

THIS IS MODEL RAILROADING IN THE NER.

ISSUE 299 AUTUMN 2025



NER COUPLER

THE OFFICIAL PUBLICATION OF THE NORTHEASTERN REGION

NATIONAL MODEL RAILROAD ASSOCIATION



Jeff Hanke shares a view from his reconstruction of the East End 3.0. More on page 14.

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EDITOR
CHRISTOPHER S. CARFARO
editor@nernmra.org

ASSISTANT EDITOR
DAVID HORNUNG
assteditor@nernmra.org

ADDITIONAL CONTRIBUTORS
MIKE TYLICK, DOUGLAS MARGISON
ANDREAS WERDER

PROOF READERS
CHUCK DILJAK, WILL EVERITT
RICK MAZZOLA, DAN SHEPARD

FINAL COPY EDITOR
JEFF PASTON

CIRCULATION
ERICH WHITNEY
nerofficemanager@verizon.net

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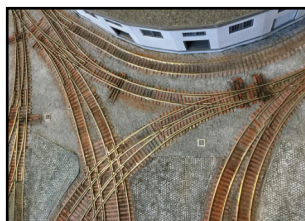
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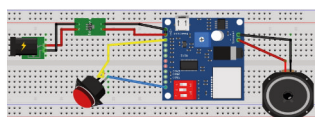
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11



12



OUR COVER PHOTO

I am delighted that Jeff Hanke shared this awesome photo of his East End 3.0. Jeff is rebuilding the railroad and expands upon the construction with us on page 14. Five years ago, I began my tenure as the Editor with one of Jeff's photos. It's somewhat poetic to finish with one. csc



TRAIN ORDER #17

ED O'ROURKE, MMR

PRESIDENT, NORTHEASTERN REGION, NMRA



A while back I was looking for a project for the increasingly longer evenings and found a plow and a steam crane on my shelf. Settling on the plow first, I opened the box and spread out the parts to see if I could make it an acceptable model of a New Haven plow.

A check of Sweetland and Horsley's *NH Color Guide to Freight and Passenger Equipment* turned up several

examples. Two were double-track plows (not surprising on the New Haven.) But plow S-6, a single track Russell plow looked like it would do. True, it was a wood plow, and my model was steel, and it had two windows in the body instead of one, but beyond that, with a golden glow headlight, some box car red paint, and a bit of weathering, I thought I could come close enough to satisfy my needs.

Once I had it built up, however, I realized it needed a front coupler. Every plow I could find a picture of had a front coupler, but Walthers had left out that particular detail. It took a bit of research, but I was able to craft an acceptable front coupler from an old dummy coupler, some brass strip, wire and styrene. Here it is as it appears in New Haven yard. Even in Syracuse, the snow hasn't been deep enough to run a plow extra (yet).



I have pontificated about the need to organize one's workspace and lay in needed supplies. Had I heeded my own words, I wouldn't have had to spend an hour looking around the workbench for a Kadee #5 for the rear coupler. I had plenty of draft gear boxes and springs, but no actual couplers until I unearthed a bunch of Kadees in envelopes buried in a drawer. Evidently these were the leftovers from a Kadee test kit I'd purchased years ago. The kit contained one each of every coupler they made at that time, including a No. 4. The more senior of us will recall cursing vehemently as springs flew about the room while assembling these. Those were real modelers, boy.

So, heeding my own advice, I set out to organize the coupler stash into a set of small drawers. The directions went into a notebook. One question, though. Has anyone used every single coupler Kadee manufactures? It seems a daunting task, but I bet someone has done so. An earlier column about the No. 4 coupler got a bunch of responses (nice to know members read my babblings). Let me know some of your experiences.



Ed
I Am The NMRA



A VIEW FROM THE BRIDGE

CHRIS CARFARO, EDITOR

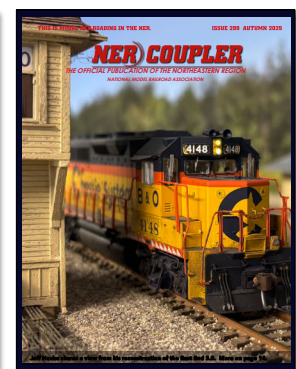
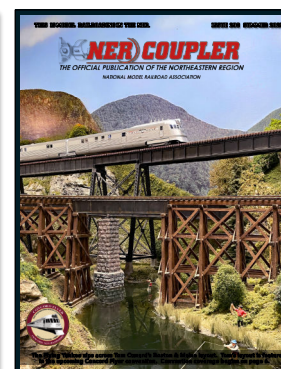
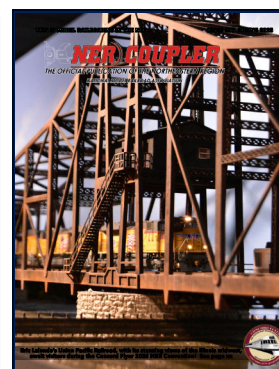
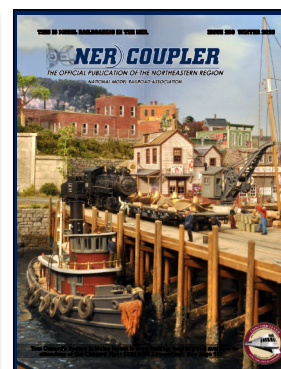
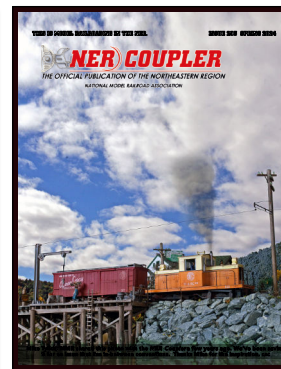
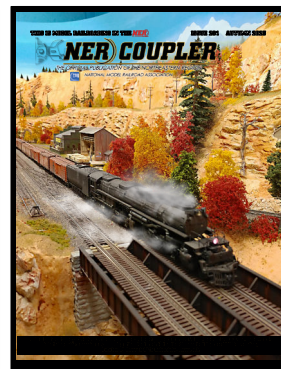
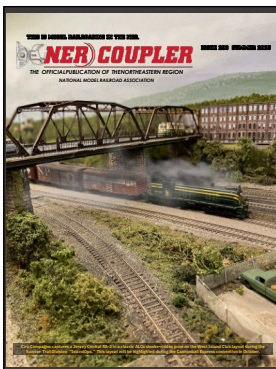
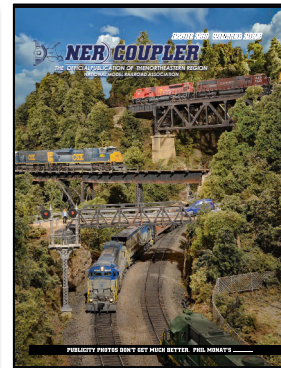
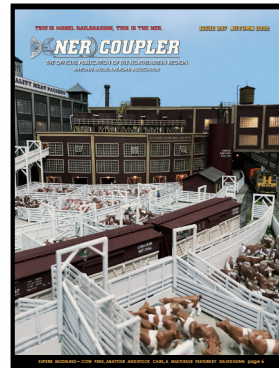
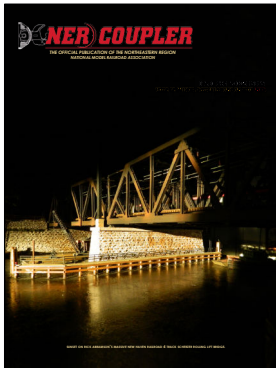
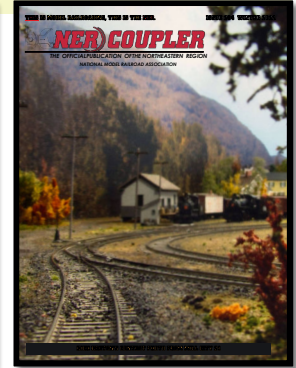
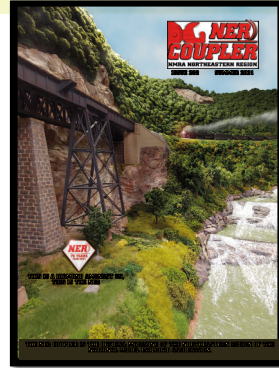
This issue brings to a close my time as your editor. I have given you my best - through my editorials and my passion with the magazine covers. Below are the twenty covers from the past five years.



Of all of these covers, Issue 289 featuring a family with Ed O'Rourke, is not only my favorite, but it speaks to me in a personal way. In my opinion, this hobby at its best, is built upon friendship and family. Although I am leaving the editorship, I hope that I can still call all of you in the NER, "family." I know twenty-five+ years ago when my family and I moved from Atlanta to Vermont, I had to say goodbye to my friends in the Piedmont Division, SER. I still think fondly about those folks. At least now, I won't be leaving the region, only a prominent position.

Producing a print magazine when the rest of the NMRA has gone digital is a unique and exceptional quality of the Northeastern Region. Going digital is easy and cheap and the results often reflect that "so easy" "cheapness." Regardless of the direction of future issues, I encourage you to focus on the continued quality that has made the *NER Coupler* a magazine worthy of good writers and photographers.

It has truly been my privilege and I am grateful for this amazing experience. - csc 



TIMETABLE

Compiled by Jack Lutz: alton_house@yahoo.com

ARRIVALS & DEPARTURES

ALL POINTS NORTHEASTERN REGION NMRA USA & CANADA

DATES	EVENT	LOCATION / TRACK
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MOST EVENTS ARE MULTI DATE. ONLY THE FIRST DATE OF EVENT IS SHOWN.

October 4	Railfair 2025	Boxborough, MA
October 8	National Steamup Symposium	Lodi, CA
October 18	Great Falls Model Railroad Club October Train Show	Auburn, ME
October 24	NMRA Lakeshores Division: Op Around the Clock	Rochester, NY
October 25	South Shore Model Rwy Club Show & Open House	Hingham, MA
October 25	St John Society of Model Railroaders Model Train Show	Quispamsis, N
November 1	470 Railroad Club and Conway Scenic RR Excursion	North Conway, NH
November 1	Southern Maine Model Railroad Club Train Show	Westbrook, ME
November 1	The 50th Great New York State Model Train Fair	Syracuse, NY
November 8	Monadnock Model Railroad Club Show	Peterborough, NH
November 9	Train & Hobby Show of the Hudson Valley	Poughkeepsie, NY
November 21	Greenberg's Great Train & Toy Show	Wilmington, MA
November 22	ExTRAINaganza	Auburn, ME
November 22	Eastern Maine Model Railroad Club 47th Annual Show	Brewer, ME
November 28	Tour de Chooch	NH & MA
November 28	67th Annual Model Railroad Show	North Haledon, NJ
December 6	New England Model Train Expo	Marlborough, MA
December 6	67th Annual Model Railroad Show	North Haledon, NJ
December 7	Classic Shows Model Railroad, Train & Toy Show	New Haven, CT
December 13	18th Annual RIT Tiger Tracks Train Show & Sale	Rochester, NY
December 13	67th Annual Model Railroad Show	North Haledon, NJ
December 14	South Shore Model Railway Club Christmas Open House	Hingham, MA
January 24	Amherst Railway Society's Railroad Hobby Show	West Springfield, MA

NER COUPLER

SUBMISSION DEADLINES

November 20th for January February 20th for April issue

1. Submission of articles and photos are welcome.
2. Print edition subscriptions can now be purchased on the NER website. Visit: www.nernmra.com
3. The NER Coupler is also available online for free.

New Members

Provided by Erich Whitney
as of September 2025

CONNECTICUT

Martin Deeg

MASSACHUSETTS

Logan Viazonsky, William Hardiman
John Hardiman, Emily Kiley
Schuyler Larrabee

MAINE

James Muthig, Cliff Lund

NEW HAMPSHIRE

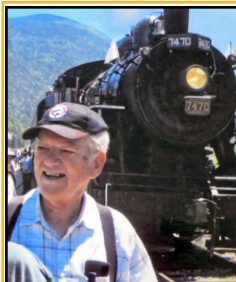
George Gould, Donald Ovel
Ray Jorgenson

NEW JERSEY

Ryan Corcoran, Peter McNany
Jim Capalbo, Matt Phalon
Thomas Grassi, Jr.

NEW YORK

James Lathrop, Margaret Durr,
Christopher Pohorence,
Philip E. Klimczak, Will Carter



In Memoriam

Dwight A. Smith Jr. MMR

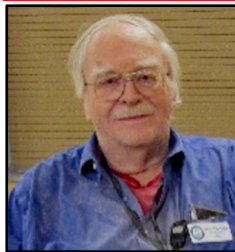
Seacoast Division NMRA members, along with those of us who knew him, mourn the loss of Dwight A. Smith Jr. MMR who passed away at the age of 100 on August 8, 2025.

A Navy veteran of WWII, Dwight was a consummate railroader, having worked for the Boston & Maine and Springfield Terminal. He co-founded the Conway

Scenic Railroad in 1974 and managed it until 1990. Locomotive 7470 was named in his honor in 2019.

Dwight built an exquisite HO layout, the *Northern Vermont Railway*, which was featured in the *NER Coupler* in 2016. He was Master Model Railroader #329.

EQUUS FERREUS MINUTUS REPORTER DAVE HORNING, ASST. EDITOR



Greetings and salutations to my fellow *Equus Ferreus Minutus aficionados*. This first column for the NER Coupler will be a bit different from the usual sort of thing we have all come to expect from this publication.

When most of us think of our model railroads, we naturally consider the nuts and bolts, or perhaps more so, the trains and tracks. But there are other aspects to consider. By this I mean art and literature, history; a world of imagination, that is the signpost up ahead – the railroad zone.

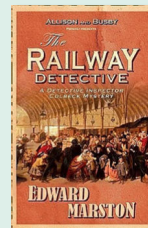
This column and in ones to come I will be writing about books, music, and films that feature railroads in some shape or form. I am hoping that some of you will add to the panorama of our model railroading with your articles or ideas. This can be anything from a favorite film, a piece of music, artist or a book or book series. For some it may be the history of our tabletop empire. If the latter, what was your inspiration? I will assume that unlike Zeus, it did not spring forth fully formed!

This space will be the reviews and ideas for thought in those times when we want to relax or are recovering from some illness or injury, or are just tired at the end of the day and want to sit quietly.

For a starter, I published a book review in the *British Railway Modelers of North America Journal* and am repeating it here in a somewhat expanded form. I hope you find it, not only interesting, but inspiring, as well.

The Railway Detective by Edward Marston

A while ago I had the pleasure of reading this book. Edward Marston is a British mystery writer and former president of the British Mystery Writers. Marston not only has a gifted literary mastery, but knows his subject, Victorian England and British railways, extremely well. This is the start of a series which I have been indulging in and the further adventures thereof.



This opening novel is set in and around London in 1851. With the opening of the Great Exhibition at hand, interest is mounting in the engineering triumphs of England and its railways. But not everyone feels like celebrating. In an audacious attack, the London and Northeastern Railway (LNER) London to Birmingham mail train is robbed and derailed, causing a number of casualties. Planned with military precision, this crime proves a challenge to Detective Inspector Robert Colbeck. Colbeck, a former Barrister at the Queen's Bench has traded in his robe and wig for a policeman's uniform. Now a member of the new detective branch of Scotland Yard, he fights to untangle a web of murder, blackmail, and destruction.

Colbeck – accompanied by Sgt. Victor Leeming – plays a deadly game of cat and mouse between the darkest slums of London and the English countryside versus the mad genius military planner who would destroy all railways. The book, while a mystery novel, is set with a strong backdrop of railway history in exceptional detail. The characters are well crafted, the scenes and back stories rich with detail. Not only does Colbeck have to find a determined killer, but simultaneously fight his own superiors. For anyone who enjoys a good mystery and railroad history, you will find this an engaging read.

Since this review previously appeared, I have continued to follow cases of Detective Inspector Colbeck in *The Excursion Train*, *The Railway Viaduct*, *The Iron Horse*, *Murder on the Brighton Express*, and am currently engrossed in *Blood on the Rails*. I believe each book improves as the series progresses. Great characters, rich images, and convoluted plots make for a great series.



THE CONCORD FLYER WAS A ROUSING SUCCESS. Hosted by the Seacoast Division in Concord, New Hampshire, it offered 58 clinics, 16 ops session locations, another 30 layouts to tour, outstanding prototype and industry tours, an unusually high turnout for the Celebration Room of models and photographs, and amazing camaraderie. Our coverage begins here...



▲ A VISIT TO THE FLYING YANKEE TRAINSET IN NORTH CONWAY, NH, ON THE WAY TO THE MOUNTAINEER RAIL EXCURSION WITH THE CONWAY SCENIC RAILROAD. PHOTO: BILL BROWN



▲ ERICH WHITNEY, READY TO BEGIN "MODELING WITH THE MASTERS" LED BY MMR JIM GORE. PHOTO: CHRIS CARFARO



▲ NICK SANTO OF NIXTRAINZ. ▲ CROWD ENJOYING WELCOME RECEPTION. PHOTOS BY CHRIS CARFARO



▲ ABOARD THE M/S MT. WASHINGTON, LAKE WINNIPESAUKEE STEAMSHIP EXCURSION. PHOTO: BILL BROWN



▲ PHOTO "RUN BY" ON THE MOUNTAINEER RAIL EXCURSION. PHOTO: BILL BROWN

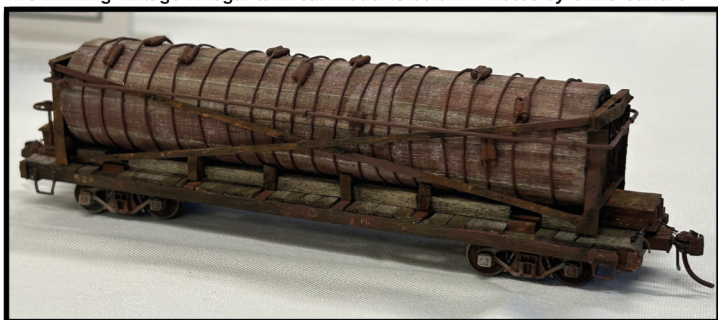
THE CONCORD FLYER SPECIAL AWARDS



▲ Bill Brown MMR is awarded the Baldwin Trophy by Ed O'Rourke and Bob Verkuyt. Bill's winning vintage vinegar tank car model is below. Photos by Chris Carfaro



▲ Tom Oxnard is presented the Harold Russell Award, given by the Lakeshores Division. Photo: Tage Erickson Tom's winning model is below. Photo: Chris Carfaro



▼ Dennis Colucci receives the Spate Award for community service from NER President Ed O'Rourke and VP Dave Insley. Photo: Glenn Mitchell

▼ Chris Carfaro (left photo) and Jim Seroskie (right photo) presented NER President's Award for service to the region. ▼ Photo: Nick Santo / Chris Carfaro ▼



▲ John McHugh presented Master Model Railroader #799 by Bill Brown. Photo: Nick Santo

▲ NER Coupler Editor Chris Carfaro awards certificates for Excellence in Photography to Tom Oxnard (above left) and Rich Breton and Mike Pedersen (above right). Left photo by Glenn Mitchell; right photo by Nick Santo

THE CONCORD FLYER GUEST SPEAKERS AND CLINICS

PHOTOS BY CHRIS CARFARO UNLESS STATED OTHERWISE



▲ Rick Kfoury, President of the Boston & Maine Historical Society kicked off the convention with a great historical perspective of railroading in New Hampshire.



▲ David Swick, president of the Conway Scenic Railroad wow'd us with a progressive vision of short line railroading.



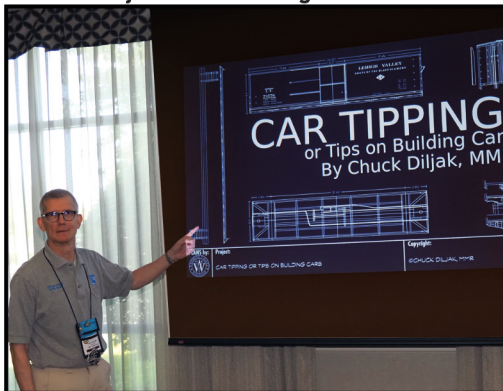
▲ Paul Lessard on detailing buildings & vehicles.
▼ Chuck Diljak on car building.



▲ Jack Lutz, rivet counting from a tree perspective.



▲ Mike Tylick on structures.



▼ Drew James talks about the 2028 NMRA national convention in Rochester, NY.



▼ Chris Carfaro speaking about Sound Dynamics.
Bill Rutherford photo





THE CONCORD FLYER:

A CELEBRATION OF IMAGES

Color Prototype Print Category



▲ First Place/Prototype Color: Dave Gunn MMR



▲ Second Place/Prototype Color: James Lauser



▲ Third Place/Prototype Color: Victor Hand



▲ Honorable Mention: Blaise Vece

Color Model Print Category



▲ Best in Show: Tom Oxnard
▼ Honorable Mention: Chris Carfaro



▲ 1st Place: Tom Oxnard



▲ 2nd Place: Chris Carfaro



▲ 3rd Place: James Lauser
▼ People's Choice: Chuck Diljak



THE CONCORD FLYER: CELEBRATION ROOM CONTINUED

PHOTOS BY CHRIS CARFARO UNLESS STATED OTHERWISE

A QUICK REMINDER: YOU CAN ALWAYS GO TO THE NER WEBSITE TO VIEW THESE PHOTOS, AND EXPAND THEM TO FILL YOUR SCREEN!

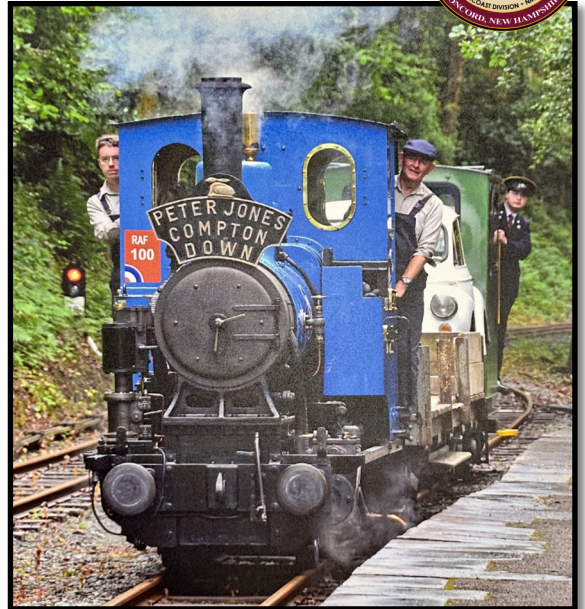


Working on the Railroad Category



▲ 1st Place Bill Brown "Waterin' Her Down"

▼ 3rd Place James Lauser "Filling the Tanks"



▲ 2nd Place James Lauser "Short Freight"

▼ People's Choice/Locomotive: Dave McMullian "B&M P4 Pacific"



People's Choice Category

▲ People's Choice/Structure: Tom Oxnard - "Squam Lake Woolen Co."



▲ People's Choice/Display: Paul Dexter - "the king of clubs, Jazz"

Coming up in the winter edition of the *NER Coupler*, watch for continued coverage of the Concord Flyer. We'll have more from the Celebration Room as well as photos of events outside the convention venue.

A special thanks to [LeZot Camera](#) in Burlington, Vermont, for clinic and overall photography support for the Concord Flyer. You guys are the bomb! - csc



Before the proliferation of high quality plastic freight cars, it was quite common to build rolling stock from wood. Many of those kits offered scribed siding and decals, but many other kits made use of pre-painted and lettered sides printed on heavy card stock.

On these paper car sides, all of the detail relief was printed flat. The artwork was often first class and with a little work these cars could be made to look quite presentable especially at a distance or in a moving train.

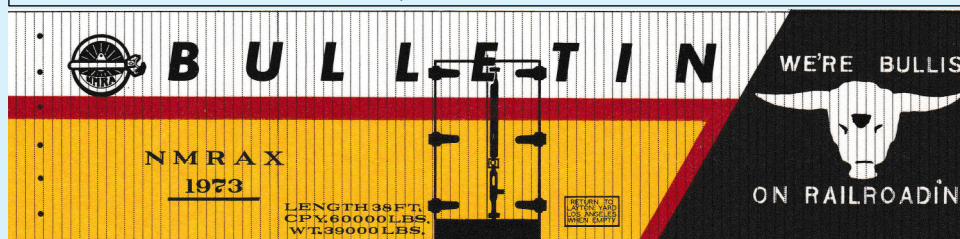
In the 1980s, the *NMRA Bulletin* included a number of unusual car sides as magazine inserts. People could cut these out and use them to build their own cars. Since I always wanted a car from John Allen's Gorre and Daphetid Railroad I was intrigued by the idea. But the magazines I read were borrowed. That meant I couldn't use the enclosed G&D car sides. And, at that time, there was no simple way to make color copies. But time and technology march on, and during a recent visit to the layout of Dave MacPherson, I thumbed through some old NMRA Bulletins and my interest was rekindled. By good fortune, Phil Johnson who was with me on that layout visit made color scans of the car sides from the Bulletins and offered to send me copies. This was even easier to accomplish these days as email and Dropbox attachments. In addition to the scans, Phil was hard at work building some of these cars for his layout. He was kind enough to take these photographs and share his techniques for this article.

There are several good reasons for reviving a 45 year old technology. The flat printed nature of the textures and relief detail become much less apparent even only a few feet away. It's even more difficult to see the difference between these paper car sides and a recently manufactured freight car on a layout with many cars and structures. The same can be said for the old Dover and Ideal brand cutout structures. They look great in the background. Witness the resurgence of printed paper structure building materials. One can also add additional detail to the sides to enhance the appearance even more.

This is a good way to inexpensively add unusual cars to a layout or a collection. What's more, you can even design your own car sides on your home computer. The cars make good conversation pieces and would be a simple way to trade "home road" cars with friends around the world. Making things with our own hands is a fun and rewarding technique, even more so using retro methods from our bygone youth. 🚂



▼ NMRA CAR SIDES, AS PUBLISHED IN THE NMRA BULLETIN



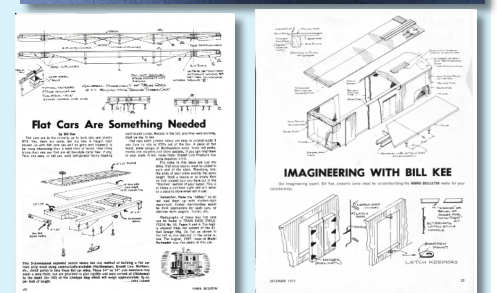
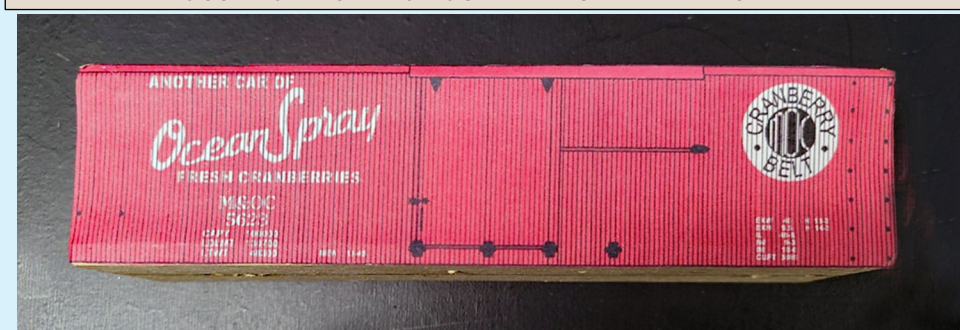
▼ REMOVING RAISED DETAIL TO CREATE A FLAT SURFACE TO TAKE THE PAPER SIDES.



▼ A "CORE CAR" CAN BE FABRICATED USING NORTHEASTERN SCALE LUMBER WOOD COMPONENTS.



THIS OCEAN SPRAY CAR WAS DESIGNED AND BUILT BY MIKE TYLICK MMR.



▲ INSTRUCTIONS FROM THE OLD NMRA BULLETIN KITS

AN N SCALE TRIBUTE TO THE CNJ BRONX TERMINAL

BY ANDREAS WERDER

Model railroaders familiar with Tim Warris' stunning research, documentation, and modeling of the Central Railroad of New Jersey (CNJ) Bronx Terminal will immediately recognize the distinctive track work of this one-of-a-kind yard. The prototype stood in the South Bronx, where the Third Avenue Bridge meets the eastern shore of the Harlem River. Photo 1 is from my N scale layout that models that block along the river between the Third Avenue Bridge and Lincoln Avenue.

At the heart of the terminal was a freight house with an unusual oval footprint and a central courtyard, encircled by two concentric tracks. Positioned precisely along the inner loop, a cut of 36-foot boxcars could be spotted so that each car lined up with a freight door, allowing simultaneous loading and unloading. The building's dimensions were carefully engineered so that the distance between loading docks matched the standard boxcar lengths common in the early 20th century.

However, as freight car design evolved and boxcars grew longer—first to 40 feet, then to 50, the once-brilliant design became increasingly impractical. After just over half a century of service, the CNJ Bronx Terminal was closed and ultimately demolished in the early 1960s.

It wasn't my goal to keep the story of this unique New York City harbor terminal alive. In fact, I had never built a layout based on a prototype before, let alone on hand-laid complex trackwork. But when I discovered that the location of the former Bronx Terminal was practically in my backyard, Manhattan's Upper East Side – and that in N scale it could fit onto a 4-by-4 foot sheet of plywood – I knew I had to build it.

I began with what I thought would be an "easy" section as a proof of concept—though nothing about this terminal is truly easy. The track density is astonishing, and the web of curves and crossings is mind-boggling. My test section included a triple diamond crossing and four turnouts. I chose Code 55 Micro Engineering rail; Code 40 would have been more prototypical in N scale, but I didn't want to add the fragility of finer rail to an already challenging project. To my relief, the test ran surprisingly well; the boxcars I used for trials rolled through without a derailment.



PHOTO 1 ALL PHOTOS BY ANDREAS WERDER



PHOTO 2

Convinced I could tackle the whole yard, I worked methodically from the western end, following the circular tracks clockwise toward the northeast corner. That's where the real challenge began: 14 team tracks fanning out to the southeast; each track branching off the outer loop through a tight, less-than-#4 curved turnout. Here, the spacing was so tight, some arrangements looked more like three-way turnouts, and so I abandoned building each turnout separately. Instead, I drew them meticulously on the

(Continued on next page)



PHOTO 3

(Continued from Page 11)

computer. Every point and guard rail, each frog, and every PCB tie was adjusted to fit the available space. Frog gaps had to be positioned so that there was just enough room for the throwbar of the next turnout. Progress here was continuous and demanding; each turnout led directly into the next, leaving no opportunity to pause between milestones.

For relief from the intense trackwork, I turned to other parts of the project. I designed and built the transfer bridge, kitbashed a barge that could hold twelve 40-foot cars on three tracks, and later scratchbuilt the gantry crane. Once the inner circular track was complete, I built the benchwork and could at least run a short train. From that point on, I not only understood the details of each track section, but could also verify how every element fit into the overall plan.

About six months into the project, I could finally see light at the end of the tunnel, even though the most difficult challenge still lay ahead — linking tracks 7 and 8 with tracks 9 and 10 through a quadruple diamond crossing, and then tying tracks 10 and 11 together via a wye. This was not only a complicated puzzle of rail geometry, but also a test of precision. The outer circular track had to close perfectly, and the angles of all four intersecting tracks needed to match the prototype exactly.

Photo 3 shows the result of that effort, taken nearly a year after I began soldering my first turnout. By then, I had ballasted and weathered the entire yard, paved the driveways with cobblestone sheets, and completed the freight house. The section pictured measures only about one square foot, yet it illustrates how nine of the yard's 14 team and storage tracks connect to the circular tracks. In that compact space are 11 (of the total 30) turnouts and, at the bottom center, the distinctive crossing of two pairs of track.

Looking at the photo nearly ten years later, I can clearly see plenty of room for improvement. If I ever had to redo the work, I'd build it in Code 40 rail. My original drawings were mostly correct, but today I'd recreate them in a vector graphics design program and use a laser cutter to engrave and cut precise templates. Using fixtures adapted to the specific locations and geometries would yield more accurate turnouts and crossings and help eliminate trouble spots. For example, in the top left corner of photo 3, the



crossover from the inner to the outer loop sits too close to the three-way turnout for tracks 9 and 10. That tangle of points and guard rails has often been the source of derailments and electrical continuity problems.

Still, I look back on this photo with pride. I managed to build a small yet exceptionally complex N scale layout, (HO modelers might call it a diorama,) adhering to prototype plans as closely as possible and without resorting to selective compression.

The layout is fully wired for DCC, equipped with frog juicers at critical locations, and operates reliably. As a prototypical model, it offers a glimpse into how railroads more than a century ago met the logistical challenges of moving freight in and around New York City — maximizing every inch of space with remarkably clever design.

If you want to learn more about how I planned, designed and built the CNJ Bronx Terminal in N scale, you can check out my blog at www.harlemrivercrossways.com. 



ADDING SOUND ANIMATION TO YOUR LAYOUT WITHOUT AN ARDUINO

BY DOUGLAS MARGISON

Animations on your layout can contribute significantly to realism and operational experience. One type is sound effects, which have been available commercially for some time. They were costly and rarely customizable. However, since 2020 the availability of microprocessors, sound players, and YouTube "how-to" videos have enabled the do-it-yourselfers to build their own. A common type of microprocessor is an Arduino, which comes in a variety of sizes and types.

Sound players have evolved over the past five years from just the player (MP3 Player Mini) to an electronic module incorporating an amplifier. Four years ago, I needed to connect the sound player to an Arduino to control volume through program code in addition to using a self-built soundbox. With the newer 2025 modules, I might not need the Arduino for single sound files triggered by a push-button. An Arduino might still be needed if you need to manage playing multiple sound files or when a more sophisticated trigger is being used (e.g., train detectors triggering a crossing bell).

Sound files are stored on a microSD card similar to ones used to store images in digital cameras. You can record them yourself or obtain them through the internet. Various programs are available to edit and boost the volume of sound files. Personally, I use *Audacity*. I will often combine sound files to get the effect I want — something I couldn't get when purchasing commercial sound modules.

In 2020, I installed several sound modules using an Arduino Nano to control an MP3 Player Mini — sawmill, mining, harbor, playground, and farm/logging sounds. Despite boosting the volume in the Audacity app, the sound files still needed more amplification. At that time, Arduino amplifiers were make-it-yourself. I was not very successful. Fortunately, constructing soundboxes using foam board worked.

In June 2024, I came across the "DY-SV5W" MP3 player module with a built-in amplifier that produced excellent results for another project. After a demonstration of that earlier sound project, an attendee at my presentation wondered if one could make a simpler sound module without the Arduino — using a pushbutton to connect GND to Pin 100/Tx to trigger playing a sound file should be doable according to YouTube video <https://www.youtube.com/watch?v=oq-KHO7Mh6A&t=360s>.

The farm/logging sound module never worked well — sometimes it would play, often it wouldn't. Could I fix this sound setup by replacing the basic DFPlayer MP3 Mini with the newer DY-SV5W sound module and remove the Nano from under the layout?

What follows is my journey to fix the farm/logging sound setup with a simpler setup as illustrated at the end of this article on Page 13.

The DY-SV5W is powered through a "buck converter/voltage regulator" (BC/VR) connected to the layout's 12 volt polarized DC bus. The output of the BC/VR was reduced to 5.7 volts and connected to the DY-SV5W as shown on Page 13.

The two sound files on the 2020 microSD card were:

1. 001_Farmyard Section2_Cattle02 Added
2. 002_Chopping Tree Gas Chainsaw

Before making changes to the sound files I wanted to confirm that I could play them on the DY-SV5W without an Arduino Nano. I added a second trigger wire to the 101/Rx pin. Then connected the 100 wire to GND — the sound file didn't play. Connected the 101 wire to GND — again the sound file didn't play. Reviewing the earlier-mentioned YouTube, I picked up on using **5-digit numbering** — my 2020 projects used 3-digit numbering. I renamed the farmyard sound file to "00001.mp3" and the logging sound file to "00002.mp3." Success!

I used the audio-editing Audacity app to merge the two sound files. In the 2020 version, playing the sound files started with the farmyard → moved on to the logging → back to the farmyard. I wanted something similar in the combined file.

After merging the two sound files on track #1, I added the farmyard a second time as a 2nd track and moved it towards the end of track #1, creating some overlap. I then added the logging file a second time as a 3rd track and moved it to overlap with the end of the farmyard file on track #2 and trimmed it a bit. Play time for the 3-track combination is 1 minute 32 seconds. I then exported the 3-track combination using a 5-digit number followed by a description filename ("00001_SQ Farm-Logging Combined.mp3").

Mac OS has a nasty habit of adding hidden files when copying to an external drive or card. Hidden files mess up the playing of sound files on the MP3 Player.

Uploaded 00001_SQ Farm-Logging Combined.mp3 to Dropbox to access on the railway PC for uploading to the 32GB microSD card; → inserted the card into the reader on the sound module. Powered the system up and connected the 100/Tx pin wire and the module GND wire. Success!

Reviewing the setup under the layout, I noticed that the voltage regulator output was 5.8 volts. I did a successful test run on the workbench with the voltage regulator output set to 5.7 volts.

After removing the previous sound module setup from a styrene sheet under the layout, I hot glued the DY-SV5W onto the sheet → connected the power wires to the voltage regulator output wires using WAGO® connectors. Connected the wires from the pushbutton to 100/Tx and lower GND wires from the DY-SV5W using WAGO® connectors. Before connecting the DY-SV5W speaker wires to the old speaker under the SQ area, I did a test run with the experimental speaker. Success, but not as loud as on the workbench. Next step was to connect the DY-SV5W speaker wires to the old larger speaker sitting face down in a foam board soundbox under the farmyard/logging area. Success again, but rather too loud. So, I turned down the volume.

In conclusion, I was able to successfully replace an Arduino and MP3 Player Mini with the DY-SV5W which provided me with the added benefit of controlling sound volume through the built-in amplifier.

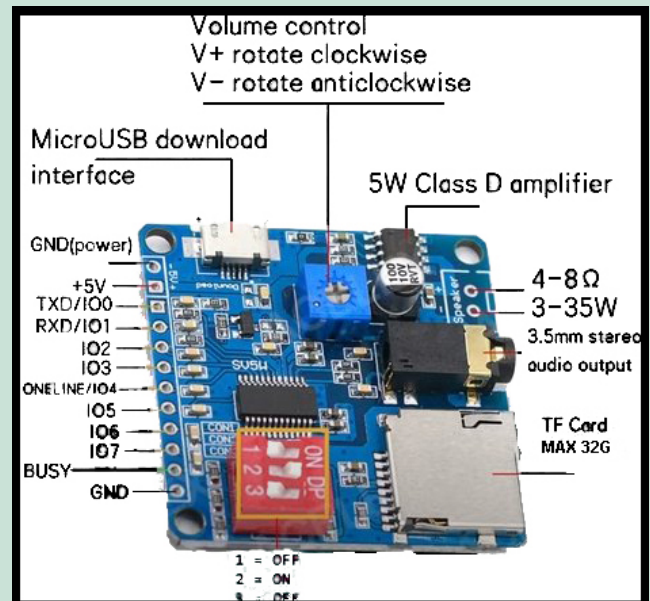
From my perspective, a pushbutton is the best means of triggering sound animation. One could use a PIR (Passive InfraRed sensor motion detector) that triggers sound play when it senses nearby movement. This would play the sound file every time someone walked nearby. Or, one could use a train detector to trigger sound play. Frequent playing of a sound file can be annoying for operators. A pushbutton trigger facilitates play only when you want to.

For those who would like to add sound animation without having to learn how to program an Arduino, I would recommend the DY-SV5W.

Technical side of things

1. Sound module with amplifier: DY-SV5W

- Left side pin from the top
- 1st pin GND connected to Arduino GND via the Blue (-ve) Rail on the Breadboard
- 2nd pin VCC (+ve) connected to +ve Buck Converter output via the Breadboard
- 3rd pin Tx (I2C Transmit) connected pin 10 on the Nano — designated as Rx (I2C Receive) in the Sketch
- 4th pin Rx connected to pin 11 on the Nano — designated as Rx in the Sketch
- Left side 2nd pin up from bottom is the Busy Pin → connected to Pin 8 on the Arduino Nano
- Right side speaker pins — doesn't matter which one is +ve
- Verbatim Class 10 microSDHC 8GB card / SanDisk Class 10 microSDHC 32GB
- DIP switches set to Independent Mode ← 1 & 3 Off; 2 On
- Resource: YouTube "Arduino C++ DY-SV5W MP3 Player with Uno or Mega 2560" — Digital Town <https://www.youtube.com/watch?v=e7qd2Nu3lss> — guy is a model railroader! His website provides useful information plus sketches <https://www.digitaltown.co.uk/components18DYSV5W.php>. I used his example #7 sketch for the UNO to guide me in creating my own sketch
- File naming: the filename must be or start with a **5-digit number** — e.g., "00001.mp3"



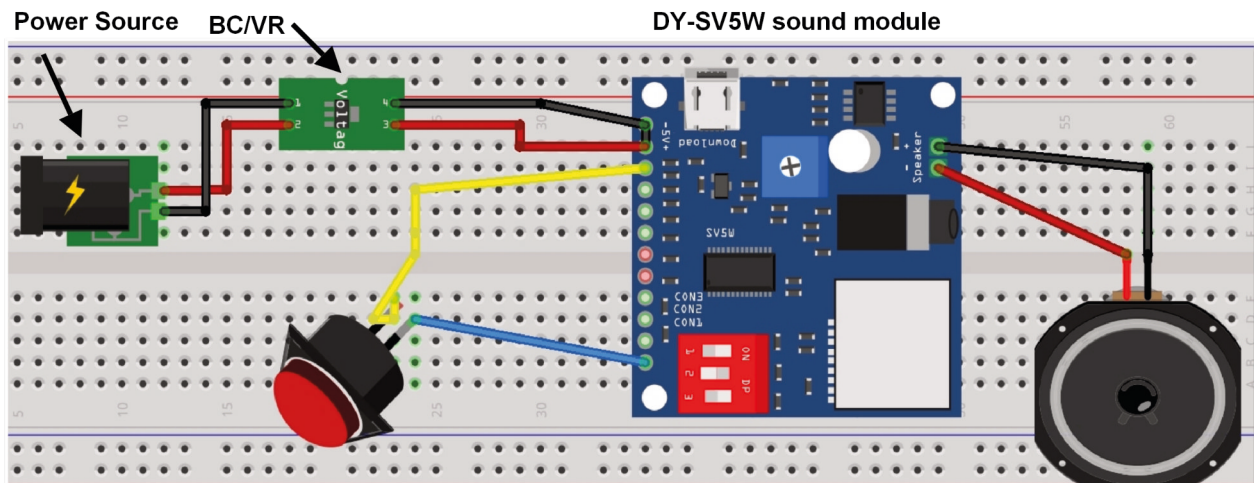
2. Speaker:

Experimental on the workbench: Gikfun 1.5" diameter 4 Ohm 3 Watt Full Range Audio Speaker Stereo Woofer Loudspeaker for Arduino

3. Power supply:

A. Experimental on the workbench: fixed AC-DC 12V with barrel adapter to +ve & -ve screw terminals → connected to a Stemedu LM2596 DC to DC Buck Converter 4-40V to 1.25-37V Adjustable Voltage Regulator — initial output 5.2 volts → later at 5.6 volts

B. Operational under the layout: Polarized DC 12 volt bus input to a voltage regulator / buck converter with output set at 5.7 volts





WORKIN' ON THE RAILROAD JEFF HANKE, MMR

MAKING A PLAN

In the last article, I described how the new layout room was finished off to be livable. Now it's time for the for the next step: creating a layout plan.

During the home inspection on the new house, I took the opportunity to measure the room. The area is 22' long and 22' wide. The single man door is 3' wide and located 4' from the garage door. There are no windows in the space, which makes creating a design easier. For ease of this article, I'll call the long wall *across* from the man door "wall #1," the wall with the garage door "wall #2," the wall with the man door "wall #3," and the rear of the garage "wall #4."

DEALING WITH CONSTRAINTS

Any model railroad design has constraints, things that can't be overcome. For example, the room dimensions listed above define the maximum space, which is the primary constraint, but there are others. The height of the room can be a constraint if you are trying to build under a staircase or in a room with slanted ceilings. We rarely think in the vertical dimension, but the height is important, as you'll see later.

The next major constraint was that the room had to be shared with a home gym. I allocated 16 feet by 9 feet for this space and located it right by the man door on wall #3. This would make working out easy without having to interact with the layout. This left an "L" shaped area consisting of the whole long 22' wall #1 and the whole 22' of the back wall #4. The layout area is 6' deep along wall #4 and 13' thick along the long wall #1.

My next constraint was something I had dealt with on East End 1.0 and 2.0. I wanted to avoid an issue I've seen while visiting other layouts. I wanted the operator *always be facing north* when they looked at the layout. That would make west to the left and east to the right. I find this is the way most people think, and it avoids confusion.

My next constraint was the fact that East End 3.0 would need to include the pieces from East End 2.0 that were already constructed. The two largest pieces were Hancock, WV, and Martinsburg, WV. Both were fully scened at 2' deep and 20' long. Luckily, both sections had built in 90-degree curves on their eastern end (right side looking at it), so they would fit along the long wall #1, while leaving me just over 2' of room on the left of that wall to build a new 90-degree curve to get the main line to run along wall #4. There was one catch: these two towns would have to be on top of each other, since neither would fit anywhere else in the room. This forced at least a two-level layout and the need for a helix. It also drove me to create a peninsula in the middle of the 13' deep area of the room. Both Hancock and Martinsburg have branch lines that depart to the right (eastward) and would need to have those depicted to the right of each section.

Luckily, I had planned to have a helix on East End 2.0 and got as far as building the table for it to sit on. This table was 6' square and about 2' tall. It would fit very well in the corner of walls #3 and #4. This kept the helix out of the main area of the layout and provided a good place to store extra items while the rest of the layout room was worked on.

I really didn't have any other constraints to deal with on the other East End 2.0 pieces. The remaining pieces weren't fully scened, so I didn't mind having to adapt them to conform into the new area.

BIG DECISIONS - THIRD LEVEL'S THE CHARM

So, with the major constraints like space and where the existing sections had to be located, I planned for a very simple first level. The goal was to place each of the towns along the appropriate wall.

My restriction in this process was that the towns had to be in order from east to west as they exist in the prototype. Also, since Brunswick to the east is at a lower elevation than Cumberland to the West, I decided that the lower level would be Brunswick and the layout would climb as it headed west. That put Hancock on top of Martinsburg on the long wall #1. That made the peninsula's top-level Berkeley Springs, WV, the area Hancock serviced on its branch line. Below it would be the Frog Hollow Industrial track and the Martin Marietta cement plant that is served by the branch from Martinsburg.

Between Brunswick and Martinsburg there are three features I wanted to include: Harpers Ferry, WV (passenger station and team track), Shenandoah Subdivision (branch line) and Shenandoah Junction (N&W interchange). The issue became clear that I didn't have the room to include all three with a two-level layout. I also had learned a hard lesson on East End 1.0 and 2.0. Staging is a must and you can never have enough of it. So, I decided to add a third level below Martinsburg that would represent Brunswick and serve primarily as staging.

A VIRTUAL CAB RIDE

Starting at the easternmost point of Brunswick, ❶ the train will head west, along the lower level on wall #4. The train will run through the helix and come out on the second level. ❷ A good helix consideration is to have the climbing route be the outside of a multi-track helix. That will minimize the grade and stress on your engines getting up grade.

After exiting the helix onto the second level, the train will run across the room about 16 feet before turning left 90-degrees along wall #2, ❸ heading about 11 feet toward Martinsburg on wall #1. The first 16 feet are allocated to Harpers Ferry, with a minimal representation of Shenandoah Junction. The next 11 feet would be the N&W interchange at Shenandoah Junction.

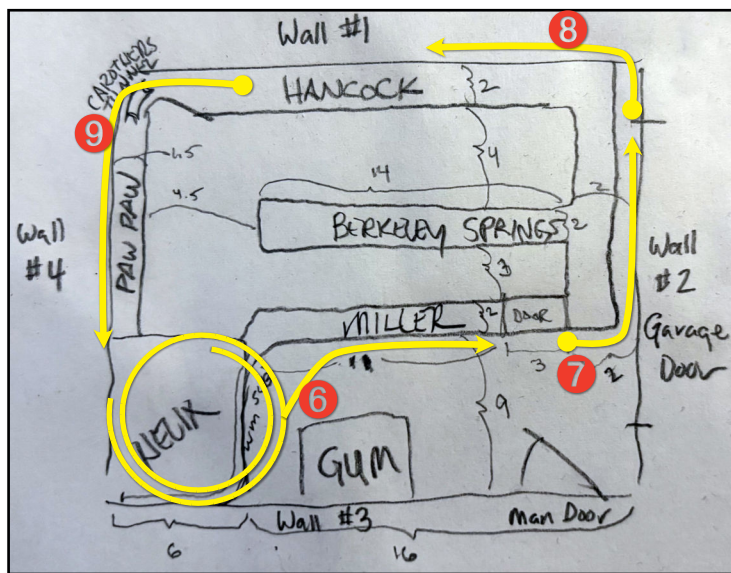
❹ Running the 22' through Martinsburg, the train will hit the new left hand 90-degree turn to run along wall #4. ❺ This area will be Cumbo, WV. Cumbo has an interlocking tower and three operational features: the end of the No. 4 Low Grade Main Line, another interchange with Conrail and a large GM auto

ALTHOUGH JEFF IS IN RECONSTRUCTION MODE, I ASKED FOR A PHOTO TO REMIND US OF HOW AWESOME THE EAST END WAS AND SOON WILL BE AGAIN. - CSC



EAST END 3.0 SKETCH

UPPER LEVEL



parts plant. The No. 4 main will likely not be able to be fully modeled, because after Cumbo, the train enters the helix heading up to the top level.

Exiting the helix at the top, ⑥ the 16-foot run across the room will represent the Miller/Cherry Run scene. Cherry Run is the other end of the No. 4 Low Grade Main Line and an interchange with the West Sub (Western Maryland track). There is also another interlocking tower called Miller. This is a significant area where eastbound traffic exits the East End for Northeast markets. It is also where westbound Western Maryland trains enter the East End, because the parallel WM route to Cumberland was abandoned in 1976. After another 90-degree left turn along wall #2, ⑦ the train will run 11 feet to Hancock, WV. This is planned to be just a plain run with no industry or towns.

Turning left 90-degrees again the train will run through Hancock, WV, on wall #1 for 22' ⑧ and turn left again 90 degrees onto wall #4. ⑨ This section will be Paw Paw, WV. Paw Paw is an interesting little town with an abandoned passenger station, a fruit shipper called Consolidated Orchards, and Vesuvius Crucible. Vesuvius Crucible makes the things that hold molten metal in steel making and assorted industries. Interestingly, they have their own fleet of 40' yellow boxcars that Accurail offered years ago.

NOW WHAT?

At the end of Paw Paw, the train is back at the helix, but what to do? I pondered this issue for a long time. I had no place for staging and didn't want to go any higher. One day it came to me! Why not use the same helix to go back down to the staging level?

There is one issue. If I used the same tracks, the entire helix would be a massive bottle neck. So instead I decided on a four-track helix! Yes, that is ambitious, but this will allow me to take the double track line from Brunswick to Miller all the way up the outside of the helix and now to get back down, I'd add two more tracks to represent the Paw Paw to Green Spring part of the main line. This would eliminate making the helix a huge gauntlet track. I'll just have to make sure it enters the spiral on the opposite side of the circle to it can go down on the same benchwork that brought the other two lines up.

So, when the train reaches the bottom ⑩, and runs from the helix to wall #2, that 16 feet will represent Green Spring, WV. Green Spring is interesting as well as it has the huge Koppers railroad tie treatment plant that receives and ships gondolas. It also has another railroad interchange, this time the South Branch Valley Railroad (SBVR). At this point, I was ready to model the western most point, Cumberland, MD.

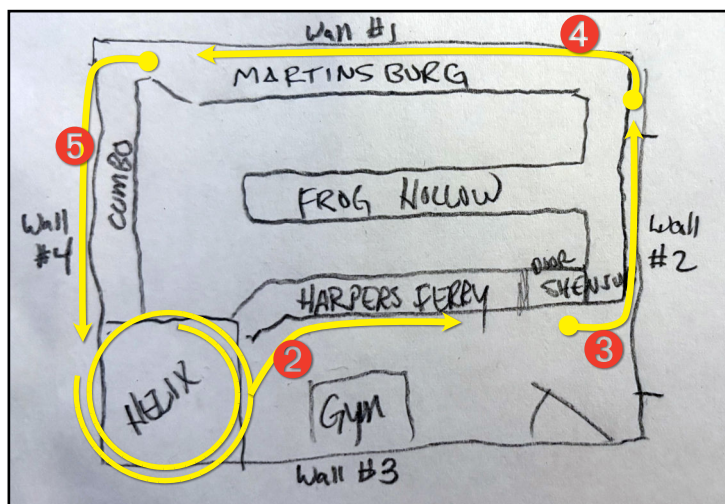
I came up with another idea. Why not just tie Cumberland to the easternmost point, Brunswick? That way, as a westbound train (that started in Brunswick), finishes its run in Cumberland, it just runs through the Cumberland yard tracks directly onto the Brunswick tracks, ready for another run west! ⑪ Basically, this will tie the two ends of my layout together to make the entire layout one big loop! This will eliminate all of the work of restaging trains. I have heard many layout owners complain about growing tired of spending hours restaging a point to point layout between operating sessions. This way the layout is basically automatically staged for the next session. All I'll need to do is update the car cards and remove various loads from flats and gondolas.

This plan didn't fit everything I ever wanted into the layout, but it got really close. The biggest thing that I couldn't fit was the Magnolia Cutoff. The Cutoff is a series of four tunnels and three bridges that is an engineering marvel cutting distance, while maintaining a level grade through the mountains. It just didn't fit.

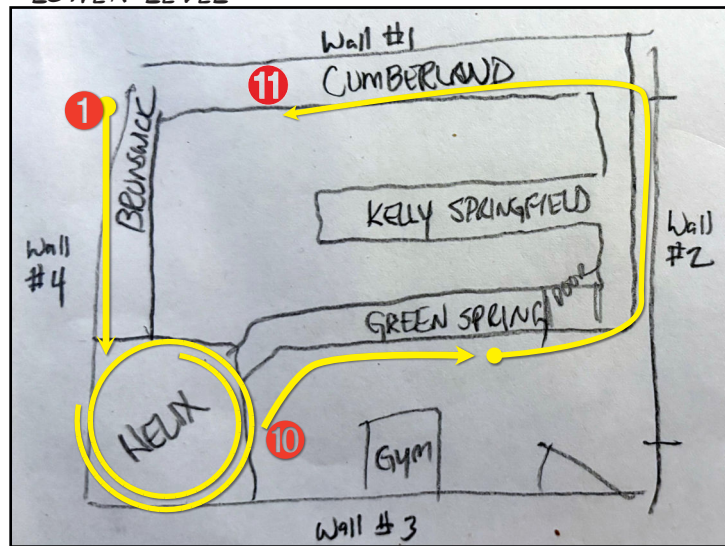
I hope this layout plan process makes sense and you will consider running through these steps before you start building. Up next is detail planning of each section for track layout and structure placement.

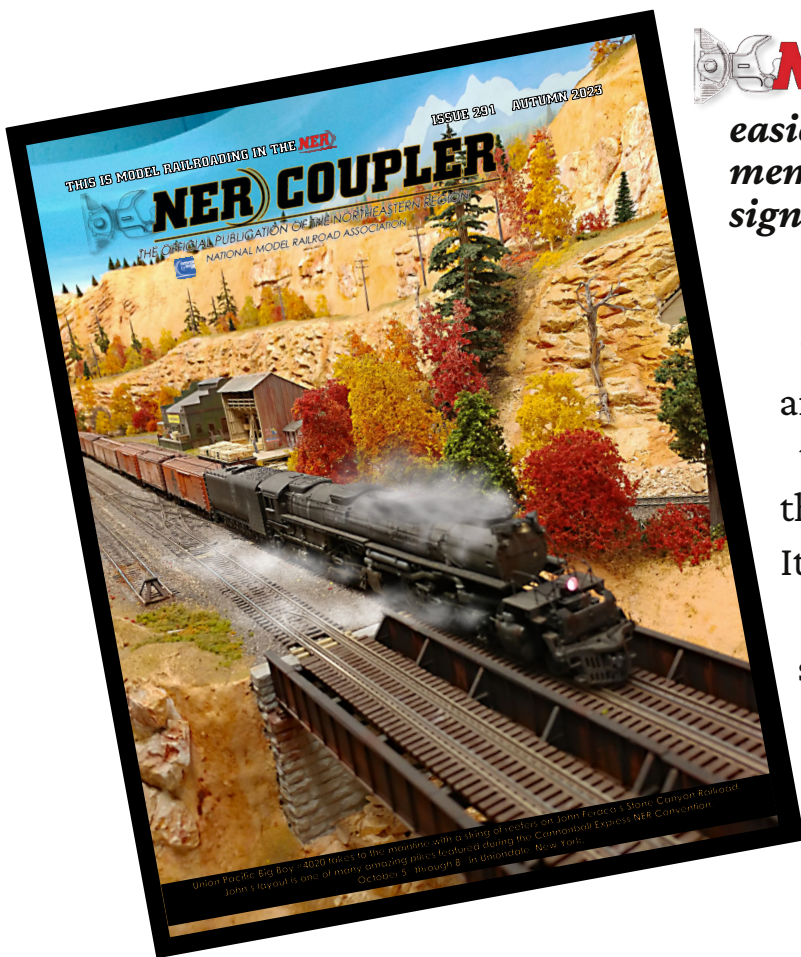
I look forward to telling you more about the new East End 3.0. Keep on workin'!

MIDDLE LEVEL



LOWER LEVEL





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NORTHEASTERN REGION, NATIONAL MODEL RAILROAD ASSOCIATION



PRESIDENT

ED O'ROURKE, MMR
Jamesville, NY 315-247-0494
nerprez@nmra.org

VICE PRESIDENT

DAVE INSLEY
Townsend, MA 978-855-4363
david.insley@comcast.net

PAST PRESIDENT

JOHN DOEHRING
Pepperell, MA 978-433-6337
john@doehring.com

NMRA EASTERN DIRECTOR

JOHN DOEHRING
Pepperell, MA 978-433-6337
john@doehring.com

AREA DIRECTORS

NORTHERN

TOM OXNARD, MMR
Exeter, NH 603-772-6265
tfoxnard@gmail.com

EASTERN

MIKE TYLICK, MMR
Marshfield, MA 413-262-1582
mtlick@hotmail.com

SOUTHERN

MARK MORTIZ
mwmortiz@optonline.net

WESTERN

ED OLSZEWSKI
Syracuse, NY 315-488-4193
eolszew1@gmail.com

DIVISION DIRECTORS

EASTERN CANADA

GREG WILLIAMS, President
Canterbury, NB 506-279-2232
gregw@gmail.com

GREEN MOUNTAIN

ERICH GOLSCHNEIDER,
Superintendent
Chelsea, VT 802-751-5361
erichg60@aol.com

SEACOAST

GLENN MITCHELL, President
Concord, NH 603-856-4103
glenn.t.mitchell@comcast.net

METRO NORTH

RICK ABRAMSON
nhr379@charter.net 203-590-3221

GARDEN STATE

JIM HOMOKI, President
Pittstown, NJ
heavyelectric@netscape.net

SUNRISE TRAIL

DENNIS DEANGELIS, President
Northport, NY 516-885-3901
rs31553@yahoo.com

HUB

MANNY ESCOBAR, President
president@hubdiv.org

LITTLE RHODY

SUE OSBERG, Superintendent
Coventry, RI 401-822-0956
sosberg1701@gmail.com

NUTMEG

ART DUTRA III, Superintendent
Meriden, CT
apdutra3@sbcglobal.net

HUDSON VALLEY

HENRY KRAMER, Superintendent
Walden, NY 973-600-0269
henry.hvnmra@gmail.com

CENTRAL NEW YORK

DREW JAMES, Superintendent
Clay, NY 315-430-3440
domerdrew@gmail.com

HUDSON-BERKSHIRE

ARTIE KRASS, President
Ballston Lake/Malta, NY 518-229-6080
ajkwings@yahoo.com

LAKESHORES

ED O'CONNELL, Superintendent
Rochester, NY 973-738-0372
superintendent@lakeshoresnmra.org

SOUTHERN TIER

Superintendent position is open.

REGION STAFF

SECRETARY

JEFF PASTON
Manilus, NY 315-682-8144
secretary@nernmra.org

TREASURER

BILL RUTHERFORD
Lunenburg, VT
treasurer@nernmra.org

OFFICE MANAGER

ERICH WHITNEY
Derry, NH 603-537-1120
nerofficemanager@nernmra.org

NOMINATING COMMITTEE CHAIR

Open position

ACHIEVEMENT PROGRAM

BILL BROWN, MMR
Jamesville, NY
larcproducts@yahoo.com

OP-SIG COORDINATOR

ED O'CONNELL
ops@lakeshoresnmra.org

MEMBERSHIP COMMITTEE CHAIR

Open position

WEBMASTER

JIM SEROSKIE
webmaster@nernmra.org

NER COUPLER, EDITOR

CHRIS CARFARO
Richmond, VT 802-999-6520
editor@nernmra.org

Please note, the NER Coupler Editor will change with the January 2026 issue to

**Bill Rutherford
Lunenburg, VT
editor@nernmra.org**