The S Scale Resource

NEWS, REVIEWS, INFORMATION TO USE

February / March 2015
Volume 1 #3

Old Decals
Small Bushes
Thoughts On Soldering
Milwaukee Road Water Tank
Cement Bag Retaining Walls
Port Rowan – A Canadian National Branch Line

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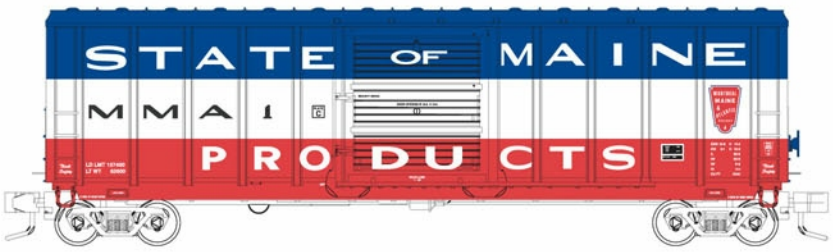

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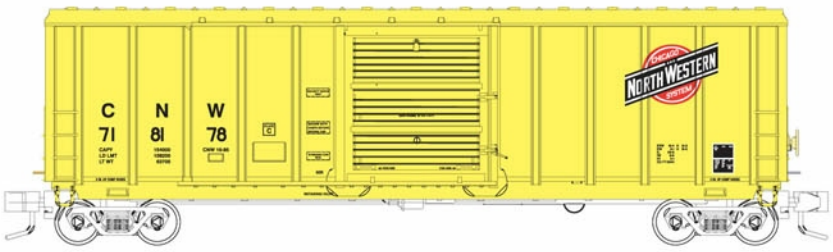

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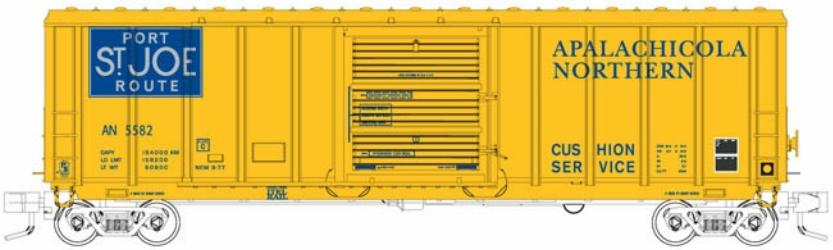

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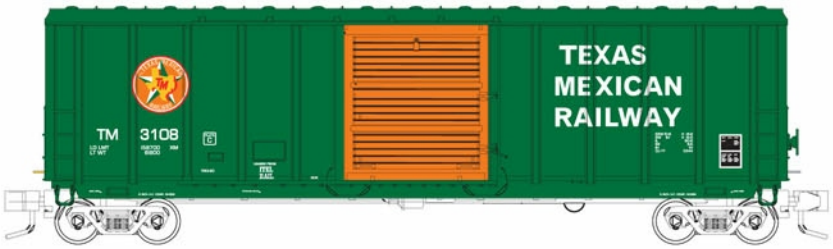

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Bill Of Lading

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

Front Cover Photo

Canadian National Railways 2-6-0 86 has mixed train M233 in tow as it emerges from the Lynn Valley, headed for Port Rowan, Ontario. In this issue, Trevor Marshall describes his S scale layout, based on a CNR branch line to Lake Erie.

Rear Cover Photo

In charge of a westbound freight extra, Canadian National Railways 4-6-0 1532 drifts past the station in St. Williams, Ontario.

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

Editorial Comment

I hope everyone had a good holiday season. Now that it's over, we can settle into our modeling again. Recently, two notable figures in the S Scale hobby passed away. Frank Titman was a long time S Scale modeler, supplier to the hobby, and editor. Bill Lane was a friend of his, and tells us about Frank in the News and Reviews section. Se Young Lee also passed away in January. You may not recognize the name, but Mr. Lee was the founder of Samhongsa Models, and was the first Korean builder to make brass models for S Scale standard gauge. Jettie Padgett knew Mr. Lee, and reflects a little about him and Samhongsa. On a more upbeat note, Dan and Amy went to Toronto in November and were able to see a lot of layouts. One of the layouts they visited was Trevor Marshall's Canadian National branch line. Trevor put together a lot of good photos of the layout, and wrote an article on the Port Rowan branch line for us. The layout is featured on the front and rear cover of this issue. There is quite a group of S Scale modelers in the Toronto area, and we should be seeing more from them. Next, we have some prototype information. I thought you would like to see an interesting small water tank that would fit any size layout. The Milwaukee Road had a design for a small tank that was used in a lot of locations. The tank was used on main lines, as well as, branch lines. We had one here in Plymouth so the local freight could take water after switching. The tank was unique in that it was mounted on steel legs. We have an article with photos and drawings for you if you would like to build one. When lettering our models with decals, we always have part of the set left. Most of us don't throw them away. Jim Kindraka shows us why you should consider keeping them. He was able to letter cars from the remains of other sets, and shows you what can be done. Take a look at the article, "Old Decals". From decals, we move to a simple retaining wall idea. While out photographing railroads for ideas for the grain elevator article in the December/January issue of the *S Scale Resource*, Dan and I noticed some concrete bag retaining walls. I took a few photos to show you. I have seen these in other parts of the country, and they appear to have been used for quite some time. They would make an interesting modeling detail. Another detail on our layouts are small bushes. Small bushes around houses or forest margins are distinctive, and not readily available pre-made. One day, a few of the local guys and I were sitting around in the basement making trees. I went into the back yard and picked some Queen Anne's Lace weed to see what I could do. I made a few bushes out of the flowers and they came out nice, so I made one for an article. Take a look at them. Speaking about having people over, one of the best parts of the hobby is getting together. The time spent with other modelers is always a good learning experience and fun. I have learned a lot from visiting other modelers. Jim Kindraka had a kit that he was going to put together. I have put some of them together, so I told him to bring it over. We had a lot of fun for two days while we assembled some of the kit. The kit has some etched brass parts that need to be soldered together, and I let him use my tools to do it. As we were talking, Jim suggested that I do something for the magazine on soldering. Well, that lead to this issue's "Thoughts On Soldering" article. I have always admired brass models and the people who build them. I pushed myself to learn how to do it. If you take the time to learn, you will not be disappointed, and you will have a new modeling skill available to yourself. Well that's all for now, so read on and enjoy the issue.

Glenn Guerra

News And Reviews

The Lake States Railway Historical Association has broken ground for a new facility to house their archive. The new facility is needed to house and conserve the ever growing volume of material. Besides material that would be of interest to authors and historians, they have a lot of material that would be of interest to modelers. You can see their website at http://www.lsrha.org/

Decals are not always easy to get for a particular model because of the many variations of lettering on the prototypes. Art work takes time and that usually puts a halt to producing the decal. Well, we have some good news from Hubert Mask at Mask Island Decals. http://maskislanddecals.com/ Hubert makes primarily HO Scale decals, but tells us that he will scale the art work up to custom make S Scale decals. Contact him for pricing and more information.

Speaking of decals, Dan Navarre of River Raisin Models is now selling decals. The first offerings are Chesapeake and Ohio sets for passenger trains. Dan said he worked with the C&O Historical Society when doing the layout for the decals. The lettering fonts match those called for in C&O drawings. Each set has lettering for all cars in that series. Sets available at this time include streamline and heavyweight cars. This should be of interest to all C&O fans. Check with Dan for more information.

Bob Spalding at Altoona Model works offers many structure kits. He was approached by some S Scale modelers, and has custom cut some S Scale round house kits for them. He just received some new etchings for ladders to the roof for these kits. Take a look at his website and contact him for details. http://www.altoonamodelworks.net/

Bill Lane sent us a note to let us know that Frank Titman passed away January 16, 2015. Bill took this photo of Frank while visiting him in 2008. Bill posted a tribute video to Frank on You Tube and you can see it here https://www.youtube.com/watch?v=SyMopT7i53A&feature=youtu.be

Frank was a pioneer in S Scale. Besides building his own model railroad, called the Spiral Hill Railroad, Frank started a kit business under the name of Lehigh Valley Models. He built many buildings for his layout and offered them as structures. The line of kits still exists today. Frank had a keen awareness of building details, and his kits have good proportions and just the right details. Frank was also the editor of the S Gauge Herald from 1960 to 1978. When Frank started modeling, the only kits available were the wood and metal craftsman kits. Bill said Frank built hundreds of them, as well as, scratch built steam locomotives. One of the true pioneers in S Scale Modeling.

Mr. Se Young Lee, founder of Samhongsa Models, passed away recently in Korea. Samhongsa was one of the first Korean builders to produce S Scale brass models. Jim Kindraka and Jettie Padgett sent a list of some of those models and the importer.

ALCO Models
RS3; RS2; RSD4/5

Omnicon Scale Models
MP 2-8-0; Erie G15 4-6-0; PRR I1 2-10-0; PRR K4 4-6-2; PRR L1 2-8-2; NYC L3/L4 4-8-2; Budd RDC 1, RDC 2 & RDC 3

Oriental Limited
SW7; SW9; SW1; SW1200; NW2

Scenery Unlimited
NP B-3 Gas Electric "Doodlebug"

Jim said the ALCO Model RS3 was the model that really kicked off the entire production of modern brass models in S scale from 1981 to the present. There had been no standard gauge brass models made in S scale since NWSL made the Jones & Laughlin 3-dome Coal Tar tank car around 1970. In 1981, Bruce Giles (ALCO Models) took a chance and brought out the RS3 made by Samhongsa. Those were followed up the next year with a run of RS2 and RSD4/5 models, also built by Samhongsa. Overland (Ajin) did not enter S scale until 1983.

Goldline Products is now a dealer for the 3D transfers made by Archer Fine Transfers. They carry the complete line. These transfers add a lot of good surface detail to your models. Take a look at them if you are not familiar with them.

Attention manufactures, importers, distributors and the like!

Send us your news items for publication in the next *S Scale Resource*! For information contact Glenn Guerra, glenn@sscaleresource.com.

Questions or comments?

E-mail us here.

Remembering Se Young Lee
Founder Of
Samhongsa Models

By Jettie Padgett

I first met Se Young Lee in the spring of 1974 when Liz and I went to Seoul on a weeks vacation from Tokyo, Japan. During a visit to Yong Son, I inquired about Korean builders of model railroad locomotives and was referred to Mr. OH of OCS Micro Casting who helped me set up a visit to Mr. Lee's factory. Mr. Lee sent a driver to Yong Son, and my friend, Lee Delgado, and I went to look at models being built, while our wives hit Eai Tae Wan and really had a great time without us watching their pocket books.

Mr Lee showed me around his factory which was then located outside Seoul, and it was very sparse. It consisted of 4' x 8' sheets of plywood (about three or four) atop saw horses for assembly tables. The floors were bare earth and machines were stabilized by welding cables to the four corners and driving large spikes in the ground to secure them. When the machines "Worked Loose", four little men would pick them up at the corners, rotate them 45 Degrees, and then re-drive the spikes in and go right back to work. I know that by the end of the day the place looked like a plowed field, but they packed it down, found firmer spots, and continued right on. This first factory did not employ more that about fifty people.

In his office, we shared a coffee while Se Young showed me what he had recently made and what was coming up. As I recall, he had just finished a Canadian Pacific 4-6-2 Class in HO, and had a lot of plans for future models. As hard as it is to believe, I felt really impressed by Se Young's knowledge and attitude. I just knew "He and Samhongsa and Korea" would make it in the brass model railroad industry. I bought several models, and returned again in the summer of 1974 to visit with him before I rotated back home and into B-52G's at Warner Robbins, GA. Having lived in Tokyo for over four years, and having visited Tokyo and Tenshodo's outlet on the Ginza for close to ten years, I had a nice start to a very small, but well built Japanese brass locomotive collection. Seeing first hand the changing economics in brass models, I felt the Japanese were just about to price themselves out of the market.

In 1978, I returned to Korea to work in Plans and Programs for the USAF at Yong Son. Again, Mr. Lee sent a car for me, and I met him at his new factory. This factory was located in an Industrial Park on the southwest side of Seoul. It had a high steel fence and brick wall, was well guarded and secure, and there was no earth to be seen anywhere – just concrete parking, floors and buildings. His facility consisted of one very large building dedicated to model production, and an even larger two story building that housed his young ladies who went to school first thing and then worked on the assembly lines for more models than I ever imagined. These tables were designed for production with cooling air in the summers and warm air in the winters. On this first visit to the new factory, I counted five (5) major projects under way on the assembly tables. There were no less than 400 of any one type, and the articulated model being made was for a run of 300 units. Four of these projects were in HO and one was in O Scale; and they represented three different importers. There were well over two hundred employees there that day and all through 1978/1979/1980, I never saw a decrease in factory size or productivity. I left that afternoon knowing "they had arrived".

Over the years, I returned many times to Korea for various reasons and always visited with Mr. Lee and Samhongsa, even though I never did a project with them. I usually had my work done by the "YOUNG TIGERS", as Samhongsa was "OUT OF MY LEAGUE". Still, I was honored to call Mr. Lee a friend. My wife and I had many dinners with Se Young and his wife and he visited my home on base at Yong Son to dine with me and on several occasions with other U.S. and European importers who were in Seoul for business. Se Young and Samhongsa, LTD really moved the brass model industry ahead very fast. While he always seemed to be "One Step Behind The Quality Curve", he sure made it up fast. I want try to go into the really good models that come out of that factory, but I will tell you that, tomorrow I will be running a 1:32 BIG BOY up on Dave Smith's railroad. Looking back at those "saw horses, plywood tables, dirt floors", I can truly say I miss Se Young and Samhongsa.

Port Rowan in 1:64

A craftsman approach to S proves to the builder that Less is More…

By Trevor Marshall

This is the view that greets visitors to the author's S scale layout. In the foreground is the terminal at Port Rowan, Ontario, with mock-ups standing in for structures not yet built. Across the aisle at left rear is the next town up the line, St. Williams – with staging area just out of view to the left of it. The layout, in a space roughly 15 x 30 feet, is a carefully crafted representation of a Canadian National Railways branch line in southwestern Ontario. It's the author's first effort in S scale.

In the 1950s, the town of Port Rowan, Ontario – on the north shore of Lake Erie – was visited one last time by a mixed train. The Canadian National Railways system timetable called it M233, but it was known by various names – including "The Daily Effort". Six days per week, this mixed train (which operated as M238 on the return portion of its journey) made a 10-hour, 143-mile round trip from Hamilton to Port Rowan, with a side trip to nearby Port Dover.

The train might carry a handful of passengers – mostly people living in communities along the line, and likely headed to Hamilton for business or pleasure. Occasionally, the regulars would be joined by a traveler from further afield, or even a group of railway enthusiasts taking in the increasingly rare experience of riding behind a small steam locomotive – a 2-6-0 or a 4-6-0 – operating in regular service.

Train M233/M238 made more money on less-than-carload packages and express and – until the mid-1950s – a mail contract from the federal government. But when that business – a significant source of revenue for marginal branch lines – was lost to trucks, the mixed train's days were numbered.

In fact, the branch line's days are numbered, too. The last regularly scheduled mixed train ran on September 21, 1957. Freight-only service was provided for a few more years on an as-required basis, and in the mid-1960s the CNR received permission to abandon the line to Port Rowan.

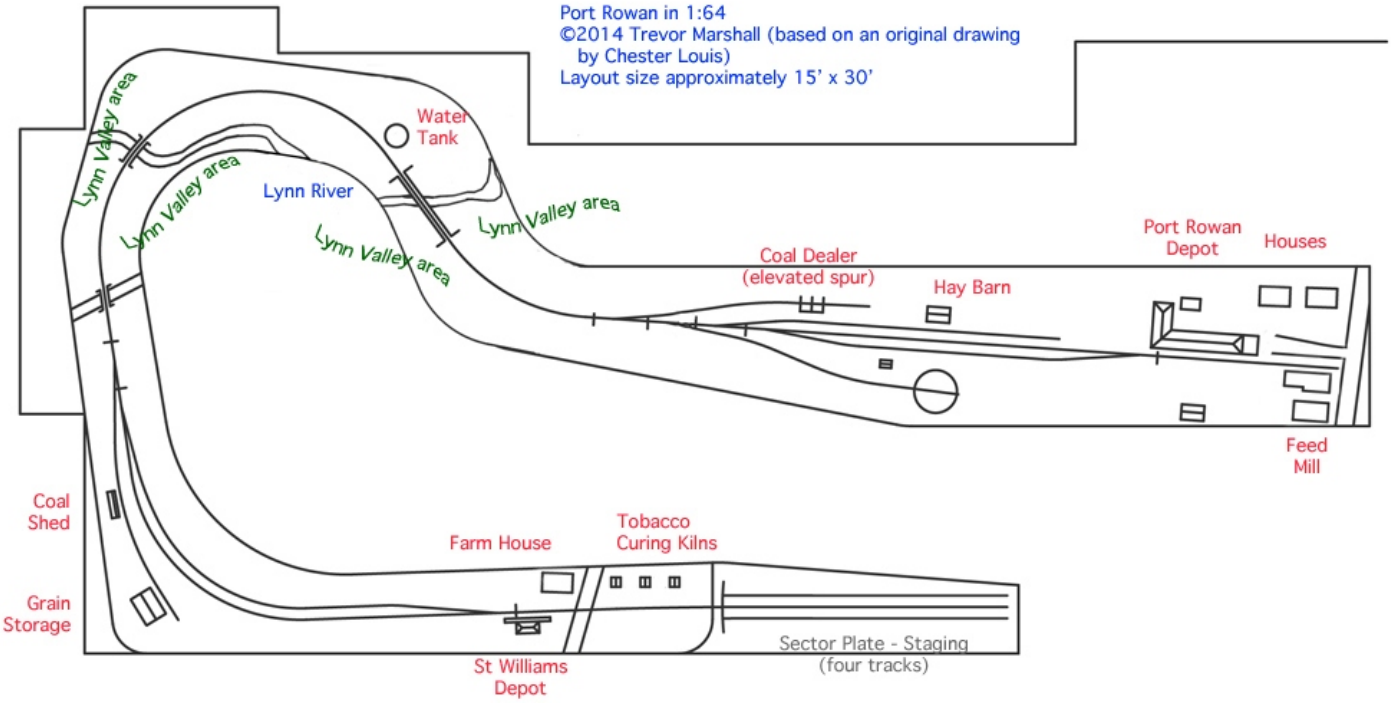
While the trains have been gone for half a century, the mixed train still runs – six days per week – on my S scale layout. Here's how I ended up modeling an obscure corner of the CNR in 1:64.

A simple plan

If you're like me, the first thing you do when you read a layout feature is look at the track plan. And I'm sure that many of you will look at mine and say, "What – that's it? I'd put a lot more in that space!"

There was a time when I would've said that, too. But there's a saying that the definition of "insanity" is doing the same thing over and over and expecting a different result – and after several false starts on model railways that were more complex than my current project, I decided to take a different approach. I would embrace the

idea of a simple layout – one that would allow me to focus on fine, prototype-based model-building and realistic operation.



I expected I would learn a lot from the experience. What I did not expect was that I would build the layout in 1:64.

Flirting with 1:48

This is my first experience working in S scale, but I've worked in lots of others. Just in the past 20 years, I've built three prototype-based layouts in HO scale and a proto-freelanced Maine two-footer in On2. My intention when starting my current layout was to work in Proto:48 – I even have a small collection of P:48 Southern Pacific steam for that project – and if my plans had come to fruition you would be reading this article in *The O Scale Resource* magazine instead of here. But then reality hit.

I enjoy O Scale's size and presence, but when I tried to design a layout for my available space – a long, narrow room in the basement of a century home in downtown Toronto – the resulting plans were never satisfying. I place a lot of importance on creating realistic scenes – places with plenty of space between the more interesting elements. But all of my O scale plans ended up looking like switching puzzles, with "train-set tight" curves, track squashed to the edges of the bench work, and building flats instead of real structures.

At some point, I realized that O scale standard gauge would not fit my space and give me what I wanted. So, what to do? Some friends suggested that I make some adjustments to my goals – for example, by trading in my small steam power for small diesels, which could negotiate a tighter curve and smaller turnouts. I decided on a different strategy.

The perfect size

While I had never worked in S scale, for several years I've had some fine 1:64 models in my collection for use on an exhibition layout built by my friends in the S Scale Workshop. This group has used a Free-mo inspired modular standard to create a highly flexible layout that represents Canadian National Railways branch line railroading in southern Ontario and Québec in the 1950s. Even as I was working in On2, I'd picked up some

CNR steam-era prototype equipment with the thought that one day I would build a module. (I've since built two.)

My models on hand included a handsome pair of CNR H6 class 4-6-0s created as a collaboration between modeler Simon Parent of Montréal, Québec and Fred Rouse at the S Scale Locomotive & Supply Company in Inverness, Florida. I also had a CNR caboose and Fowler boxcar – both resin kits from Oliver and David Clubine at Ridgehill Scale Models. I decided to explore whether I could find a suitable CNR prototype for an S scale layout – one that would fit my space and achieve my goals.

Those modeling the CNR in the steam era have many great resources, including a series of books by author Ian Wilson that document the railway's operations in southern Ontario. Knowing I would need a small prototype for my space, I scoured Ian's books for branch line terminals. Quick sketches showed me that most were still too big for my space. But one place fit the bill perfectly – and S scale was the perfect size for modeling it.

The essence of a terminal

Port Rowan is a small town on the north shore of Lake Erie, about a two-hour drive down the highway from my home.

CNR 10-wheeler 1532 prepares to shove a hopper car up the incline for the coal delivery track at Port Rowan, Ontario. The switch stand targets rotate when switches are thrown to indicate position, and the one to the coal track is marked with a "D" to remind crews that there's a derail at the base of this incline. The author scratch-built a working sliding derail, which is out of view in front of the hopper car. It's controlled by a mechanism on the fascia.

It has been decades since a train turned a wheel in Port Rowan, but at one time, the community was home to a compact branch line terminal.

Port Rowan had just five turnouts, and the whole terminal area was roughly 1,700 feet long. (That sounds like a lot, but that's less than two city blocks in Manhattan.) Within its compact space, the terminal features a team track, elevated coal delivery track, a feed mill, a station serving passengers, mail and express, a turntable, and some interesting ancillary structures such as a section house.

There's enough to build to keep me engaged and challenged, while not being overwhelming. And the terminal – served by a one train at a time – would provide plenty of operation without requiring a huge crew or a marathon session. While there are many great things about living in the heart of Canada's largest city, it's a rare place to find a model railway enthusiast: most hobbyists prefer the less expensive, larger basements with full-height ceilings in the suburbs. As a result I tend to run the layout solo, with only the occasional visitor or two.

It took just two attempts to create a plan that fit my space beautifully. Working in 1:64 gave me many of the size advantages of O scale, plus the space-saving advantages of HO. I was able to place Port Rowan with relatively little selective compression: My version is roughly two-thirds the size of the real thing. And S scale allowed me to fit a second town into my layout space: St. Williams is the next community up the line from Port Rowan, and like the prototype it features a double-ended siding plus a stub spur that serves a feed mill.

Equipment

Before I committed to tearing out my previous layout, I decided to make sure I could find the equipment I would need to accurately model the CNR to Port Rowan.

S scale may seem an odd choice for modeling the CNR – except that the prototype is surprisingly well served by manufacturers.

CNR Mixed Train M233 rolls west through St. Williams, Ontario. The boxcar is in LCL service – there's no carload freight to be delivered today. By choosing a modest segment of the CNR, the author has been able to recreate his prototype in S scale with few compromises.

In addition to the 10-wheeler, Simon and Fred collaborated to create a CNR 2-6-0. And another member of the S Scale Workshop, Andy Malette has produced accurate CNR passenger cars, a 4-6-2 (too large for my branch, unfortunately) and several versions of the railways distinctive eight-hatch refrigerator cars – all offered through his company, MLW Services. Andy has also created detailing kits to modify Pacific Rail Shops boxcars into more accurate Canadian models.

In no time at all, I had determined that I could find essential locomotives, cabooses, passenger cars and rolling stock to do a reasonably accurate job of recreating the line to Port Rowan. More importantly, given the limited run nature of many S scale items, I'd collected the signature pieces of equipment I would need.

Benchwork and track

With a plan, and equipment, I started building my layout in October, 2011. My friend Pierre Oliver visited and within six hours, we had all the benchwork up, ready for risers and roadbed.

I started on that at the Port Rowan end, hand-laying my track. I used Code 70 rail on individually distressed wood ties to represent the prototype's venerable rail and end-of-useful-life appearance. I further emphasized this with poorly maintained ballast. Like my prototype, sidings and spurs are disappearing in weeds and tall grasses (although I was careful to make sure trains would still operate reliably through these overgrown tracks).

I built my turnouts using fixtures from Fast Tracks – and since my layout design is so relaxed I was able to use turnouts with larger-than-typical frog numbers: #9 for any tracks that my full-length passenger cars would negotiate, and #7 elsewhere.

I have a unique method of throwing switches. I use manual switch machines from Fast Tracks and R/C aircraft control lines, operated by garden scale switch stands from Sunset Valley Railroad. These are mounted on small shelves on the fascia, and replicate the action of "lifting-rotating-dropping" the lever on a real switch stand. I've even added luggage locks on chains to secure the stands when not in use.

The first train rolled under its own power in Port Rowan in May of 2012, and by July of that year I had all track in and wired, with a Lenz DCC system for locomotive control. All locomotives are sound-equipped.

Structures

I enjoy building structures and want to create accurate models of signature prototype buildings, so most of the structures on my layout are scratch-built. I do have a couple of houses built from laser-cut kits, enhanced with additional details.

Most days, there's only a single train in each direction through St. Williams, Ontario – but this small station is still an important location on the sleepy branch to Port Rowan. Mail, Express, LCL and yes – sometimes even passengers or a full car of freight – are handled through here and the community still warrants an operator on active duty. The author scratch-built the station board by board from a photograph and measurements in official railway documents. It includes a working train order signal on the roof. The baggage cart is a kit offered by Port Lines Hobby Supplies.

The area through which my prototype ran was the largest tobacco-growing region in Canada so I've modeled some of the unique curing kilns based on field notes and historical photographs. I scratch-built the tiny St. Williams station from a photograph, and included a working train order board.

Before I started this layout, I'd scratch-built an S scale model of a feed mill that once stood in Cheltenham, Ontario. The prototype photographs showed the mill without its cladding and I loved the effect, so I duplicated the finger-joint board-on-board construction. I intended to use this model on a module, but since I had no information on the mill at St. Williams, it ended up on the layout. (I've now found a photograph of the correct structure for this location, so I have another scratch-building project on my list.)

In Port Rowan, I've scratch-built a small hay barn, a garage, the coal dump and the railway's section house. Still to come are the two largest structures on the layout – the Port Rowan station and feed mill complex. In the meantime, mock-ups built from artists board serve as placeholders.

The Port Rowan turntable is a kitbash, starting with an HO scale 90-foot turntable kit from Custom Model Railroads. This works out to 65 feet in 1:64 – close enough to the prototype's 60-foot table. I find most turntable models are trouble-prone, but I'm really impressed by the CMR table and its motorizing kit, which have proven very reliable over the past two and a half years.

Scenery

In addition to structures, I also like to model convincing scenery – and I left plenty of space on my layout for commonplace scenic elements like farm fields, meadows, and forests.

I wanted to model some river crossings, so I borrowed a short segment of line from the Lynn Valley, which is a few miles up the subdivision that I model, and moved it to the main between St. Williams and Port Rowan. This gave me the opportunity to build a trestle, a twin-span deck-girder bridge, and the water tank used to replenish steam locomotives on my line. The trestle is scratch-built, the steel bridge is kitbashed from HO scale Micro-Engineering kits, and the tank is a much-modified kit from Altoona Model Works.

I built up the basic landforms with carved foam insulation board, and covered this with ground foam, scatter material and static grass. Weeds and crops come from a variety of sources, including Silflor, while small trees and bushes are from Super Trees material. I scratch-build my larger trees from florist wire armatures covered in flexible modeling paste and finished with poly-fiber canopies and Selkirk Scenery Company leaf material.

Operations

While my layout plan looks quite simple, don't let the paucity of track or trains deceive you. Operating sessions on the line to Port Rowan can be quite challenging, especially if one wants to accurately recreate the activities of a crew on a mixed train or freight extra. (Yes, I do occasionally run those for variety.)

For starters, people quickly discover that there are no extra tracks on the layout where one can shove a car out of the way. Careful planning is required to minimize the number of moves and the amount of walking done by crewmembers on the ground.

What's more, I've incorporated several features designed to slow down operations, as they replicate reality.

The prototype features begin with the locomotives themselves. I've equipped all steam engines with TCS WOWSound decoders, and set up the various sounds for manual operation. A few years ago, I took some training as a fireman's apprentice at a tourist railway, and this experience taught me a lot about how steam locomotives work.

When I'm running a model steam locomotive, I try to replicate the activities in the cab as faithfully as possible. This goes beyond the proper use of whistle and bell to include: using the blower when stopped; opening the cylinder drain valves when starting up to clear condensed steam out of the cylinders; running the injectors when opportunities arise; and so on. Compared to flipping a direction switch and opening the throttle, it's amazing how much time can be added to an operating session.

The fascia at the Port Rowan yard throat. The author uses garden scale switch stands from Sunset Valley Railroad to throw the switches on his layout. These brass stands are about 4-inches high and mounted on small shelves on the fascia. They operate RC aircraft control cables, which are linked to Bullfrog manual turnout motors from Fast Tracks. The chains and luggage locks – all keyed to the same key – secure the switch stands when they're not in use. The small shelf in the middle holds a SVRR ground throw that controls the working derail on the coal delivery track. The fascia has not yet been painted.

I highly recommend that anybody interested in this type of operation visit a tourist line, talk to the steam team, get a cab ride, and take notes. You'll be surprised at how this changes the way you run trains at home.

My layout encourages prototypical operation beyond the locomotives, too. I run trains according to timetable and fast clocks. I use prototype-based waybills and switch lists – drafted by the conductor – to forward freight cars.

The author's layout is simple in design, but engaging to operate. To enhance sessions, he has crafted prototype paperwork – including an employee time table, paperwork for mail bags, passenger tickets, LCL and Express receipts, waybills for carload freight, switch lists, train orders and clearance forms. To give operators room to work, the author built a slide out desk at St. Williams. It includes the control for the working train order signal on the station, as well as a working telegraph key and fast clock. There's a similar slide-out desk in Port Rowan.

In addition to the freight waybills, conductors on the mixed train must also account for passenger tickets, LCL/Express receipts, and mailbags. Operators can OS ("On Sheet") the passage of trains using a working telegraph system and a greatly simplified version of Morse Code (complete with cheat sheets), and sign trains in and out of Port Rowan using a train register.

This may sound like a lot of work, but it's actually a lot of fun. I never insist that visiting operators observe all of these practices, but most of my regular guests are keen to learn the ropes. Even with two-person crews, there's a lot to keep track of and it takes several operating sessions for a new operator to become comfortable with everything. But they've told me it's definitely worth the effort, so I must be doing something right.

The right layout, in the right scale

And I agree. After several less-than-successful attempts to build a complex layout, I'm deriving great satisfaction from recreating this modest yet interesting example of Canadian branch line railroading in the twilight of steam, in 1:64.

There's always more to do and if you care to follow along, I'm documenting my progress online at:

http://themodelrailwayshow.com/cn1950s

Why not drop by and say hello?

Postscript:

My wife, Amy, and I went to Toronto this past November to photograph some layouts. One was the O Scale St. Jacobs & Aberfoyle Model Railroad which I wrote about in last month's *The O Scale Resource.* While there, David Nadeau put me in contact with Trevor Marshall to see his S scale layout. I had of course heard of Trevor and his The Model Railroad Show podcasts. Although the podcast is on hiatus, all the old programs are available to listen to using instructions here.

After lunch and a couple of beers, we went and saw this beautiful layout. I did photograph it, but the lighting and the small area (no, not the beer) made it tough, so Trevor did some more photography and we'll feature his work here as we take a pictorial look at Port Rowan, Ontario and surrounding area.

A pictorial look at Port Rowan, Ontario and surrounding area

Photos by Trevor Marshall

CNR Mixed Train M233 rolls west through St. Williams, Ontario. The boxcar is in LCL service – there's no carload freight to be delivered today. By choosing a modest segment of the CNR, the author has been able to recreate his prototype in S scale with few compromises.

The driver of the Canadian National Express truck waits for CNR Mixed Train M233 to come to a stop at the tiny depot in St. Williams, Ontario. The truck is lettered with HO scale passenger car decals. The depot is scratch-built, board by board, based on a photo and measurements in official railway documents, and features a working train order signal on the roof. The combination car is a kit from MLW Services.

There's a family conference underway on the front porch as CNR Mixed Train M233 rolls past the St. Williams, Ontario depot in the background. The author built the house from an extensively modified "Finley House" kit from Branchline Trains – adding real glass and curtains to the windows, gutters and downspouts, and other details.

Its station stop in St. Williams complete, CNR Mixed Train M233 rolls west out of town towards Port Rowan, Ontario. The author planted more than 2,000 HO scale corn stalks from JTT Scenery Products in this scene, and scratch-built the unusual grain storage building from photographs of a prototype in Cheltenham, Ontario. He plans to replace the structure with a more accurate model. Many of the trees here are still at the bare wire armature stage.

A mail contract with the Canadian government kept many marginal branch lines in business in the 1950s, and the Canadian National Railways line to Port Rowan, Ontario was no exception. Here, baggage-mail car 7792 crosses a steel deck girder bridge in the Lynn Valley. The author extensively re-detailed an American Models car. The bridge is built from a pair of Micro-Engineering HO scale bridges, with a center pier based on CNR engineering practices and scratch-built in styrene.

Secondary tracks – such as the turntable lead in Port Rowan, Ontario - are losing the battle with the grass as CNR Mixed Train M233 eases through the yard throat at the entrance to the terminal. The station stop – its last as M233 – is just seconds ahead. The crew will turn its train and head east as M238 to Hamilton.

CNR Mixed Train M233 rounds the final curve and passes between apple orchards as it arrives at the terminal in Port Rowan, Ontario. The author planted more than 100 trees in the two orchards shown here, and scratch-built the wooden fences. It's 1953, but the single-wire on the pole line indicates that railway communications along this line are still conducted via telegraph.

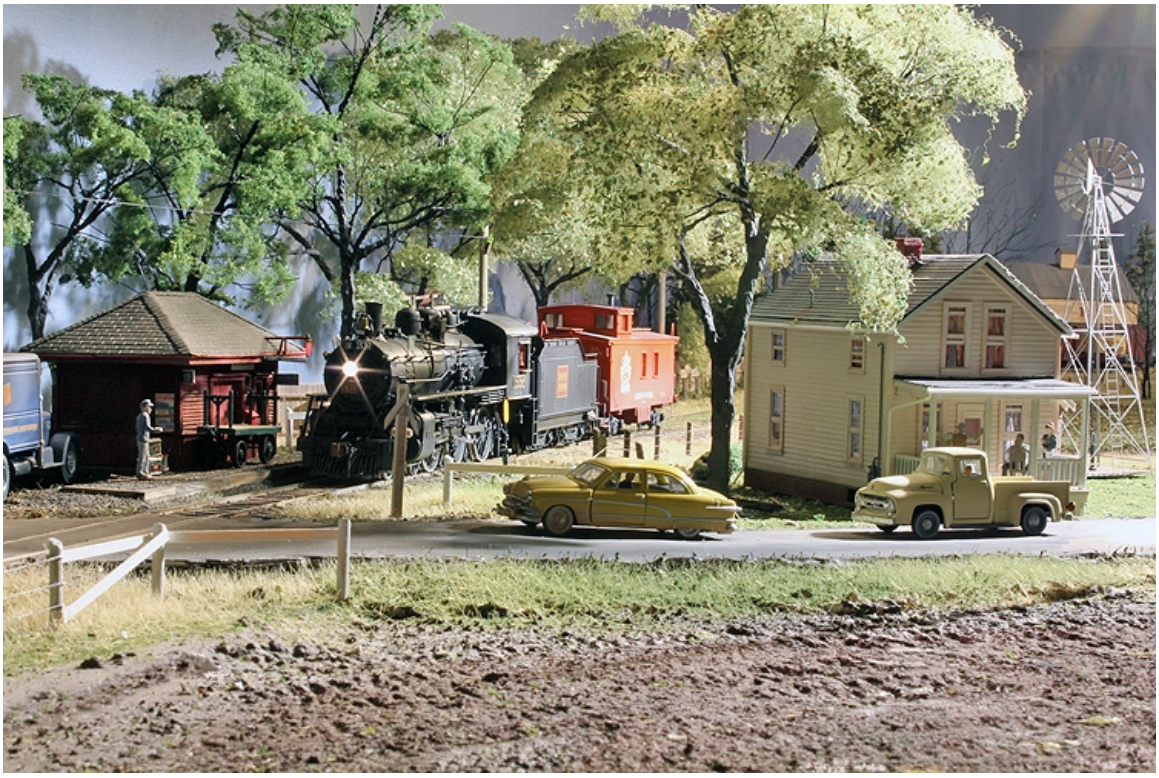
The sky is dark: There must be a thunderstorm brewing. Freight extra 1532 is slowing for the Charlotteville Street crossing at St. Williams. The train order board is set, so the train will be stopping to pick up paperwork, too. The author scratch-built the station and working order board.

The rear-end brakeman waves from the van (the railway's term for a caboose) and prepares to unload as CNR 1532 brings a short freight to a stop in St. Williams, Ontario. The first car – an NMRA heritage car for the late Bob Hegge's Crooked Mountain Lines – is likely headed to the team track. The van is a resin kit from Ridgehill Scale Models, built for the author by his friend Pierre Oliver.

A truck from the Direct-Winters Transport line unloads a boxcar on the team track in Port Rowan, Ontario. The small barn was used at one time to store hay. It's no longer in use, but remains trackside. The author scratch-built the structure, board by board. The boxcar is a PRS kit, enhanced with a CNR detailing kit from MLW Services. The truck is a diecast model that the author repainted and lettered for an Ontario trucking company, using HO scale decals from Black Cat Publishing.

The head-end brake man has lined the switch for the elevated track in Port Rowan so the crew can deliver a PRR hopper loaded with coal. It must be a partial load as it's not piled above the car sides. The author uses Code 70 rail, individually stained and distressed ties and plenty of static grass to recreate the run-down, lightly trafficked look of his prototype. The switch stands are kits once offered by Alder Models, and feature targets and levers that rotate as the switches are thrown. This stand has a lever painted yellow to indicate that the track is protected by a derail.

Its work finished in Port Rowan, Freight Extra 1532 East emerges from the Lynn Valley and into St. Williams, en route to its home terminal in Hamilton, Ontario. The author scratch-built more than 100 trees for the Lynn Valley, starting with armatures twisted from florist wire. He's now starting to craft trees for St. Williams, as the bare wire armatures suggest. He likes to plant the bare armatures and then run the layout for a few weeks to ensure they don't interfere with operations. Once satisfied with their placement, he'll finish the armatures and add the canopies.



The order board is clear in St. Williams as Freight Extra 1532 rolls past the station. The author built the house from an extensively modified "Finley House" kit from Branchline Trains – adding real glass and curtains to the windows, gutters and downspouts, and other details. The trees are scratch-built, while the farm-style windmill is a photo-etched kit from TractorFab.

CNR 2-6-0 908 heads west through St. Williams in charge of a freight extra. The silver tank car is a W.A. Drake brass model decorated for the Flying A brand. The field in the foreground was crafted using Silflor row crops, while the railway RoW fence is strung with EZ Line.

Extra 908 West leaves St. Williams and is about to enter the Lynn Valley. The author scratch-built more than 100 trees for the Lynn Valley, starting with armatures twisted from florist wire. He's now starting to craft trees for St. Williams, as the bare wire armatures suggest. He likes to plant the bare armatures and then run the layout for a few weeks to ensure they don't interfere with operations. Once satisfied with their placement, he'll finish the armatures and add the canopies. The cornfield required planting more than 2,000 HO scale stalks from JTT Scenery Products.

As a freight rolls past, a BnB (Bridges and Buildings) gang discusses the day's work on the water tank in the Lynn Valley. Working from prototype photos, the author heavily modified an Altoona Scale Models kit to create the water tank. He kitbashed the speeder from an Sn3 kit offered by Wiseman Model Services. The caboose – a resin kit from Ridgehill Scale Models – was built for the author by his friend Pierre Oliver. It's lettered with Black Cat Publishing decals.

A railway employee gives Freight Extra 908 West a roll-by inspection at Port Rowan. To the right of the train can be seen the lead for the team track and the elevated coal delivery track.

Freight Extra 908 West arrives in Port Rowan behind a 2-6-0. To the left, a short siding will allow the crew to run around its train, while one of the CNR's distinctive eight-hatch refrigerator cars is being loaded on the team track at right. The author scratch-built the section house, board-by-board, from prototype photographs. The refrigerator car is a resin kit from MLW Services.

Milwaukee Road Water Tank

By Glenn Guerra

The Mid Continent Railway Museum in North Freedom, Wisconsin has a Milwaukee Road water tank that they acquired. The tank is a smaller tank that was used throughout the Milwaukee Road. We had the same tank here in Plymouth, Wisconsin. At one time, there was a switch engine stationed in Plymouth and the tank would supply water for the engine. The through freight from Milwaukee to Green Bay would stop to set out and pick up cars at this location. Before leaving, they would top off the tender from the water tank.

This is the foundation for the Milwaukee Road water tank in Plymouth, Wisconsin. The location of the four corners matches the tank in North Freedom, Wisconsin. You can also see the square form in the center for the frost box.

The tank is interesting in that it has steel legs. The legs are made from 6” x 6” angles with angle bracing. Originally, the components were riveted together, but when the tank was moved to the museum, some of the rivets were removed for disassembly. Currently, some of the joints are bolted together. The same tank was used in Plymouth and the foundation is still here. You can see that at one time there was a frost box that contained the water supply pipe. The counter weights for the spout have a hole in them; and they run on a rod for guidance.

To build a model of this tank you could use brass or styrene. In either case, you will need to make some compromises on the size. The 9” I-beams would be .140”, and there is nothing in that size. The closest you could come would be 5/32” which is .156”. Similar compromises would be needed for the other shapes. Once you have the correct sizes, you will be able to make some sketches. To make the base, assemble two legs with all the bracing using a simple fixture. Then, do the other two legs in the same fixture. When that is done, set them up in the relation that they will be in, and add the remaining bracing. Now you will have a stronger base to work with. Add the large I-beams next; followed by the two 9” cross beams. The floor beams sit on the large I-beams. The two shortest floor beams sit on the 9” cross beams. There are small blocks on the cross beams to support the floor beams. When setting the height of your cross beams, locate them so the spacers will be a convenient size. Next, add all the gussets.

To build the tank, you could start with tube that is 2-5/6” in diameter and glue strip wood around it. Another way would be to make three disks each with a hole in the center. Put them on a rod so one is the top, one is the

This is the base of the frost box for the Milwaukee Road water tank that was in Plymouth, Wisconsin. The water supply pipe would have been inside of the frost box to keep it from freezing in the winter.

bottom, and one is the center. Next, start gluing the tank boards on. The first few will be critical to keeping the tank forms square. Once you have a few boards on, it will go easier. Be sure to let the boards hang over on the bottom. To make the roof ,draw a circle with the same diameter as the distance from the peak of the roof to the edge. Next, draw circles on that are 3/32" or .093" apart, starting at the edge. These will be guides for installing the shingles. Then, take a pie shape section out of this and wrap it up. It will form a cone. There is a fascia around the edge of the roof. You can make this by cutting a circle from some 3/32" or .093" material. If you are working in styrene, a piece of .08" thick material will work. Finish the edge nicely, and place your roof cone over the disc. Putting shingles on is a bit tedious, but individual shingles look the best. The guide circles you drew will help to keep everything looking nice.

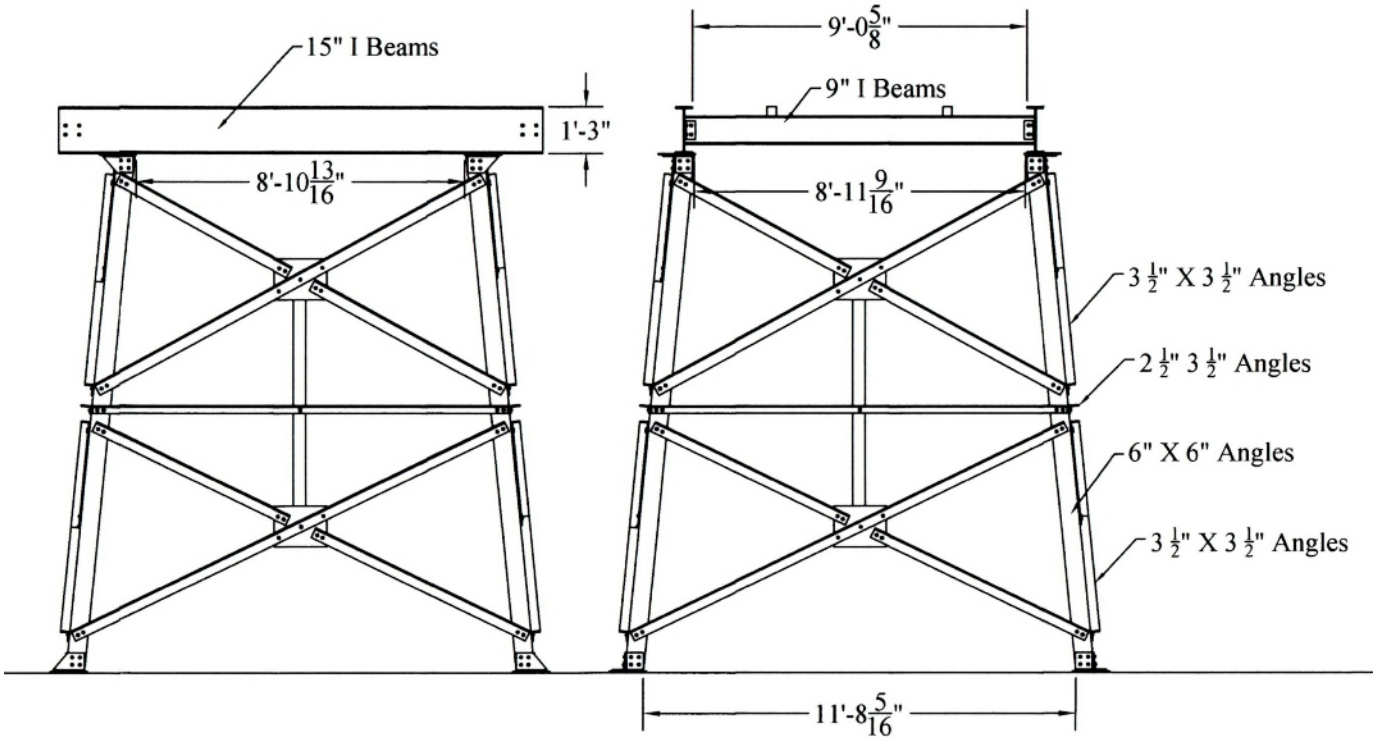
The support structure for the spout will be delicate. I like to work in brass because the finished model is stronger. Temporarily mount the tank assembly to help with the spout support structure, but do not permanently fasten the tank yet. When you get the support structure done, remove the tank.

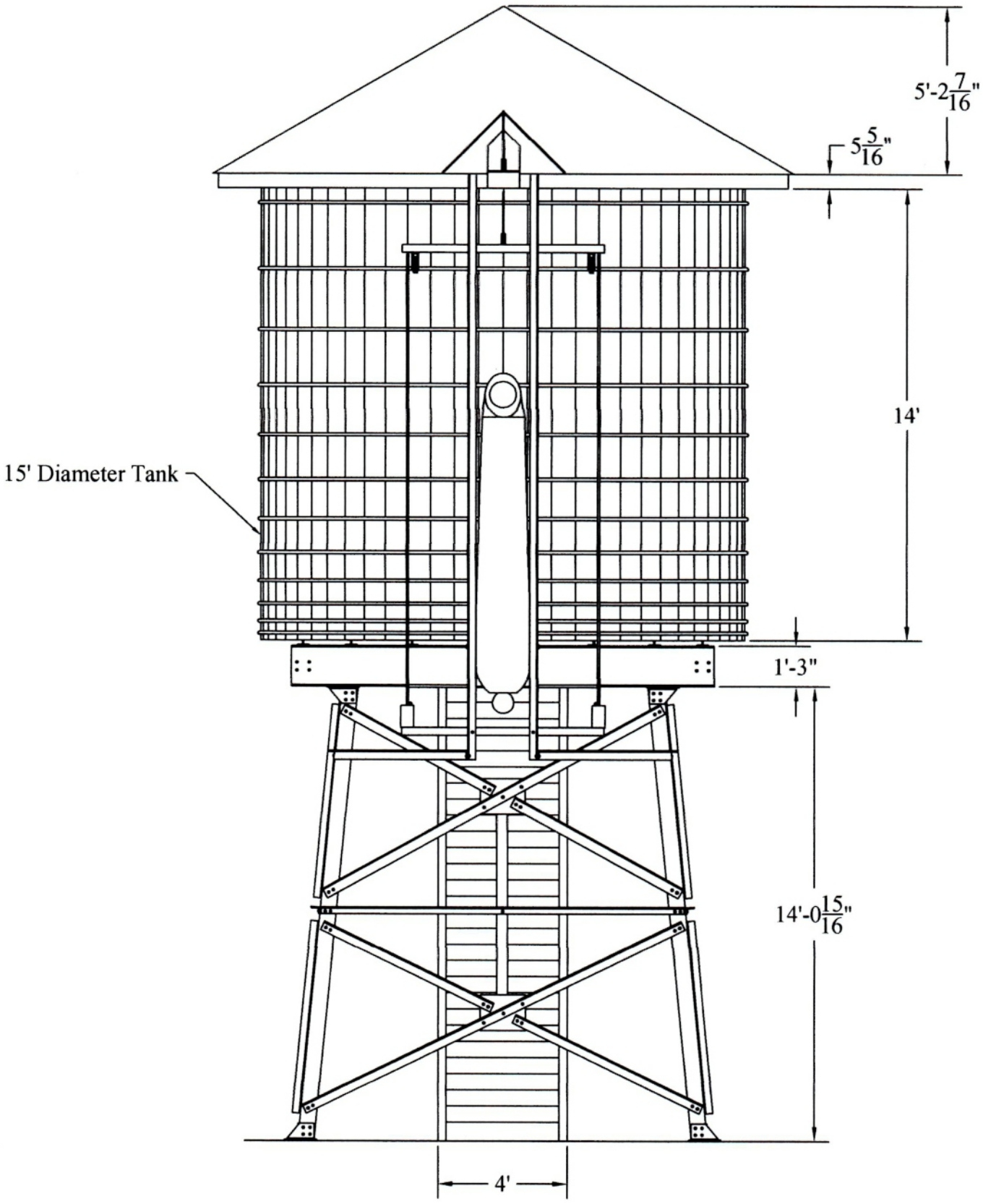
Paint the base and support structure black. Using freight car red, paint the tank and stain your shingles. Once dry, assemble the model; and finish it by installing the spout and strings for lines.

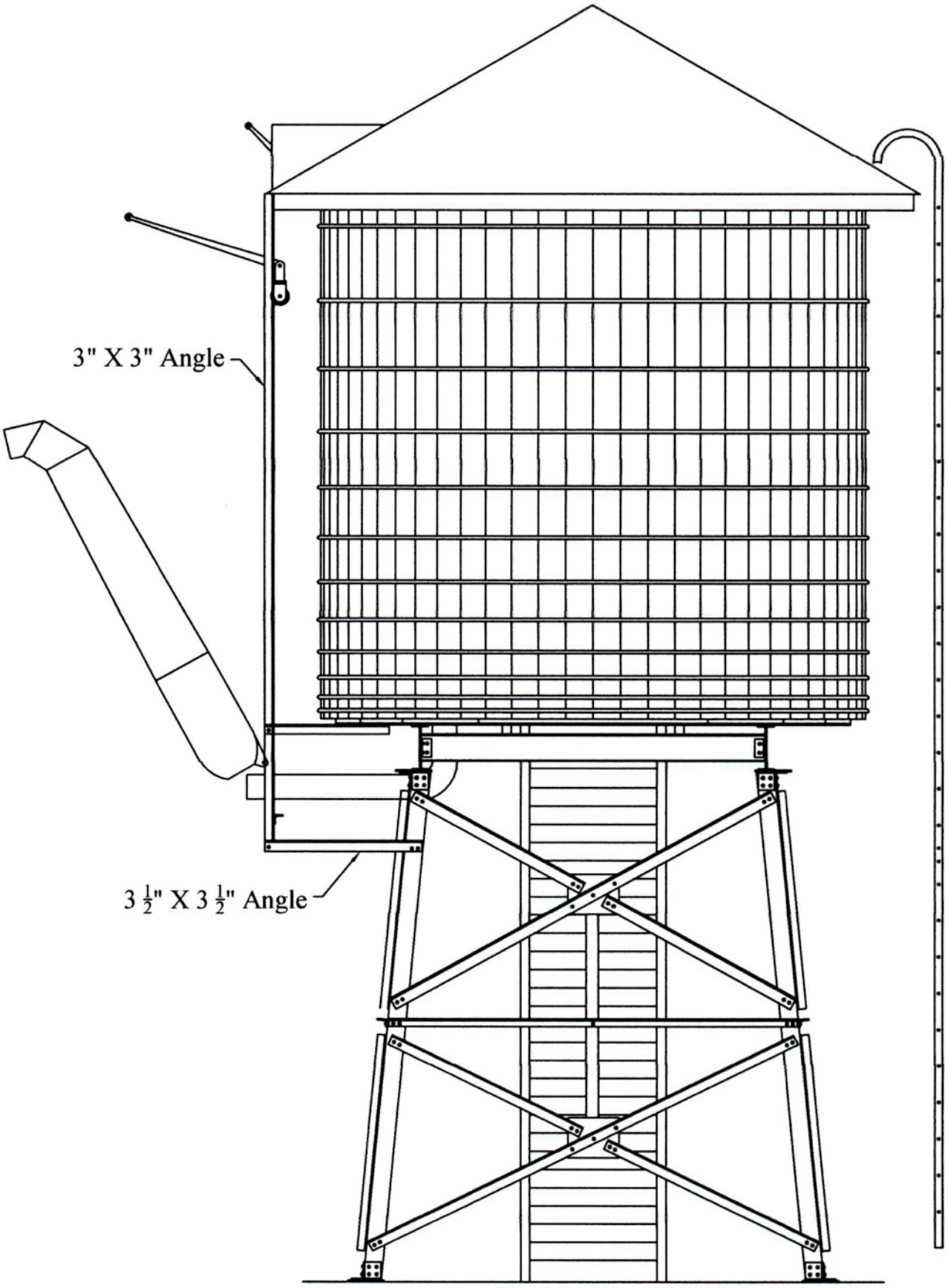
Another view of the water tank at the Mid Continent Museum. The tank was moved here, and when it was reconstructed they did not install the frost box.

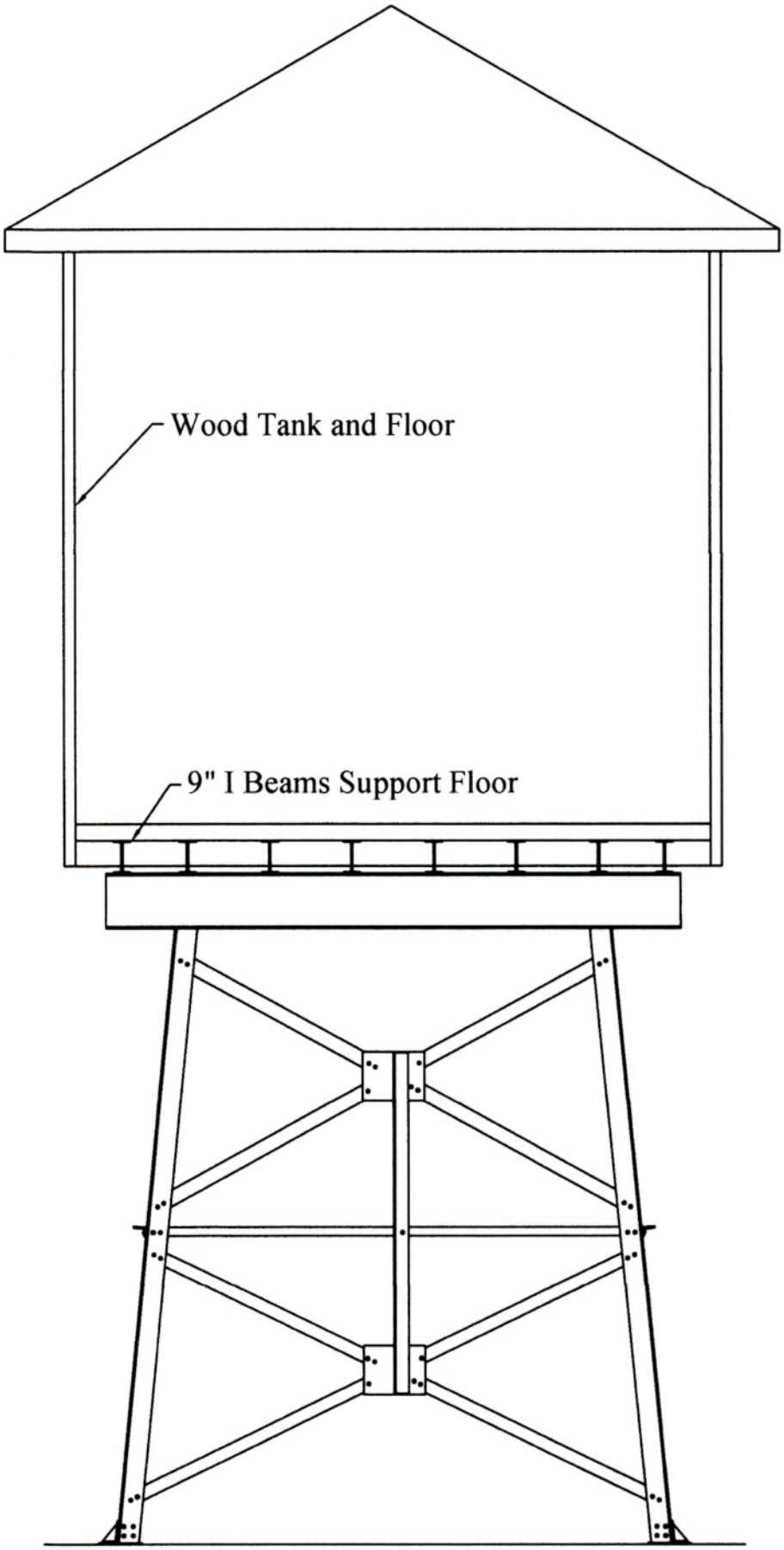
These two photos show the spout support structure. The counter weights have a hole in them and they run on rods. There is a rope from the spout through the pulleys and down to the counter weights. By having the counter weights run on a rod, they don't blow around in the wind. You can see how the floor beams are tucked up under the tank.

This view from below shows the floor beams tucked up under the tank. Note that the closest one to us is sitting on the cross beam and is supported by two small square blocks. When you build your model, set the height of the cross beams so these small blocks will be some convenient size.




5'-2 7/16"
5 5/16"
14'
15' Diameter Tank
1'-3"
14'-0 15/16"
4'


3" X 3" Angle
3 ½" X 3 ½" Angle


Wood Tank and Floor
9" I Beams Support Floor

We have all seen this on our work bench before.

By Jim Kindraka

Decals, decals... All of us use them in some degree for modeling projects. I can't even begin to estimate the number of different decals currently offered in S scale by various manufacturers. But there is always the question, “What do I do with the left over decals?”. Very few model building projects result in a decal sheet being used in its entirety. Sometimes there are only a few odds and ends left, and other times there may be enough to potentially letter another model. What to do... ? Over the years, I've adopted the practice of placing leftover decal sets into 5 x 7 envelopes and labeling then generically: "All NYC Box Cars" or "Rock Island Passenger Car Stuff". It seems like I hardly ever go back to them, but lately that has changed.

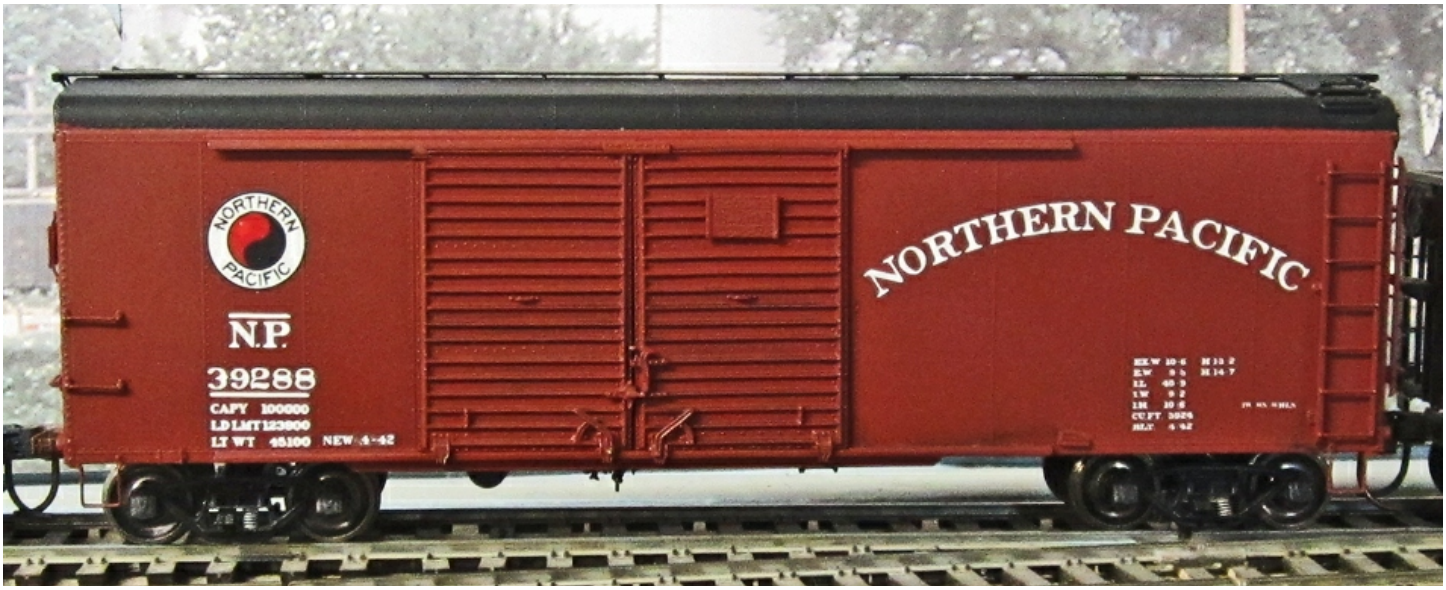
Some years ago, a brass import company, River Raisin Models, imported the unique Pennsylvania Railroad round roof boxcars, both the 40 foot X31 and 50 foot X33 designs. The models were delivered painted, but not lettered, as they carried quite a few different paint and lettering schemes over the years for the Pennsylvania Railroad. At the same time, Des Plaines Hobbies came out with extensive decal sets for both models covering several of those schemes. With the DPH decals, it was easy to letter cars for the Pennsy. The extensive decal sheets also resulted in a great number of leftover pieces.

The stock Pennsylvania Railroad round roof boxcar. This car was made in 40' and 50' versions, and is usually associated with the Pennsylvania Railroad. There were many other railroads that used the car as well, and decals are not always available for those lettering schemes.

I have always liked to model slightly different things. With all the different ready-to-run S scale cars, both brass and plastic, it always seemed more fun to have something slightly different from everybody else – especially at shows or large operating events. With that in mind, I kept a couple of these cars on the side looking for a way to differentiate them.

When those models first appeared, I was a partner in River Raisin Models and wrote an article in the April 1996 issue of the now defunct S/ Sn3 Modeling Guide about the PRR designed round roof cars. There are many other excellent and extensive articles on this design, an older one in the PRR Technical Society magazine and, more recently, an article by Patrick Wider in the Railway Prototype Cyclopedia, Volume 22 and 23. In reviewing those articles on the car's history, a couple of "slightly different" things stood out. A few railroads other than the Pennsylvania purchased those round roof boxcars new, while other railroads ended up with second hand cars. In reviewing various railroad books and color guides over the years, I have discovered prototype photos of those other railroad round roof cars. A couple that caught my eye were 40' boxcars on the Northern Pacific and 50' cars on the DT&I. Looking back at the articles written, the DT&I was one railroad that had round roof cars made brand new in the late 30's from the PRR design; then subsequently selling some of the cars to the NP after World War II. Add to that the fact I thought both paint schemes were good looking; therefore, my sense of "slightly different" was piqued.

Jim was able to make this Detroit Toledo and Ironton version of the Pennsylvania round roof boxcar with parts of decal sets saved from other projects.



This Northern Pacific lettering was made using parts of many other decal sets that Jim had left over from other projects.

Now, getting back to those piles of decals. Neither the DT&I or the NP round roof versions had a direct decal set available in S scale. CDS made a dry transfer set with the NP herald and "eye brow" name, but not the correct capacity or built data. There was even less on the DT&I – all I had to go by were two prototype photos in a Morning Sun Color Guide for that railroad. Digging through the various groups of decal bits and pieces, I was able to piece together the capacity and other needed data for the NP car. Combined with the CDS set, the model pictured was completed. For the DT&I 50 foot cat, I eventually was able to uncover artwork suitable for the DT&I herald. I worked with a friend and a commercial decal manufacturer to resize it, and had a short run of the appropriately sized herald and dimensional data made. The rest of the car's lettering came from individual pieces in the infamous decal pile of used PRR X31 and X33 decals. The only exception were the actual letters "DTI". Those came individually from a Woodland Scenics alphabet set.

My advice to other modelers is if you see something you like that is a bit out of the ordinary, just keep at it. Eventually, you may find or create what you need to make it happen, making the results are well with the wait. Also, keep those old decal pieces, but do your best to organize them in a manner that makes sense to you. They are like that old coffee can full of screws, nuts and bolts in your shop – you just never can tell when you'll find a perfect match to pull out and use.

Concrete Bag Retaining Walls

By Glenn Guerra

Small retaining walls need to be cheap and easy to build. Here are two that fit that bill. They are made with paper sacks of concrete stacked up. They will hold back the fill, and when it rains, the concrete sets up and makes them permanent. Over time, the paper bags weather away and you are left with concrete shapes that look like the bags. These are easy to model with modeling clay that air hardens. They could also be made with a thick mix of water putty. Roll out the clay and flatten the roll. Cut off sections and stack them up. After the sections harden, paint them and then back fill them. These retaining walls have been around for a long time, and I have seen them anywhere there is rain to set the concrete.

These two photos show how the Toledo Peoria and Western made some retaining walls in Illinois with sacks of concrete mix. You can tell by the shape that the bags were stacked up dry, and when it rained, the concrete set.

Making Small Bushes

Notice the small bushes in front of the large trees. Small bushes tend to have a lot of thin stalks. These can be modeled by using a weed called Queen Anne's Lace.

By Glenn Guerra

Trees generally have a large main trunk, but small bushes like cottontails, bridal wreath, and hedges have a lot of small thin stalks. These thin stalks often show. In addition, these bushes tend to grow from a central clump. The thin stalks can be difficult to model; or so I thought. One day some of us were fooling around trying to learn how to make trees. We were using sage brush armatures that I picked up in the desert on a trip. I wanted to see if there was anything in the backyard I could use. I went into the backyard and picked the heads off of some dried up Queen Anne's Lace. This is a weed with bright white flowers in the summer. They grow most places, and can thrive in open fields and poor soil. In the fall, the flower curls up and dries. It ooked like I could make a bush out of them – something that could be used around a house or the margin of a forest.

In S Scale, I was looking for something about 10 to 12 feet tall. Around 1-7/8" to 2-1/4" tall. That seemed like a typical bush size. I picked the heads off and brought them to the work bench. Don't agonize over the looks while you are picking them. They will need to be trimmed anyway. While they are still green, they are flexible and I found it worked better to wait until they were dry. Each head is made of many smaller flowers, and when they are dry, they are easier to trim. I started by trimming with a scissors to a rough shape. After I had the rough shape, I brushed them a little with the tip of a pencil to knock the small flowers out. When they are dry, the flowers will fall right off. To get the last few out, I used a tweezers. Next, I put some angel hair scenery base on them. I draped it on to a rough shape of the bush I wanted. You don't need much of this. If you want the bush to be more open, use very little of it. The idea is to fill in the area between the stalks. When I had that done, I sprayed them with clear finish as a binder. Next, I rolled the bush in foliage crumbs to cover the top. I sprayed it again to help hold the crumbs on. Repeat this a few times if you want thick foliage, and only once if you want thinner foliage. Before the bushes dried, I did any final shaping. If you want a flowering bush, spray it again and sprinkle a few crumbs of whatever color flower you would like.

Queen Anne's Lace makes a nice bush, and the exposed stalks look good. In addition, they are a different shape and type of plant that will look good on your layout. Use them for ornamental bushes around a house or wild bushes in a field or forest edge. Bushes like this are also common around marshes and river banks. These bushes are easy to make and not expensive.

I went out in the back yard and picked some dried flowers from Queen Ann's Lace weeds. Don't worry about the shape or size when you are picking. You will be trimming them later. I found the dried ones worked better than the green ones. The green ones are flexible but that made it more difficult to get all the small flowers and seeds out of the head.

This is what the flower looked like when I started. When dry, they sometimes curl up like this. I thought this would make a good compact bush.

I started by trimming the flower like this. The next step is to dig out the flower heads and seeds in the center. I used a tweezers to pick them out. When the flower is dry like this, these pieces will come loose very easily. At this point, I am also developing the shape of the bush.

Once the flower head is trimmed, the next step is to drape some angel hair on it. Note that the stalks of the flower head are all cut to the same height. I wanted the bush to have a crown to it so I built up the center with the angel hair.

After the angel hair was applied, I sprayed the whole thing with clear finish, and flocked it with green scenery crumbs. I sprayed it again to help bind everything together and shaped it while it was still wet. I like the look, and all the thin stalks make for a different bush on your layout. Compare the bush to my thumb nail, and you will see that it is a small bush.

Thoughts On Soldering

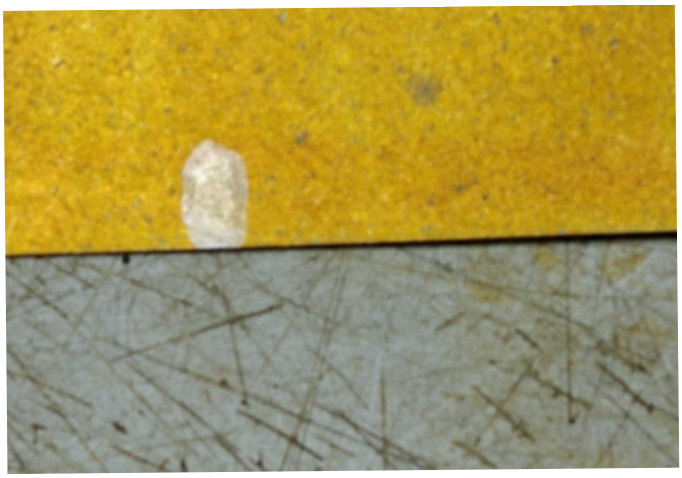
By Glenn Guerra

To build our models and our layouts requires many skills. While we may not think about it, all these skills were learned by us. We learned them so we could use them to make our models. Soldering is one of those skills. Many people stop dead in their tracks at the mention of soldering; thinking that it is some insurmountable task to learn how to do. It's not, and if you take the time to learn more about soldering, you will increase your modeling options. Brass etchings are becoming more common as a way of doing detail items, as well as, whole kits. The brass etchings provide very delicate detail which would not be possible in styrene or wood. Soldering is a good way to attach brass parts together. In addition, changing details on brass models will be easier if you learn more about soldering. Like any other skills, soldering requires some knowledge of the materials and tools. It also requires some practice. This article was prompted by Jim Kindraka after he spent some time with me as we worked on a kit. This is not a how-to type of article, but more of an overview of what solder is, some of the tools used in soldering, and some techniques.

To start, let's talk about solder. There are many different types. When thinking about solder, think of glue. There are many different types of glue, and you learned what they are and which one to use for which application. The most common type of solder for modeling is an alloy of tin and lead. The proportions are generally 60% tin and 40% lead. Sometimes this is referred to as 60/40 solder. This solder melts at around 350 ºF. This is usually what you solder the wires together with on your layout. There are some differences though, and you should be familiar with them. I was having trouble once with the solder joints failing on the railings of caboose models I was making. I started looking around for information about the strength of solder, thinking that I needed a stronger solder. I ran across a website, http://sra-solder.com/ . They sell solder by alloy types and have a lot of information listed. I called them to ask a few questions, and got some good advice. Now, I had some data on different solders and a place to buy them by alloy type. At this point, let me interject, "always know the materials you are working with". When you go to purchase an item things like, "extra strength" "new and improved", "ultimate holding power", and other buzz phrases on the packaging tell you nothing. Read the fine print to see what is in it. So, back to my soldering problem. The guy recommended a tin silver solder that is 96% tin and 4% silver. It worked great. Now, before you give up and think this is some exotic expensive unobtainable item, read on. The stuff is sold under the buzz phrase of "lead free" solder. This is what they use on the copper water pipes in your house because lead solder is outlawed for plumbing use. You can get it any hardware store. You can also get it through Radio Shack in smaller diameters of wire. Read the fine print next time you are in the store. This solder melts at around 450 ºF and does not flow as well as the tin lead solder, but the other advantages make its use worth learning. Besides, the extra strength the higher melting temperature will help when soldering one assembly to another. One last note on solder – there are solders that will melt at temperatures as low as 250 ºF. With these solders, you can solder white metal castings to brass. So, take the time to learn about the alloys of solder and their properties. Next, let's talk about flux.

Read the labels. On the left the Radio Shack solder is 62% tin, 36% lead and 2% silver – basically a tin lead solder. The center roll is 96% tin and 4% silver. The small diameter is ideal for model work. On the right is a jar of acid flux.

When soldering, the brass or nickel silver needs to be clean. If there is a heavy tarnish, you will need to clean the metal by sanding or using a wire brush. You will also need flux. There are different types of flux, and they have different properties. The purpose of the flux is to prevent the formation of oxides on your metal, remove the oxides on your metal, and aid the flow of your solder. The solder will bond to the base metal, in our case brass and nickel silver, but will not bond to metal with oxides on it. If your solder forms little balls and does not flow, your problem is an oxide on the metal. Flux can be mildly active or highly active. What this means is it can eat through an oxide layer (highly active), or it will prevent the formation of oxides (mildly active). The mildly active fluxes are recommended for electrical work because they do not actively attack the oxide. This is desirable since you don't want any corrosion on your electrical connection over time. Most of us are familiar with a mildly active flux called rosin flux. Electrical solder has a rosin flux in the center of the wire. Since most electrical soldering is done on clean metal, the rosin flux works well. Rosin flux also comes in a paste form that you apply with a brush. A draw back to using paste rosin flux on your model is that it leaves a greasy residue on the model which is hard to remove before painting. The active fluxes are things like acids. They will eat through an oxide layer on your metal aiding if the flow of the solder. The most common acid flux for modeling is hydrochloric acid. The flux is made by dissolving zinc in hydrochloric acid until no more zinc will dissolve. This forms zinc chloride, and this is what you want to look for on the label. Many of you are already using this. A common brand for hobby uses is sold by Tix. Nickel silver, which is an alloy of copper, zinc, and tin tends to form an

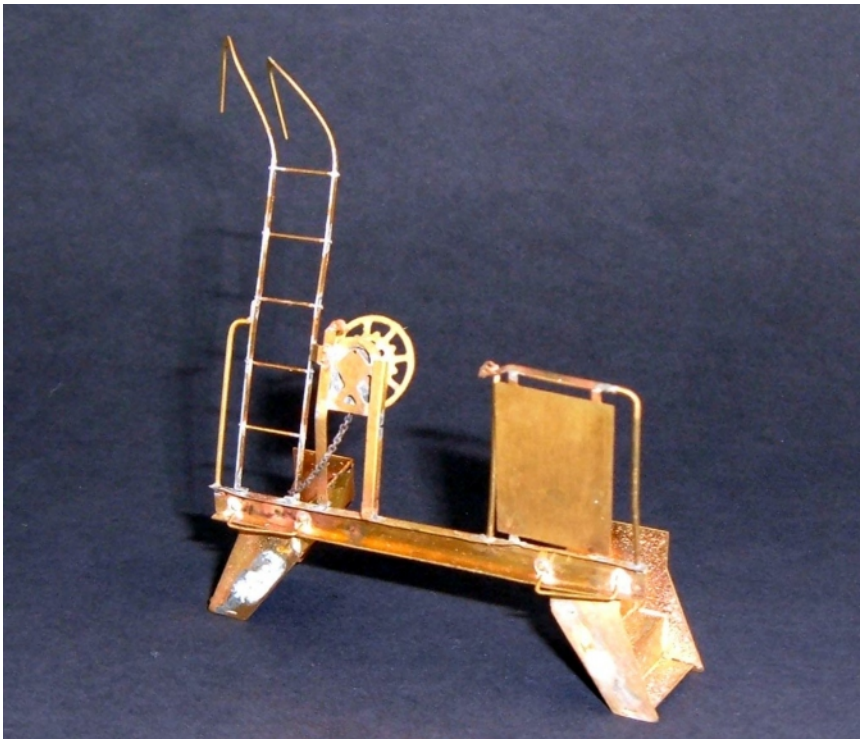


This is a highly tarnished piece of brass. The bright spot is a small drop of zinc chloride flux that I put on the brass. You can see how a highly active flux like this cleans the metal for you.

Here, Jim is going to solder the steps together for his S Scale Big Four caboose kit. One way to control how much solder gets on the part is to pick up a small amount on the tip of the iron like Jim is doing here. If you try to feed the solder into the work, you will end up with too much. This also frees up your other hand to hold something besides the solder. You can see some completed steps under the soldering iron. These are simple projects to learn on. The metal is thin and heats up easily.

Here, Jim is soldering the step together. Since he picked up the solder on the tip of the iron his other hand is free to hold a tool. He is holding the step in place with the tool and wiping the solder on the side of the step. The solder will flow into the tab slots and hold the steps together. The excess solder is sanded off with wet dry sand paper.

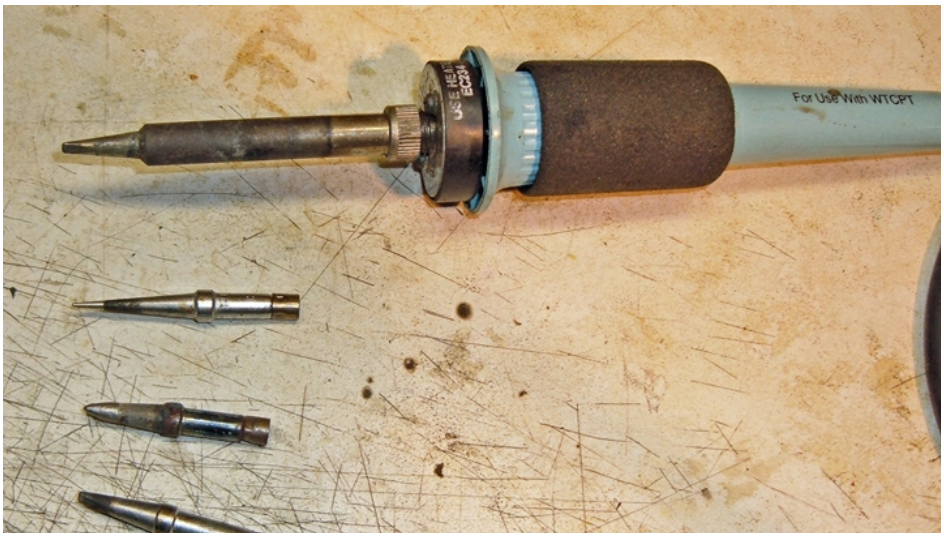
oxide layer that is hard to remove. This is why many people use the Tix flux when soldering wire to their rail. Generally, you do not want to use acid flux around electrical work because the acid will continue to attack the base metals. The good news is the acid flux will work better for you if your base metal has a tarnish on it, and it is easy to wash off. Washing with clean water is all it takes. For this reason, I have gravitated to using acid flux exclusively on my models. If you can't wash the whole model, mix a little baking soda in water and brush it on the solder joint. This will neutralize the acid. Wash it a few more times with clean water, and you should be good to go.



This model fell on the floor and was mangled like this. Notice that none of the solder joints are broken. This was done with 96% tin 4% silver solder. The extra strength is worth the extra effort it takes to work with. I was able to straighten this all out and put it back on the model.

My basic soldering tools. The resistance unit is on the right. The blue soldering station is something most modelers already have. The solder and flux are in the foreground. The cords are the probe, ground lead, and tweezers for the resistance unit.. The large propane torch is used for really big jobs, but not very often. The small butane torch is handy, but I only use it to preheat large chunks of metal.

Next, we need some heat. We talked about most modeling solder melting at 350-450 ºF, and we need some way of heating the metal to this temperature. As we are heating the metal at the location we want to solder, the heat is dissipating away from the location. This, probably more than anything else, leads to frustration when soldering. For example, when soldering a part on our model we are waiting for the joint to get hot enough for our solder to flow, and at the same time, the part next to it falls of. This is where many people throw up their hands and quit. I have had many of these experiences myself, but I wanted to learn how to do this and stuck with it. What I have found is you need a big heat source so the location you are soldering gets hot quickly before the rest of the model gets hot. The most common heat sources are the pencil soldering irons that people use for their wiring. These are the best place to start. You have probably noticed that the tip needs to be clean for them to work. If the tip is dirty, it will not transfer heat to your joint, and you will get nowhere. Most soldering stations have a sponge on them for you to wipe the tip on to clean it. As I mentioned, I use a lot of acid flux. This tends to dry out the tip forming a scale on it. To fix this, I dip the hot tip in the acid flux and then apply a rosin core solder to the tip. This re-coats the tip and "tins" it. Now, it will stay clean for a while so I can go back to my acid flux and tin silver solder. The drawback to the soldering station is the limited heat storage and potential. The tips are small, and when you touch them to the joint, the heat is sucked out of the tip quickly. In addition, most soldering stations are 30 to 60 watts and take some time to reheat. What's happening is that the heat at your joint is dissipating away faster than the iron can put it in. The problem is not your technique, it's not having a big enough iron. However, if you go to a bigger iron, the tips get bigger and they start to get heavy and hard to handle. I used a 1000 watt iron on a metal roof one time and it was a chore to handle. The



The common soldering station has a variety of tips available for it. These different tips may be needed for some applications.

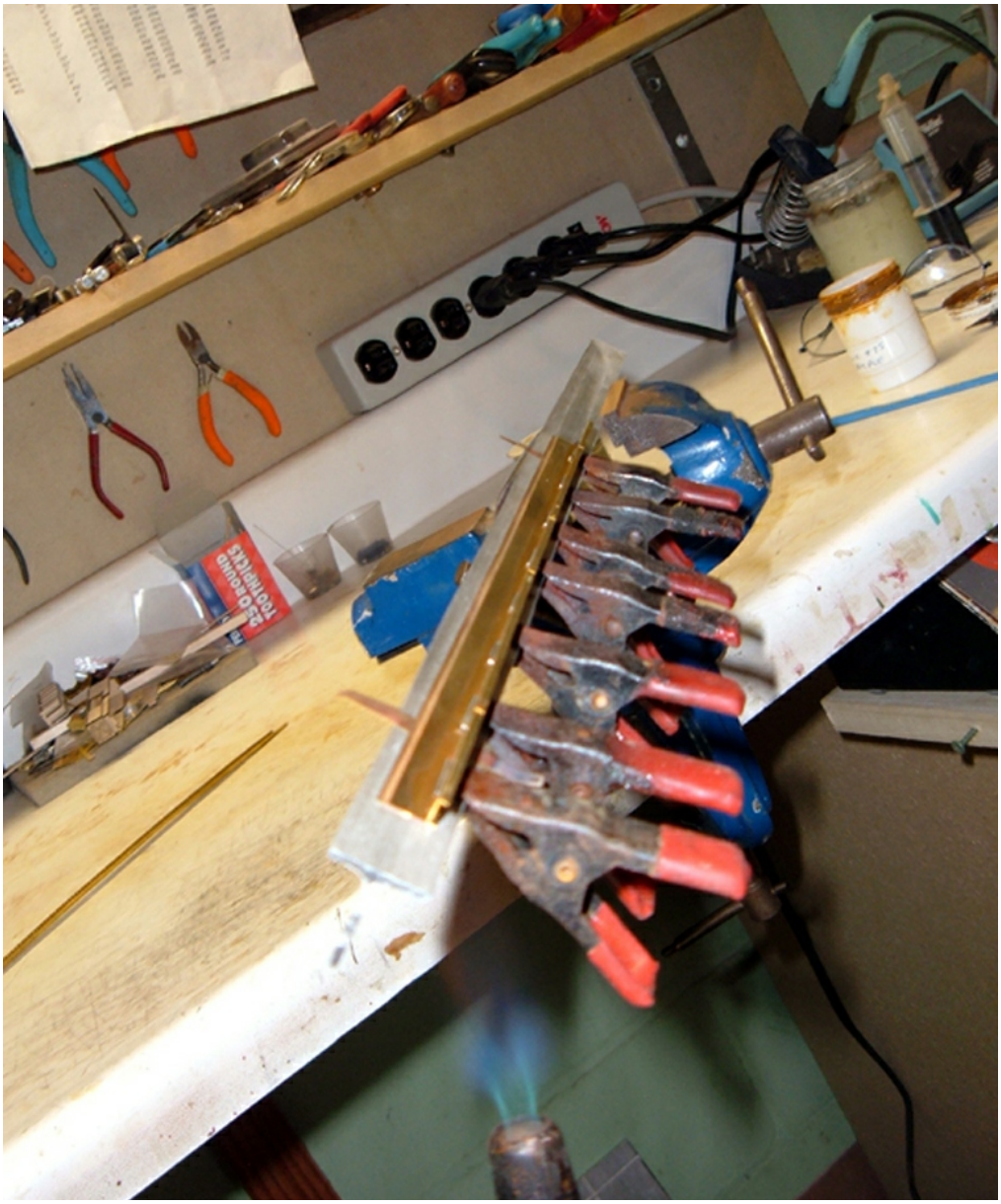
gun type of soldering irons are generally around 100 to 200 watts and heat when you pull the trigger. These work well, but are big and hard to handle.

The solution to the not enough heat problem may be to go to a resistance soldering unit. I bought my first one a few years ago, and use it all the time. I have a 100 watt unit and it works for almost anything I need to do. The way it works is with a "ground" wire is attached to your work by a spring clip. Then a probe made from a carbon rod it touched to your work at the joint. The carbon rod is sharpened like a pencil. Since the resistance of the sharp point is the highest at the point, it gets hot at the point and that heats your work. This heats your work very quickly and makes the solder melt before nearby parts get hot enough to fall off. The other big advantage to the resistance soldering is the electric current is turned on and off with a foot pedal. When you are soldering a joint and the solder melts, release the foot pedal and the current stops heating the joint. You can use the probe to hold the parts together until the joint cools. This is like having an extra hand. With an iron, the joint will stay hot until the iron is removed which usually moves your part and screws up what you were working on. How many times has that happened to you? The 100 watt unit worked fine for the S Scale models I was working on. Recently, I assembled an O Scale bi-level passenger car. I was having trouble since the 100 watt unit could not keep up with the heat dissipation. A friend loaned me his 250 watt unit, and it worked like a charm! Another friend loaned me a 200 watt gun type soldering iron and that worked fine also. The solution to the problem was a larger heat source. Don't be to quick to blame your skills for the lack of success. You may just need a better heat source.

In this photo I am soldering using the resistance unit probe. Note that the ground wire is clamped to the vise. With resistance soldering, all you nee to have is an electric path from the ground to your probe. By grounding the vise, I don't have the ground lead tugging at my model while I rotate the vise. This is a big help when working on delicate models. The heat is generated at the tip of the probe because that is where the resistance is highest.

The last heat source I will mention is torches. I have tried different torches with mixed results. Some people do excellent work with them, and have learned how to work with them. I still have a little trouble with them, but that is me and not the torch. Let's start with the common torches like the propane torch. I have a big one that you would use on plumbing fittings, and a small pencil one made for modeling. They put out a lot of heat energy, heating up your work very fast. The problem I have is they tend to oxidize the metal and the solder will not flow. The way the nozzle on a propane torch works is to combine the propane with air by sucking air into the nozzle as the gas and flame goes out the other end. This tends to make the flame oxygen rich, causing the oxidation of the metal. When you solder copper water pipes, you use a paste flux and that coats the metal and prevents oxidation from occurring. My problem may be that I'm using the wrong flux. I use the torch where I can heat the back side of the metal, and that seems to keep the flame away from the joint so I can get the solder to flow. When doing these kinds of things, the solder will be liquid after the flame is removed, and I will take a wire dipped in acid flux and wipe it on the joint. This will usually make the solder flow into the joint and works

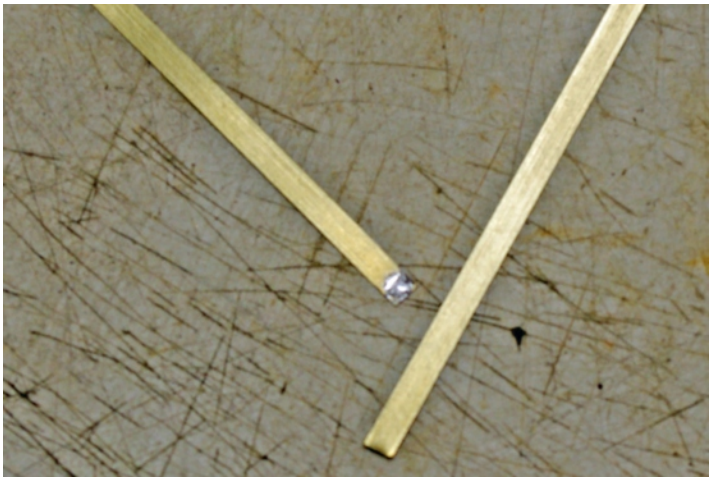
This was an application where I found the torch worked well. I am soldering a center sill to the center sill cap. I put flux in the joint and cut short pieces of solder to lay in the joint. I found when heating this from the top, the oxygen rich flame tarnished the brass and the joint would not work. By heating from the bottom, I minimized that problem. The aluminum "T" acted as a fixture to hold the parts straight and transfer the heat from the flame to the brass. Also, solder will not stick to aluminum so my part would come off. When the solder melted, I removed the flame. Then, I dipped a probe in the acid flux and ran it down the joint. This made the solder flow into the joint. I let it cool and did the other side the same way. When you do the other side, be sure to keep the first side clamped so it will not come apart when the assembly gets hot.



well. I have had some success with using a torch, but it is not my first choice. Another type of torch uses an oxygen source. These torches mix the gas and oxygen in the nozzle and they burn at the tip. The most common is the oxygen acetylene torch. There are very small versions of these that jewelers use and they will put out a flame of only 1/16" long. For most modeling, they are not necessary. They are necessary when you are doing hard silver solder that melts at 1200 ºF. I have a friend who silver soldered some very small parts for the pilot on his scratch built steam locomotive coupler pocket. He did it so he could solder the pocket to the pilot beam with tin lead solder and not have the coupler pocket come apart. You will not need to learn this, or buy the equipment to do this, for most of the soldering you will do. I mention it because someday it may be desirable, and you should be aware that this option is available to you. So, a lot of heat will help you do work that was otherwise was a problem.

Next is technique. This comes with practice. Start with some scraps and see how it goes before you jump right in to a complicated kit. Practice with some thin strips. Try some that are clean and some that are not clean. Observe how the solder is flowing. Then, try a few thicker pieces. You will start to see how heat dissipation is a problem. By now you have probably burned your fingers or scorched the work bench. You will need to learn how to hold things in place while you are soldering them. Initially, I used wood and this works fine if you are using rosin paste flux. When I used my acid flux, it boiled; and when it was boiling off, it brought some of the resins in the wood with it. This created smoke and my joints were getting contaminated. Next, I tried some

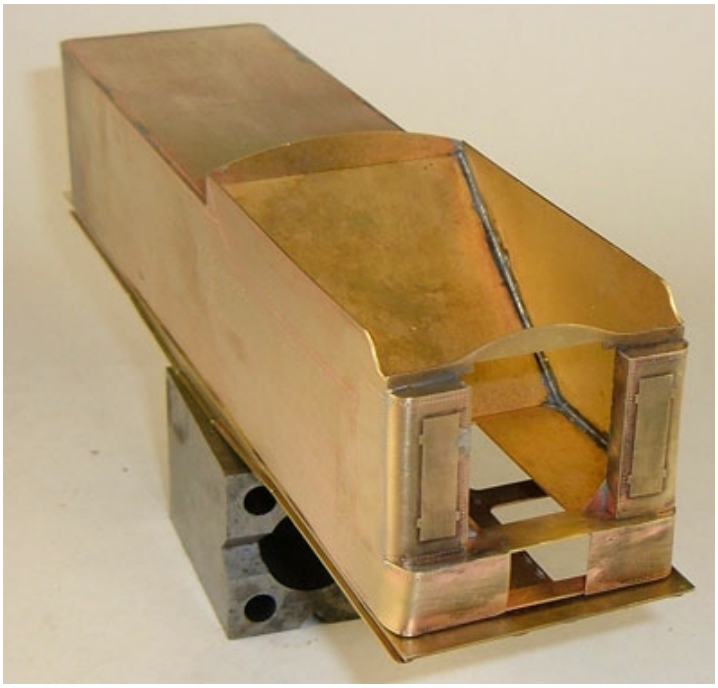
I made these stands for painting my models. I screw them to the bolster of my models through the small hole. The base is made wide enough so the side of the model is off the table and the corner steps are protected. When painting the model, it sits on the stands. Projects like this are good things to practice soldering techniques.



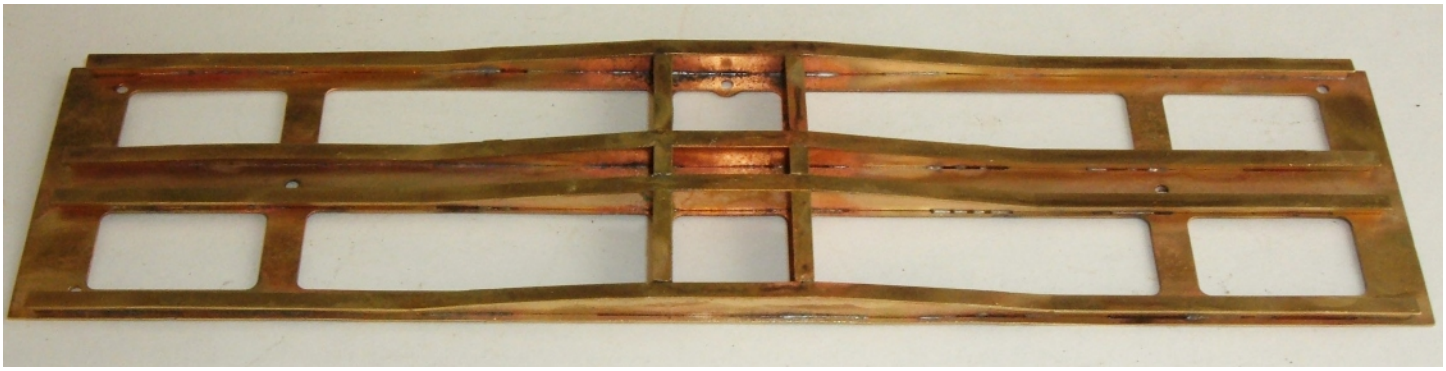
You will see a small dab of solder on one of these strips. This technique is called "tinning" the metal, and will help in controlling how much solder you have in the joint. To finish, place the two strips where you want them and re-heat the joint.

scraps of circuit board material. This is a good insulator, and will not burn or smoke. The problem was that I was using my tin silver solder which melts at 450 ºF. This got me up close to the maximum 700 ºF of the circuit board material, causing the material to melt and I was getting char spots. Modern day circuit boards are made for an epoxy type of material, not Bakelite like they used to be made of. I got to

Stan Bye showed me this nifty little fixture he made from countertop laminate. He made over 150 step units in this fixture to replace the plastic ones on some hopper cars he was detailing. The laminate material will withstand high temperatures and works well for fixtures.



I designed some etchings for a CB&Q 2-10-4 tender for some guys in S Scale. I partially assembled one of the tenders to see how things fit. This was only the third tender I have built, and while far from a contest winning model, I am happy with how it turned out. Mostly, I am happy with what I learned. Each model I build teaches me something new, and each model gets more involved. Take the time to learn about soldering, and you will be able have models that are otherwise not available. You will also have a lot of satisfaction knowing you made the model.



This is part of the frame for the CB&Q 2-10-4 tender.

Here, I am soldering the slope sheet and front assembly into the shell of the CB&Q tender. Note the circuit board material used for insulation and to hold parts in place. When soldering sheet brass like this, the heat will expand the brass and it will move around a lot. To counter this, do small areas at a time. Solder a short section and let it cool. Then, move to the other corner and solder a short section. Keep doing this until it is all soldered together. I did this using a 100 watt resistance unit.

This was a tender etching I designed for a CB&Q 2-10-4 in S Scale for some guys. I wanted to put one together to see how it would work. The green material is printed circuit board that I used for insulation. It also allowed me to clamp the parts in place. You can see the ground wire for the resistance unit clamped to the shell. Since this photo was taken, I have switched to countertop laminate in place of the circuit board material.

thinking about this, and realized that countertop laminate material, commonly called Formica, is Bakelite. I went to the local cabinet shop and got some scraps from them. I use it for a pad to solder on, as well as, insulating pads on clamps. By putting a piece of the countertop laminate between the work and a clamp, you will slow down the heat dissipation. A friend of mine made over 150 stirrup steps in a countertop laminate fixture.

Lastly, spend some time with other modelers making models. I learned a lot from Marty Brown about resistance soldering. I was able to use his equipment, and he showed me some tricks. The other day when Jim came over, he learned from me the same way. Now he has used the equipment along with an idea of what he needs. We had a good day building models. Above all else, learn about the materials and tools you are working with. This will help you solve problems along the way. Start with some simple projects. You will find that being able to solder will open up more modeling options for you.

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