	806	$5		
Frank Coat's Laurel Mountain Division of PRR (Section 1)	807	$5		
Frank Coat's Laurel Mountain Division of PRR (Section 2)	808	$5		
Frank Coat's Laurel Mountain Division of PRR (Section 3)	809	$5		
Frank Coat's Laurel Mountain Division of PRR (Section 4)	810	$5		
Frank Coat's Laurel Mountain Division of PRR (Section 5)	811	$5		
Extra Fare Clinics – Registration Required, Further Information on Web Site	--------	--------	----	-----------
Build a Craftsman Kit ____ N ($15) ____ HO ($25) ____ O ($45)	601			
Tinkercad	602	$0		**No Fee**
Getting a Freight Car Kit Ready for Your Layout	603	$12		
Prototype Tours – Further Information on Web Site	--------	--------	----	-----------
Western Maryland Scenic Railroad #1309	201	$99		
East Broad Top, Rockhill Trolley, Bricktown Club	202	$99		
Railroaders Museum K4 Roundhouse (Sat morning)	203	$15		
Railroaders Museum K4 Roundhouse (Sat afternoon)	204	$15		
Convention Shirt	--------	--------	----	-----------
___ Small ____ Medium ___ Large ___ XL		$36		
___ 2XL ___ 3XL		$40		
Would You Like To Be A Contest Judge At The Convention – Circle - YES or NO	-----	----	---	-----------
Have You Been A Contest Judge In The Past – Circle - YES or NO	-----	----	---	-----------
TOTAL			➡	

*   Non-members must complete and be eligible for a Rail Pass. Please contact the Convention Registrar (contact info below) for details.

Print registrations must be accompanied by check payable to **MER Conventions**. Send to: MER Conventions, PO Box 426, Sykesville, MD 21784-0426
Any questions and/or additional information, contact the Convention Registrar: e-mail **mer-registrar@mer-nmra.com** or call (410) 442-0446.
Hotel – Altoona Grand Hotel, 1 Sheraton Drive, Altoona, PA 16601, (814) 946-1631. Room Rate - $89.00 per night + tax. Contact the hotel at the telephone number provided and reference the National Model Railroad Association. The convention rate is not available via online booking.
Please refer to COVID-19 and cancellation policies at the convention website online.

President's Column

President Scott Unger

Where Are You?

Being able to identify one's model railroad location requires the ability to identify and recognize not only the individual features of a locale, but also its unique defining features. Buildings, rolling stock and railroad infrastructure, when incorporated together with other elements in model form, can be very powerful in creating the feeling of a specific place. The most impactful scenes are those that evoke a sense of human connection or capture the intended purpose inherent to the locale.

A logical starting point in identifying a space is to assign it a name. Whether it is a stand-alone diorama or a town on your model railroad, what you call it is critical to creating the first impression. Making sure to spell the town correctly if you are modeling a prototype is also generally a good idea! So please excuse my blunder in my last column where I misspelled "Barre," Vermont. Modeling an actual location offers the opportunity to research nearly endless volumes of available information to establish the specific attributes of a place. I discovered that researching the locations along my railroad turned out to be an unexpectedly enjoyable part of model railroading. Naming a freelanced town is more of an art than a science, requiring you to capture the specific feel of an imagined location.

Possibly the next most obvious attribute of a location is the topography. Establishing that in a convincing fashion requires a bit more advanced planning than coming up with a name. Constructing areas that will be below the railroad need to be incorporated into the benchwork. Extra effort to get the landform correct in advance has tremendous benefit in capturing the essence of location. Plywood is a convenient starting point for a base but generally limits you to creating landforms that are above the railroad surface. However, even the flattest terrain has some undulation that needs to be lower than the railroad such as ditches and waterways. Horizontal distance can be difficult to model even in N scale, but vertical distance is much easier to model without substantial compression. Setting a bridge to the correct elevation above the valley bottom can be as simple as counting contour lines on a USGS topographic map multiplying that by the contour interval and then converting to the appropriate scale. How a horizontally compressed scene plays with a correctly scaled vertical parameter is something I am still

experimenting with, so I will have to let you know how that goes!

Track infrastructure can also provide cues regarding location. A rambling single-track winding around in the wilderness provides a much different feeling than a dense network of tightly packed rails serving a long-established industrial urban area. We all struggle with the temptation to pack more railroading into our existing space. Since most of the miles of the North American railroad network are rural, attempting to model wide open spaces, it is probably the most difficult for us given that we usually struggle to get more than one train length in between each town's siding. The arrangement of the track also provides indications of a given railroad's reason to exist and a thoughtfully arranged track plan can help to anchor a scene with implied purpose.

Lighting is also easiest to plan out before too much construction is completed (unless you intend on standing on your benchwork) and can also have a significant impact on establishing a sense of location. A dimly lit scene in a desert of the southwest is about as unconvincing as an intensely illuminated heavily wooded deep ravine in the Appalachians. I would guess that model railroaders as a group tend to err on the side of under illumination so giving some thought about how bright and dim locations might fit best within your railroad design can be helpful.

Planning space for structures also yields dividends in realism as the type, size and quantity of structures or lack of structures can provide strong ties to both the purpose and location. Installing clear and consistent signage around your model railroad helps to solidify the overall context of place. Adding a key or unique element can provide an undeniable connection to the modeled location such an iconic building, landform, or industry as long as there is sufficient space to do so convincingly.

Smaller details like vegetation, debris, pavement, fences, vehicles, equipment, and remnants of former industry or even railroads can be added over time to refine the appearance of a specific time and place. Colors and textures are additional variables that can be manipulated to yield a specific outcome. Fine muted textures tend to make scenes look larger or objects look farther away while course textures with bright coloring can have the opposite result.

People add the final connection, meaning, and vibrancy to our modeled places. Scale versions of pedestrians, railroaders, office workers and families added to a scene provide the finishing touch to the imagined world. Figures of people are often an afterthought as a detail on model railroads, but they

should be one of the principal elements. Without people, nothing else matters. That is what the railroad was built for, and serving the people is the ultimate purpose of the railroad.

Similarly, people are the principal element that makes up the NMRA. Without people, the NMRA would not exist. The organization owes its existence to a large diverse membership of all kinds of people from all walks of life, but who all have a common purpose. We all share and are pulled together by the art and science of model railroading. With Divisions covering multiple counties and a Region that includes portions of eight states, we, as members of the Mid-Eastern Region (MER), may not always feel like we share the same sense of place. Some modelers who have previously been members of the MER have resigned because of this. They haven't felt the collective bond to other modelers that is supposed to be the heart of the organization. Why even belong to a group if you don't feel like you are part of the group?

To help address that, the NMRA has established the NMRA Interchange to help us stay connected and to narrow the space between us (compression isn't always bad!). If you are feeling lost, unfriended, or unconnected, this is the way to get reconnected with other folks like you with a common purpose. But you can't do that if you are on the outside.

If you have not already signed up or read about it in your Division newsletter log into the [NMRA website](#) and check it out at

NMRA Achievement Program Update

Kurt Thompson, MMR

MER AP Manager

Since the last report in *The Local,* the following Achievement Program certificates were earned and awarded in the Mid-Eastern Region (MER):

Division 1 New Jersey Division
Joseph Zebrowski - Association Volunteer

Division 13 Carolina Piedmont Division
Charles Rausch, MMR - Model Railroad Engineeer: Civil

Division 14 Chesapeake Division
Kirk Bateman - Association Volunteer

In the Region:
Philip Dechene - Golden Spike Award

Congratulations to all those who have received achievement awards. Keep up the great work!

NMRA Interchange

This is a new way for NMRA members to communicate with each other. Texting, voice messaging, and sending videos are all available here. The Official NMRA announcement page: https://www.nmra.org/nmra-interchange. Follow the directions there very carefully. The following is a summary of those directions:

How to sign up:

1. Click on this link: https://discord.gg/k6kg2mFw8B.

2. Create a new **Discord account** with an email, username or nickname (What you want other people to call you.) and a password (not the one you use for your NMRA sign-in!).

3. You will then get an email where you need to click on "**Verify my email address**."

4. **Log in to Discord** using your new account username and password.

5. Click on the **Direct Messaging icon** at the top left and the NMRA Interchange with a blue icon below it. That will take you to **#the-lobby,** where you have to read the rules and agree with them by clicking the thumbs up icon for each one. Read the how-to guides and then type **/ onboard [NMRA member number]** command here in the lobby. Note: DO NOT COPY AND PASTE your member number here. You must TYPE it in including the forward slash in the front, the six numbers, the space, and the last two characters. If you only have six numbers, TYPE those in, then add a space, and then type either 00 (zerozero) or 0A (zeroA) as the last two characters. If you mess up, one of the moderators will send you a message. Just follow their directions.

6. Now that you have logged in to the website, click on **Member List** in the top right corner, then find your membership number in your personal details. So then type in **/onboard** and provide your NMRA membership number again AND the space AND the two characters just like before.

7. You will then receive a message telling you to expect an email and where it was sent. If your email address is correct, then dismiss the link. **If it is NOT correct, contact the NMRA** at https://www.nmra.org/request-membership-info-changes to get it fixed.

When the email shows up, copy and paste the whole line '/ clearance input: 654321' into #the-lobby (in the message box at the bottom) in the Discord app and notice suddenly you can see all the NMRA channels and your Region and Division too!

8. Now start participating by posting photos of your work in #the-workbench, or when you see a CSX train in #csxt, or ask or answer a question in any other channel.

9. Suggestions are welcome in the #interchange-suggestion-box channel.

10. NEVER click Leave the Server from anywhere or you will have to do this all over again.

11. Install the Discord App on your phone or tablet: go to https://discord.com/

From the Editor's Desk

Greg Warth, Editor

Model Railroading in the Summer

For some model railroaders, the summer tends to be a time when we put down our tools and spend more time at the beach, on the road, or just in our backyards, enjoying time with families. Hopefully, there will be a little off time when we can still do some work on the railroad or on the models we have wanted to assemble. Even if you are out of town and sitting in a motel room, there are things you can do, like planning your next project, drawing out an extension to your layout, creating a CAD program for your 3D printer, watch YouTube videos of layout tours or how-to projects, or just getting caught up on reading *The Local* or *Model Railroader.* One thing I like to do when traveling is to look at scenery and take pictures of trees, landscapes, bridges, or old buildings. I can then use these as reference photos to create new scenes for the railroad when I get back home. If you're lucky, the area you are visiting will have a train show, a model railroad museum, or a hobby shop nearby that you can check out with the kids.

Explore One New Thing!

If you find that during the summer months, you have less time to devote to your favorite hobby, you may want to focus what little time you have on learning about or developing one new thing, something you have not done before. It could be building that craftsman structure you've been putting off. Or it could be that electronic project you have wanted to do. I'm not talking about a big project here, like re-wiring your entire layout. I'm suggesting just one small project for the whole summer. It could be just a detection and automation project at one of your train stations, where an approaching train is detected, stops at the station, and then starts up again after 60 seconds. Or you could pick out any of the recent *Local* articles in the Electronics Corner by Fred Miller, MMR, or those about "What to Do with Leftovers" by Martin Brechbiel, MMR*. You could even choose one of the Achievement Program categories to work on completing. The Model Railroad Author award would be easy to work on while on vacation. Just take your laptop with you and do some writing!

How about building a small diorama or a model that you could bring to the October convention. Just focus on that one thing and do a super job on it. Make it something you can be proud of when you're finished. This would be better than doing a hodgepodge of other stuff you won't even remember later. Go for the win! Even if you don't win, it will be a great experience. Your skills for your next project will be better. And besides, you will have a very nice model to display in your living room or den.

My project for this summer is to create a small Z scale diorama.

This is something I have wanted to do for a couple of years now. I've never worked with Z scale before, so it will be interesting to see if my eyes and my hands are up to the job. So far, I have developed my track plan, started building the terrain and purchased a starter track set from Marklin. We will see how it goes. But I'm excited about it! That's all that really matters anyway, just getting excited about a project you have not done before and then doing it.

This issue of *The Local* might give you some ideas about projects you can work on over the summer. If you like electronics and circuitry, Fred Miller, MMR won't disappoint you with his article on a $30 DCC shuttle throttle that you can make yourself. The Editor will do a show-and-tell of what he's been up to in the room-over-the-garage. We have more news and information about the upcoming "Round the Curve to Altoona" MER Convention in October, which looks to be a really great place to go this fall. Make sure to register and sign up for your favorite clinics and tours as soon as possible if you haven't already done so. They fill up fast. Mark Nieting's article will show you an easy way to get started in having your own operating sessions. Be sure to read the Candidates' statements for the 2023 election of Directors-at-Large so you know who to vote for when the ballots come around. And lots of other surprises lie ahead! Read on…

*Use the "SEARCH THE LOCAL" function located in the masthead of every issue to find these articles.

Thanks again to the editorial team who makes *The Local* possible:
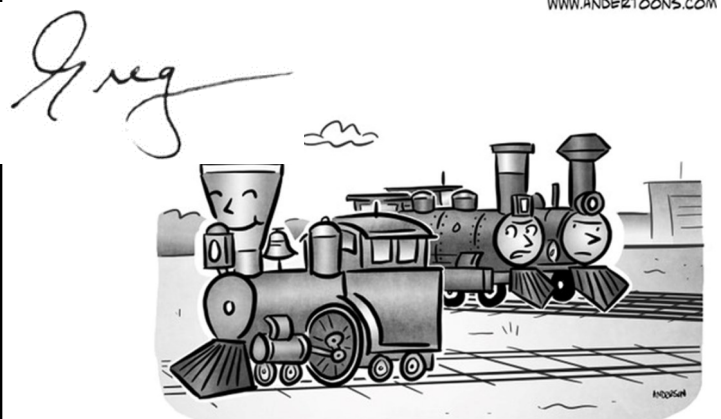
Martin Brechbiel, MMR
Alex Belida, MMR
Jack Dziadul
Rick Stoneking, MER Secretary, Publisher
Bob Charles, MMR, MER Director-at-Large

And thanks to all the members who read *The Local*. We truly appreciate the great feedback we have been receiving.

Warm regards to all,
Greg Warth, Editor

WWW.ANDERTOONS.COM

"For cryin' out loud! He goes up a hill one time…"

Advertising in *The Local*:

If you have a model railroading business and would like to place an ad in *The Local*, please contact the Editor. The new rates *per year* are as follows:

Divisions & Clubs	Free
Clinics & Education	Free
Convention Ads	Free
Full Page - Color	$100.00
½ Page – Color	$60.00
¼ Page – Color	$35.00
Business Card	$10.00
Text Only	$7.00

Your ad may appear as text, photo, art, or any combination thereof. Art must be of high quality and camera-ready. Formats must be in txt, doc/docx, pdf, jpeg, bmp or tiff only. The content must be related to model trains or railroads or provide a benefit specifically to model railroaders. If you need help with your ad, please don't hesitate to ask the Editor.

Send in Your Articles

We are always looking for new articles, tips, ideas, photos, and comments from our readers. If you have been awarded an AP (Achievement Program) Certificate or an MMR (Master Model Railroader) award, please consider writing an article about it so others can learn how you did it. We always enjoy looking at new layouts, dioramas, and models that our members have created. If you would like to contribute to *The Local*, please send an email containing your article and photos to *The Local* Editor.

The Local welcomes and encourages articles, photographs, and model railroad related material as contributions to members' education and enjoyment of the hobby. Materials should have a wide appeal. The Editor will exercise all due care of submissions, but contributors should not send paper/photo originals without retaining back-up copies. Editors, by definition, reserve the right and have the responsibility to make corrections, deletions, and changes to accommodate space. If your item is time-sensitive in any way, please advise the Editor. Otherwise, stories and photos that are accepted are published in approximately the order in which they were received.

How to Submit an Article for The Local

Please observe the following steps to submit your contribution:

Please read the article written by Martin Brechbiel, MMR on "How to Prepare a Manuscript for *The Local*."

Compose and submit your text in one of the following formats: TXT, DOC, or DOCX.

Consider what photos, illustrations, or other graphics can go with the text. These are essential. But DO NOT include/insert them into your text. DO put notations in the text such as "Insert Photo #1 here."

Your photos should be high resolution and very clear. We cannot accept photos that are fuzzy or out of focus. JPG, GIF, TIFF, and PNG formats are acceptable.

Please rename your photo files in the order you want them to appear, e.g., Photo-1.jpg, Photo-2.jpg, etc.

If you have captions for your photos, etc., create a separate text file for the captions, each of which should be numbered to match a numbered photo or figure.

Send your article or photos by email to *The Local* Editor. There may be a limit on the number of megabytes you can send depending on your email program. If necessary, either send the photos three at a time, or compress the photos with a "Zip" program to send more at one time.

Deadlines for Submitting Articles to *The Local*:

Issue:	Deadline:
Jan/Feb	Dec 1st of previous year
Mar/Apr	Feb1st
May/Jun	Apr 1st
Jul/Aug	Jun 1st
Sept/	Oct Aug 1st
Nov/Dec	Oct 1st

Special Notes:

Please only send us *your own* creative work or that for which you have written permission to use so we can give that source proper credit. We need to avoid any copyright infringement situations.

If you have previously published your article or photo in any other magazine or newsletter, including a division newsletter or your own website blog, it cannot be reproduced in *The Local* without written permission from the magazine publisher, editor, and author or photographer.

If this is your first submission to *The Local*, please fill out and return this Media Agreement form to the Editor, which gives us permission to use your material and verifies that the work is yours, or that you have obtained written permission to use it.

Once your article is approved for publication, and you have qualified for 42 or more points in the Author Category of the Achievement Program (AP), you may submit a Statement of Qualifications Form to your Division AP Manager to receive your Author AP Certificate.

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Election of Directors-at-Large for 2023

The candidates for Directors-at-Large for the Mid-Eastern Region 2023 elections are listed here along with their statements. Please read all of these over carefully so you can decide how you will vote when the ballots are sent to you.

Candidates and Their Statements

Bob Bridges

I am interested in volunteering to serve as a MER Director. I am a "new-old" member of the region. I joined the NMRA and MER in 2013, moved to Surprise, AZ in 2018 becoming a PSR Arizona Division member until recently returning to North Carolina and the MER this year.

I have served as CPD13 Clerk and editor of the CPD13 newsletter "The Herald" from 2015-2018.

I was the Publicity/Marketing chairman for the 2016 Tracks to the Triangle MER Convention and served as the MER Photographer in 2017. This service to the MER enabled me to earn my Volunteer AP certificate.

During my time in Arizona, I joined the Arizona Railroad Historical Society, a 100% NMRA club which has built a layout depicting Arizona rail history in the Arizona State Capitol Museum, https://azrhs.com/   I served as the club's newsletter editor for 5 years. Service to the PSR included layout tour chairman for the 2015 PSR Regional Convention held in Scottsdale and assisting with contest judging and AP evaluations.

Upon my return to the MER this year I have volunteered to serve on the local convention committee for the 2024 MER Convention.   With your support I look forward to the opportunity to serve MER members and grow the hobby.

Kevin O'Connor

I am volunteering to serve on the MER Board of Directors. I got back into model railroading when I retired in 2014, joined NMRA and Carolina Piedmont Division in 2015. I am a very active member of the Carolina Piedmont Division and MER and have attended recent MER conventions. Activities and accomplishments include:

- Division Director for 5 ½ years;
- Currently Division Clerk which covers, publications and membership;
- Earned the Golden Spike Award, AP Volunteer, and AP Author;
- Served as MER Archivist for the last 5 years;
- Presented clinics at the division level on various topics such as Getting a Freight Car Kit ready for your Layout, impact of Hurricane Camille on the railroads in Central Virginia, and points to consider when expanding your layout;
- Getting a Freight Car Kit Ready for your Layout was presented on the regional level as a clinic in the MER 2022 convention in Charlotte;
- Volunteered to oversee CPD White Elephant tables at local train shows;
- Co-Chair of the LCC (Local Convention Committee) for 2024 MER Convention Piedmont Junction hosted by CPD and being held in Durham, NC; and
- Participated in the 2021 MER Convention as a Contest judge, and the 2022 convention contest as a participant.

I feel my activity at the divisional level has prepared me for moving up to the Regional level as a Director. Thank you for your consideration.

Greg Warth

I have enjoyed being a model railroader since 1990 and a member of the NMRA for most of that time. The hobby has served as a great diversion for me and has helped to provide a balance between work and life which is important in my profession as an internal medicine physician. I started writing about model railroading in 2009 and created a website dedicated to sharing information about it. In fact, I think sharing tricks and techniques with each other and the comradery that results from that is one of the best aspects of the hobby. I love writing about it almost as much as I love doing it. After building multiple personal layouts at home, two in HO and the rest in N scale, I have learned much about the science and the art of the hobby. And since becoming Editor of *The Local*, I have learned even more about teamwork, dedication, and the importance of connecting and communicating with other model railroaders. I am now grateful and honored to have been nominated to the position of Director-at-Large and, if elected, will provide the absolute best service I can for those who depend on it.

Also Open Thursday (Oct. 19) 7:00pm – 10:00pm

THE ALTOONA ASSOCIATION OF MODEL RAILROADERS
AAMR
EST. 1949

Open Fridays
7:30pm - 10:30pm

2930 S 10th Ave
Altoona, PA 16601
(Corner of 30th St & 10th Ave)

www.theaamr.org | :@theaamr | president@theaamr.org

- Style: Freelance Club Layout
- Era: Varies
- Scales: N, HO, and O
- Access: Steps to 1st and 2nd floors
- This club has three layouts situated on two floors of a dedicated building.

2023 Mid-Eastern Region Convention
ALTOONA
Susquehanna Division 11

Clinton Central Model Railroad Club

www.CCMRR.org

October 21, 2023 – 10 am to 4 pm

- Style: Freelance/Prototype
- Era: 1940's & 50's
- Scale: HO
- Size: 28' X 40'
- % Trackage and Wiring Completed: 100%
- % Scenery Completed: 90%
- Control: NCE DCC
- Access: Two Steps Up

The layout is located in the Castanea Station, just across the Susquehanna River from Lock Haven, PA, some 1.25 hr drive from Altoona. Railroads that have existed or exist in Clinton County from the earliest railroading days include the Pennsylvania, New York Central, Penn Central, Conrail, Norfolk Southern, Beech Creek, Clearfield & Western, and R. J. Corman. What has been built into the layout is a generic vision of Clinton County, Pennsylvania. Naturally, coal is a large component of the layout. Lumber and manufacturing also play a significant part. Mines, tipples, coal load-out facilities, yards, sawmills, brick factories, rock quarry and local small manufacturing plants all portray the historical vision an observer may have witnessed someplace in Clinton County during the mid-20th century.

PRR Middle Division & East Broad Top Railroad

Lee Rainey

October 22, 2023 – 11:30 am to 2 pm

- Style: Prototype
- Era: 1954
- Scale: S/Sn3
- Size: 12' X 26'
- % Track Completed: 90%
- % Scenery Completed: 25%
- Control: Lenz DCC
- Access: Steps down to basement

My layout represents the town of Mount Union, PA; for many years the largest shipping point on the Middle Division of the PRR, and the junction between the PRR and the EBT. Emphasis is on recreating the industries that existed in Mount Union. Track on this S/Sn3 layout is primarily handlaid and much of it is dual gauge. The scenery features custom photo backdrops and scratch-built buildings. The layout is a switching layout with PRR through freights coming from both Enola and Altoona staging. Both a PRR shifter and a standard-gauge EBT shifter handle the car spotting.

Forks Ridge Railway
Gary Nastase
October 22, 2023 – 11 am to 5 pm

- Style: Proto Freelance
- Era: 1966
- Scale: HO
- Size: 24' X 30'
- % Completed: 100%
- % Scenery: 50%
- Control: NCE DCC Sound
- Access: Stairs to Basement

The HO scale Forks Ridge Railway (FRRY) is a proto-freelanced design based heavily on PRR practices set in 1966. It features a double mainline approximately 150' each. At its highest point, it has a junction where the FRRY ties into the PRR. The FRRY circumnavigates the basement back to the junction. It has 2 coal mines, a quarry and petroleum depot. There is also a small engine facility and yard for the FRRY The lower portion features an agricultural area, farm and small village with two industries. It also has an extensive yard and engine facility for the PRR, which will include several industries. It is wired for DCC using NCE products. All turnouts are controlled by toggle switches.

Convention Guide Photo 5—Gary Nastase FRRY Open House

Foxdale Model Railroad
Resident Model Railroaders
October 22, 2023 – 11 am to 2 pm

- Style: Proto Freelance
- Era: 1950's to early 2000
- Scale: HO
- Size: 16' X 24' with 2'X 5'extention near door
- % Completed: 100%
- % Scenery: 95%
- Control: NCE DCC Sound, wireless throttles
- Access: Elevator to 2nd flloor
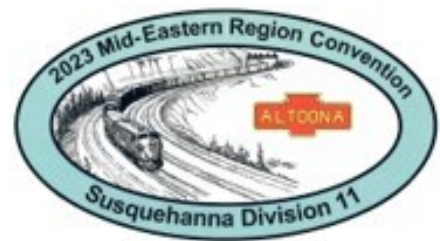
Model railroaders who are residents at Foxdale Village, State College, Pennsylvania formed a model railroading group in late 2014. After securing a space in 2015, they began construction of the Foxdale Model Railroad in 2016. There is 680' of track on the layout, with 82 turnouts, all controlled by Tortoise machines with frog power routing. The layout was designed to fit in the room for show. It is a double track mainline, each 106' long with 36" minimum radius curves. Areas on the layout are named after founding members and helpful staff that made the room possible for this use. Most of the equipment that is on the layout is from members' former home layouts.

Norton Division
John Kocet
October 22, 2023 – 11 am to 3 pm

- Style: Prototype/Freelance
- Era: 40's, 50's, & 60's
- Scale: HO
- Size: 23' X 40'
- % Trackage and Wiring Completed: 96%
- % Scenery Completed: 80%
- Control: NCE DCC
- Access: Steps down to basement

The Norton Division is a double deck layout featuring a double-track mainline which is approximately 320 feet from point A and back to point A. It is a continuous run railroad but the design also permits point to point operation. There is a complete operating signal system that works almost perfectly. Turnouts are mostly Walters and Shinohara; mainline turnouts are all powered by Tortoise switch machines. The control system is DCC sound with NCE power cabs, three boosters, and several radio wireless throttles along with a few plug-ins. Railroad equipment features several railroads that worked the Appalachian coal fields such as the Baltimore & Ohio, Chesapeake & Ohio, Virginian, and Norfolk & Western.

Galeton & Chestnut Lake
Jerry Lauchle, MMR
October 22, 2023 – 11 am to 2 pm

- Style: Freelance
- Era: Transition
- Scale: HO
- Size: 15' X 19'
- % Trackage and Wiring Completed: 100%
- % Scenery Completed: 100%
- Control: NCE DCC
- Access: Steps down to basement

The railroad is around four walls with a liftout for entrance. Within this area is the fictitious G&CL shortline that connects Galeton and Chestnut Lake in north-central Pennsylvania. The mainline is a two-lap arrangement with two interchanges with the Pennsylvania Railroad (PRR); one at Williamsport and the other at Renovo. There are staging yards at those two locations and both have turntables. There is a branch out of Chestnut Lake to a coal transfer station where coal carried on the G&CL standard gauge railroad transfers to narrow-gauge gondolas of an un-named railroad that disappears into a tunnel. Bituminous coal is mined near Chestnut Lake and a tipple there permits loading it into hoppers and gondolas. The Chestnut Lake Lumber Company, including a saw mill, is located midway between Chestnut Lake and Galeton. The yard and locomotive service area are located in Galeton. There are several spurs and sidings off the main that serve various customers including a brewery, a REA, a milk station, a crude oil loading station, and freight stations.

Cumberland and Lake Erie Railroad

David Baker

October 22, 2023 – 10 am to 5 pm

- Style: Proto Freelance
- Era:1957
- Scale: HO
- Size: 36' X 34' around the walls plus one large peninsula
- % Completed: 100%
- % Scenery: 50%
- Control: NCE DCC Sound, wireless throttles
- Access: Ten steps down to basement from garage

The C&LE is a bridge route with close ties to the Western Maryland. It's a 2-level 270' walk around railroad with a single track mainline. There are two helper districts, 2 yards and 4 staging yards. Track is a combination of hand laid and Micro Engineering code 83, 70 and 55 rail. The two yards are Johnstown and Somerset. Johnstown handles mostly merchandise with interchange with the Pennsylvania Railroad, Conemaugh and Black Lick (Bethlehem Steel), and the Johnstown and Stoney Creek (United States Steel). Johnstown also makes up and receives local and through freights. Somerset yard handles mostly coal traffic making up five local coal trains that work the five modeled coal mines and one coke plant, plus coal trains to the mines that are represented on the Coleman and Boswell staging branches. Somerset makes up loaded east and westbound coal trains.

Laurel Mountain Division of the Pennsylvania Railroad
Frank Coat
October 22, 2023 – 10 am to 5 pm

- Style: Freelance PRR fictitious Division
- Era: 1950-1970
- Scale: HO
- Size: 20' x 21' with 6' x 8' extension at one corner
- Mainline: 255'
- % Track Completed: 100%
- % Scenery Completed: 50-75%
- Control: NCE DCC Plug-in Throttles
- Access: Railroad in basement access by one flight of stairs

The fictitious Laurel Mountain Division of the Pennsylvania Railroad occupies most of our basement. The trains run around the basement twice and also traverse two peninsulas. This gives the mainline approximately 255' of track. The layout is not double decked but because of a carefully planned track plan and scenery techniques you don't realize you are passing the same area twice. The classification yard is the heart of the layout containing four arrival/departure tracks and eight classification tracks along with an engine facility and some industries. Eastbound from the yard winds through four small communities with lots of switching and then into the staging yard. Westbound from the yard also winds through the four communities with again lots of switching and then into the staging yard.

B&O, WM, and P&WV Railroad
John Bennett
October 22, 2023 – 10 am to 5 pm

- Style: Prototype
- Era: 1957
- Scale: HO
- Size: 52' X 26'
- % Completed: 100%
- % Scenery: 50%
- Control: NCE "radio" control
- Access: Steps down to basement

The B&O and WM RR is a north/south railroad from Johnstown to Rockwood and an east/west railroad from Cumberland to Pittsburgh with a Connellsville connection to the P&WV RR and a connection to the PRR north of Johnstown. Significant freight movement occurs on the Cumberland & Lake Erie RR as well on two steel railroads: Bethlehem Steel (Conemaugh and Blacklick RR), and the US Steel RR (Johnstown and Stoney Creek RR). The railroad is a double main with two sections of single, signaled track with 350' main. The railroad has 15 coal mines, 2 coke plants, 6 power plants, 4 logging runs, gravel and sand pits, cement plant, paper plant, multiple oil depots, and multiple lumber yards. The staging yards hold up to 16 trains, the Cumberland yard can store 7 to 10 trains (loop) and the Pittsburgh (Connellsville) yard (stub-ended) can hold 10 trains of 16 to 40 cars in length.
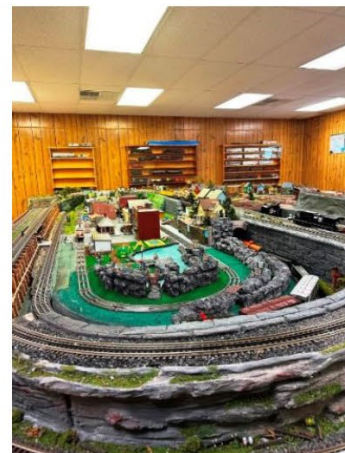
Alto Model Train Museum Association

9th Ave., Altoona

Behind Railroaders Memorial Museum

Oct. 21; 10am-2pm

- Style: Freelance Museum Layouts
- Era: Varies
- Scales: N, HO, S, and O
- Access: One step up at entrance
- Museum has four operating layouts and displays of vintage model railroad equipment

How to Build a 4' x 2' N Scale Layout

By Greg Warth

Photo 1: Small 2x4' N scale Model Railroad with two mainlines, a tunnel, waterfall and river rapids, servicing three passenger stations, a small town, and a lumber industry.

Sometimes when I need a break from my larger layout, I'll consider doing a side project, like the Z scale layout mentioned in "Modelers' Haven." This section is about an older project I did a few years ago (**Photo 1**). I wanted to build a small layout for my grandson who was around six at the time. We were planning to visit our son's family in Georgia in about a week. So, I had to work quickly.

You could do something like this as a Christmas display. It could be a beginner's layout that you might expand into a larger one later. Or it could be just a small project that you could take to train shows or take to the workplace in November on "Take a train to work" day. You could even use it as a coffee table display.

The basic plan is a figure eight design for the inside mainline with a 90 degree cross track in the center and an oval for the outer mainline (**Photo 2**). There were no elevations, branches, or turnouts, making it very simple. But it was also somewhat interesting because of the interaction of trains on the two mainlines.

For the layout surface, I used a 4' x 2' sheet of 1" foam supported underneath by 4' x 2' sheet of ½" plywood. I pinned and glued down the cork roadbed according to my design. The ends of the flextrack were soldered together, then pinned and finally glued down onto the cork roadbed with diluted white glue.Wiring was easy with feeders from one mainline connecting to one transformer and wires from the second mainline to a second transformer, so that each mainline could be operated separately. The wires were embedded into the foam sheet so they would not be visible under the scenery and ran out to the sides of the layout where they were connected to the transformers.

To add interest, I created a small mountain, using sections of foam sheets and small wads of newspaper covered with plaster cloth, from which a waterfall sprouted and fell onto a creek below. There was also a tunnel under the mountain through which both trains could pass (**Photo 3**).
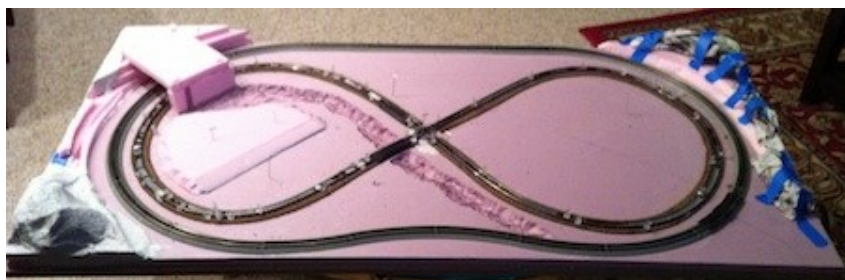

Photo 2: The basic train layout for this small model railroad project using extruded foam on plywood. The tracks have been glued and pinned to hold them in place till the glue dries.

The creek was formed by cutting a trench in the foam sheet, covering it with plaster cloth, and building up the edges with "ground goop" (a mixture of Sculpta-mold, Mold-A-Scene plaster, and water. I used the same "goop" to shape the mountain, the crest of the waterfall, and the other landforms.

The road was created by just painting the surface with an asphalt color. I better defined the road by lining it with vegetation and ground cover.

I built up the scenery by applying varying colors of green turf, then coarse foam, and clumped foliage followed by fall colored lichen and trees. I applied the diluted white glue to soak the materials to the layout surface.

After painting the river and creek beds, I placed the rocks and dead logs to create rapids. High gloss acrylic gel was then applied to create the waterfall and add depth to the river. A small spoon and mostly my finger were the tools used to spread the gel. To complete the scene, vegetation was added along the riverbanks.

I stopped at this point, because I was out of time, but a lot more details could have been added, including lights for the structures, signals, traffic lights, culverts, people, perhaps a city park with streetlamps, etc.

At the end, I cleaned the tracks and checked to be sure everything operated correctly which it did thankfully. Amazingly, it survived the 500 mile trip to Georgia so that it could be delivered as promised.

Photo 3: Model railroad structures have been temporarily placed where I will want them to be. The plaster cloth has been placed to create the terrain.

Photo 4: Lumber mill elevated for some variation in landscape.
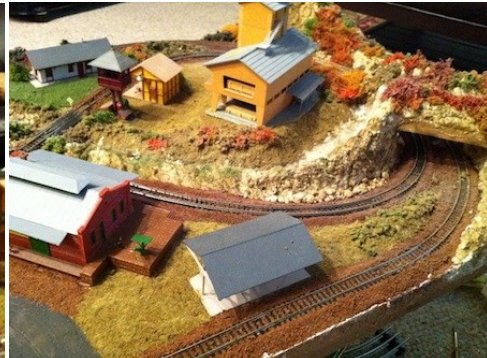
Photo 5: Scenery. Structures. Tunnel.
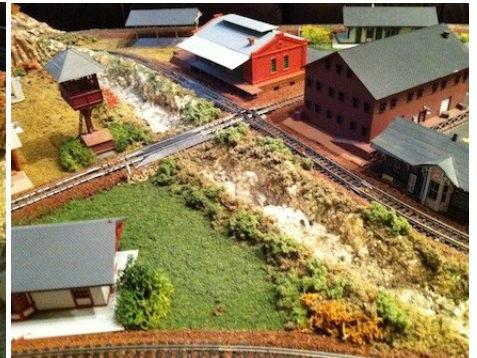
Photo 6: Central track crossing. Creek.

Photo 7: Not much room, so the mountain, tunnel, and waterfall are compressed into a small area.

Photo 8: Waterfall and creek behind the lumbermill.

Carolina Piedmont Division HO Car for Sale

UPCOMING MER CONVENTIONS

2023 – Susquehanna Division - "Round the Curve to Altoona" October 19-22, 2023, Altoona, PA

2024 – Carolina Piedmont Division—"Piedmont Junction" Sep 26 - 29, 2024, Durham, NC

2025 – New Jersey Division Dates and location TBD

MER Board of Directors Meeting Schedule

Board of Directors Meeting – 7 pm Oct 19, 2023 – Altoona Grand Hotel, Altoona PA

Annual Business Meeting—9am Oct 22, 2023—Altoona Grand Hotel, Altoona PA

Featured Layout

The Blue Ridge & Southern

By Greg Warth

Photo 1: The Blue Ridge Mountains inspired the scenery for the BR&S.

"Givens and Druthers"

This is a phrase often attributed to the famous model railroader and author, John Armstrong, known for his expertise in designing and operating model railroads, regarding the personal decisions that need to be made when planning a model railroad. The "givens" are the non-negotiable, non-changeable things you must deal with like the finite space available, the budget, timeline to finish the project, and the obstacles you have to work around. "Druthers" are all the things you would *like* to have on your layout, but you ultimately must choose among those different possibilities because you can't have all of them. For example, you have to decide whether your layout will be freelanced, or built according to a prototype, and if you choose the latter, which one.

My "givens" for building the Blue Ridge and Southern included a finite space (a non-negotiable boundary), a budget, a limited amount of time, and since I did not belong to any clubs at the time, I was likely to be the only builder and operator, at least in the beginning.

Having lived in Virginia since 1976, I have always been impressed with the scenery in the Appalachian Mountains particularly along the Skyline Drive and the Blue Ridge Parkway (**Photo 1**). When it came time to decide in 1990 what I was going to model I chose the Blue Ridge. I wanted to model the scenery of the mountains with trains weaving in and around the peaks and through the forests. I chose the autumn season because I liked the colors so much when I visited there which was frequently in October. I also wanted to be able to have a variety of steam and diesel engines populating my layout, so the era had to be around 1955. There were several of the main railroads that operated in eastern Virginia during that time including Norfolk and Western, Chesapeake and Ohio, Baltimore and Ohio, Western Maryland, and others. I wanted to include the Southern Railroad as well just because I liked their green color scheme (**Photo 2**). That gave me a variety of locomotives that I could engage for service. Don't tell anyone but a few Norfolk Southern engines somehow made it to the layout through a "time warp." I wanted two mainlines, one for industry, freight, coal, and lumber, and one for passengers. Passenger trains had mostly dried up in this country, but since this was freelanced, that didn't matter. I could have passenger trains if I wanted them. These were my "druthers."

Photo 2: 4-6-2 steam engine in The Southern Railroad paint scheme.

The original train room was in the attic and was quite large with DC cab-controlled HO trains traveling from one end to the other, probably over 30'. Upon seeing this room, one of my visitors said, "This is not a hobby. It's an occupation!" He was right. It still is. My new train room, measuring 19' x 14', is the room over the garage which previously was part of the attic, but we closed it in with drywall and added air conditioning and carpeting (**Photo 3**). Since I had the experience of modeling in HO before, I discovered I never had enough room for the scenery that I wanted to install. So, this time I decided to model in N scale where I could have a bigger empire in a smaller space. I switched to Digitrax DCC at that time.

Construction

I worked for a bricklayer at one time, but never learned anything about carpentry, so I built my benchwork (**Photo 4**) using prefab-

Photo 3: The new train room cleaved off the attic.

ricated, pre-drilled wood made by Woodland Scenics (WS). I lined the walls in my new room with these modules of benchwork and found that I had enough room to put a peninsula in the middle. The benchwork was topped with ¾" plywood and 4" of extruded foam sheets. I used foam sheets because I wanted to be able to easily dig out creeks, ponds, cliffs, valleys, etc. without having to cut through plywood. I also wanted to put most of my wiring on the sides of the layout rather than on the bottom. The foam sheets made it easy to cut out space for the wiring on the sides, where it would be easy to get to by just removing the fascia (**Photo 5**). Someday, I want to put hinges on the fascia to make it easier to open, but I haven't done that yet. Fortunately, I haven't had that many wiring issues.

Photo 5: 4" thick foam sheets with a channel dug out for wiring.

Photo 4: Mod-U-Rail benchwork from Woodland Scenics.

The new track design was drawn out with paper and pencil which I found to be easier than trying to learn any of the CAD track design programs they had at the time. I modified the plan as I went along because I found that some of my design elements just would not fit in the space available. I used mostly Atlas track and turnouts because that was what was readily available at the hobby stores locally.

I built the mountains with a combination of Great Stuff and wadded newspaper covered with plaster cloth and Sculptamold (**Photo 6**). I used WS Styrofoam inclines and risers to create the different levels of track. The roadbed and trackwork were fairly straightforward. Putting in the scenery was probably the most fun. I installed 44 remote turnouts, which I wired to Atlas momentary slide switches on the facia (**Photo 7**) and also to momentary toggle switches on the front control panel (**Photo 8**) so that I could operate everything from there. I could also use my Digitrax walkaround IR throttle if I wanted to. Extra plug-ins and smaller walkaround throttles were installed (**Photo 9**) in case I ever had operating sessions. The wiring process took two years, working on it as I had time for it. Recently I have started to install signals (**Photo 10**) that change when the turnouts are activated. I plan

Photo 6: Using wadded newspaper and masking tape to create mountains.

Photo 7: Fascia made with hardboard. Turnout switches and Digitrax Loco-Net plug-in IR receiver have been installed.
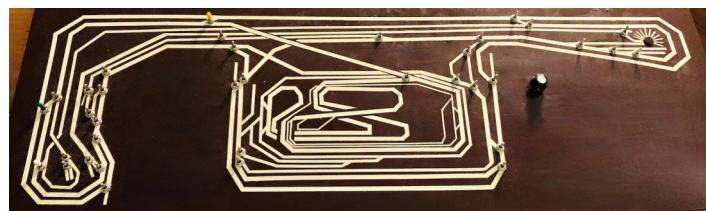
Photo 8: Main control panel with momentary toggle switches controlling every turnout.

Photo 9: Digitrax IR receiver plug-in and walkaround throttle mounted on the side of the peninsula.

Photo-10: Automated Signals installed that change when the turnout is activated.

to add some automation so that trains will stop at stations and then start up again after a minute.

Operation

My main command control is a Digitrax Zephyr DCS50 to which I added a DC150 5A booster (**Photo 11**) which is connected to several other Loco-net plug-ins around the layout for walka-

Photo 11: Command Control Station.

Photo 12: Smaller control panel to operate the yard on the right side of the peninsula.

Photo 13: The new backdrop expands the dimension of the layout.

round operation. As mentioned, I can also control everything from the panel located at the tip of the peninsula in the front of the layout. I also have a smaller control panel (**Photo 12**) on the side of the peninsula to control a yard located there in Sandy River Valley. The layout was designed for either solo operation or for a group operating session, although I never had one. I can operate four trains at once by myself, two on each mainline, if I pay close attention to keep the trains away from each other. I plan to automate that in the future as well.

Additions

About a year ago I added a vinyl backdrop which pictured a mountainous scene that I thought looked similar to the Appalachians. It came in rolls of 6' x 3' which were not easy to put up. I finally got some help and completed that project

Photo 15: New curtain draping over the front of the layout.

Photo 14: Mini camera on a flatcar.

after the first attempt failed. Anyway, it adds another dimension and a 3D effect to the layout that it did not have before (**Photo 13**).

I recently bought a small minicamera that I was able to mount on a flat car (**Photo 14**) and push around the layout with a locomotive to take a video as if viewing it from the cab. While watching the video, I found multiple areas where the scenery was not that great. So lately, I've been working on that. I decided to change a large industrial scene recently. I wanted to add some roads, streetlights, a lake, and a waterfall, but that's not quite finished yet. I added a little league baseball field as well.

Makeshift cabinets made from sheets of paneling covered the bottom of the layout which I used for storage, but they were difficult to slide open, so I recently replaced the paneling with faux leather cloth sheets, purchased from Amazon, which are much easier to get into (**Photo 15**).

Mistakes

As I look back on it now, several mistakes were made along the way.

> Some of the trackage is too close to the wall in the back of the layout and some of it is too close to the front edge. There should be 2" of space between the tracks and the front and back edges of the layout.

> The aisles are too narrow. If I happen to bump against the facia, I often accidently hit one of the momentary switches for a remote turnout. I have burned out and had to replace several of the solenoid switches by doing that. I need to put covers over those fascia-mounted switches.

> I did not make room for roads, rivers, and lakes in my original design, so I'm trying to add them now, which is much more difficult than if I had included them in the beginning.

Photo 16: The forbidden tunnel of no return.

The solenoid switch machines on the top of the layout which operate the turnouts remotely are somewhat of an eyesore and not very realistic. In retrospect, I wish I had buried them under the track in the foam sheets.

My control panel looks like spaghetti. I don't even use most of the turnouts. I wish the track plan were a little simpler and easier to navigate.

One of my tunnels is impossible to access without tearing up a lot of scenery. I think I have lost three locomotives inside that tunnel which I have never been able to retrieve (**Photo 16**).

I don't have enough detail in many of the scenes, so I am gradually adding more as I have time.

It was too large of a project for me to do myself with such limited time to work on it.

Photo 17: This tunnel is OK.

Photo 18: Rocky terrain.

Photo 19: View from the mountaintop.

Reflections

Despite the mistakes and drawbacks, I am happy with it overall. It's not perfect and it will never make *Model Railroader* magazine. However, the journey has been a tremendous learning experience and very enjoyable. Would I do it again? Absolutely!

My wife and I are talking about possibly downsizing to a new home soon. If we do, I will miss the BR&S but will enjoy the prospect

prospect of starting over and avoiding the mistakes I made here. In the meantime, I will continue to work on the BR&S. It is always a work in progress, and there are always problems to troubleshoot. That's part of the fun though. When you finally fix something that has been a challenge, there is definitely a "Eureka!" moment. I hope to have a lot more of those moments as time goes on.

Here are some more pictures that you might like (**Photos 17-30**):

Photo 20: Rocks, gravel and lumber on top, passenger, and freight station on the bottom.

Photo 21: The geographic center of the layout. Tracks coming and going every which way.

Photo 22: Front Royal at the most northern part of the BR&S.

Photo 23: Multiple levels and grades.

Photo 24: N&W stopping at the passenger station.

Photo 25: No. 2137 carrying a light freight load through Church Valley.

Photo 26: Get your rocks, gravel, and lumber loads here.

Photo 27: Destination – Walton's Lumber Mill

Photo 28: A deer and her doe come out from the brush to watch the trains.

Photo 29: Country living.

Photo 30: Turntable, roundhouse, and car repair shop.

Potomac Division Events Calendar
2023

Virtual Clinics start at <u>3:00 P.M</u> unless noted otherwise and take place on the Zoom video platform. Zoom information is distributed through the Division's email distribution list. Virtual Clinics will not be scheduled in November of 2022 due to other Division Events taking place.

*Hobby Barn Build and Take Clinics require <u>preregistration</u> through the Paymaster and start at <u>10:00 AM</u> unless noted otherwise.

If you need a ride or want to form a car pool to an event click here to access our Team Leader list.

Events are posted up to six months in advance.

DATE	EVENT	LOCATION	NOTES
Saturday 8-Jul-23 10:00 A.M.	Hands on Clinic "Using DecoderPro to program Locomotives" Clinician: George Meyrick/Ernie Little MMR	Manassas, VA	MAXIMUM 6 PERSONS - CLINIC IS FULL CLINIC AT MEMBER'S HOME
Saturday 16-Jul-23 3 P.M.	Virtual Clinic 38 "What's New on the Old Ma & Pa: Update on the Ma & PA, Roland Park Division" Clinician: Bob Sprague	Zoom	
Saturday 5-Aug-23 9:00 A.M. to 12:30 P.M.	Potomac Division Meet (Live event) Waldorf VFD Fire Hall 3245 Old Washington Road Waldorf, MD 20602	Waldorf, MD	There will be two clinics with two layout tours afterward.
Sunday 20-Aug-23 3:00 P.M.	Virtual Clinic 39 "Earning the NMRA Electrical AP with a Small Layout" Clinician: Bill Mosteller	Zoom	
Sunday 17-Sep-23 3:00 P.M.	Virtual Clinic 40 "TBD" Clinician: TBD	Zoom	
Saturday 4-Nov-23 8:00 A.M. - 1:00 P.M.	Potomac/James River Divisions Joint Meet (Live event) 4361 Lee Highway Warrenton, VA 20187	Warrenton, VA	Planning is underway.
Sunday 17-Dec-23 3:00 P.M.	Virtual Clinic 41 "Locomotive Build for AP Motive Power" Clinician: Kurt Thompson, MMR	Zoom	

Branch Lines

From the Divisions…

As *The Local* Editor, I have the distinct pleasure of receiving a copy of all the Division newsletters, which are all very informative and creative to say the least. Here are links to those publications so you can stay up to date on what the other Divisions are doing:

NEWSLETTERS	DIVISIONS	MOST RECENT EDITION
Wheel Report	South Mountain Division	May 2023
The Potomac Flyer	Potomac Division	June-July 2023
Train Orders	New Jersey Division	May 2023
Sidetracks	Susquehanna Division	May-June 2023
The Dispatcher	Philadelphia Division	May 2023
The Callboard	Tidewater Division	May 2023
Crossties - Index	James River Division	April 2023
The Brass Pounder	Carolina Southern Division	May 2023
The Herald	Carolina Piedmont Division	June 2023
The Relay	Chesapeake Division	All Posts

And don't forget the new digital NMRA Magazine

Reminder: Here's how to access the **Digital NMRA Magazine:**

1. https://www.nmra.org/user/register

2. Answer a few questions

3. Click on Create a New Account

4. You will receive an email on how to set your password.

Modeler's Haven…
Tips & Tricks for Model Railroaders

By Greg Warth

This section of The Local *is for all members to share any tips, techniques, tools, books, fixes, new products, or any other information that might be of interest to others. One of the many benefits of being an NMRA member is spreading knowledge about the hobby and learning things from other modelers. Please submit your tips to the* Editor *for consideration on publishing them here.*

Here are some short, fun articles, in no particular order, regarding tips, tricks, techniques and general modeling, that might pique your interest. You might even find something here that you didn't know before, or something that might carry you to a new path in your model railroading adventures.

Z Scale

I am beginning a new adventure in model railroading by designing and building a Z scale layout. My fascination with Z scale began gradually over the past two years. I finally decided to bite the bullet and give it a try. I have heard about people building a Z scale layout in a suitcase, and I vowed to do that one day. But when I heard about the possibility of putting one inside a guitar case, I was hooked on the idea. So, I'll be working on that over the summer and hope to bring it to the October Mid-Eastern Region Convention.

As I have talked about this new project at our train lunch-meetings every Wednesday, I learned that, not surprisingly, Z scale is not for everybody. Here are the main reasons:

Diminishing eyesight, large hands, and mild age-related tremors would make Z scale very challenging for some of us modelers. I'm finding that out now as I am trying to put tracks together. So, the first tool I need to find is a pair of magnifying glasses on a headset.

There is a limited availability for Z scale equipment, but there is enough out there to get started.

The Z models are fragile and have to be handled with care.

The Z scale structures seem to be reasonably priced, since many of them are 3D printed, but the track and the turnouts have been expensive.

Assembly of the tracks has been difficult, especially because I am trying to use Atlas flextrack mixed with Marklin sectional track and they don't seem to want to go together well.

Installing electronic devices in small Z scale models is also a much greater challenge than even in N scale, although possible. My first engine will be analog, but if I switch to DCC later, I will likely sell this one and purchase a pre-installed DCC locomotive then.

However, I usually reply to the naysayers by listing the following benefits of Z scale:

The small size is actually a big advantage: You can create detailed layouts in a much smaller space.

The layout is portable. What other model railroad can you carry around in a suitcase to train shows or just to show your friends what you're doing?

You can have long train runs even on a small layout.

Precision operations are possible, along with fun switching puzzles, and fine-tuning train maneuvers.

Z scale layouts can provide a sense of depth and realism that other scales cannot. The reduced size makes the mountains, rivers, and structures seem more expansive and grander.

Z scale is different from what we are used to seeing, which makes it even more interesting and novel to me.

The Rokuhan power pack is battery operated. No cords to trip over.

Of course, whatever scale you use, it is a personal choice based on how the pros and cons match up in your mind. Sometimes, the scale is the most difficult choice to make when starting a new layout. This is another advantage of Z scale. It can just be a side pro-

ject, not the main scale that you model. In my case, I am mostly a modeler of N scale, which I really don't plan to give up. The Z scale railroad is a just a fascinating extracurricular expedition. Here is my work in progress so far (**Photo 1**).

Photo 1—Z scale layout in progress

Best Paints to Use in Model Railroading

Most seasoned model railroaders already know what paints they like and don't like. But beginners may not have any idea what to choose. Even the older modelers might like a review. So here you go.

Probably the best and most popular paints today are the **acrylic paints**. I have used Liquitex, Folk Art, Woodland Scenics, and Wargames, but my current favorite brand is Vallejo. These paints are non-toxic, and water based which means they are easy to clean up and work with. Their quick-drying property allows for faster progress during the painting process. A wide range of colors are available, and color retention remains good over time. When thinned with water, they make excellent washes for coloring rocks and landscapes and are often used for weathering. Modelers often like to put small dollops of various colors on a pallet and mix them with their brush to achieve different shades. Thinned acrylic paints can be used in airbrushes as well.

Enamel paints, like Testors, have been used in model railroading for years. Hallmarks are durability and a glossy finish that can enhance the appearance of models. They have good color vibrancy and are available in a wide range of shades. Enamel thinners can be added for airbrushing or for brush applications. These paints usually require longer drying times and stronger solvents for clean-up such as mineral spirits or enamel thinners.

There are **spray paints** that are specifically designed for modeling purposes. Spray painting offers a convenient way to cover large areas quickly and achieve smooth finishes. Various colors are available including metallic shades. Available in both acrylic and enamel formulations, they can be useful for covering landscape surfaces, backdrops, and structures. With proper masking, "rattle cans" as they are sometimes called, can also provide excellent results for painting locomotives and rolling stock, especially in the larger scales. For models, I like to use Rustoleum 2X Ultra Cover specifically. For covering landscapes, I like the textured multicolored, green, stone, or tan Rustoleum or Krylon spray cans. Proper ventilation is required to ensure safety. It is not safe to use a cardboard box, but rather purchase a good ventilation booth with a fan that can remove paint fumes to the outside. The other option would be to take your model outside, set up a table, and paint your model there. If you are painting a large area of landscape, wear a good, ventilated, respirator mask.

Weathering products, such as washes, powders, and pigments, are made specifically for this purpose and are formulated to add realistic aging and special highlighting effects. These products are often used to create rust, dirt, grime, spills, and mud effects on rolling stock, structures, and scenery. They are available in various forms including enamel and acrylic, and can be applied with brushes, air brushes or by dry brushing. Tamiya, PanPastel, and Vallejo make excellent products for this purpose. Interestingly, MAC cosmetic makeup kits make great, durable, longer lasting products for weathering models. Their cosmetic brushes are the best for application of various powders.

Oil based paints, like those made by Castle Arts, are preferred by some modelers for their ability to blend colors and provide shading. They have a longer drying time, which is an advantage in this case because it allows for more time to work with the paint and to achieve subtle transitions in color and texture. Oil paints can be thinned with special thinners or mineral spirits and can be used for weathering, highlighting details, and creating realistic effects.

Primer paints applied before using the above paints can improve the adhesion and the durability of the paint that is applied after-

wards. Vallejo surface primer and Rustoleum 2X spray primer would be my suggestions.

Sealers, like Testors Dullcote, are often used as the final coat to further enhance the durability of the paint, or powder, especially in the process of weathering.

Air Brushing Techniques

Speaking of painting, you might like to know more about airbrushing techniques. Airbrushing is an acquired art that takes a lot of practice to do it well. If you can achieve that expertise, it can become a highly effective and efficient method of achieving fantastic results. Badger airbrush paints are the ones I have used, and they seem to work very well. They even have a set of railroad colors available. I use a Master dual-action airbrush kit, which I like. There are cordless kits available as well in different brands.

Base coating is the process of applying a smooth and even layer of paint to the surface of the model. This provides a solid foundation for further detailing and weathering. To do this you must thin the paint to the appropriate consistency for your airbrush which is usually recommended by the paint manufacturer. Hold the airbrush perpendicular to the surface and apply thin even coats of paint, gradually building up the color intensity. It's important to maintain a consistent distance and speed while moving the airbrush to avoid uneven coverage. As you apply the paint it is best to go beyond the edges on each side so that there is no build up on the edges of the model.

Another technique is to use gradual **fading and blending** of the colors for smooth transitions and for gradients. Start by applying a lighter color as the base coat. Then, using a slightly darker shade, spray along the edges or areas where the color transition should occur. Hold the airbrush at an angle and gradually move it towards the lighter area overlapping the colors.

Highlighting and shadowing are excellent techniques for adding highlights and shadows to create depth and dimension and your models. For highlighting, use a lighter shade than the base color and spray it from the desired direction to simulate light hitting the surface. For shadowing, use a slightly darker shade and apply it in areas that would naturally be darker or in the shadow. Remember to consider the direction of light and the overall composition of your model when adding highlights and shadows. The direction of light should also be the same for the other models that you have in that scene.

Airbrushing is excellent for **weathering** models and making them look older or weather beaten. This could involve adding rust, dirt or grime or other weathering shades. Use the appropriate weathering paints and thin them to the proper consistency. Then apply them to controlled and targeted areas.

Stenciling and masking techniques are great ways to create intricate patterns, logos, or specific shapes on your models. Use a low-tack masking tape or special masking materials to cover the areas that you want to protect from overspray. Then spray the desired color over the stencil or mask ensuring even coverage. This will allow for very precise and clean application. Stenciling works well for complex designs, like logos on railcars, or for making signs on commercial buildings. You could create your own graffiti if you wish.

Practice these techniques on scrap cardstock before using them on your final model. Become familiar with your airbrush equipment, know how to adjust air pressure, and practice controlling the paint flow to achieve the results that you want. Also, proper cleaning and maintenance of your airbrush are crucial to avoid problems with it later. Be careful though. If you become too good at it, all your friends will be asking you to paint their models for them.

Making New Things Out of Old Parts

This is one of my favorite topics. My hat is off to those modelers who can think up this stuff. Some of these are just techniques I have learned over the years. I am not really sure where they came from. I have provided credits to those sources that I knew about.

Use the foam roadbed made by Woodland Scenics to make loads for coal cars. Just snip them to the right size, perhaps slightly wider than the top of the hopper, so that when you insert it into the top of the car, it will bow upward a little which makes it more realistic. To keep the foam from sinking too low into the car, put a small glob of silicone gel on the inside of the hopper on each side. When the car reaches its destination to deliver the coal, you can easily remove the foam and the car is instantly converted to an empty one, ready for pickup and return to the coal mine.

Use ladder parts to make miniature shelves inside a warehouse, or to simulate a row of windows on a building. Use one side of the ladder to make a handrail. Use the rest of it to make a railing or fence (Bill Gill in *Railroad Model Craftsman*, July 2023, p. 36).

Use aquarium gravel for miniature rocks or talus at the bottom of a mountain. Use it for creek-bed rocks, or around the edges of lakes. Line the sides of roads with it. Embed the rocks into Sculptamold to make retaining walls, embankments, or bridge abutments.

Use toothbrush bristles for icicles in a winter scene. Use small mirrors for ice skating, or compressed Styrofoam blocks for snow on the side of the road (Mark Nieting).

Kit-bash two Blair Line loading platforms to make a walking bridge over a creek.

Use the broken edges of ceiling tiles stacked up to make a cliff or an embankment.

Stack up and glue shreds of pine bark mulch to make a retaining wall or rock formations.

Create mysterious flatcar loads with bottle caps or pieces of plastic from packaging material (Roger Bir, Tidewater Division).

Use a wet coffee filter and canopy glue to make a tarp or a tent (Alex Belida, MMR). https://mer-nmra.com/MEReLocal_Files/2021/elocal-v76i03-2021MayJun.pdf

Use tissue paper and thinned white glue or glossy matte medium to make waves and water effects.

Use a hot knife on the edge of 1" foam sheets to make irregular embankments for lakes or rivers.

Create a test track on a flat board that you can use to experiment with a variety of electronic devices to be sure they work properly before putting them on your layout (Fred Miller, MMR).

Use the cardboard rolls from inside paper or tissue rolls to make grain elevators or circular walls at the top of skyscrapers.

Use roofing shingles to make roads (John Fallon, Tidewater Division).

Mix fine sand with white glue and gray paint to make roads.

Use plastic flower stems to make logs. Use coarse sandpaper to rough them up and add wood grain marks and then paint them with gray or dark brown washes.

Cut up almost any material to make a gondola load.

Use Walthers Goo to make roots extending out from the bottom of large trees.

Scraps from a new linoleum floor can make foundations for houses or industrial buildings.

Headless nails make great chain-link fence posts. Use tulle material for the chain link fence.

Use old thin jewelry necklaces as chains for your flatcar loads.

EZ Line from Berkshire Junction make the best telephone wires.

Make your own decals at Evan Designs.

Wall electrical outlet covers work well to cover switches on fascia to prevent accidental activation (Mark Nieting, Tidewater Division).

Vinyl wall bases make great retaining walls and extensions for the top of fascia boards to prevent derailed trains from falling to the floor. They come in a variety of appropriate colors.

Sedum and sage branches are excellent armatures for trees (Bob Cook, MMR, Tidewater Division).

Multiple articles by Martin Brechbiel, MMR have graced the pages of this newsletter over the past few years about what to do with leftovers. Just search The Local with the term "Leftovers" and see what you get.

The point here is that, as modelers, we often think about things differently. Most people would look at a piece of scrap and think about where the nearest trash can is. But when you become a model railroader, you think about what else you can use this for on your layout or model.

> *What tips and techniques do you use in your modeling? Please send us a paragraph or two about something you have modeled or a tip that would help the rest of us improve our modeling skills. It does not have to be perfect or too long. Even one or two sentences would be great. I know those tips are out there. Send me a note. -Ed.*

Electronics Corner

DCC SHUTTLE THROTTLE PROJECT

By F. Miller, MMR

Many times it is useful to automatically, hands off, run a Trolley or Locomotive back and forth between two locations. Electronic devices are available to provide this capability, but most are for DC only equipment. The few devices which do support DCC are on the expensive side. For example, a very capable unit is offered by Iowa Scaled Engineering (www.iascaled.com "Motorman") but selling for over $100. The automatic control for DCC equipped trolleys or locomotives can also be provided through the use of JMRI scripts and associated detection sensing support; however, that approach requires a PC to run JMRI.

The availability of Arduino micros and software offer another approach. I decided to develop a 'SHUTTLE THROTTLE' (**Figure 1**) using inexpensive Arduino Nanos and Motor Driver shields. Many Motor Driver shields are available which simply plug into an Arduino UNO. Software is available on the web to convert that mix to a capable DCC Command Station. I found an inexpensive 'shield' to use with the less expensive Arduino Nano and then simplified some of the available software to provide my back-and-forth DCC capability.

Figure 1 Completed Shuttle Throttle

Design Objectives (Shown in **Figure 2**)

- Self-contained DCC rail power sufficient for 1 Loco or Trolley (1 Amp)
- Selectable DCC address (2-digit)
- Selectable fixed running speed but including Acceleration/ Deceleration
- Selectable equipment Scheme (Trolley or Loco) to match associated Function Keys
- Support 2 to 5 stops (2 for end points, up to 3 more intermediate stops
- Set stop time (in seconds)
- Enable or Disable decoder sounds
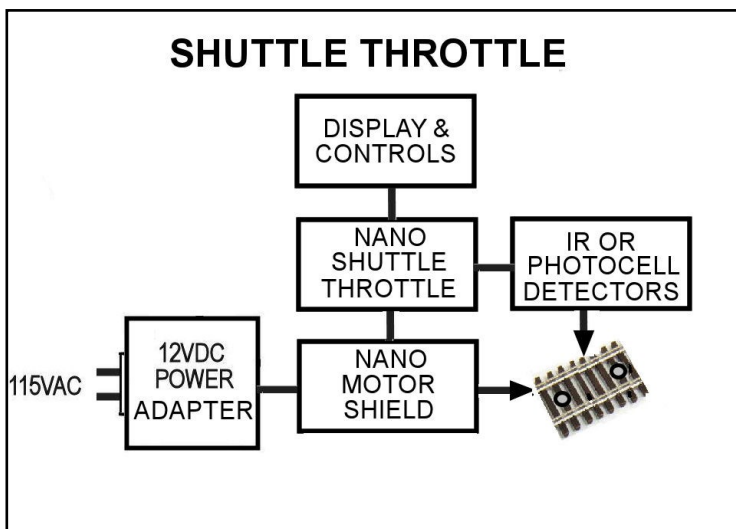

Figure 2 Overview of Shuttle Throttle Components

My completed unit operates either a trolley (with my own custom Trolley Sounds Decoder) or an N scale diesel with an ESU sound decoder. The chart in the Reference Section shows the supported functions in my implementation. Other functions could be supported by modifying the Shuttle Throttle software.

The DCC++ Power Station Nano receives commands such as <t 1 41 50 1>

which sets Loco Address 41 to a speed of 50 in the forward direction. This command message is transmitted through the serial connection between the Throttle Nano to the Command Station Nano. A chart in the Reference Section shows other command messages.

As noted above, this project includes a self-contained DCC Command Station built with an Arduino NANO and a Motor Driver shield made for the Nano (**Figure 3**). No other DCC equipment is requi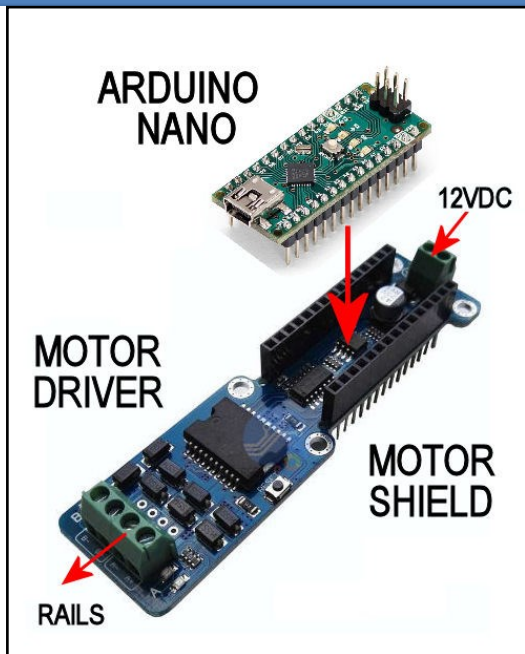red. The software for generating the DCC rail power with DCC commands is a slightly modified version of a popular 'sketch' (**Figure 4**) originally developed by Greg Berman for an Arduino UNO with Motor Driver shield.

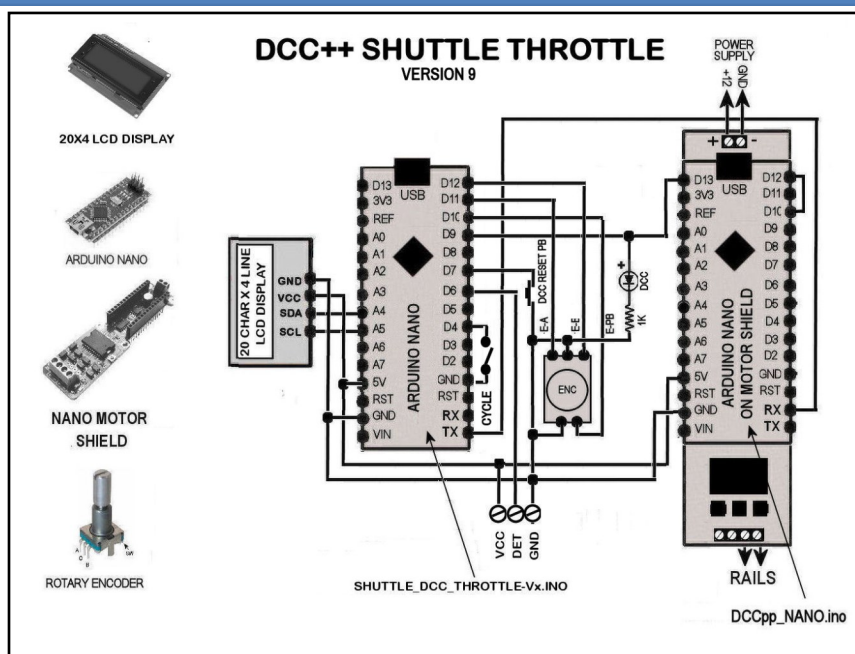**Figure 3 Command Station Nano and Shield**

Figure 4 Wiring Circuit for Shuttle Throttle

The Shuttle Controls box (**Figure 5**) includes the DCC Command Station Nano with shield and the controlling Throttle Nano micro as well as the controlling external controls including:

A Rotary Encoder and LCD display to select and display operating characteristics (e.g. address, speed, Address, number of stops and stop time, etc.)

A LED indication of active Detection

Provision to connect 12VDC Power input.

A USB port for future software changes.

Outputs are provided for Rail Power and Detection devices.

A Push Button to 'reset' the DCC output if a short was detected.

Construction

A good portion of the wiring is accomplished by simply plugging the Command Station Nano into the Motor Shield board. The remaining wiring connects the two Nano micro-controllers to the various controls and input/output connections on the box.

As is my usual practice, I started with quick-connect breadboards and made the necessary connections while developing and testing the Arduino software (**Figures 6,7**).

Once the DCC++ command station software is loaded and tested using the Arduino IDE monitor to type commands, work can begin on

Figure 5 Top and Side View of Completed Unit

the throttle software. It is interesting to note that since the commands from the throttle Nano to the command station Nano are sent through the standard Arduino board serial pins, it is easy to monitor the activity on the standard Arduino IDE monitor. Other status messages can also be inserted in the Throttle software to appear on the IDE monitor but only messages enclosed in '<' and '>' characters are interpreted by the Command Station Nano as valid commands.

When the software for the command station and the throttle are working as desired, the components can be mounted in an enclosure. I use a piece of perf-board to tie the two Nanos together and provide connections to the controls.
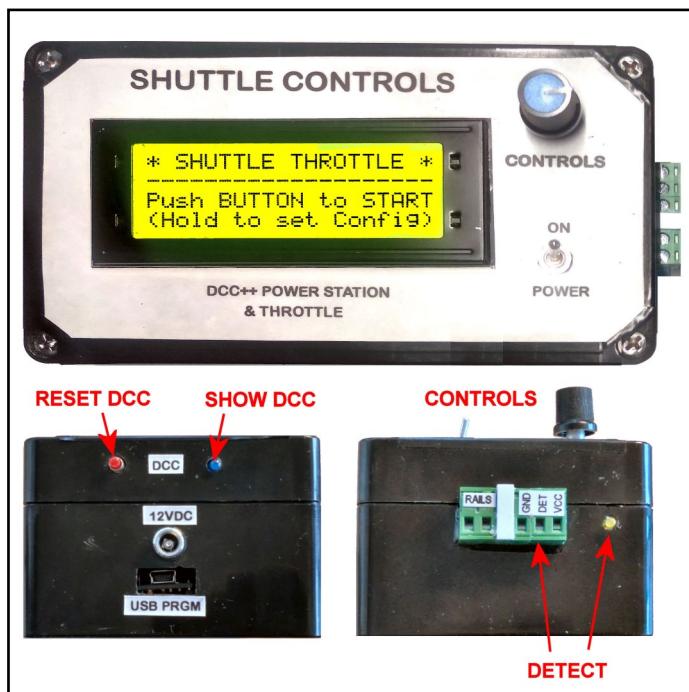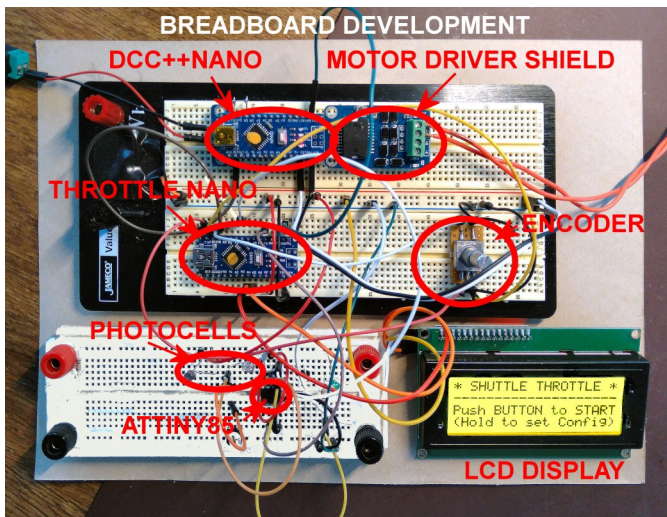
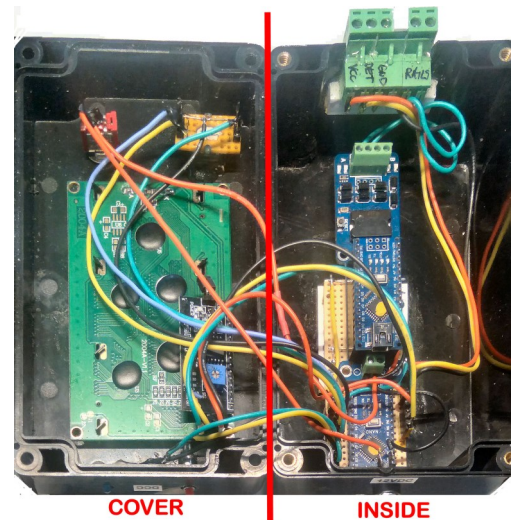**Figure 6 Project Development on a Breadboard**

Figure 7 Inside View of Project Box

The Shuttle Controls for operation of a trolley (or locomotive) require an initial configuration process. The parameters that are selected in the 'SETTINGS' screen can be preserved in the Throttle Nano's EEPROM memory and will be preserved for future power-up use of the Shuttle Controls box (**Figure 8**).
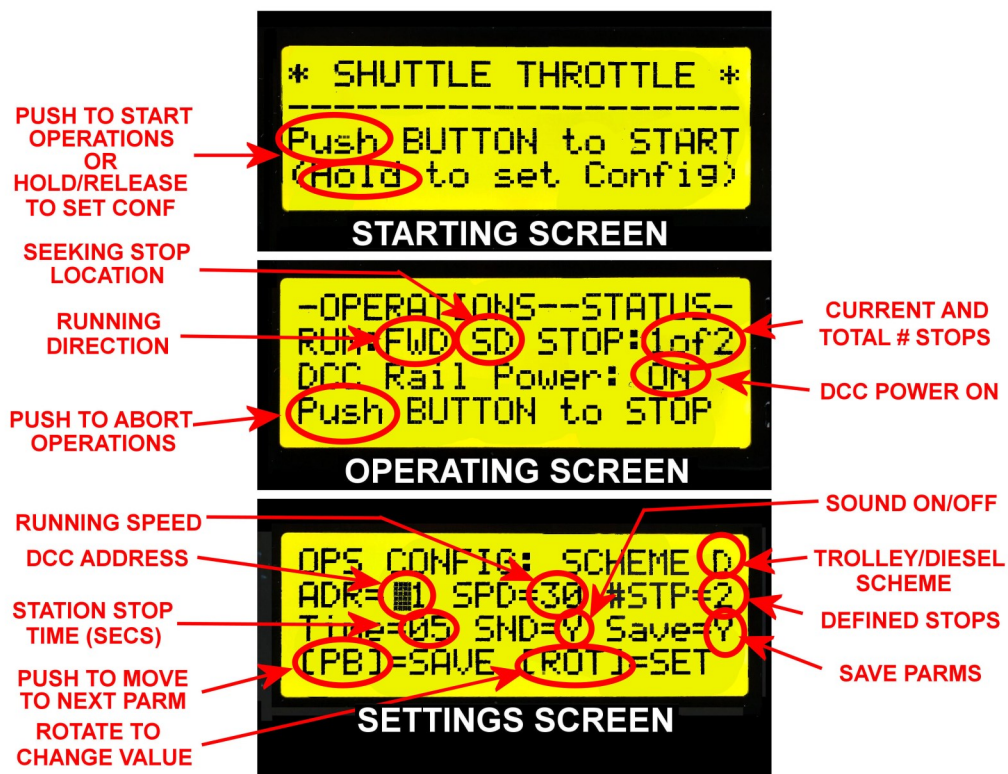
Figure 8 Shuttle Throttle Control Screen

Holding down the rotary Encoder knob for a few seconds and then releasing will access the 'SETTINGS' screen. A large blinking cursor indicates each parameter as it is selected. Twisting the rotary Encoder knob will change the values shown for that parameter and pressing the Encoder knob will then save that selection and move the cursor to the next parameter. The parameters to be set include:

- Scheme (D=Diesel or T=Trolley).
- DCC Address (2 digit).

- Operating Speed (01-99).
- Number of Stops (2-5, with 2 reflecting just end points).
- Stop Time (in seconds).
- Decoder Sounds (Y=ON, N=OFF).
- The last parameter is a question about whether to save all of the values to the EEPROM memory for future use. (The currently established values, even if not saved, will be used until the power is removed).

After pressing the Encoder knob for the 'save' query, the screen will return to the START screen. A brief press of the knob while the 'Start' screen is showing will start the shuttle operation. The Trolley or Engine will move in the forward direction (from the first stop location) until sensing a detection spot. The unit will stop and remain stopped for the designated time and then resume travel. If more than two stops were configured, the forward-stop cycling will continue until reaching the last stop. After the stop time at the last detection spot the loco will proceed in the reverse direction, performing the stops as above. When reaching the initial (first) stop, the whole process will continue providing the back-and-forth operation (**Figure 9**).
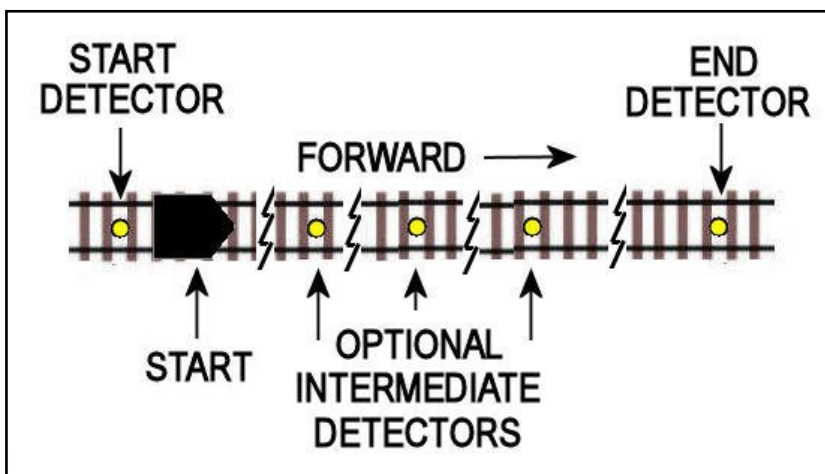
Pressing the Encoder knob while the unit is in operation will terminate the operation and return to the START screen. Any repeats of the back-and-forth operation from the START screen should be preceded by placing the loco at the first stop location.

A LED on the side of the control box is illuminated whenever DCC is applied to the rails (operations mode). If a short circuit is detected the DCC power is removed, and the LED will go out. Pressing the adjacent DCC Reset button will restore the DCC power (if the short has been removed.)

Figure 9 Location of Detection Devices

Spot Detections

The shuttle control circuitry depends on some means of detecting the presence of the trolley or engine at stopping points. The detection connections at the end of the control box provide three connections: for + 5VDC, for Ground, and for the middle for the detection sensing signal. The circuitry expects that the detection sensing connection will be pulled to ground to signal the detection stratus. Many different kinds of sensing circuits/devices can be used as long as the Detection Sensing line is pulled to ground when activated. The +5VDC connection is provided for use of such sensing circuits.

I have found that simple circuits using photo-resistors could be used but are somewhat fussy about changing light conditions. A better approach is to use an IR detection circuit which is not sensitive to ambient light conditions and even works in the dark.

Author's Note: An article in the last issue of *The Local* (May-June 2023, p.31) presented details of each of these 'spot' detection implementations.

If the use of multiple detection units connected in parallel causes false readings, the following little circuit can be used to combine up to 4 of those detection circuits into one (**Figures 10, 11**).
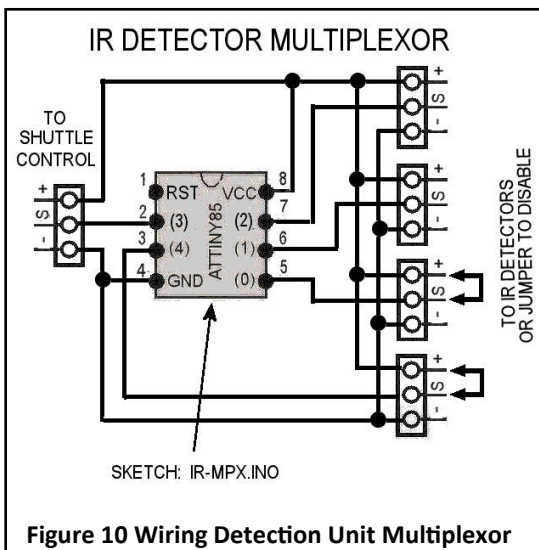
Figure 10 Wiring Detection Unit Multiplexor

Figure 11 Assembled Multiplexor
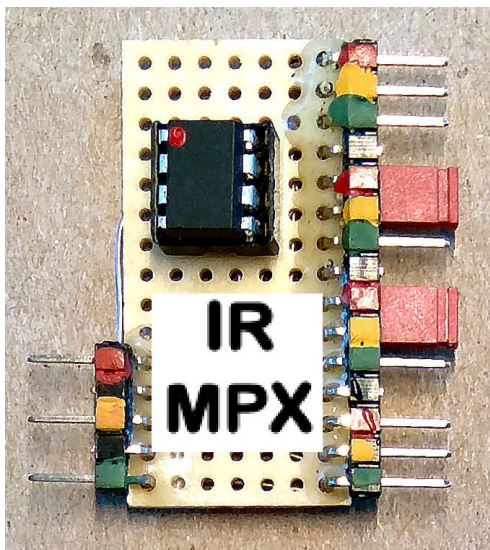
Reference Section

Figures 12 and 13 show the functions supported and the serial messages displayed on the throttle.

DCC CMD	FCT	FUNCTIONS SUPPORTED			
		TROLLEY		N-DIESEL	
128		GROUP 1 FCTS OFF			
144	F0	HEADLITE	X	HEADLITES	X
129	F1	CONT.GONGS	-	BELL	-
130	F2	TWO GONGS	*	HORN	**
132	F3	DOORS	X	COUPLER	***
136	F4	BUZZER	X	DYNAMIC BRAKE	-
176		GROUP 2 FUNCTIONS OFF			
177	F5	-	-	-	-
178	F6	MUTE ON	X	-	-
180	F7	-	-	-	-
184	F8	-	-	MUTE ON	X

*   TWO GONGS AUTOMATIC ON TROLLEY FWD/REV
** 2 (FWD) OR 3 (REV) HORNS AT STARTUP
*** COUPLER PLAYS FOR EFFECT

Figure 12 DCC Functions Supported by the Throttle

SERIAL MESSAGES TO DCC++ COMMAND STATION	
MESSAGE	DESCRIPTION
<1>	TRACK POWER ON
<0>	TRACK POWER OFF
<t 1 aa ss 1>	SET ADDR aa TO SPEED ss FORWARD
<t 1 aa ss 0>	SET ADDR aa TO SPEED ss REVERSE
<f aa x>	SEND FCT x COMMAND TO ADDR aa
WHERE X =	128 (F0-F4) OFF
	144 FO 0N
	129 F1 ON
	130 F2 ON
	132 F3 ON
	138 F4 ON
	176 (F5-F8) OFF
	177 F5 ON
	178 F6 ON
	180 F7 ON
	184 F8 ON

Figure 13 Commands to Activate Functions

Two YouTube videos are available; one shows the Shuttle Throttle running an HO Trolley between two end points with an intermediate stop:

https://youtu.be/2b4cVNr-Lw0

And the second shows an N scale diesel locomotive in a back-and-forth operation:

https://youtu.be/a6V7diKDX88

Further information, copies of the Arduino sketches (programs) and response to questions can be obtained through my email address: tractionfan@aol.com

Parts List (**Figure 14**):

Note off-shore parts sources (Ali-Express) have good prices but long shipping lead times. Better shipping times are possible with US based suppliers, but total prices could be $20-$30 more for the project.

TYPICAL PARTS LIST - SHUTTLE THROTTLE					
QTY	PART	SOURCE	PART #	PRICE	
1	NANO MOTOR DRIVER SHEILD	ALIEXPRESS	-	$ 7.22	
2	ARDUINO NANO	ALIEXPRESS	-	$ 2.70	*
1	4x20 LCD DISPLAY PANEL	ALIEXPRESS	-	$ 2.18	
1	20 PIN MALE HEADER (CUT FOR 4)	JAMECO	2236797	$ 0.99	
1	20 PIN FEMALE HEADER (CUT FOR 4)	JAMECO	308567	$ 0.95	
2	1K 1/4 WATT RESISTOR	JAMECO	690865	$ 0.12	
2	RED LED (T1)	JAMECO	333851	$ 0.24	
1	MINIATURE SPST TOGGLE	JAMECO	2230325	$ 1.69	
1	ROTARY ENCODER W/SWITCH	ALIEXPRESS	-	$ 0.69	*
			SUB TOTAL	$ 16.78	
	OPTIONAL PARTS DEPENDING UPON MOUNTINGS				
1	SCREW TERMINAL BLOCK	ALLEXPRESS	-	$ 0.50	*
1	6x3.5x1.9 PROJECT ENCLOSURE BOX	JAMECO	854390	$ 4.95	
1	12VDC WALL POWER ADAPTER	JAMECO	2233983	$ 7.95	
	PERF BOARD, MISC HARDWARE/WIRE/SOLDER			~	
			~TOTAL	$ 30.18	

PRICES NOT INCLUDING SHIPPING. ALLOW TIME FOR OFF-SHORE SHIPPIING
*   PRICES ARE FOR 1 UNIT WHEN PURCHASED IN LARGER QUATITIES

Figure 14 Typical Parts List for Shuttle Throttle

Back on Track...

Group Therapy

By Greg Warth, Editor

You might be interested to know that the Coastal Virginia Medical Society to which I belong is actually thinking about starting a model railroad group. You'll never guess where that idea came from, but it's a good one, nevertheless. You may have heard that there is currently a lot of what we call "burnout" among physicians and other healthcare workers, which often leads to depression. It is related to overwhelming frustration, and lack of control in trying to take care of too many patients within a very inefficient healthcare system that works against you much of the time. So, we are trying to figure out ways to treat and prevent this problem, one of which is to get doctors more involved in enjoyable activities away from medicine whenever time allows. We have talked about forming groups of people that might be interested in photography, music, golf, art, and yes, even model railroading. This doesn't just apply to doctors either. It can apply to anyone in a similar situation where no matter how hard you try, you will not be able to please everyone, and you have *no control* over how to fix it.

After all, model railroading is a wonderful, multifaceted hobby that appeals to people who are interested in art, science, trains, dioramas, landscaping, construction, electronics, woodworking, model making, 3D printing, laser engraving, crafting, building things out of nothing, and just tinkering. That encompasses a lot of people, which is why model railroading is so popular. It is fun. The people are friendly and work together well. No one yells at you.

There is a great therapeutic benefit to this hobby as well. You can get lost in it and forget all your troubles. You can *control* it, which you cannot do at work, or even at home sometimes. There are challenges, but usually, you can fix things. Troubleshooting is easy. Problems are almost always solvable. Like prototypical group therapy, you can ventilate your frustrations to other members of the group, and they will *sympathize* with you. You will always go away feeling better.

So, model railroading is my psychotherapy. It may be expensive at times, but it's still cheaper than a psychiatrist. The lunches I share with other modelers (**Photo below**) and the Division meetings I attend serve as my group therapy sessions. When I finish a model or when I complete an article for *The Local*, I feel like I have accomplished something. My self-worth is enhanced.

Group Therapy. Photo by Greg Warth.

So, if you know of any people who are frustrated, irritable, and unhappy, get them started in model railroading. Start your own group. It is helpful if at least one member of the group is trained in psychotherapy or ministry, but not totally necessary. Just getting the members to talk about their real-life frustrations while running trains will be all they need. Soon their families and friends will be amazed. They won't know what happened. Whatever the reason, they will all be better for it.