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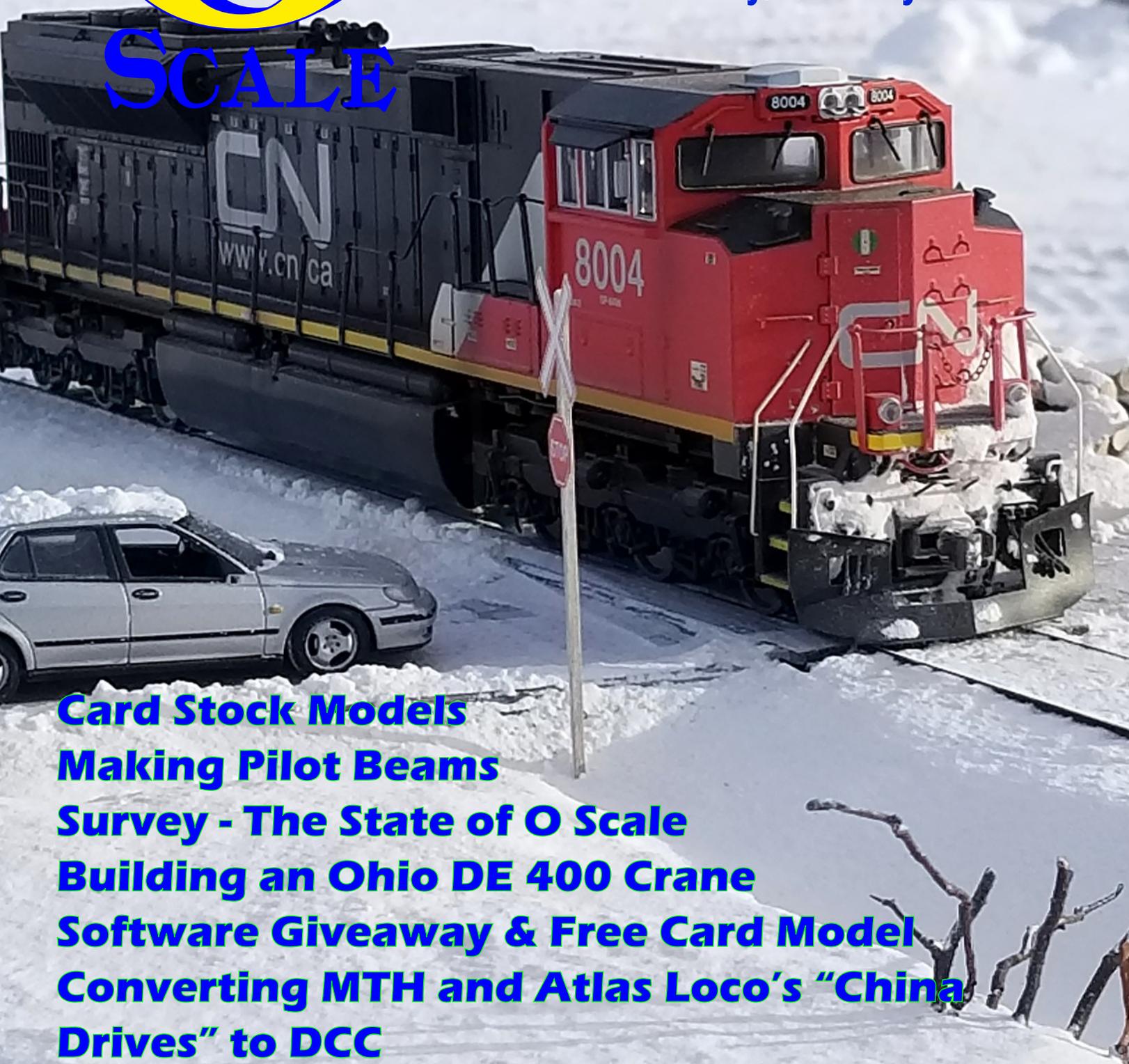
# RESOURCE

NEWS, REVIEWS, INFORMATION TO USE

Volume 6 No. 3

January/February 2019

SCALE



**Card Stock Models**

**Making Pilot Beams**

**Survey - The State of O Scale**

**Building an Ohio DE 400 Crane**

**Software Giveaway & Free Card Model**

**Converting MTH and Atlas Loco's "China  
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**January/February 2019**  
Volume 6 No. 3

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**Amy Dawdy**

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*Managing Editor*  
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*Advertising Manager*  
**Jeb Kriigel**

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

***Front Cover Photo,  
Centerfold and Rear Cover***

*Beautiful Canadian National snow scenes modeled by Serge Lebel. Serge built a new diorama and went outdoors to capture these beautiful images.*

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

# From the Publisher's Desk



Happy New Year Everyone! I am looking forward to it as I am now cancer free, and if you haven't already heard, the Indianapolis show is back on. The hotel came back to us and asked if we were still interested, and of course, we said YES! We've got a new name, [O & S Scale Midwest Show](#), new schedule and a new [website](#), so be sure to check it out. One of the biggest changes this year will be the change from a Friday/Saturday show to a Saturday/Sunday show, September 20-22, 2019.

We hope that the schedule change will increase attendance, continuing to improve the show. As in the past, there is online registration or you can print a form and mail it in. Be sure to get your vendor table reservations in early. We sold out of tables last year, and hope to do the same again this year. We will continue to take attendee registrations online up to 2 days prior to the show and walk-ins are always welcome. We are still finalizing the contract with the hotel, but will make an announcement when the room block is open. We encourage you to stay at the host hotel, the Wyndham Indianapolis West. There are a couple of reasons for this: one is convenience; but the other and reason (as I explained in my November/December 2018 note) has to do with hotel revenue. The amount of space utilized needs to be in proportion to the number of sleeping rooms a group consumes. Do we as the promoter save money on meeting room rental if our room block is sold out? No, the price is the same regardless. However, if our room block is not sold out, there is a penalty clause in the contract. So I encourage you to stay at the host hotel. In order to continue to provide this show in the future, we need to back it up with consumed room nights.

Now that I've had my say (once again) with respect to the above, let's get on to talking about this issue of *The O Scale Resource*. [This issue has a link to an online survey](#) that we hope all our readers will take. The intent of the survey is not to compile personal information, but to provide us with information regarding the state of O Scale and what modelers are looking for. We keep hearing there are no young people entering the hobby, it's just "grey hairs". We know this not to be true, as this magazine continues to attract younger readers and authors. [By completing the survey](#), you will be helping us to determine what the real demographic is along with what O Scale modelers are looking for. We will publish the results in a future issue, and hope that these results will encourage manufacturers, show producers and modelers. So please, take 10 minutes out of your busy schedule to complete the survey.

We've got some great articles in this issue, along with a contest and free download! So, sit back and enjoy reading about working with brass, converting "China drives", card stock modeling and mentoring.

Happy Reading & Happy Modeling,

*Amy Dawdy*

# O Scale Resource

## State of O Scale Survey

As we go to shows around the country and talk with fellow modelers, we hear much of the same. “**The hobby is dying off, look at all the gray hairs in the room, there’s no one new in the hobby...**”

Of course I have been hearing that since I switched to O scale back in the late 1970’s, so I have to assume that those people have passed on and a new batch of older people have taken their place.

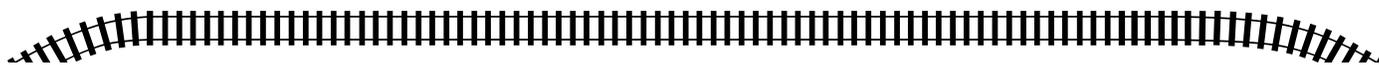
My take is totally different coming from an on-line publishing perspective. Look at many of the authors we have published over the years. Look at our Facebook page and some of the many O scale specific Facebook pages. Many of these people are much younger than you may realize. They are modeling, building, creating 3D models and a lot more. So why the disjoint in the perspective? That’s what we want to find out. Many of these people don’t or can’t get away to shows because of family or career obligations. Many are too busy with other things in their lives at the moment to travel.

This is the first real comprehensive on-line survey dedicated to O scale ever done. We need your input. The survey will take less than 7 to 8 minutes of your time. We don’t want your name or location, we only want your honest answers to help us understand just what the state of O scale is today.

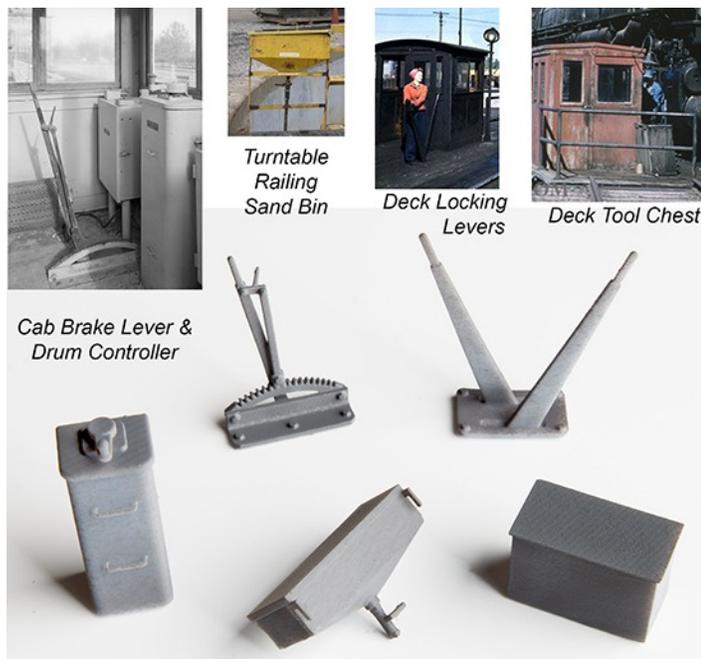
***CLICK HERE  
TO TAKE THE SURVEY***

**Please take the time to complete our survey. In the coming months, we’ll share the results and see just what is going on with the state of O scale.**

# NEWS YOU CAN USE



Alan Zamorski from Millhouse River Studio has a new product for people with their or any turntable.



Millhouse River Studio is now offering a detail parts pack for people to super detail their turntables with these added items. Parts are made with resin and include the following: drum controller and brake lever for inside the operators cab, a set of locking levers for the bridge and a tool chest for the deck and a sand bin that hangs on the turntable railing at the end of the bridge for sanding the rail by the drive wheels.

Available now on their website:

[www.studiozphoto.com/millhouse.html](http://www.studiozphoto.com/millhouse.html) or call him at 716-830-5267. Price is \$25



Ken Browning from WOODLAND® sent us some exciting news. Their The Field System™ has arrived!

The Field System combines everything you need to create realistic meadows, fields and pastures. The Field System includes Static Grass, which is a material that stands upright like individual blades of grass when applied with the Static King™. This material is perfect for adding dimension and texture to a layout while modeling fields and other tall grasses. Static Grass is

available in four lengths and four colors that blend together to replicate all phases of growth.

Model other tall grasses or weeds with Field Grass, and use Briar Patch to create brambles and thickets. Accent highlights and shadows on the layout with Plant Hues, and add Flowers for extra color and interest.

The Field System also includes three new adhesives. These adhesives are specially designed for adhering the landscaping materials in the Field System.



Use The Field System products with easy-to-follow techniques for a simple way to mimic nature with incredible realism. The Field System is fully compatible with other Woodland Scenics products and can be used on new and existing layouts.

[Click the image above or here to see a great video on this new system.](#)



Rusty Rails has two new figures to offer. First we have Nick the guy in his bib overalls will fit into and scene from gas station to railroad worker. He has one hand tucked into his overalls like you see in old photos.

Next figure is Bob, he reminds of that person that is looking over you shoulder and always has a comment. Also we have the main parts you would need to start a blacksmith shop.



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



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

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Atlas announced a new & improved Atlas All Scales Signal System. The Atlas All Scales Signal System features new capabilities across all scales while maintaining backward compatibility for existing users of Atlas signal products. This updated system is based around a universal control board (Atlas part number 70 000 046) suitable for use in all modeling scales (N, HO, O), and retains the same communication cabling as our existing boards. The new products can therefore be easily integrated directly into your current signaling layout without the need to upgrade or change a thing. [Click here to download the Atlas Signal Guide.](#)

---

[Woodland](#) announces their New Built-&-Ready® Structures: O Scale Windmill and Old Windmill.

The well-kept Windmill indicates someone is investing in the property. It features a shiny metal turbine that sits high on a tall wooden tower, and a ladder leads up to the turbine for easy maintenance. Accessories include a round stock tank and a hayrack.

The Old Windmill was once vital to farm operations. Now, it sets the scene in a forgotten rural area or abandoned farm. The blades of the metal turbine are rusted and broken, and the wooden tower is authentically weathered. Unattached details include two oblong stock tanks, a hand pump and a trough.

---

Dave Devita of Key Models is on his way, (December 4, 2018), to Korea to check out the fire situation. FM Models, who has been building all of Key's Diesels and was going to produce the California Zephyr in 2018, burned to the ground in the spring of 2018.

It was a total loss and really left Key Models with a major problem. Dave and I both have a complete data package so that is not a problem. Dave is going to see if FM Models can restart or find another qualified build for the California Zephyr.

Dave is going to also be talking to at least two builders about producing the Union Pacific Big Boy with the same quality as the Cab Forwards produced 2 years ago. The Big Boy will be produced to run on either DC or DCC, just as the Cab Forward was. Please check the [Key Web Site](#) for updates and news. Roger Lewis, for Dave Devita, Key Models

---

Our friends at [Evan Designs](#) are pleased to announce our new O scale Gooseneck lamp. This classic barn lamp is made of metal with a metal shade. It is lit by our chip warm white LED.

The lamp comes ready to install with a separate resistor rectifier for use with 7-19 volt track power. Evan Designs also has a 3 volt option.



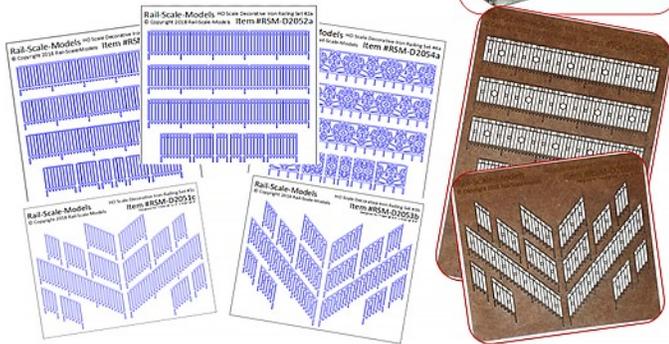
See their Website for all their fine products.



Rail Scale Models has new Fencing available.

Sheets of laser-cut porch/patio decorative railings. 4 decorative styles from which to

Sample Assembly in HO Scale



choose, straight sections, 8"x 8" tread/riser sections, and 11"x8" tread/riser sections. Everything you need to build that patio and staircase railing. Available in HO, S and O scales.

See their Website under the "What's New" section.



Art Fahie from Bar Mills Models has some new kit releases. NEW O-Scale Craftsman Kits... all directly available from Bar Mills Scale Models. Please visit us on the Website for a complete catalog and to view our video clinics!



T.J. Reilly's Available Jan. 2019... \$235. + shipping



Tory Hill Lumber Available early 2019 / \$265. + shipping



Pete's Garage currently available... \$54.95 + shipping

Edward Skuchas from The Berkshire Car Shop, O Scale Model Trolley Specialists, has acquired the O SCALE patterns, molds and CAD models of Imperial Hobby Products of Philadelphia. Included in the material acquired are:

- \*Philadelphia City Division Kawasaki single end light rail vehicle
- \*Philadelphia Red Arrow Division Kawasaki double end light rail vehicle
- \*Philadelphia & Western (now SEPTA Rt. 100 High Speed Line) Brill double end Bullet cars
- \*Kansas City all-electric PCC
- \*Philadelphia all-electric PCC
- \*Air car PCC (good for many cities)
- \*Toronto CLRV light rail vehicle. (See [www.torontotransitmodels.org](http://www.torontotransitmodels.org) for details).
- \*Other patterns for additional PCC cars are under development and will be released soon.

Besides starting production with the patterns, all of the masters will have their detail upgraded and

corrected. Decal sets have been developed so that the enthusiasts can more easily complete the cars.

Now available are the C&LE freight containers or demountable truck bodies which were one of the earliest freight containers used in the United States. A special container flat car has been developed for use on trolley lines. The unique decals have been developed for these special cars.

In addition to car body production, specific floors with detailed underbody details and detailed seats are available. The floors are 3-D printed with seats and handrails on one side and underbody equipment on the other. These are significant advances in model parts generated by the 3-D process.

BCS also offers non-metallic seats for interurban and trolley seats.

The Berkshire Car Shop has continuously provided cars, kits, parts, overhead components, single point turnouts, and decals from ALL manufacturers and importers besides kits and parts manufactured to its own specifications for over 40 years. [Email Ed here](#) or [visit his Website here](#).



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[Roger Lewis from Wasatch Model Company](#) is trying to get reservations to rerun his beautiful trucks. This may well be the last time. If you've already reserved trucks, please re-reserve

All trucks have 0.145 NMRA Wheel Sets with Ball Bearing Journals: Ordering the Following Trucks which are out of Stock 61-UDO Trucks 2410 Heavyweight Trucks 242 Heavyweight Trucks 41-CUDO 41-N. If you want any of these trucks please reserve them **NOW!** I understand that they are expensive, I'm paying over 3 times what these trucks cost back in 1992-1993 And the cost continues to increase because of rising costs in Korea. Painting cost doubled from last year because of new restrictions on painters by the Korea EPA. I'm not increasing my price.

61 UDO Trucks: Used by the Union Pacific on Modern Baggage and RPO cars Also used by a few other Railroads on special cars. The Truck of Choice now for Business Cars. These trucks have been out of

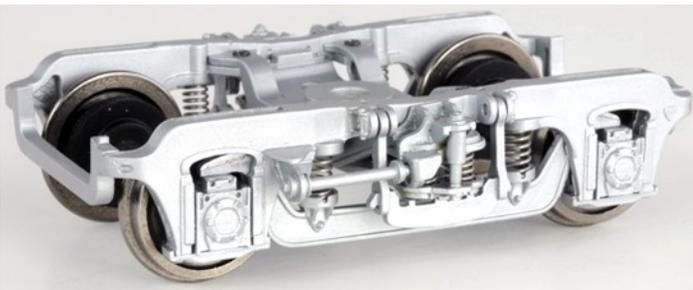
stock for years, OCS Micro Casting will build 10 pair for me as a favor.



2410 Heavyweight Trucks \$149.00 These trucks are built to go under PSC Heavyweight Passenger Cars. You will not believe how well these trucks roll!



This highly detailed model of the Pullman Type 2410 passenger truck was made in Korea by OCS Casting using supplied Pullman drawings. It is fully equalized, runs on ball bearings.



41-CUDO Passenger Car Trucks Used by the UP and ATSF on most of their Lightweight Passenger Cars Out of Stock - I will not be building any more unless there are enough reservations.

Go to [www.wasatchmodels.com](http://www.wasatchmodels.com) for details. Again, this may be your last shot at these beautiful trucks.

Richard Segal from [Right On Track Models](http://Right On Track Models), builders of scale laser cut wood model kits in O scale, launches their 18th new model structure kits in O scale this month.

Model O-18 Enterprise Stove and Range Company. Lots of detail with ample dock space for trucks and rail. These kits represent a typical supplier structure with a compact footprint of 12"x12". These kits features precision cut MDF, highly detailed



styrene windows and doors as well as printed parts. Complemented with easy to follow step by step color Instructions.

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

[Rusty Rails](#) has some new O scale castings. This month they have a new small tow truck built and ready to place on your layout. These kind of small tow trucks were at every gas station or garage to get your car to the mechanic. This is what you did before AAA existed.



We also will be offering the crane for the tow truck by itself for a limited time. This crane is designed to be added to any die cast pickup after you remove the bed.

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



Bill Yancey from Modern Era O Scale will have their new modern era FMC 50'6" boxcar kits ready for the March Meet. These are 4 different versions of the same car. Included brake detail, custom injection molded details, and etched parts. Double door cars have a choice for Youngstown or Superior.



We think that this is something O Scale (and potential O scalers) are needing. Kits will be available to order online after the show.

[See his Website for more information on these fine new cars.](#)

Bob Spaulding of Altoona Model Works is pleased to announce that the manufacturing of casting parts for their ABC Brewery project is underway.

The Brewery model is highly detailed and features a complex of 3 main buildings including a distillery, a bottling & warehouse, and an administration office. Some of the many unique features include a 35" trackside freight dock and a 19" tall smoke stack. Lots of options are possible and the buildings can also be purchased separately.

Building can be purchased separately.

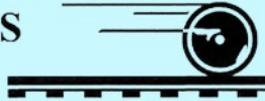


|                         |        |
|-------------------------|--------|
| Distillery Price        | 325.00 |
| Bottling & Warehouse    | 265.00 |
| Office                  | 385.00 |
| Square Smoke Stack      | 75.00  |
| Base Custom Made Quote. |        |

Pre-orders and deposits are now being taken. The finished model will be displayed at Chicago in March and kits will be available for sale by mid Summer.

[More information to be posted to their website soon.](#)

AMERICAN SCALE  
MODELS



# Purchases and Sales of Scale Model Trains

*Estate and collection liquidations*

*Consignment Sales*

*Purchases of new, used, and unwanted equipment*

References gladly furnished.

Bill Davis, P.O. Box 1011, Oconomowoc, WI 53066 • (262) 560-1619 • bdavis148@aol.com  
Visit my website at [americanscalemodels.com](http://americanscalemodels.com) for models, detail parts, trucks, and more!

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THE CALIFORNIA *Zephyr*



[keymodels.net](http://keymodels.net)

# Key Models

March/April 2019



Tall dome, wide frame

# CONOCO

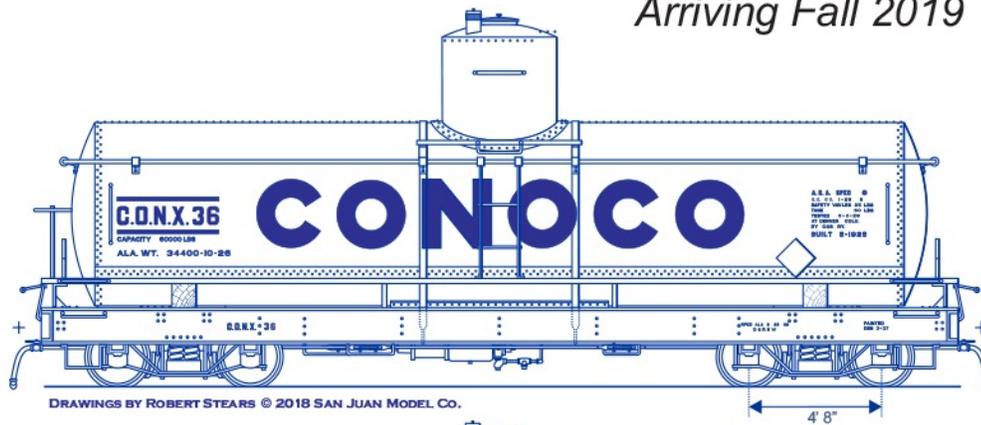
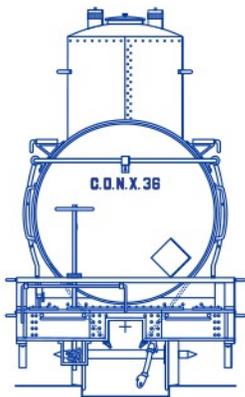
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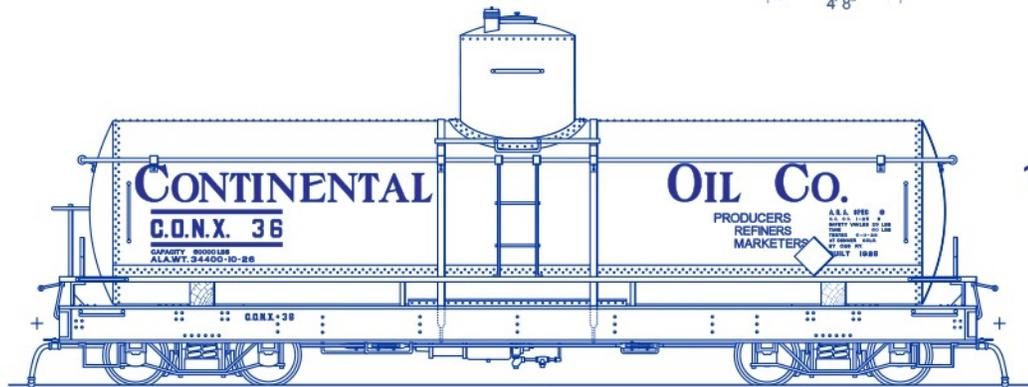
Doug@sanjuanmodelco.com



1930's - 1946

Both silver tank with green lettering and black tank with white lettering versions available.

DRAWINGS BY ROBERT STEARS © 2018 SAN JUAN MODEL CO.

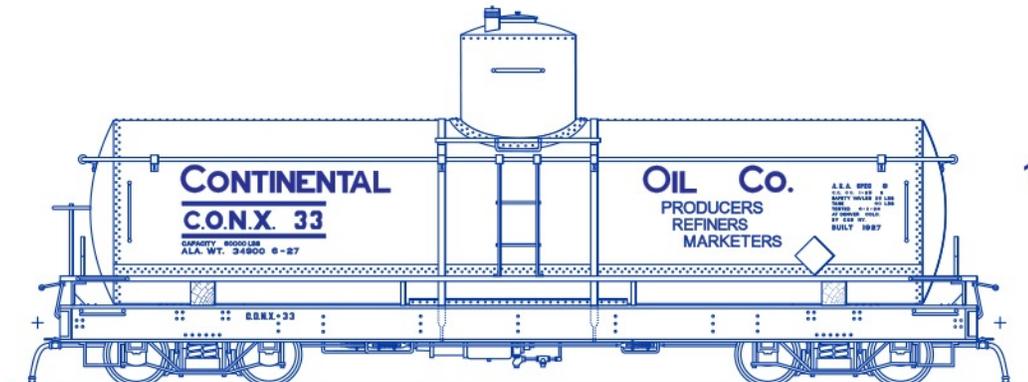


1926 - 1930's

Tank and frame painted black with white lettering



RGS



1926 - 1930's

Tank and frame painted black with white lettering

★ Smoothly rolling ready to run styrene models with metal wheel sets and couplers installed.

★ Factory painted with numerous car numbers available for each lettering style.

★ As operated on the RGS, D&RGW and C&S narrow gauge lines from 1926 to 1945.

RESERVE YOURS AT [www.sanjuanmodelco.com](http://www.sanjuanmodelco.com)

# Cleveland 2-Rail O Scale Train Meet



Again this past November, Amy and I traveled to Cleveland for the Cleveland 2-Rail O Scale Train Meet. It was a new location, and we enjoyed the show. Thanks again to Sam Shumaker for putting on a great show. See you next year Saturday, November 2<sup>nd</sup>.

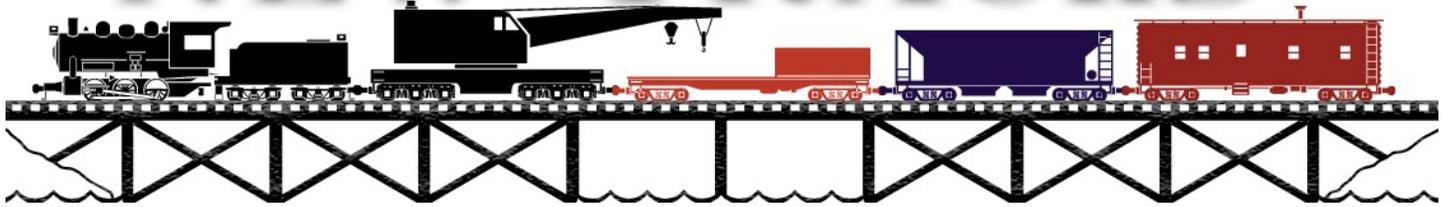








# NEW TRACKS



Mentor Definition: A Trusted Counselor or Guide

By Contributing Editor Jim Kellow MMR

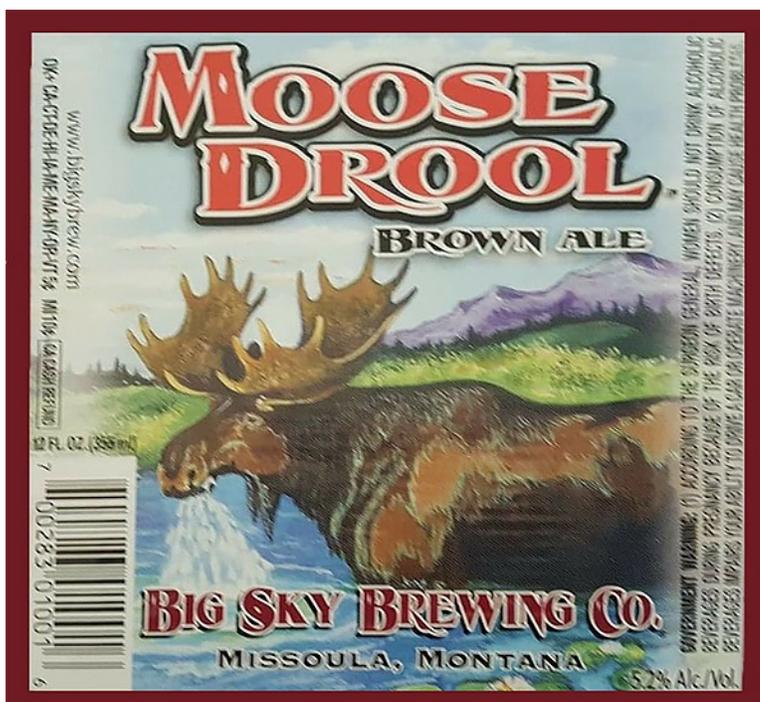
## Card Modeling

**A surprise free card model... A contest for three winners of a free computer program... Plus card modeling mentors**

Question 1. Anyone out there want a card manufacturer to offer model railroad car sides like used to be published in the NMRA Bulletin? Check out this photo:



*From Stephen Karlson's O scale layout: Picture is current, cars are throwbacks, the closest four cars are forty-year-plus old cardboard sides from the NMRA Bulletin, on home-built wood bodies from about 25 years ago. I'm slowly getting the super-details on the nearest two cars, the other three are in regular service.*



I know I want to get them back because after seeing this photo, I built some of them recently that I have had for many many years, and had a lot of fun doing it. If any card manufacturer or the NMRA is interested, please email me at [JimKellow@oscaleresource.com](mailto:JimKellow@oscaleresource.com) and let's see what we can make happen.

Or how about this artwork that John Mann posted on a Facebook group. Maybe use it on a card model box car?

Well what do you think?

Question 2:

Are model railroaders building card models? Yes, take a look and read on.



Jim Gore  
MMR IMG 8356  
Miss Sue's  
(named after my wife) has a complete interior as well as many exterior details. Signs were computer generated as were the walls of the interior dining area. This is a kit modification of Smitty's in the Clever Models catalog. Jim Gore Photo.



*Rudy's Printing, a Clever Model by David Rarig.*

David M Mason quote: “Probably the best company out there is Clever Models. Numerous buildings and in different scales and also various texture sheets, plus he has free ones to try out. Just a download away. [www.clevermodels.net](http://www.clevermodels.net)”.

For more information on building card and Clever Models see the David Rariz and Jim Gore MMR mentor profiles below.

“Card and paper have been modeling tools since Noah built his first layout on the ark. We now have new technology to use this medium more effectively.” I forget who sent me this comment.

Jim Gore MMR wrote similar beliefs in a “Card-stock Craftsman Structures” article published in Sn3 Modeler magazine a few years ago. Jim wrote: “ Just by the title, you might think that I am telling you to consider card-stock as something other than a placeholder on your layout. Indeed, that is exactly what I am suggesting. With new skills and new materials, you can create structures (from kit or kitbashed or scratchbuilt) from card-stock that will rival any craftsman model kit that you have purchased. All it requires is getting used to a few new techniques, a little different planning, and the “willingness to suspend disbelief.”

Jim Gore continued: “Card-stock modeling is nothing new in model railroading. European modelers, especially, have created a wealth of kits and some incredible paper and card kits for quite a few decades. As a matter of fact, John Allen’s famous engine house at Gorre (built in about 1948), was built entirely of card-stock and it can only be described, even by today’s standards, as nothing but a foreground structure.” Read more about Jim Gore MMR in his mentor profile below.

I purchased the Clever model kit of John’s Engine House kit years ago and it has been awaiting building on my workbench for way too long. I finally completed it this afternoon. Great model and fun to build. Now for details and to find a location for it.

After hearing from several other modelers who suggested I write one of my “**New Tracks**” articles about card and paper modeling, or as I will refer to it from here on as card modeling, (the best I can determine, this is the term used worldwide), I decided to look into what is going on in this modeling medium.



*Jim Kellow's build of Clever model kit  
"John's Engine House".*



This morning I posted to several Facebook model card building and model railroad groups hoping to identify card model manufacturers, who either produce card models or software that can be used to produce card models, and modelers who are skilled in building card models. Several of the Facebook groups I joined are Model Rail Buildings-mostly card and paper, Papermodelers.com, Cardmodel and Scalesscenes Modelers Group.

The response was more than I expected, and frankly confirmed my belief that interest in building card models is definitely "alive and well" among all modeling scales. Thanks to all

of you for your information and interest. I have more information than I can use in one article, so rest assured you will hear more about card modeling in some of my future "New Tracks" articles.

Based on my contact with Facebook groups, I believe there is a growing interest among modelers to build card models for their railways or railroads. Modelers give various reasons for their interest in card modeling: less modeling cost, easy to correct a mistake or problem, just print new page and start building again, minimal skills required to start, fewer tools needed to build, and overall; it just seems easier than other mediums to construct a model that looks great on their Railway or railroad.

I also found out there are card manufacturers in various parts of the world, including not only the US and the UK, but Poland, Russia, Japan, Germany, Spain, and Ireland, to name some I have been told about. In addition, there are software programs that allow a modeler to design, and print their own card models or building materials such as sheets of bricks, stonework, etc. to use to build specialized card models. I found modelers in N, HO, S, and O Scale who are building with card. I found National Model Railroad Association MMR's who build card models, including, Jim Gore, and now yours truly.

I even found a card model of a Titanic deck chair on Anthony Stevens' Weblog. More about his site later. I could not resist the deck chair so I used the design to build one out of brass (old habits die hard) and another out of card. This was really "New Tracks" for me, and I must say much fun. By the way, the "Sailor" in the chair is also a card model. More about this Spanish card manufacturer's paper figures, which can be made to take any position needed, later. Oh, and how about this Narrow Gauge Australian Sugar cane Locomotive? Again I used the pattern to build it in paper and in brass. Yes, more about this manufacturer later.



Based on the responses I got from my post, I am writing several articles about card modeling. I truly believe card building, by model railway and model railroad modelers, is going to play a more significant role in our future model building than I would have thought possible not that long ago.

A perfect example is my experience with the deck chair and locomotive. Why will I continue to build in brass, basswood, or plastic if I can build the model that suits my purpose cheaper in card? For me, and for some, if not most of you, I believe we may first check out available card models before deciding what building material we will use. Even if you do not build the model in card, I think you will find the patterns are great to use with other building materials as I have done.

In this article, I want to introduce a new card manufacturer, a software manufacturer, and some skilled card modelers who can help you get started in this medium, as well as, develop, improve, and diversify your card building skills and artistic abilities.

Now for a surprise to give all of you a free taste of card modeling from a new and upcoming manufacturer I found. While this surprise is a first promotional effort for me and "New Tracks", I hope it is not the last. Most importantly, I hope you have fun building the model and benefit from the skills you will gain.

### A New Card Manufacturer

Team Track Models is located in Oregon and owned by John and Aaron Gibbens. They have been in business for about a year. Thank You, Daniel John Beresford, for telling me about [Team Track Models](#). When I looked at the [Company's Website](#), I immediately saw that what the company was saying about why modelers should consider card building were the same reasons I was hearing from various modelers. So I called and

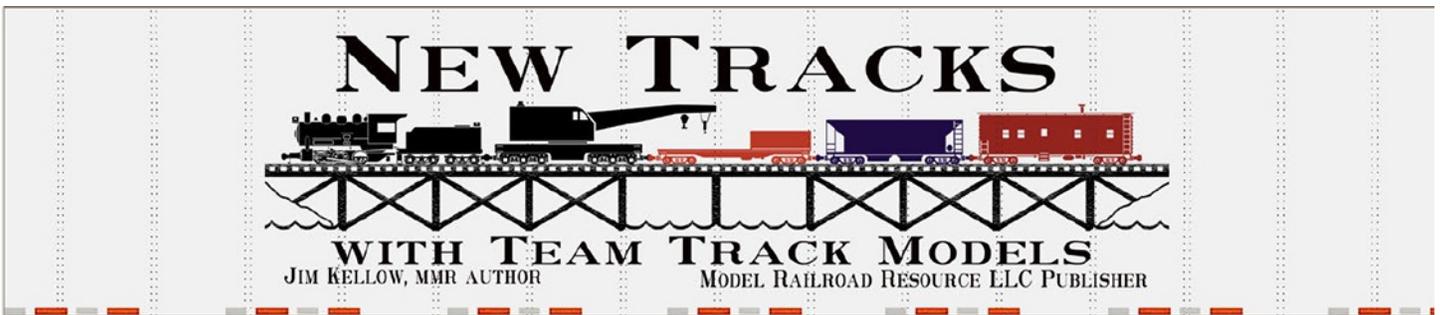


*John Gibbons and Aaron Gibbons of Team Track Models*

talked to John. He was completely forthcoming about their company, and their goals for the future.

First, John told me they currently only offer semi-trailers for a big rig truck and containers in S and O Scale, but have plans to include the truck for the big rig trailer and various structures as soon as he completes designs and his models are test built by skilled modelers. At this point in time, he wants modelers in S and O Scale to contact him with what structures they would like to see offered and any other suggestions they may have for improving his models in the future.

Now for the surprise I promised! John and I discussed how my readers could experience building one of his O card scale models for free. He thought about it for a minute and said how about I offer one of my O Scale big rig truck trailers with a special signage on the sides just for your article. Oh John, you just made my day. Here is the signage we agreed on, I hope you like it. John is also going to offer each Modeler who gets the “**New Tracks**” trailer a free big rig truck that will go with the trailer as soon as the design for the truck is complete.

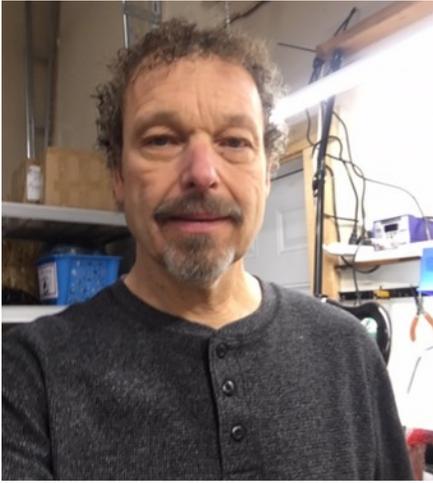


**CLICK HERE TO RECIEVE YOUR  
DOWN LOAD INSTRUCTIONS**

Any reader of this article can order the special “**New Tracks**” big rig trailer in O Scale, within three weeks of the date this article is published in the relevant publication, and download the card model for free by clicking above. (The S scale version will be coming soon in The S Scale Resource Magazine.) I hope a lot of you download this model, have a lot of fun building it, and use it on your model Railway or railroad. I know I am looking forward to getting the model. After the three weeks, this model with the “**New Tracks**” signage will not be available or offered again. Make sure you and your friends do not miss out on this very special offer by Team Track Models, and “**New Tracks**” presented only in these two magazines. Thank you Amy & Dan Dawdy for publishing this offer in your two magazines.

John, thank you and your Company, Team Track Models, for your interest and help with my mentoring project. I hope O and S Scale modelers respond to your request for comments and suggestions for your models, and that you develop many other card model products.

If you like what I am doing with this modeling project and its special signage, and want to see other manufacturers provide special logos or signage on other models in my articles, please let me know at [JimKellow@oscaleresource.com](mailto:JimKellow@oscaleresource.com). I think we could have some fun with this concept and hope you agree. I look forward to hearing from you. This could take all of us down some. “**New Tracks**”



## Software Manufacturer

Evan Design

The Evan Design Model Builder software was designed by David Jamison. I first heard about this software firm from several modelers who recommended it in their replies to my Facebook post including Sam Matthews. I emailed Dave, and he could not have been more enthusiastic in wanting to be profiled in my article. I believe Dave understands the modeling needs of card modelers and has done everything he can to make his software programs easy to use while producing the results that the modeler wants to create.

Dave told me: "When developing Model Builder, I wanted to make a program that was easy to use by all scale model builders, even novice computer users. I found that most modeling software has a steep learning curve which can be a turn-off to many home users. Feedback that I have received from users shows that I have accomplished this goal. When Model Builder came out, I also made our existing Brickyard software work as a plug-in to Model Builder. Brickyard allows Model Builder users to use additional brick and stone textures within Model Builder when creating their designs. Shortly after its introduction, Model Builder became our most popular program. Users wanted me to make my other existing software plug into Model Builder. Since then, I have made our Advertising Software, Stained Glass Software and parts of the Sign Creator software plug into Model Builder, thus allowing users to incorporate those textures in their designs."

"After Model Builder was out a year or so, some people who had heard about what others made with Model Builder would tell me, "I am interested in Model Builder, but I have little or no modeling experience so I would not know where to start."

"To support this type of potential customer we created a file-sharing website that specifically supports Model Builder Customers. Currently, you can find a few hundred project files from the sharing file that you can open up with Model Builder. After opening a file, you can print as is or customize it by swapping out windows, doors, trim etc. See <https://www.evandesignsmodelbuilder.com/>"

"In the file-sharing site, modelers do not have to limit their search to their scale as Model Builder will re-scale a project upon request."

"Besides the shared files provided by customers, you will also find a video tutorial section to support new users understanding of getting the most out of the software."

"Model Builder has over 500 building textures that you can use to create your models along with various tools that are designed specifically for scale modeling. Many customers also supplement Model Builder by importing pictures that they take with their camera of unique windows or doors of a building that they are modeling. Another great source of additional images to import into a Model Builder design is the Internet where one can find a vast variety of images based on their search criteria."

Dave also said: "I have found that Model Builder is a tool that many modelers use throughout their participation in the hobby. Every week I hear from Model Builder users that have had the program for 5 or 10 years. They may have had a computer crash and need a new download for their new computer or misplaced their CD after moving and need to get up and running again. I am always glad to help."

I suggested to Dave that he offer a contest email drawing like I have done with other model manufacturers in my mentor series. He agreed, but expanded what I normally do in the drawings. I am very pleased to be able to announce Evan Designs contest in this article will have three winners who will receive one of "Evan

Designs” software programs. 1) Model Builder, 2) The Advertiser, and 3) Brickyard. If a modeler has Model Builder or one of the other programs Dave will provide something of equal value.

This contest will enable the lucky modelers to design their own card models. I wish all of you luck in the contest and much success in your card modeling with Dave’s computer programs. I know the winners are going to have a great time experimenting with the programs and go down some “**New Tracks**” with Dave.



I just got the Evan Designs Model Builder, Brickwork and Advertiser programs up and running on my laptop, and am having a great time using it. My first effort was to use it to get some wood to complete a Queensland, Australia house. It worked great. I plan to get both the windows program and the stained glass program so I can complete my next card project. I talked to Dave, and he was able to give me some advice on my project, as well as, how to scale other card projects to my scale. Great support and “Mentoring” from Dave.

Thanks Dave for your interest in my project, I really look forward to see the three winners’ completed Evan Designs models and hear their and your comments about their model building experience with the Evans Design software programs. Their models and comments by Dave and the modelers will be included in a future “**New Tracks**” article.

### **Individuals Who Can be Your Card Mentor**

One modeler who replied to my post said: “card modeling is a separate art form”. If you need help modeling in card building, either to just get started, or improve your skills and techniques, then a mentor can be very important to you. Some very skilled and knowledgeable card modelers are profiled below. Please say hello and take advantage of their skills, knowledge, and expertise to improve your card modeling down these “**New Tracks**”.

#### **Jim Gore MMR**

My History in Paper Modeling:

Paper modeling has been around for well over 150 years. Of course, if you want to go back far enough, the Japanese and Chinese artisans in the 17th century were building various art-works out of paper. The British produced paper model kits of various London landmarks in the 19th century; the most famous of which was constructed and modified by Joseph Merrick (The Elephant Man) in the 1870’s. It is still on display at a museum in Longond. As far as model railroading, the British and Australians have been using paper models quite extensively over the past 100 years. I think that most of us will still remember Suydam kits which were made of embossed cardboard. Early HO kits had cardboard embossed sides (Globe, for example, prior to and during World War II).

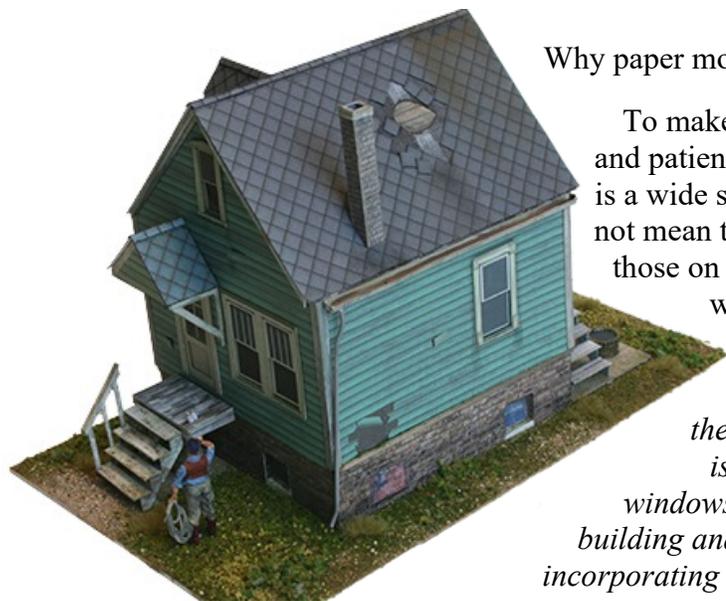
Did I have a mentor or just trial and error?

It was both through trial and error, as well as a mentor. I started paper modeling by purchasing a Paper Creek (no longer in business) model. They were laser-cut with small frets to hold them on the carrier sheets. The extensive instructions were great and taught me about layering to give the model dimensionality. That’s the real essence of paper modeling, adding layers of paper parts to give a true 3D dimension to the model. I then turned to Clever models and, since I model in On30, chose a kit. It arrived in the mail with about 8 sheets of



*The alley side of the Union Hotel, with drain-pipe and stair arrangements all as described by Harry Brunk. Even the gutters are cardstock with plastic downspouts. Again, details make the difference. Jim Gore Photo.*

parts that had to be hand-cut, but there were no assembly instructions. It really was a “wing-it” kit! Of course, I screwed it up and ruined a couple of parts in the process, and had no way to replace them. So, I sent a rather nasty letter to Clever Models and told them what I thought of their models. I received a note back from Thom Miecznikowski (along with his brother, Dave) owner and designer for Clever Models (at that time, it was called Clever Brothers). He offered me a refund, but I said, “no ... teach me how to build the models”. So, by email, for about two weeks, Thom and Dave talked me through building a Clever Models kit which is, in my estimation a craftsman kit. A year later, Thom introduced John Allen’s engine house at Gorre. However, they decided not to sell it, because it would have been over 40 pages and cost over \$100. So, I begged and pleaded with them to be allowed to try the model and Thom agreed, if I would photo document construction. After receiving the files by email, it took me a good 3 or 4 months (and a whole lot of #11 blades) to complete the model. I was pleased that Thom and Dave liked my rendering and, ultimately, that model became a cover story for O Scale Modeling. Perhaps because of this success, Clever Models decided to sell all their kits as downloadable files. Once you bought the kit (for somewhere around \$20), it was yours forever and you could build as many versions as you wanted. That’s how the models are produced today. Clever Models produce all of their kits in 1/4” scale, the engineer and architects choice. So, if you model in HO, you must tell your printer to print each page in 48/87 proportions, or in N scale, 48/160 proportions.



### Why paper modeling?

To make a paper model look realistic is a challenge to skills and patience. The great advantage, at least with Clever Models, is a wide selection of kits, and can be easily kitbashed. This does not mean to say that I eschew craftsman kits; there are plenty of those on my layout as well. When I see a cardstock model that will fit the space where a craftsman kit won’t, I will use it.

*This is a company house from Clever Models. It shows the effectiveness of layering of cardstock “parts”. The roof is three layers, the walls of the house are four layers, the windows are six layers. This also demonstrates my technique of building and detailing the structure on a sheet of thick plastic, then incorporating into the layout.*

*Jim Gore Photo.*



*This is another test build of the coaling tower at Chama, New Mexico. Ultimately, the only way I could effectively complete the model was to make it multimedia, with wood supports, a detail kit from Grandt Line, and a balsa coal pit. The main part of the kit (walls, roofs, hoist house, etc.) are all cardstock. Jim Gore Photo*

Tips for new modelers thinking of paper model building:

This question always reminds me of computer modeling (one of my research projects when I was on the faculty at university). I had a sign in my office that holds true for cardstock modeling: “Computer Modeling / Cardstock Modeling : Fast, Cheap, and Accurate. Pick any two!” You can’t have all three! If you want an accurate model with lots of detail, treat it as if it were a craftsman model, just made of a different medium than wood. Inexpensive and accurate means that you must be slow and thoughtful. Just because the medium is cardstock, does not mean it should go fast.

Plan to use lots of #11 blades. In general, I plan to go through 3 or 4 blades per completed side (I used over 100 to complete the Engine House at Gorre). Paper dulls blades faster than any medium. Don’t throw the blades away; they can always be used for a softer medium like wood. If it takes you more than two swipes of the blade to cut out a part, it’s time for a new blade. Even using a metal straight-edge to guide your blade, a dull blade will tend to wander, making it difficult to get accurate pieces.

Spray all your parts prior to cutting with Dullcote. This has two advantages. It tends to seal the parts so they don’t absorb atmospheric water and warp. The Dullcote also provides a block to UV light so they don’t fade. Here in Florida, I have structures on my layout that are over 12 years old that hold their color and are not warped.

Layering of parts to produce dimensionality is the most important part of cardstock modeling. We all grew up on Grandt Line and Tichy windows but they are grossly over-thick in some of the smaller scales. A typical cardstock window

will have between 5 and 7 layers (frame, mullions, sills, etc.) and will be almost spot-on true scale. Since the parts are already printed in color, it is the layering that demonstrates the craftsman in you. Contemplating then creating the piece can be a long process. For example, I am currently building an overhead electric traveling crane (not currently available as this is a test-build). The block and tackle is composed of 42 layers of cardstock!

When you cut cardstock, you will have an exposed white edge. That has to be colored to match the color of the printed part. I have two methods for coloring: I can use a #2 round brush with acrylic paints (my favorite color is something called Mudstone by Delta Ceramcote). Paint from the back side of the part (the unprinted side) using the side of the brush not the tip. Alternatively, you can use Copic pens (get them at an art supply store). These are similar to a Magic Marker so it takes a little practice to not allow the ink to run into the piece, just color the edge. I primarily use T4 Toner Gray (it gives a nice shadow effect when layering pieces) and E57



*J&RG Wright's Repair. This is a stock kit from Clever Models with some additions, including complete studs on the interior wall, lighting, and a complete machine shop. The building to the right of Wright's is also from cardstock. This shows what some careful planning and detail can do to create a craftsman-style structure. Greg Komar Photo.*

Light Walnut (when used on pieces like metal roofs, for example, allowing it to seep into the pieces gives a nice rusted effect).

Finally, consider the scenery you will apply around the structure. If you are using the current water-soluble sorts of scenery (ground foam, etc.), remember that the walls will absorb the water and separate the pigments as they wick upwards into your model! My own process is to “paint” the inside and outside walls (up to about a ¼” up the side) with Lip Balm! The paraffin carrier is transparent and blocks the water from being wicked into the building sides. Again, this takes some practice. To make things easier for myself, I attach the finished (or almost finished) structure to a sheet of .04” styrene, leaving a good inch or so around all sides. I can control the water soluble scenery mixes easier, and I can add details without attempting it after being placed on my layout.

There’s no “rule” that you must use only cardstock on a paper model. Mixed media models are allowed. The cardstock police will not attempt to arrest you.

Detailing is what separates these models from the backdrop-type models. You can detail these models just like any wood craftsman model and you will be surprised at the result!

The really nice part is that if you make a mistake, you can always print out a new part and start over!

Changes manufacturers should consider making to have paper modeling easier to build or more accepted by modelers:

I often hear modelers complain that the parts should be laser-cut like the old Paper Creek models. I agree that it would be nice but, personally, I am unwilling to pay for the process when my #11 blade (sharp) does a good job; it's just slower. Thom tells me that it would triple or quadruple the price of kits (the \$30 Engine House at Gorre would be well over \$125). As far as being "accepted" by modelers, learning the skill of layering can make the models look like true craftsman structures. I challenge most visitors to identify all 17 cardstock structures on my layout. They can pick out one or two, but nobody has identified all 17!

What is not available you would like to see?

I'm pretty happy with the situation as it stands. Clever models, alone, have structures sufficient to build an entire fishing dock scene if you model New England, including a light house. If there is a complaint, personally, I would like to see more western false-front structures and adobe structures. But, I build adobe out of balsa or dental stone with no problem, so I am not picky about that need. Indeed, Clever models offers two CD's with all of their "textures" on 8 x 10 sheets (or you can buy them individually on-line). Clapboard, shiplap, board and batten, brick, cinder block, roof underlayments, as well as, windows and doors and other textures are available, so I can scratchbuild just about anything, given enough time. My first attempt, the Diamond-Bar in Como, Colorado) won a national contest for scratchbuilt models. As long as there is an expanding availability of textures, I will be happy. I am currently building the Service Station that my grandfather owned in the 1950's. All I have to work from is photographs that were used for insurance coverage.

If you think I can help your modeling please let me know at [james.gore@oscaleresource.com](mailto:james.gore@oscaleresource.com)

David Rarig

I've been building models since I was about 10 years old, first with plastic cars, then control-line model airplanes and then model railroading. I acquired my first N-scale train model in 1970 while attending grad school at Penn State, and I have been "playing with trains" ever since. I was re-introduced to cardstock structure modeling two years ago when I read an article in a magazine in which the modeler used computer-printed brick texture paper to construct an O scale retaining wall. I built models in the 1970's using the traditional methods of milled basswood siding and strip wood along with heavy mat board substrate, but I had always used model paints to finish them. I liked the realistic appearance of the printed brick in the magazine article, so I went on-line and ordered some texture sheets from the manufacturer referenced in the article (Clever Models).

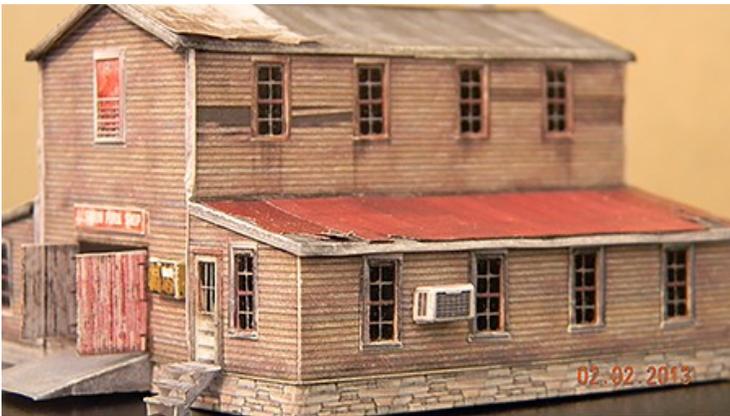
Once I downloaded a number of texture patterns, I started to experiment with them in N scale which is my primary modeling size. I have been driving a truck over-the-road since 2001, and I was becoming very frustrated with the lack of time available to pursue my modeling hobby as I am typically at home only 36 hours every other week, and other necessary tasks usually prevent spending much time in my basement "train room".

As I purchased some ready-designed cardstock buildings, I realized that I could fit everything I needed to model them in a standard briefcase, and since there were no messy or hazardous paints or chemicals involved I could take my hobby with me on the road. Here are pictures of my "workbench" in the cab of the Freightliner truck I drive.





*These models were printed on 110# plain cardstock paper with an Epson ink jet printer. They are N scale 1:160 and are some of the first models I made.*



I started with simple structures with few windows and doors, then progressed to more complex designs as I gained familiarity with the medium. I think I've become "hooked" as I really enjoy building these models and admiring the artistry involved in making the original designs. There is absolutely no way that I could achieve the realism in appearance of these models if I had to try painting the finish on plastic or wood kits, especially in N scale! There are some

extremely talented modelers who could do it, but not me.

I began to experiment with different types of paper to see if I could improve the appearance of the finished model. I tried using a "bleed-proof" Bristol paper with good results, but still not the sharpness of print I was looking for:

### **The Cannery Model by Clever Models in N scale**

I finally hit on several combinations that I found did a good job of producing a good print and helping the construction process which requires bending the paper at 90 degrees to form corners. The first is a paper from Strathmore called Satin Board which I purchased on-line from Blick. It is rather expensive and no longer available from Blick (but there are other sources). It is satin glossy on one side and matte on the reverse side, about .010" thick, and what I would call a hard finish





*N scale Wally's Mercantile by Clever Models (my index finger for size reference)*

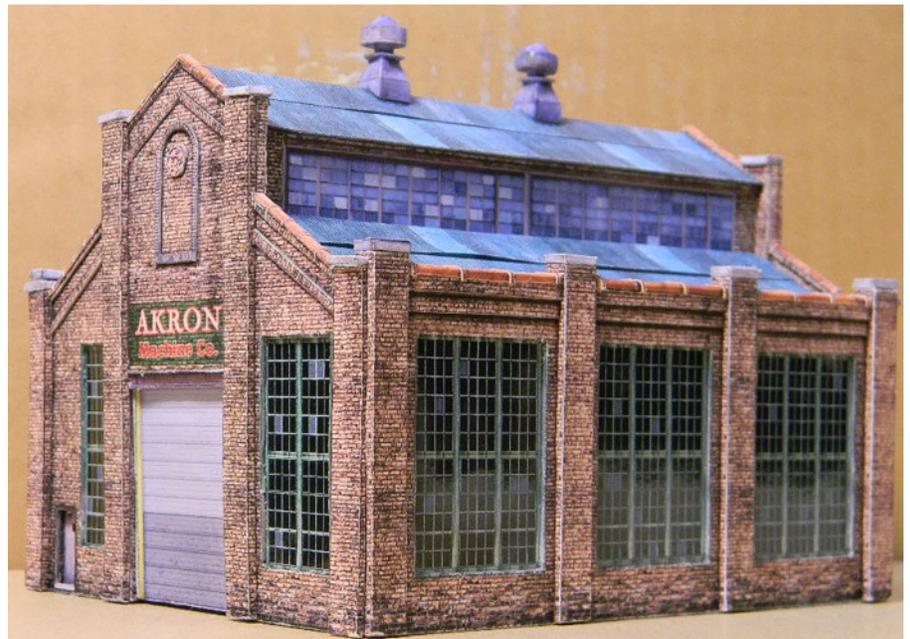
paper. It is quite stiff but once folded holds the shape well, requiring little internal reinforcement. I find that all paper models have to have internal reinforcement to prevent warping and unwanted surface distortions. The pictures below are models built with this paper.

The third method I tried was to print the model on matte finish photo paper. I found an inexpensive one at Wal-Mart made by Printworks that sells for about \$7 per pack. It has a moderately smooth finish and measures only .0065" thick which makes it easy to fold. This is important since some of the models require folding the print into a small feature such as wrapping around a chipboard core to form pilasters. With paper this thin, it is really important to back it up inside with a heavier card or chipboard. I like to print the design a second time on cardstock, laminate it to a still heavier material like chipboard and cut it to fit INSIDE the model printed on photo paper. You have to cut it to fit after the outer shell is formed to allow for

material thickness. By printing it on cardstock, you will be able to cut the window and door openings to the exact size and placement as the external walls.

Tip: I coat the windows with clear fingernail polish (3 heavy coats) to make it glossy like glass, alternately they can be printed on glossy photo paper.

The exterior walls of the Akron Machine building below, doors, and roof covering are printed on .0065" matte photo paper with heavy .055" thick chipboard interior reinforcement throughout (even behind the windows). Tip: the rooftop ventilators are coated with thin ACC after forming from 7 cut pieces each, makes them tough as fiberglass! Close up photo next page - can you detail paint your plastic building this well?



*N scale Akron Machine by Clever Models (note these windows are printed on glossy photo paper)*

One of the very nice features of these “cardstock” models is that they are printed on your home computer printer and can be reproduced as many times as you like. If you goof-up, you don’t have to give up; just print it again and start over.

They can also be reduced or enlarged to suit your modeling scale as can be seen in the photo below; same model done in Z, N, HO, and O scales. What FUN!



### **Greg Williams**

Well Jim, I’m not sure of how much use I can be, but I will answer your questions the best I can and hope to be of some help. (“I can not tell you how many times I hear this. I just wish I had some of Greg’s skills. Judge for yourself if he can help you. ~ Jim Kellow)

I started in the hobby quite young, I’d say about the age of 10. I always had a fascination with what my father was doing. I watched him at his small workbench in our apartment in Montreal do all kinds of things from repairing radios to building models. As part of this, I discovered my father’s collection of *Model Railroader*, *Railroad Model Craftsman* and *Trains* magazines. I asked if I could look at them and I was off! I have read every issue of MR from 1950 to today. I grew up with the greats of model railroading, and still believe Linn Westcott to be my hero as I youthfully wrote an essay in grade 6 on my hero. I think I should have put my father as he is the real hero of the story.

One day dad brought home a book from Carsten’s publishing with a bunch of pre-printed buildings that one could cut out and put together. Printed on card stock, this provided the first structures to my small 4 x 6 layout.

My father taught me to build. I watched as he crafted things from the basics. Wood, paper, cardstock, sheet brass etc... One of his greatest achievements was a double track pratt truss bridge built entirely of wood and brass. No structural shapes bought, he made them all from brass. He didn’t have a lot of money, but he had skills.

By my early teens, I was building in wood and card. I scratch built a wood gondola with scribed card sides and wood braces. I still have it somewhere. Not that bad actually considering my youth and skills. Card is a versatile material that can be used to simulate everything from wood to metal. One of my structures was a coaling tower that I used card to make the buckets. When painted Floquil gun metal and streaked with rust, it looks very realistic.

I’ve been a model railroader on and off since that time. I Lost interest in my early 20s. Returned to it in my 30s, started a business and put it aside, only to go back to it in my late 40s. I am not a prolific modeler as time does not allow, but I do enjoy the hobby in some sense everyday. HO has always been the scale for me as that is what dad was into. However, lately I have a yearning to work in O scale, narrow gauge, as On30 catches on in popularity. To me, narrow gauge modeling is perfect for wood and card modeling.

A couple of years ago, I tripped on a video review of a Cricut machine. They are used primarily by crafters who work in paper and cardstock. The reviewer was a model railroader who scratch built and demonstrated how it could be of benefit. I showed my wife; and that Christmas, there was a Cricut under the tree.

I began collecting cardstock for use in it and learned how to lay out vector drawings to make my own parts. I was very successful in making a door in HO scale from three layers of card. In my eye it looks as good as a plastic casting. There are others who work with this tool and a Facebook group dedicated to modeling with the Cricut. <https://www.facebook.com/groups/ModelingwiththeCricutExplorer/>



I then gained an interest in the available card stock models that one can print, cut and assemble. As I am building a small, urban industrial layout, I thought it might be a good way to populate the layout with structures at a lower cost than purchasing plastic embossed sheets. This led to a new high-quality ink jet printer under the tree the following year. My wife knows how to shop! Now much has been said to malign ink jet printers with the low cost of machine, but high cost of ink cartridges. My wife chose a Canon printer that you refill the ink containers with liquid ink you purchase. I have yet to use up the included ink when I set up this winter. Ink is reasonably priced, and you get a good cost ratio with it (Canon Pixma G3200).

Recently, I was building a scrap yard and to get an idea of the buildings and how they related to each other, as well as placement on the layout. I used card and paper to mock up each of the buildings. This was a great benefit as it allowed me to make some small changes that made a lot of sense. If I had built them straight off from wood, I would have regretted it.



I have included pictures of my latest build. Beginning with a small basic wood kit we were challenged to see what we could do with it. I used printed card stock to model the roof and foundation of the building, as well as print custom signs. For this, I use thin card marketed as matte photo paper. To my eye, these printed textures look as good or better than anything else out there. The signs are not available anywhere else, and are taken from prototype photos. The key to this is some software I bought with card modeling in mind.

Model Builder from Evan's Designs (<https://www.modeltrainsoftware.com/collections/modeling-software/products/model-builder>) allows one to use their pre-generated designs and textures to create your own buildings or build some that come with the software. There are lots of add on modules available with many different textures and materials. Also, on the Internet I discovered <https://www.textures.com/index.php> which has many textures available for download both free and premium. Added to this would be some good image manipulation software. I use

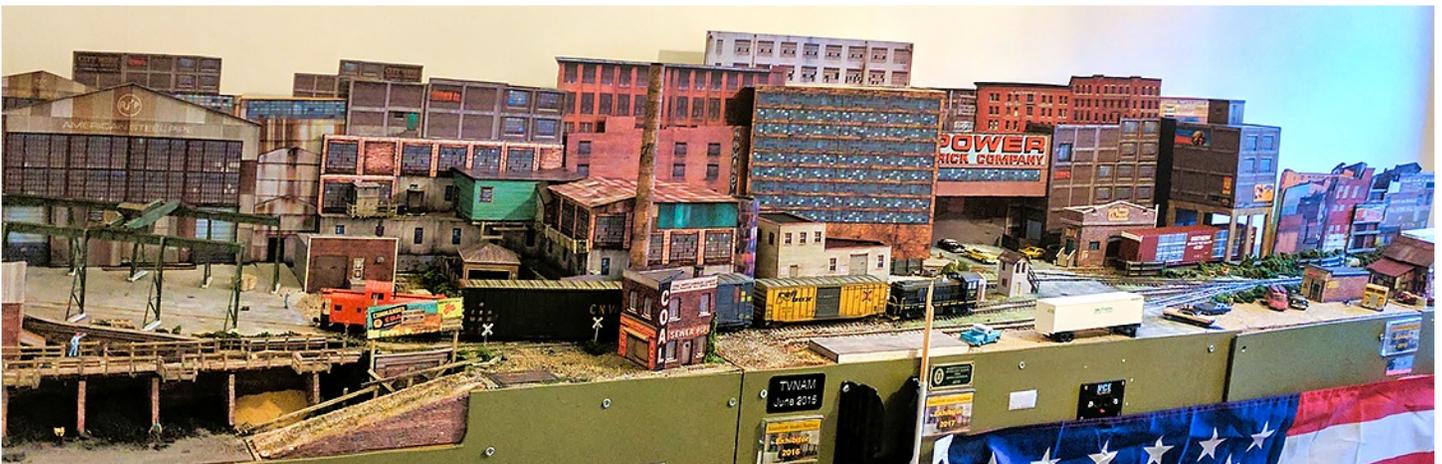
the free GIMP, (GNU Image Manipulation Program) available at <https://www.gimp.org/>

A visit to another modeler's home revealed his secret to scratch building structures. He uses a card core to which he laminates plastic sheets with a brick pattern embossed. I asked about what he uses for card and he told me he uses material bought at an arts and crafts store. Something suitable for making mats for framing. I have yet to experiment with this material in my Cricut machine, but that is next on my agenda. Overall, I find card to be a great material to work with that is inexpensive and versatile. Give it a try!

If you think I can help you with your modeling please contact me at [Greg.Williams@oscaleresource.com](mailto:Greg.Williams@oscaleresource.com)

### Dan Beresford

Dan is a very talented modeler who has really helped me get started in my search for information about card modeling. His help is most appreciated.



*Layout is all cardstock*



My name is Dan Beresford, I'm from England, and I've been modeling in cardstock models since I got back into the hobby around 10 years ago.

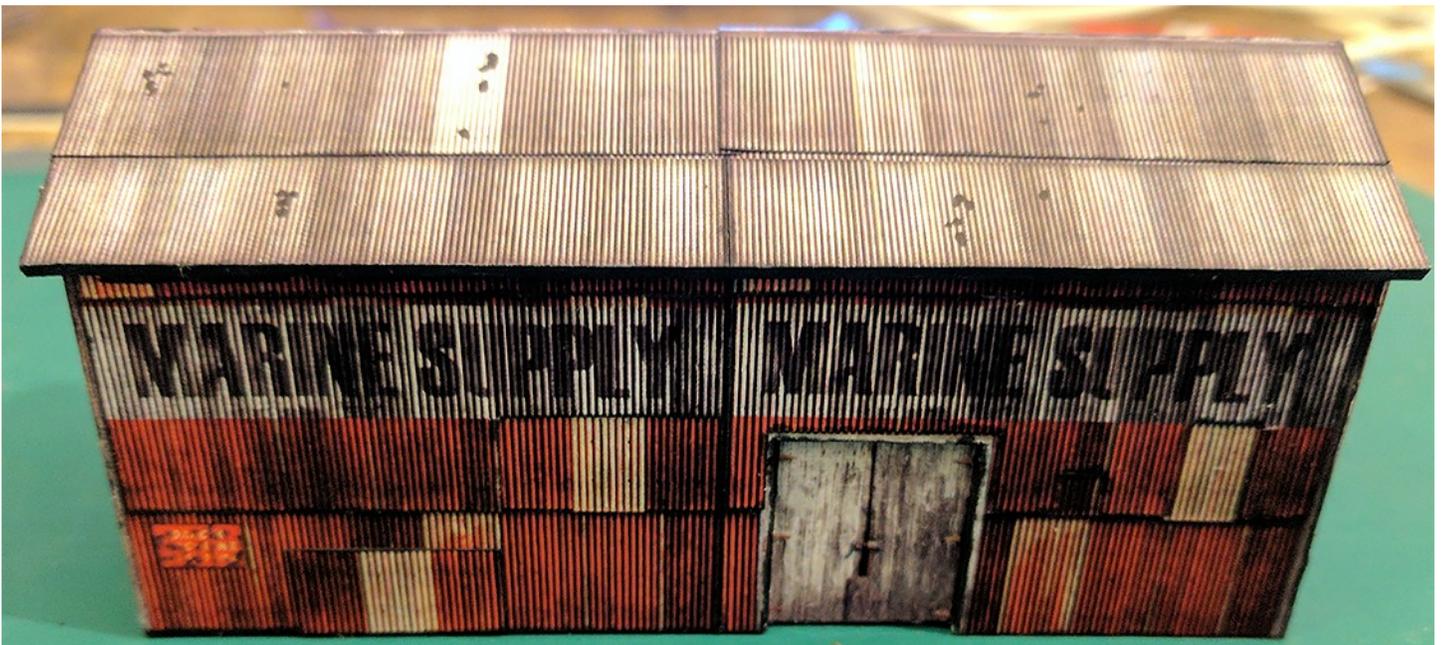
I started building in cardstock because it is a pretty forgiving medium – mess up a build? Just print out another copy and try again. I began with free demo kits that came from several different cardstock manufacturers, and naturally I built them according to the instruction sheets that came with the kits. I made a LOT of mistakes, and scrapped a lot paper and card in the process. But that's the only way I learn – hands on, trial and error.

I've never been a “book-smart” studier, I prefer to learn by doing, though I will go over the instructions a few times, as well as any build guide videos I can find online so as to avoid any common pitfalls.

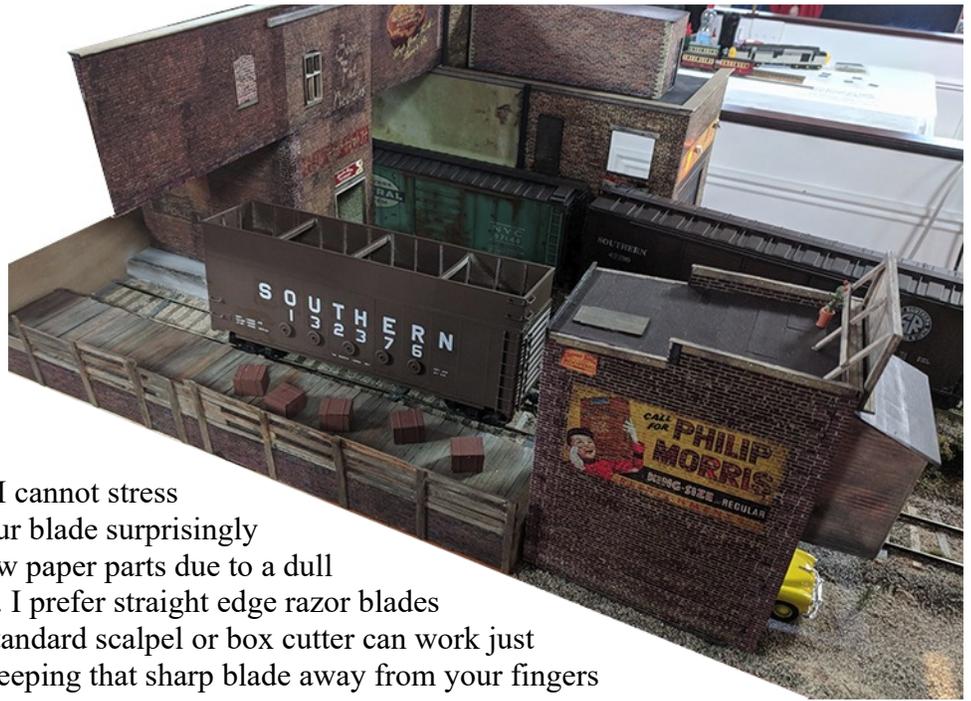
These days, I look at photographs of the finished models from the manufacturers or other modelers, and I use these to work out how I want to build each kit. I must admit, I tend to look at each kit as a collection of

scratchbuilding or kitbashing aids these days, and I use them to build my own structures that I need to fit a certain spot on any layout project I'm building.

That's the beauty of cardstock kits – you have an endless supply of parts to build your structures with. Want to make that engine house twice as long? Print out twice the amount of side walls and roof parts. Want to make that warehouse taller? Print out more parts to build it higher. The potential provided by even the smallest cardstock kit is essentially infinite.



The idea of the mentor initiative that is being featured in “**New Tracks**” would have been a great thing to have when I was starting out in cardstock modeling. I’m by no means an expert, but I’d like to hope that I could offer assistance to anyone looking to start in cardstock modeling too. For anyone doing just that, I’d recommend a few of what I’d like to consider essential practices.



Always keep your blade sharp – I cannot stress this enough. Cardstock will blunt your blade surprisingly fast, and I’ve had to re-print a fair few paper parts due to a dull blade tearing the paper when cutting. I prefer straight edge razor blades for working in cardstock, though a standard scalpel or box cutter can work just as well. A steel ruler is essential in keeping that sharp blade away from your fingers too!

Always keep a nice supply of different card types and thickness in your materials stock. I like to keep hold of any sources of card I find and add them to my materials supply, as you never know when they might come in useful. Cereal boxes are my go-to source for thin card for building up layers, but I tend to go for artists mount board for my primary material. Sometimes, if I need to build something big, I cheat a little and use foam core board to act as the shell around which my cardstock kits are built.



Sharpies are your best friend. I use Sharpies in multiple colours to remove the white edges of the cardstock or paper once I've cut out a kit part. Brown for brickwork or wood, black for tarpaper, etc. I just take the Sharpie and run it at a 90 degree angle along the edge of the paper to colour it in. One thing I do recommend is making sure the side of the paper or card that has the artwork for the kit on it to be facing AWAY from the Sharpie, that way if you slip, you are only marking the plain side of the paper and not ruining your carefully cut out kit part!

Finally – and I'm pretty sure this goes to all aspects of model building – measure twice, cut once! It's a lot easier to correct a measurement error before you cut anything!

Oh, and take your time! Cardstock models are like any other craftsman kit – they are complex kits that produce beautiful models, but they are a marathon, not a sprint. They inevitably look better the more effort you put into them.

There are plenty of cardstock kit manufacturers out there, whether the kits are download files you print out yourself, or pre-printed sheets you buy packaged up, or pre-cut kits similar to wood or plastic models. I think most of the manufacturers are doing a stellar job of catering to the needs of the modeler, and I think a lot of them are also criminally overlooked when compared to plastic kit manufacturers.

There is however, one aspect of cardstock modeling that I think hasn't truly been tapped into yet is rolling stock. There is a fantastic British modeler named Jim Read who not only makes cardstock structures on his layouts, but all his rolling stock – wagons (freight cars), coaches (passenger cars) and even locomotives, are all built from cardstock. Yes, even the running gear and chassis frames are cardstock. The only things not made from card are the wheels, gears and motors! Jim's O scale micro layout, Moxley Heath, is a true work of art.

For US modelers, Clever models does make a collection of narrow gauge freight cars and a boxcab locomotive, but I think they might be pioneers in this aspect of cardstock manufacturers.

I did try my hand at scratchbuilding a freight car from cardstock, using side-on photographs of actual freight cars cropped and printed out to make the car sides, and though the execution wasn't perfect, the theory is definitely sound.

If any modeler would like any assistance with any aspect of cardstock modeling, please feel free to get in touch at [Dan.Beresford@oscaleresource.com](mailto:Dan.Beresford@oscaleresource.com)

That's it for this "New Tracks" card modeling article. I hope you enjoyed it. Thanks for reading this far. Time for me to get back to my work bench and building.

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# Canadian National Railways Sanmore Subdivision Converting MTH and Atlas locos “China drive” to DCC

By Serge Lebel



**Photo 1**

As a veteran N scale modeler crossing over to the wonderful world of O scale modeling, I had a pre-conceived idea about DCC thinking it was the norm in all scales, and that I would be able to buy DCC equipped locos right off the shelf from any manufacturer. Boy was I in for a surprise! After doing some research, I realized that each manufacturer had their own system of control and that I would be in for quite the learning curve if I wanted to stay with DCC. But DCC is the only thing I know, and I knew it would gain in popularity eventually, so it would be best to stick to it and wait until it got better. That was nine years ago, and I can now say that I do not regret my decision one bit.

But there is also another important factor with O scale locomotives... Availability! It is not like we have a lot of choice when it comes to diesel locomotives in 2-rail. With that comes the debate on the famous China drives, which makes the best of modelers

grind their teeth in frustration over this design. As much as I hate to admit it, I have to agree. But this is what is available on the market, so I decided to adapt and make the best of it.

## FINDING THE DCC DECODER THAT SUITS YOU

I think DCC in O scale is still in its infancy. It is my belief that we will see more and more O scale decoders in the future, but there are still a few good candidates out there. I will not try to list them by fear of omitting some due to my lack of knowledge. I am not the most experienced person in terms of DCC decoders, so I will discuss only the ones I have experienced personally.

For my operational needs and wants, when came the time to buy a DCC decoder for my locos, I had one important feature in mind: sound. One of my early decoder purchases was an MRC which I never installed. The reason for this is because Atlas was coming out with factory installed QSI decoders in their MP15 locos, so I just purchased one of those instead. This being my first experience with sound in O scale, I was quite pleased, so I purchased a few QSI decoders for future installs. But the web site for the QSI decoders did not

give me enough information on the installation, and how to modify the sound files. Again, a long search on-line did not reveal any desired info. So I put that project on the ice for a while and sold the decoders. A few years later, ESU came out with their Loksound Select and Select L, and a great web site that has lots of information and easy to download sound files. That was a major selling point for me. So I purchased a new decoder, the Lok Programmer unit, and downloaded and installed the software in my computer. Finally, I had the type of flexibility I wanted out of a decoder and a programmer!

For that reason, my DCC decoder of choice is the ESU Loksound L. This is a hefty decoder with great features. So for the past 2 years, I have been looking on-line to find videos or tutorials on how to convert the dual motor drives to DCC, but I was not very successful. Perhaps I am not looking at the right places, but the only thing I could find was more a decoder replacement in an Atlas loco. This conversion kept the Atlas board which is supposed to be DCC friendly, and used a simple wire harness to hook up the decoder to the board. A five minute job... that was just what I needed! So I did such a conversion in one of my Altas locos, and it ran. But I soon started having problems with the loco running out of control. After talking to a few modelers who had more experience in the matter, I discovered that the problem could be some sort of interference between the Atlas board and the DCC decoder. Besides, I had a lot of MTH locos that I wanted to convert, and these don't have a DCC friendly board, so I was facing the dreadful task of gutting out completely a brand new locomotive to try a more direct approach to the DCC install. Believe me when I say that not only can it be done, but I think it is the best way to go in order to get a good running, problem-free locomotive!

In this article, I will do an install in a MTH SD70ACe loco, but it is the exact same process for the Atlas locos that have dual motors. So let's get to it!

## TIME TO GO SHOPPING FOR PARTS!



**Photo 2**

For this conversion, you will be needing a few things. Here is the list of parts I used in addition to the MTH loco, see Photo 2.

ESU Loksound L decoder, part no. 73399 (available from the ESU website at [www.esu.eu](http://www.esu.eu))  
 Goes without saying, my decoder of choice.  
 TCS Keep Alive capacitor unit, part no. 2000, KA3 (I get mine from Tony's Train Exchange).  
 These can only be used if your DCC track voltage is between 12 and 16 volts, although I run mine on 18 volts without any issues. ESU makes a similar keep alive unit designed for their decoders, but I never tried it. I am guessing it is the best way to go, since it is 100% guaranteed to be compatible. I would suggest checking the voltage ratings, just in case.

Tang Band 4 Ohm speaker, part no. T1-1925S (I purchase mine from Solen Electronics, and for people in the US, I have ordered mine from Parts Express). This speaker has sound, and bass! You can also use any speaker of your choice, as long as it does not exceed the capacity of the decoder. This speaker is safe, and it sounds amazing in comparison to the smaller speakers supplied by the manufacturer.

1 normally closed (N/C) S.P.S.T. Magnetic reed switch (eBay). I will explain their use in the article. A few micro mini JST 1.25 mm 2-pin male-female connectors (eBay), in case you did not keep the contact connectors that came with the loco frame, or if you decide to add more lights. You will also need one of these for the Tang Band speaker as it is not supplied with the speaker.

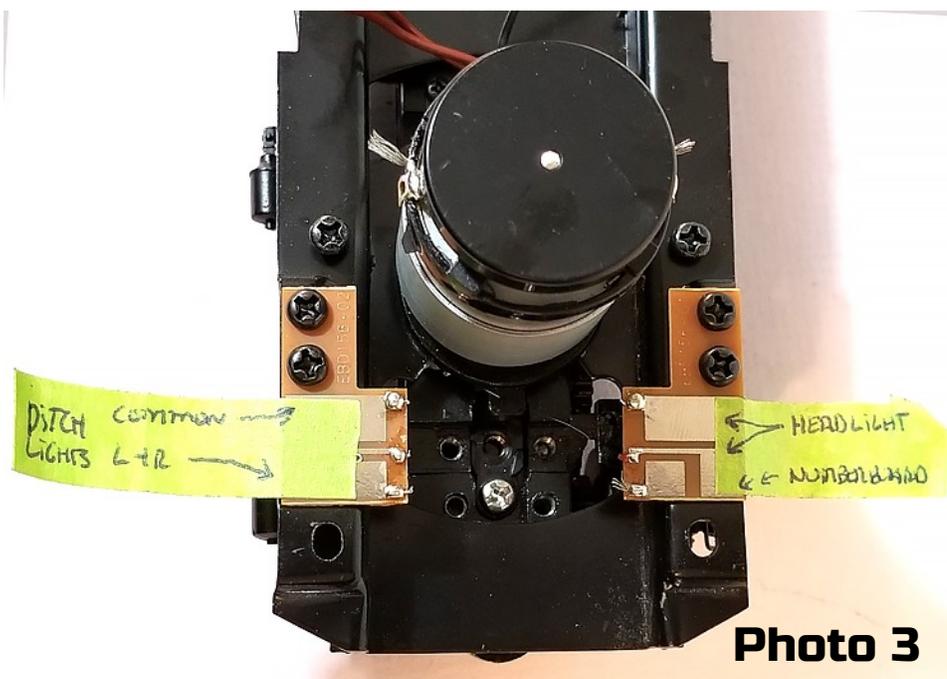
(Optional) 3mm Flat top warm white LED's (eBay), 2K Ohm resistors for each LED installed (eBay) ...and while we are at it, Kadee metal coupler of your choice (I like the No. 805) and Kadee no. 1708 stainless steel roundhead screws size 2-56 x 3/8" long. (see local hobby shop or on-line stores)

## INSTALLATION PROCESS...

I know this can be a bit stressful, but there is no other way around it... You will need to completely gut out your locomotive from all it's complex electronics. In this case, my MTH loco had a DCS PS 3.0 system which can run on DCC. Why not keep it if it runs? I would have to say that two things influenced my decision. One is the fact that because this is not a full-featured DCC decoder, I was not able to read it and re-program it with my Lok Programmer or my Easy DCC system. Sure it runs on DCC, but it did not run the way I wanted, which brings me to my second reason; the speeds. The speed curve has a very fast mid and top speed which I will never use on an operating layout. Also, the loco would not give me slow starts and low speed control I needed.

The first step in doing this is to flip the locomotive over and remove the truck side frames from the locomotive. This will give you a better access to all the underbody screws that hold the shell. The truck side frames will also be re-positioned in a more prototypical spacing when they are re-installed... More on that later, for the moment, remove them, label them in order to put them back in the right place, and set them aside. You now have better access to the screws that hold the loco shell to the frame. These are usually long screws that have a pointy tip like a wood screw. There were 8 of these on my SD70ACe, but I have seen locos with only 6, like the Atlas units. Once these are all removed, turn the locomotive over and the shell should pull away. Be careful of any connectors that are in place to connect the lights.

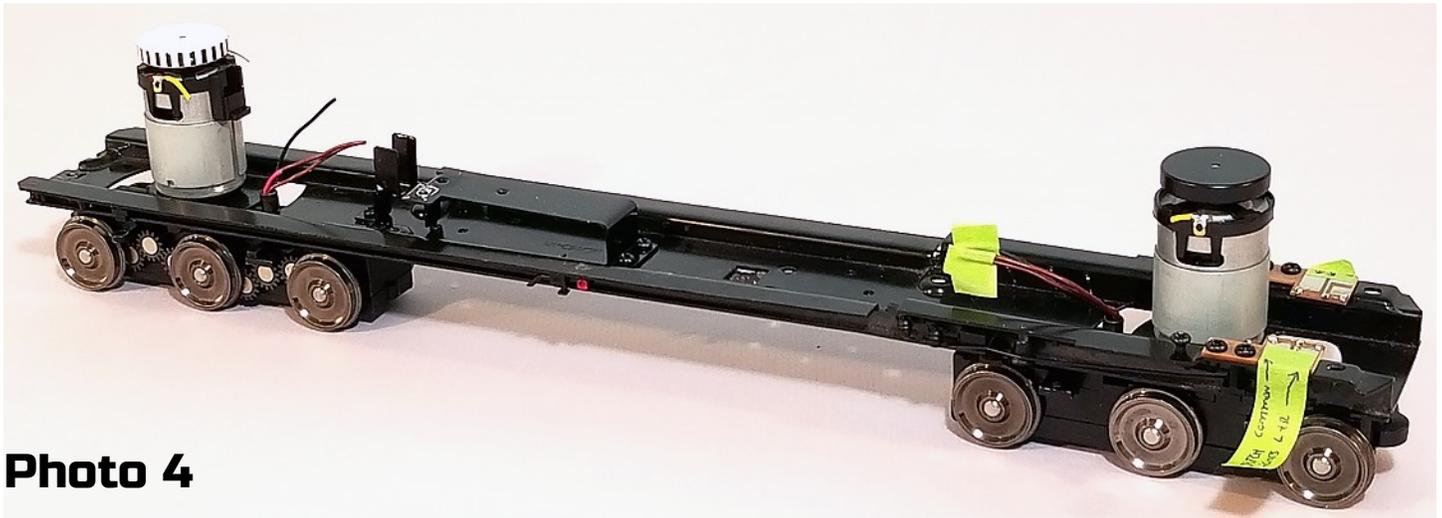
The only connectors I decided to keep for my conversion were the ones that were already attached to the frame. These are used for connecting the lights, so I figured I might use them as they are very practical since there is no need to unplug anything, they are a simple contact switch. I took the time to figure out where they go and labeled them for future use. Photo 3 below.



**Photo 3**

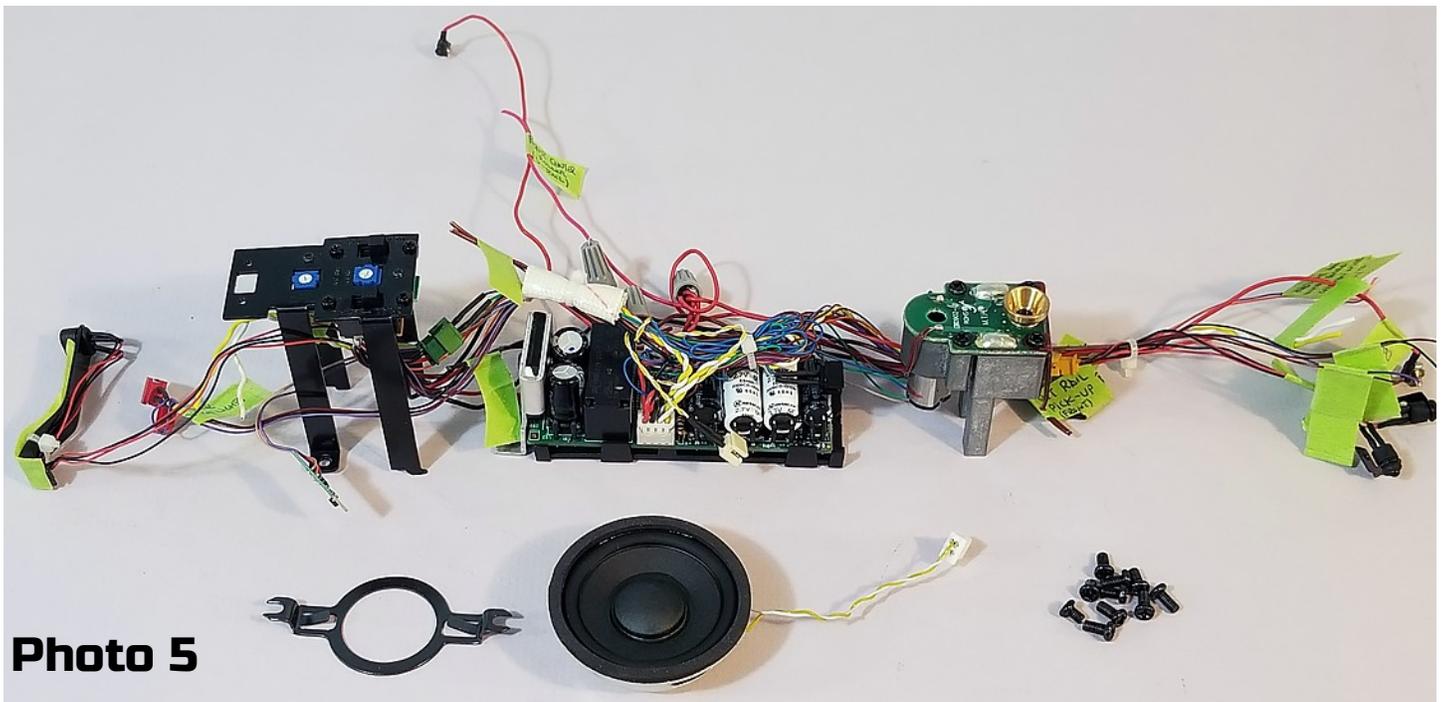
In stripping this out, take the time to label every single wire you unplug or cut. This will make your unit more interesting to sell and easier to install for the next guy! I removed the entire unit, trying to keep it all together as much as possible, and saving all the hardware, battery, smoke unit, speaker, fixtures and connectors to include them with the unit for selling. The only wires I had to cut were the wires to the motors, and the black and brown wires for electrical pickup. I try to leave as much wire as possible on the DCS unit, but do keep just enough also on the loco to have something to connect my new wires to.

This is the completed gut... Photo 4.



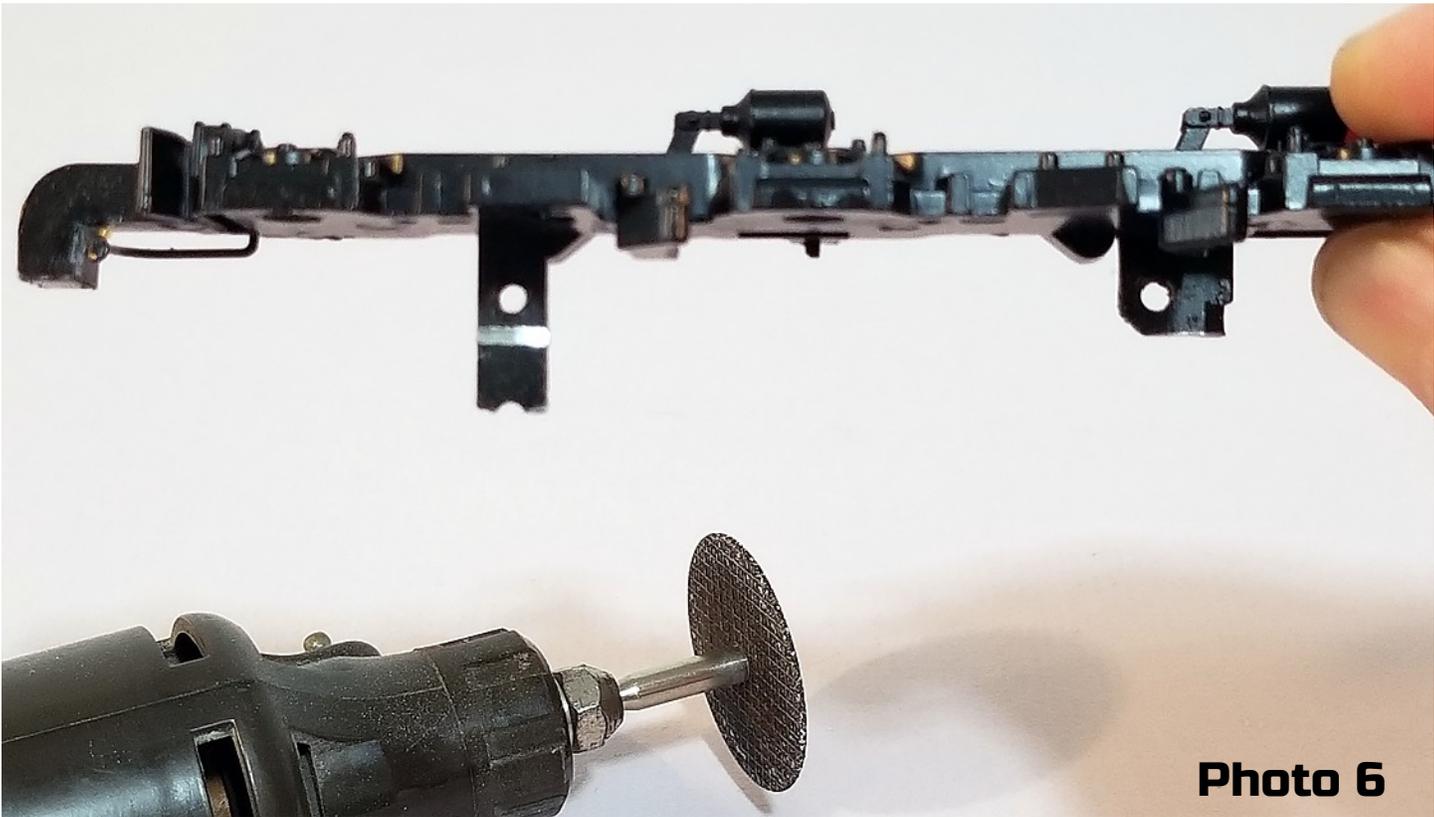
**Photo 4**

And this is the extracted DCS components that can be salvaged for sale... Photo 5.

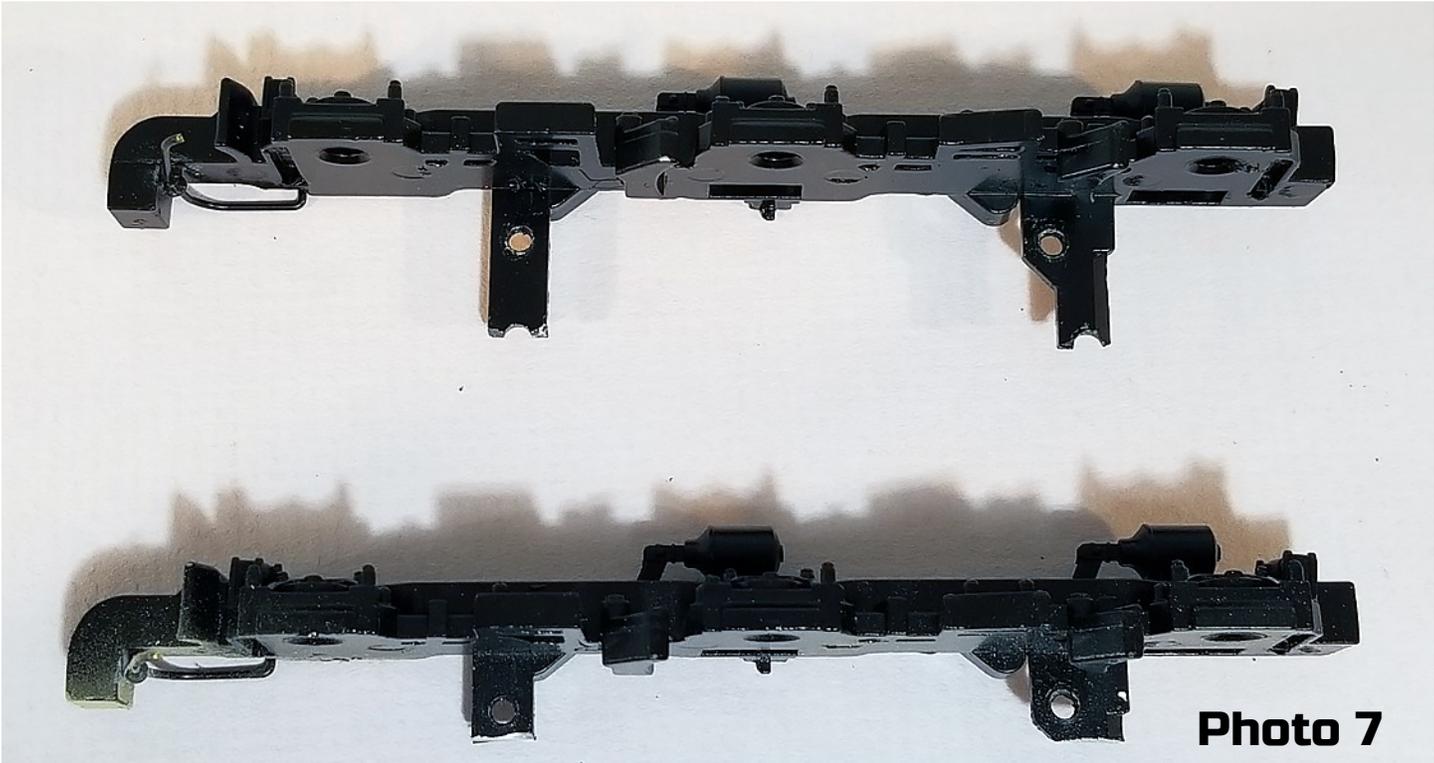


**Photo 5**

This would be a good time to do some cosmetic work on the loco. Since these locomotives are designed to be converted from two rail to three rail, the modeler has the option of scale wheel or the large flanged wheels. The large flanged wheels are much wider than the scale wheels, which explains why the truck side frames are sticking this far out. Because we are using scale wheels on our locomotives, we don't need that extra wide gap or spacing for wheel clearance. Since the frame is now bare and free of any sensitive electronics, let's take this opportunity to drill out new holes in the truck side frames and get them installed properly. To do this, the first step is to cut off some of the excess material on the side frame brackets that has the factory holes in place. Leave just a bit of material close to the current holes in case you decide to place the side frames back to their factory position at a later date. The photo shows one side frame with this material cut on one end. See photos 6 and 7 on the next page.



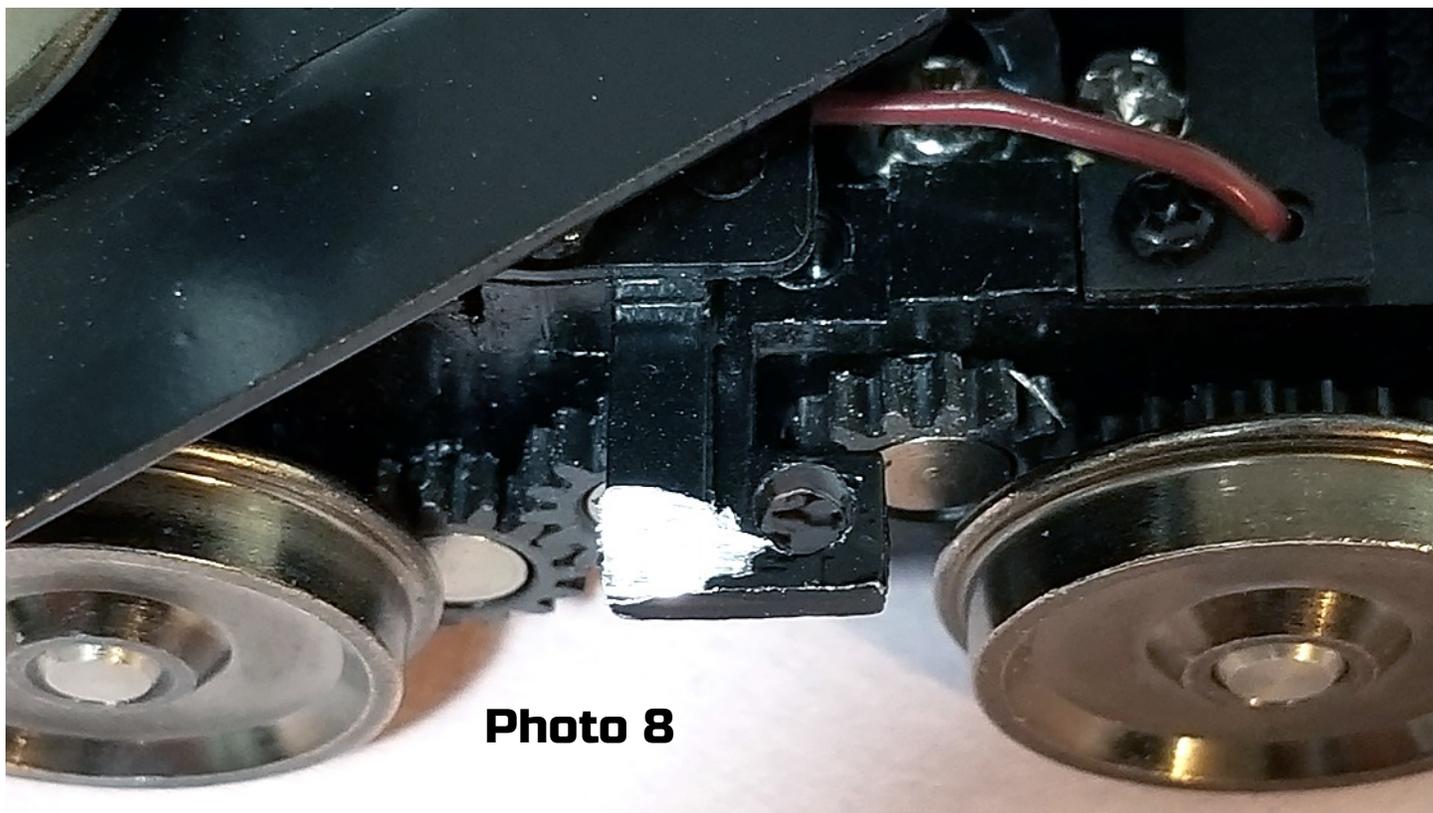
**Photo 6**



**Photo 7**

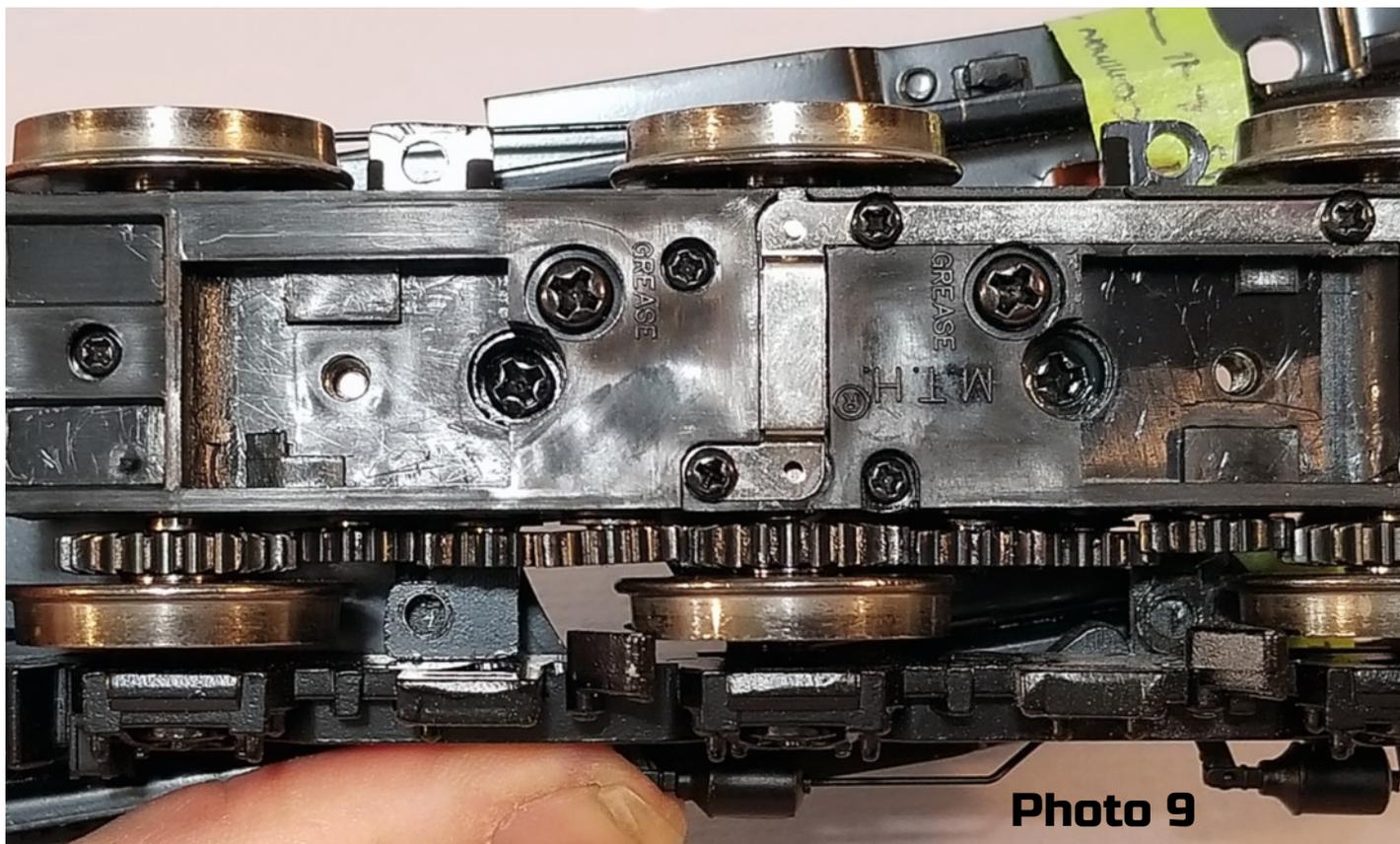
Then, take one truck side frame and put it in place like you would normally to fix it in place with the normal screws, but this time placing the side frames closer to the wheels. You could use a small piece of styrene as a temporary gap spacer, but when I fitted mine, I noticed the side frames fitted very nicely just by pushing them against the truck's existing brackets.

The only thing I noticed afterwards was that I needed to grind off just a little bit off the truck, see Photo 8 below.



**Photo 8**

Once you are satisfied with the clearance, mark the holes, Photo 9 below.



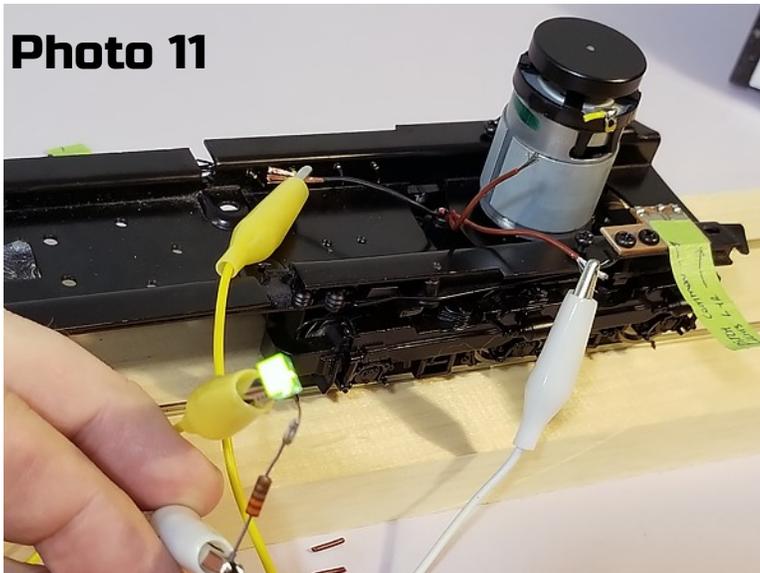
**Photo 9**



**Photo 10**

Now my shop is not the most equipped when it comes to metal work, and I did not have a tap and die set. If you have one, you can drill and tap the holes in order to use the factory screws. But I am quite certain that 99% of you have the Kadee no. 246 tap and drill set for coupler mounting. In order to keep this simple, I used this kit and drilled and tapped new holes, then using 2-56 x 1/4" screws I secured the frames in place.

Next, I did a test to figure out what wires on each truck was the left and right pick-up. (Photo 10) To do this, I used a small section of track and wired it to a variable DC power supply. Using a common LED and a 330 Ohm resistor to make a "tester", I connected my "tester" directly to the rails to figure out which way it needed to be in order to light up.

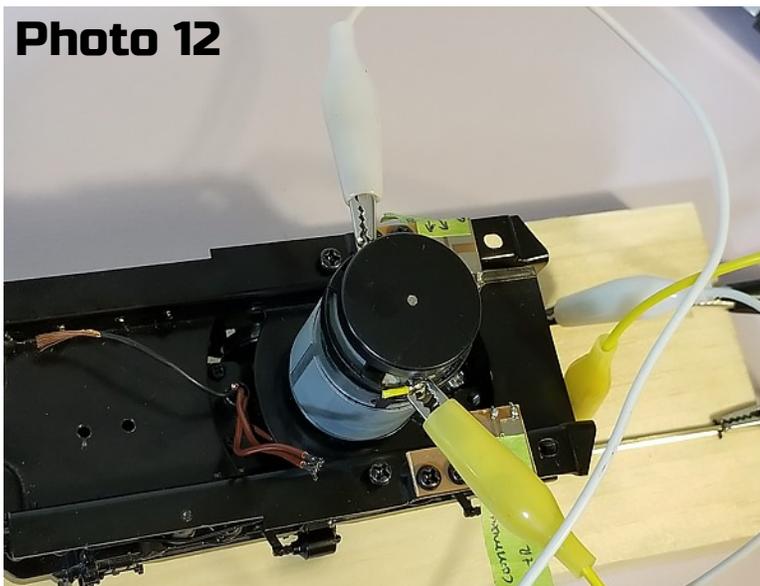


**Photo 11**

I then tried my "tester" on the short leads on my loco's front truck to find the wires that made the LED light up. In this case, the black wire is the left rail and the brown wire is the right rail. I did the same with the rear truck to be sure that the colored wires matched. (Photo 11)

Next, I needed to know where to wire the left and right track wires to the motor in order to have the loco go in forward motion. In this case, wiring the left rail to the left side of the motor was the correct polarity. Again, I did the same for the rear motor and the same turned out to be true.

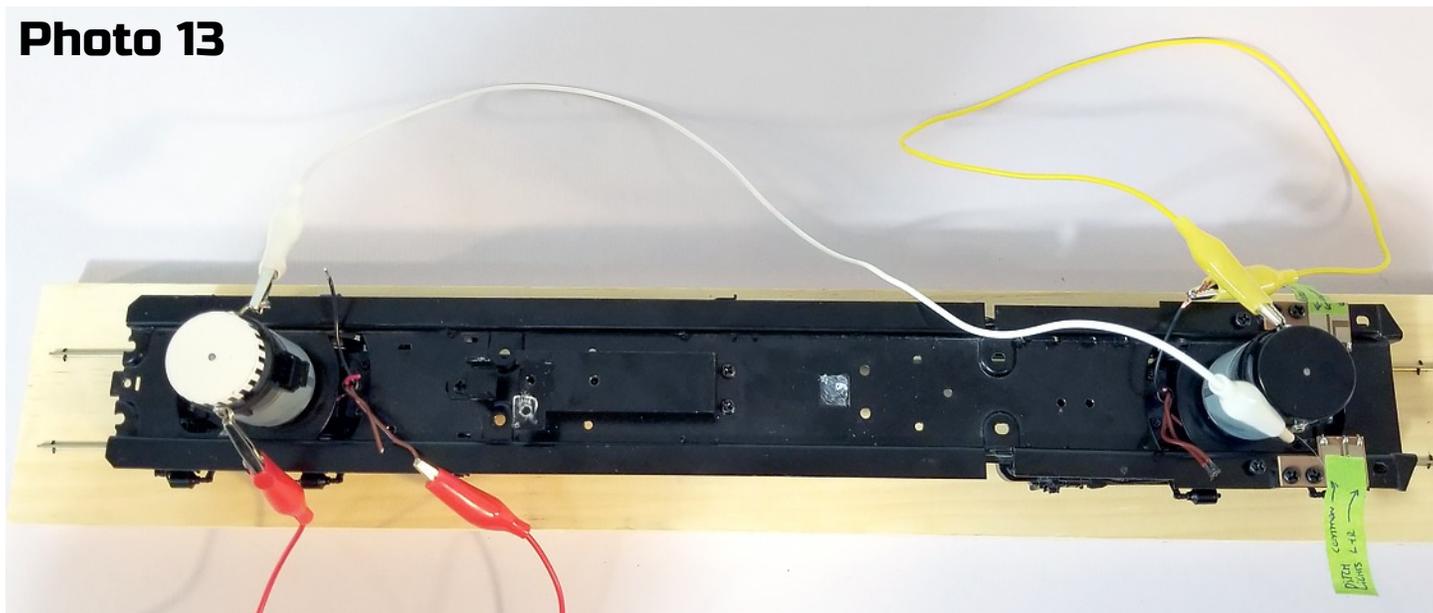
Photo 12



**Photo 12**

After this was established, it was time to do a temporary wiring of the motors and the rail pick-ups to wire the motors in series. Wiring the motors in series will make them run much slower, thus giving the operator more control over the locomotive. Now I am no expert in electric wiring, but I have been told wiring the motors in series also reduces the amount of power needed to get them moving... This remains to be verified. So for this temporary wiring test, I wired the left rail pick-up (black wire) to the left side of the front motor, then ran a wire from the right side of the front motor to the left side of the rear motor, and finally ran a wire from the right side of the rear motor to the right rail pick-up (brown wire). See photo 13 next page.

## Photo 13



I ran the unit forward and reverse a couple of times just to be certain both trucks were pulling in the same direction and not fighting each other. At this point, don't expect the loco to run smoothly. The DCC decoder will have a big role to play in the final outcome.

Now comes the fun part... It is time to install the DCC components in place and get some wiring done. I prefer starting with the installation of the speaker in the fuel tank. This allows me to install the fuel tank and run the speaker wires through the frame and know exactly where to leave a space for these wires to run free. As noted above, I am using the Tang Band 1925 S speaker. You could keep the existing MTH speaker and skip this step, but I strongly advise on giving the Tang Band speaker a try, you will be amazed. On some of my already converted locos, the speaker fitted straight in without any modifications to the tank, but for the SD70Ace, you will need to grind off the original speaker mounts. Photos 14, 15 & 16

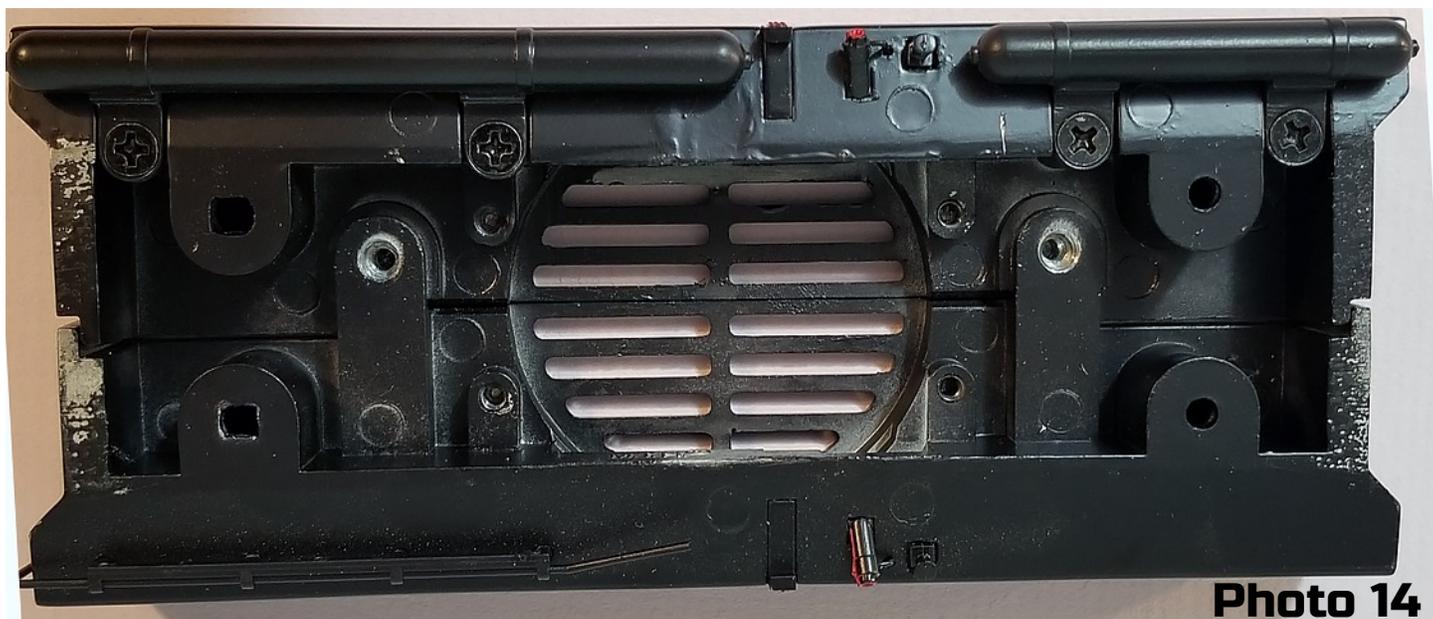
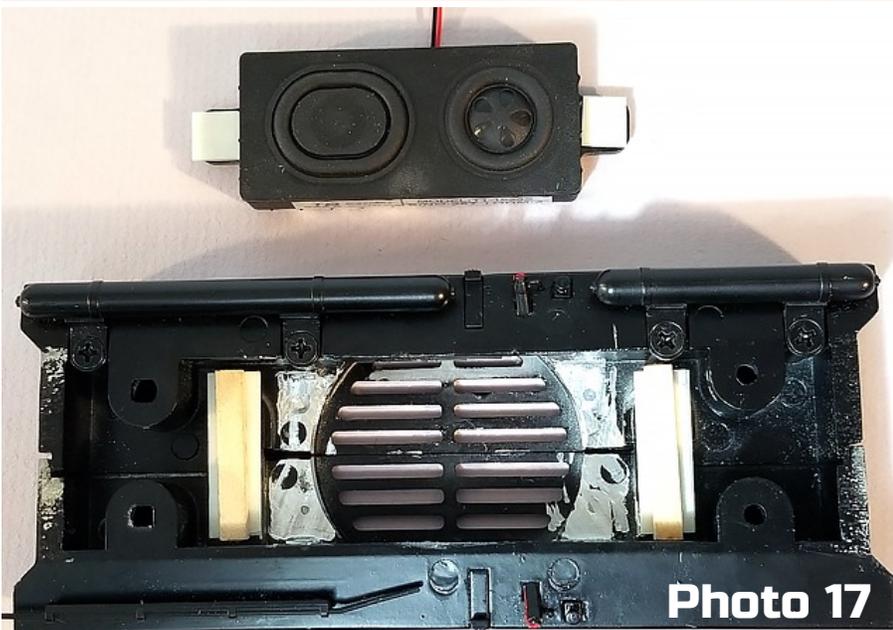
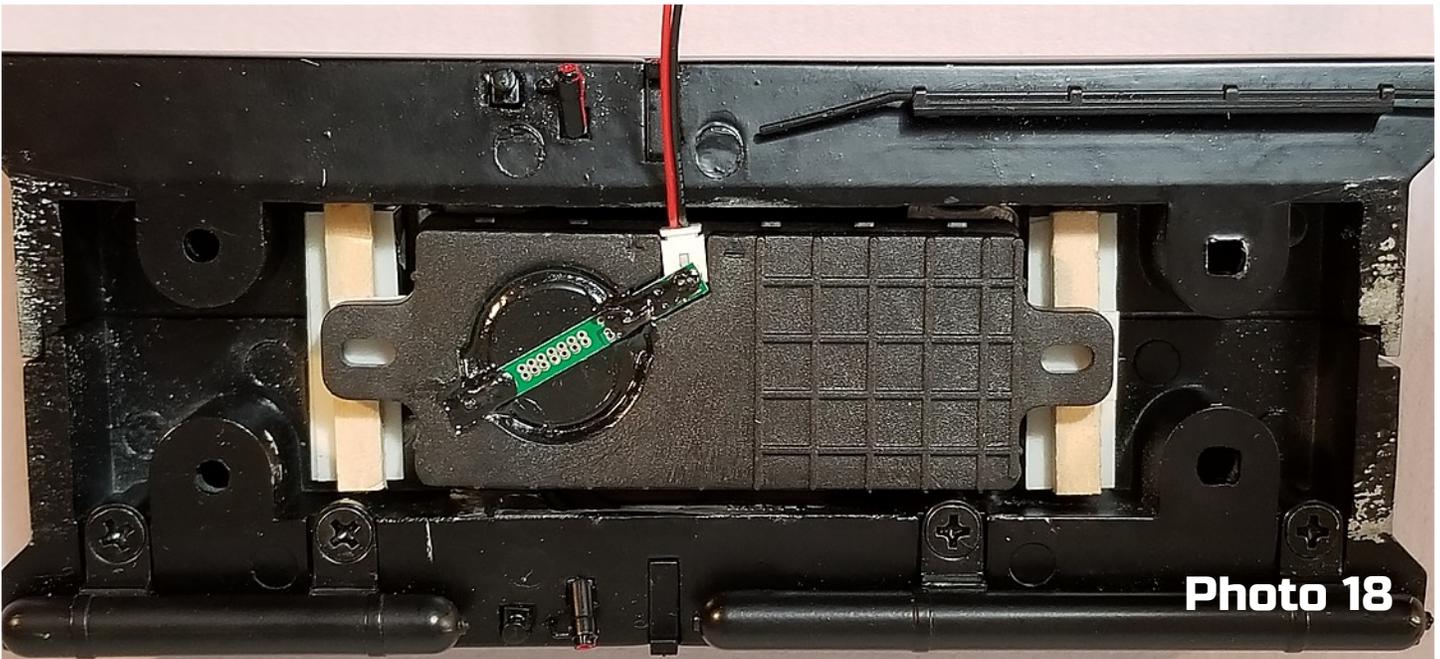


Photo 14



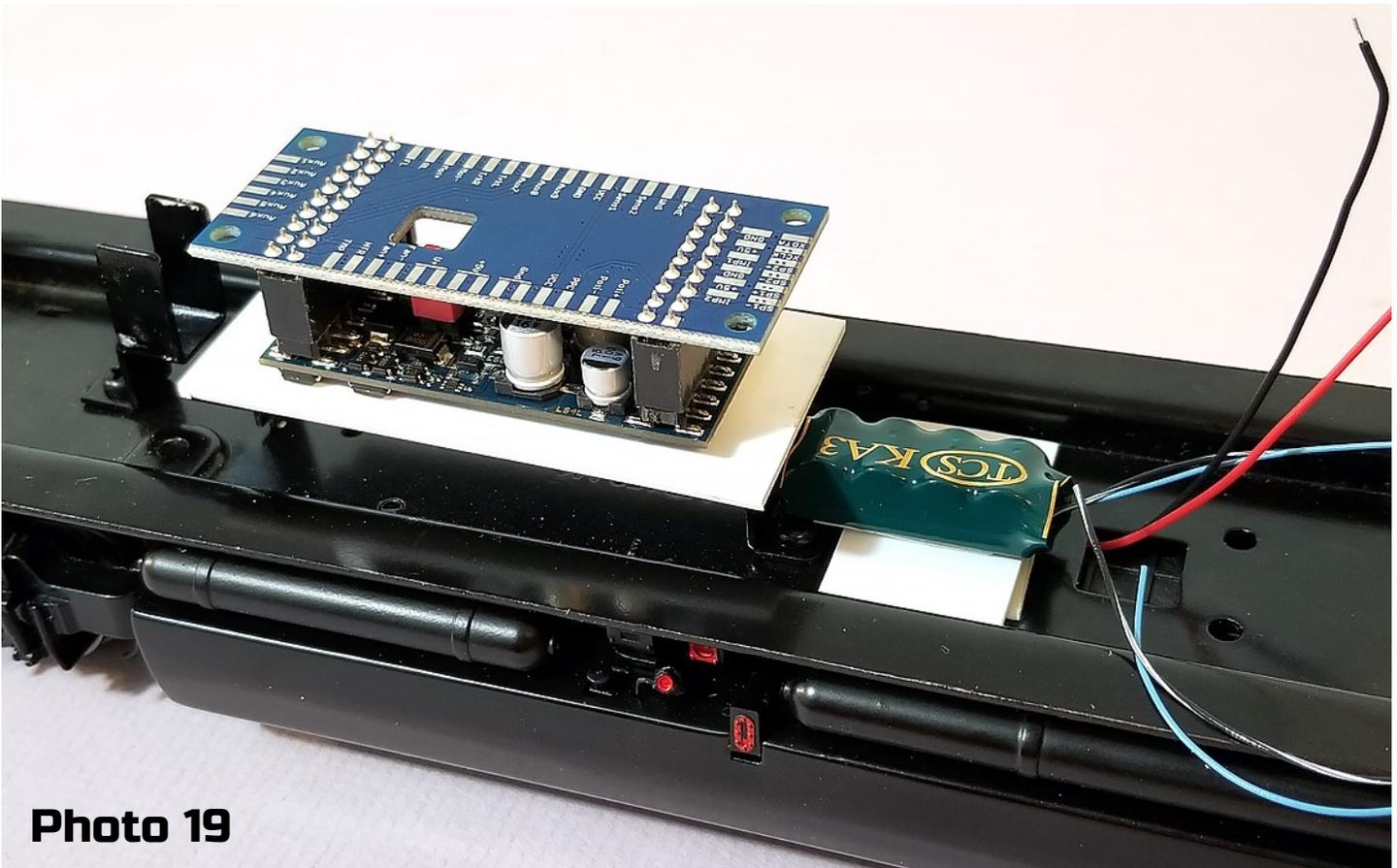
Once the mounts are ground flush, use a few layers of double-sided tape and mount the speaker face down in the fuel tank. Because these speakers are little woofers, they need some space to flex, so I mounted the speaker on top of a wooden spacer. Photos 17 & 18



**Photo 18**

Plug in the speaker wire using a micro mini connector, and run the wire through the frame. You can now fix the fuel tank in place.

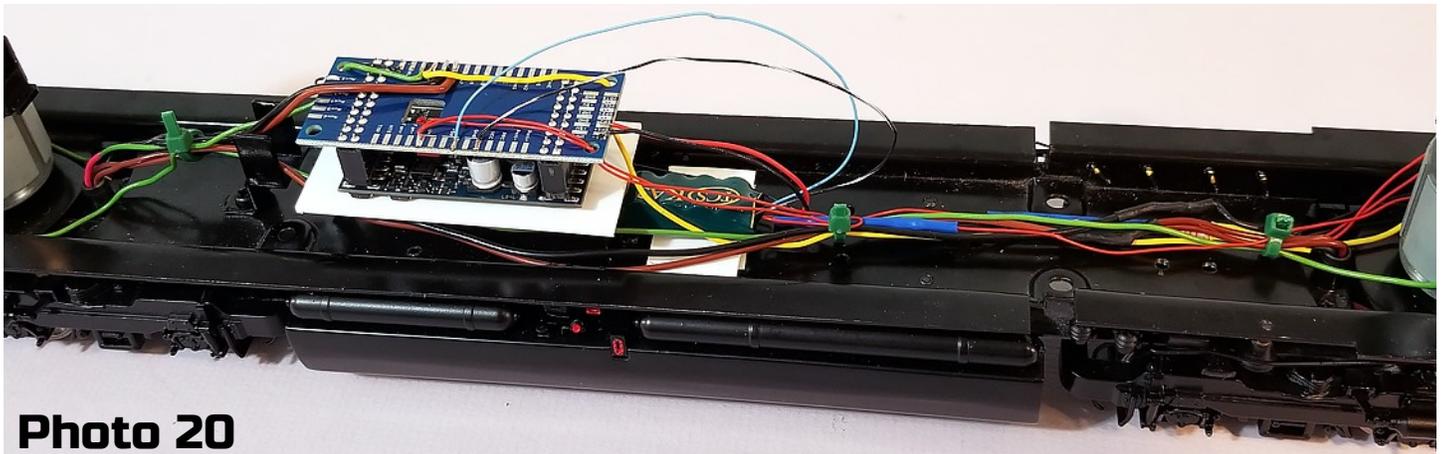
One solid advice I can give you is to make sure none of the electronic components come in contact with metal parts. So in order to fix the DCC decoder on the loco frame, I made a small styrene base and fixed it to the frame with double-sided tape. The decoder can now be fixed to the base with tape also. Do the same for the keep-alive unit, photo 19.



**Photo 19**

The first step in wiring is to gather all the right and left rail pick-up wires and converge them into a single brown and a single black wire. Wire these onto the decoder at their labeled terminals. Then run a wire from the decoder's motor (-) terminal to the front motor's left side. Wire the front motor's right side to the rear motor's left side, then wire the rear motor's right side to the decoder where it is labeled motor (+). Connect the speaker wires to the decoder, and do a test run on a test track just to see if the decoder reacts to the commands. In most cases, I prefer to do all my programming at this stage, since the keep alive unit is not yet installed. Besides, programming now will allow me to test the lights and lighting functions the moment they are installed.

I will not go into detail about the programming, mostly because I am very green in that field. It would make this article longer than it already is, and all this info is available on the manufacturer's web site and in various DCC forums. All I can tell you is that because I want all my locomotives to run the same way and use the same functions, I did the programming of one loco and saved that file on the computer. Now, all I do is put the new locomotive on the program track, bring up the file from the computer which now has all the operating characteristics, download the chosen sound file from the ESU web site, and write the entire project to the decoder. I then save that file with the ESU sound file number combined with my loco number... Something like 75320CN8004.esux... That way, if something happens to my decoder and I need to replace it, I have the correct file for that specific loco photo 20.



**Photo 20**

Next, wire the lights. I think most cases are similar but I found that in the locos that have the small contact pads between the shell and the frame, I prefer to use that instead of the mini connectors. This is what I did with this project. Wiring the lights is simply a matter of connecting the wires to the decoder. For the headlights, I wired the common (negative pole of the LED, in this case the black wire) on the decoder that is labeled FL for front headlight. The other wire on the LED, the red one, was fitted with a 2k Ohm resistor, and then wired to the V+ connector. Ditch lights are wired the same way, connecting the black wires to the aux.1 terminal, and installing resistors on the red wires (one resistor per ditch light) and connecting to the V+ terminal. You will need to program aux.1 to the ditch light function on your programmer.

I then attached all the wires together with tie wraps for a nice and tidy job. The only thing that I am not able to show in this article is the use of the magnetic reed switch, because at the time of this writing, I still have not received my switches. In a nut shell, I install the keep alive unit as per the instructions of the manufacturer... Blue wire to V+ and the dashed wire to the ground terminal. When I get my reed switches, I will simply cut one of the wires and insert the switch on that wire. I will then glue the switch inside the roof of the loco in a place where I can put a small magnet on top of the loco without it falling over, and that will de-activate the keep alive while I am doing my programming.

The loco is now ready to get to work on the layout. I did a slight weathering on mine to kill that plastic look, and set this in consist with another MTH loco I converted. Using the exact same programming parameters proved well for the speed matching of my two locos, I simply adjusted the forward and reverse trim (CV66 and 95) on one loco to have them running in perfect synchronicity.



I made a short Youtube video on this locomotive, running with the PS 3.0, and then running with the Loksound.

*[Click here to see video.](#)*

In conclusion, as you can see, it is clearly possible to do this type of conversion and I highly recommend it to anyone who wants to have more flexibility over the programming and the running of their locomotives. I still have about 12 locomotives to convert, so I guess I better get to work!

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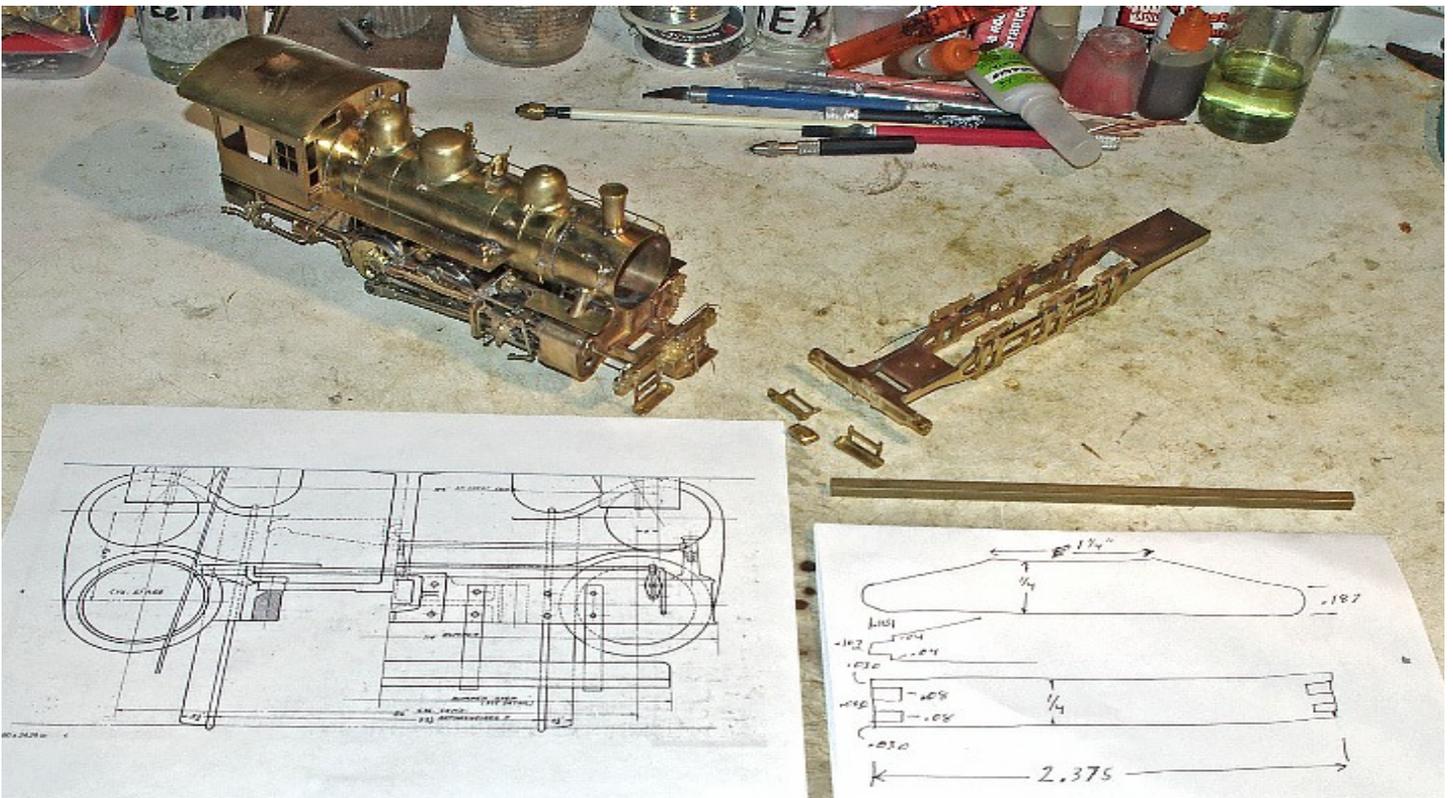
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# My First Two Steam Locomotive Kits

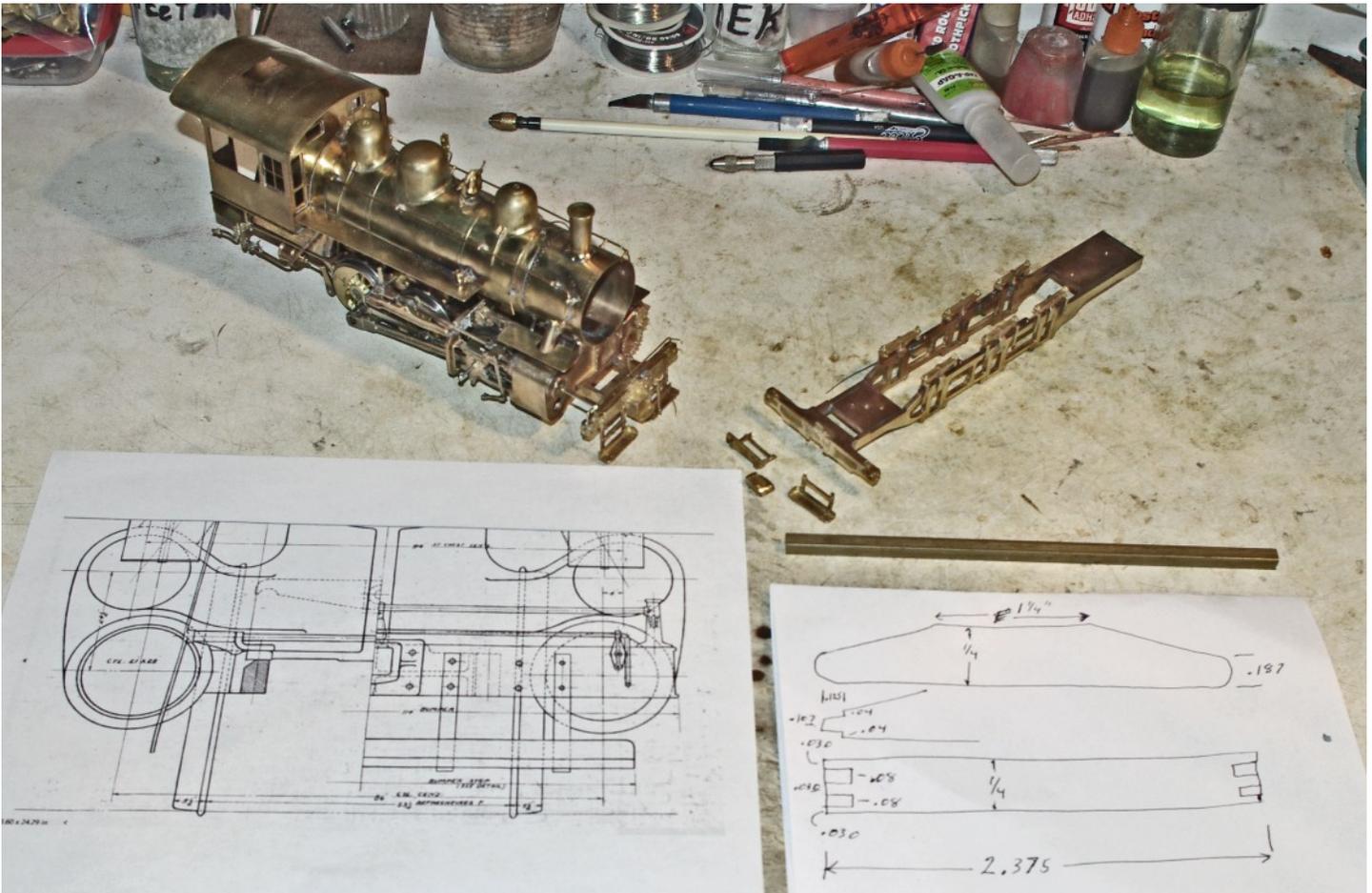
## Making The Pilot Beams



By Glenn Guerra

I recently modified two Stevenson Preservation Lines New York Central switch engine kits to resemble Nickel Plate class B-11 switchers. The NYC and Nickel Plate engines were the same mechanically, but the appliances varied, so it was not a complete rebuild of the models. Once I had the chassis together and on wheels, I checked the coupler height at the pilot beam. It was way off, so I started to look into where the problem was. After looking close at a photo of a Nickel Plate engine, I could see that the coupler mounted on the face of the pilot beam, not below it, like the model pilot beam. When I discovered this, I looked closer at the foot boards and they were way also too low. The pilot beam supplied with the kit was going to take some work to make it right.

I tried filing and cutting off the details on the model pilot beam so I could modify it. As I was doing this, I looked closer at the drawings I had, along with the photos of the prototype, to see what needed to be fixed. I finally got to the point where all I had left was the pilot beam with no details, and even this was not quite like the prototype. At this point, I decided I would need to start from scratch. What follows is how I made two new pilot beams and detailed them.

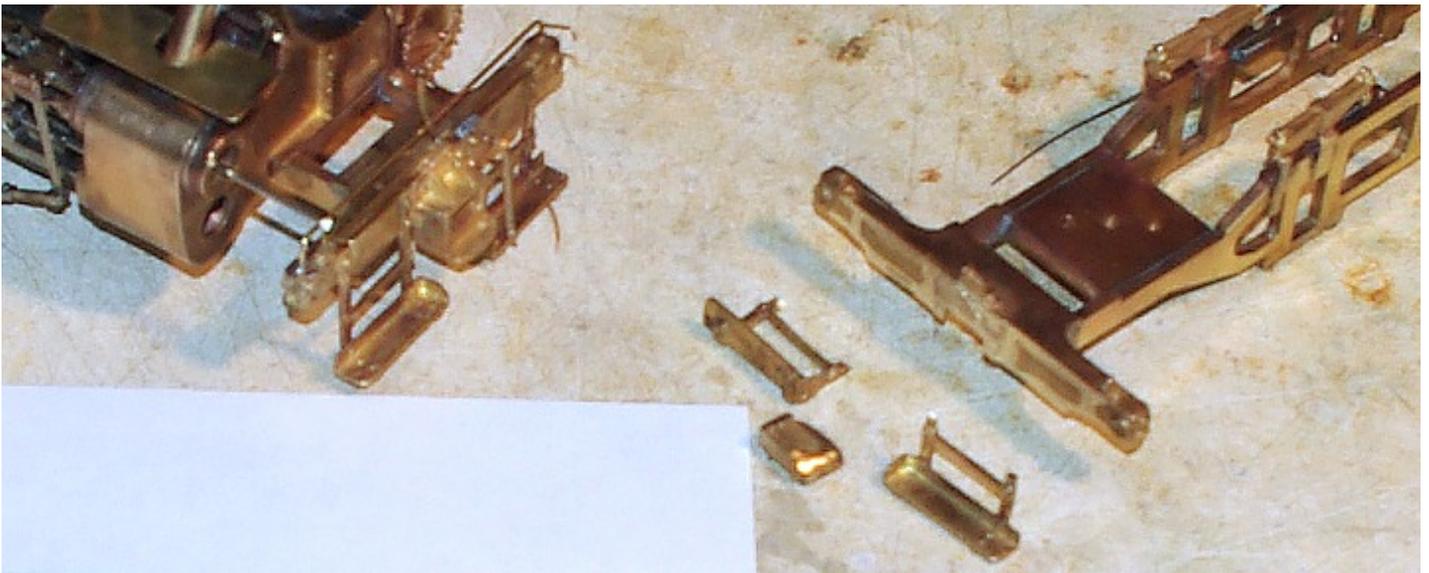


The first step with any project is to get something down on paper. The drawing on the left is part of the NYC erection drawing for these engines. It had some basic dimensions of the pilot beam. I measured a few of the dimensioned items on the drawing with my calipers to get a scale reference for the drawing. Here is how it works:

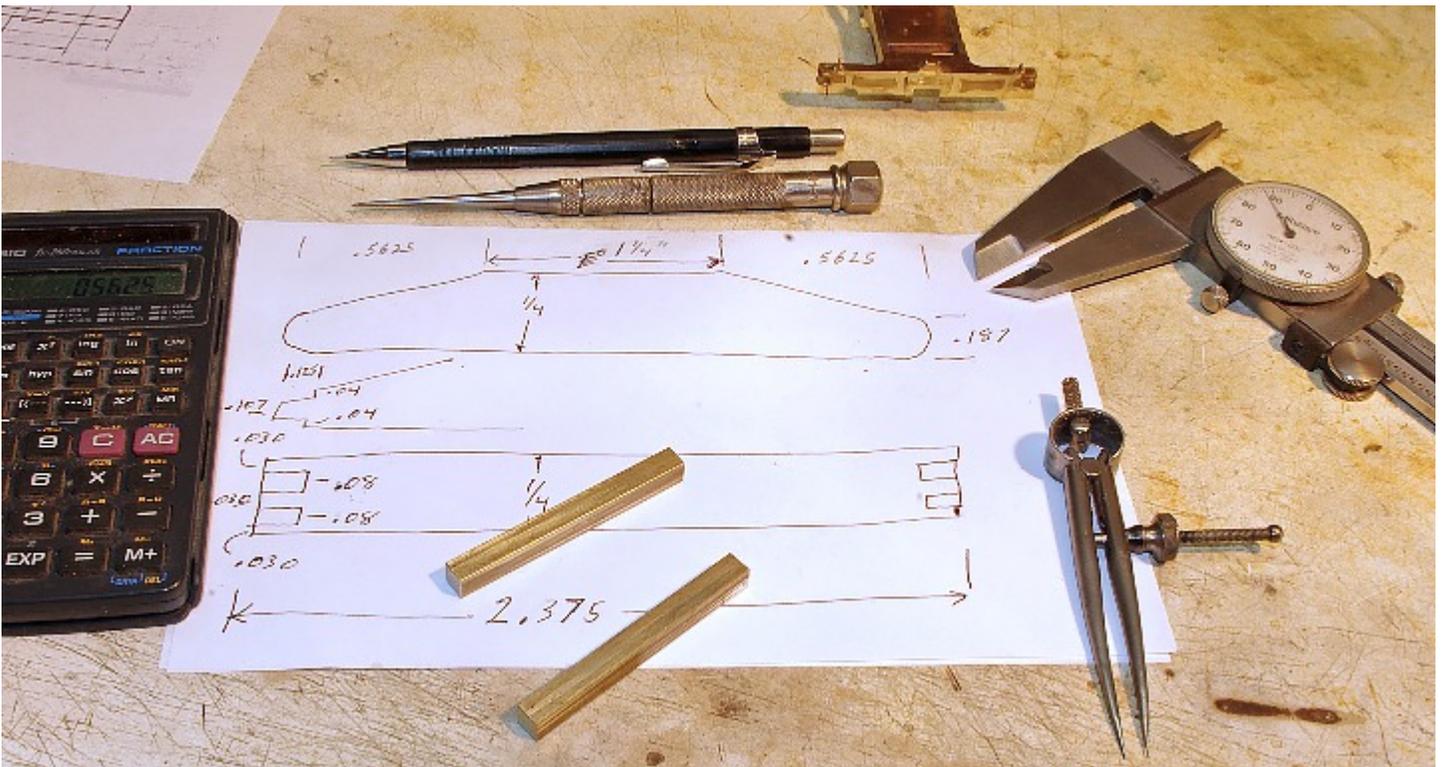
$$\text{Dimension Shown On Drawing} / \text{Your Measurement Of The Drawing} = \text{Drawing Scale}$$

To check your drawing scale, measure some other dimensioned part of the drawing with your caliper. Then multiply that measurement by your drawing scale and see how close it comes to the dimension shown on the drawing. It should be close and within one actual inch of the prototype. Scaling drawings is not a good practice when working in a shop, but for making a model it is acceptable. If you are within one inch of the prototype, that is .020" on your model. Visually it's not a problem. If your part needs to work with some other part like a valve gear part, then adjust the dimensions you get so the part you are making will fit the rest of the assembly.

The next step is to make a sketch of the part you want to make with the actual dimensions of the part on it. You can see my sketch on the right. This sketch will also help you think through how you will make the part using the tools you have. This sketch becomes the drawing that you will use and you can put the prototype drawing aside for a while. Don't try to go back and forth between the two or you will end up with a mess.



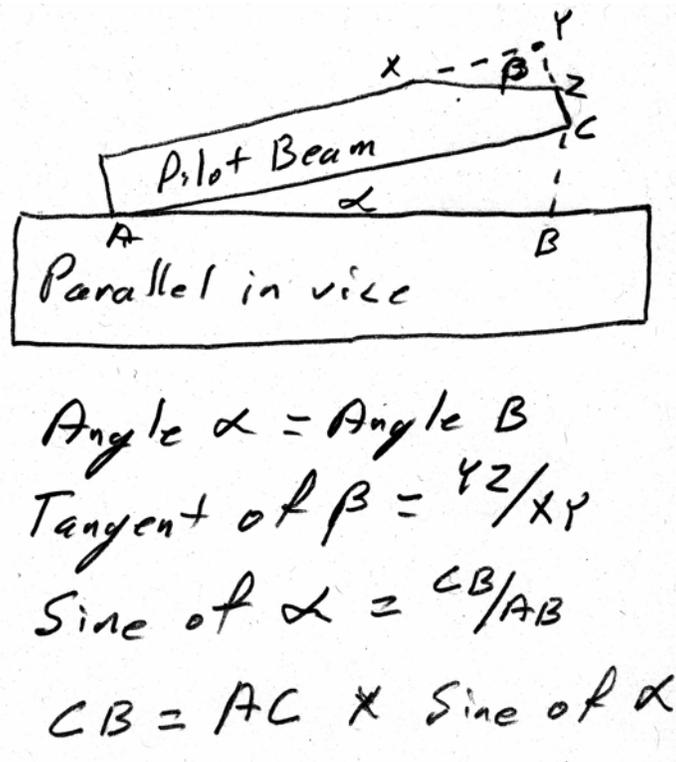
This close up of the previous photo shows the pilot that came with the kit on the left. The model on the right shows the details I took off to try and make it work. At this point, I decided there was too much wrong with the one from the kit, and I just needed to make a new one.



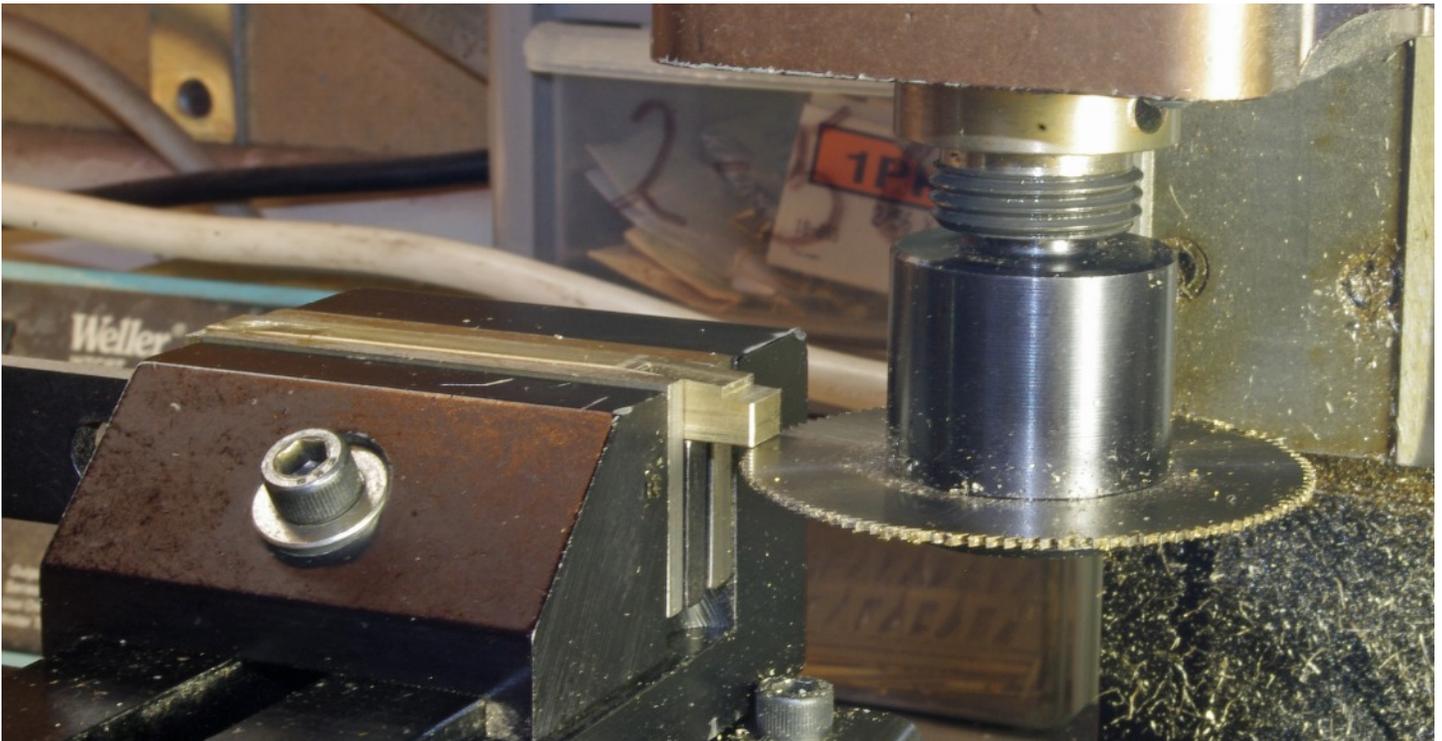
The prototype pilot beam measured out to 12" tall by 12" wide. It tapered towards the ends as shown in the sketch. I used some .25" x .25" square brass stock. There are holes on the ends of these cast pilot beams. These holes are where the sand core was supported so the pilot beam could be cast hollow. They are square on this pilot beam and I was trying to figure out how I would make them. To try and cut them with a milling cutter from the end would not work. A small cutter like that would last about two seconds with me running the machine. Therefore, I decided to cut two slots on the ends with a slotting saw and also mill off .040" of the front and back face. Then I would hard solder two pieces of .040" brass on the faces I milled. This would give me nice square holes on the end. To make the round corners, I just filed them round. You will see how it worked in the next few photos.



In this view I am milling the taper on the back side of the pilot beam. The drill bit is to help hold the part in place, and also to help set up the cuts for the other tapers. I learned this from a machinist friend. Once I know the drill bit to use, I can set up the other cuts using the same drill and all the cuts will be the same. To determine the drill to use, I just kept trying larger ones until my cut was parallel to my scratch mark on the piece. Trial and error worked fine here, if you want to know how to calculate the drill size see the next photo.



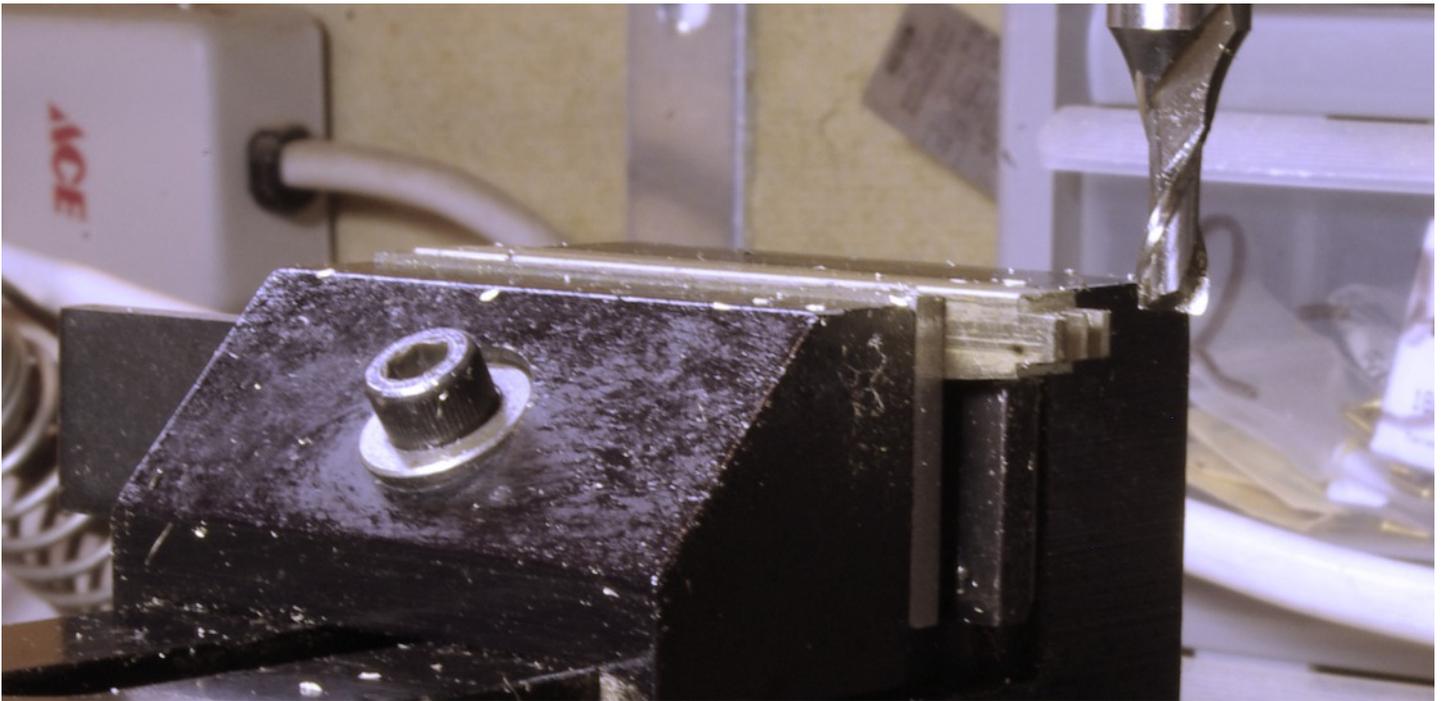
Here is a sketch of the math if you want to calculate the diameter of drill to use. We know the dimensions of lines XY and YZ from our layout. Since the tangent of angle Beta is YZ/XY we can determine what angle Beta is by using our calculator or some sine tables. The sine of angle Alpha is CB/AC. Since angles Alpha and Beta are the same angle dimension, we can look up the sine of angle Beta, which will be the same for angle Alpha, so we now know the sine of angle Alpha. Now that we know the sine of Alpha and the length of line AC, we solve the equation for the length of line CB as shown. The dimension of line CB is the diameter of the drill bit you need as a spacer. A bit over done for a model, but fun to practice your math skills.



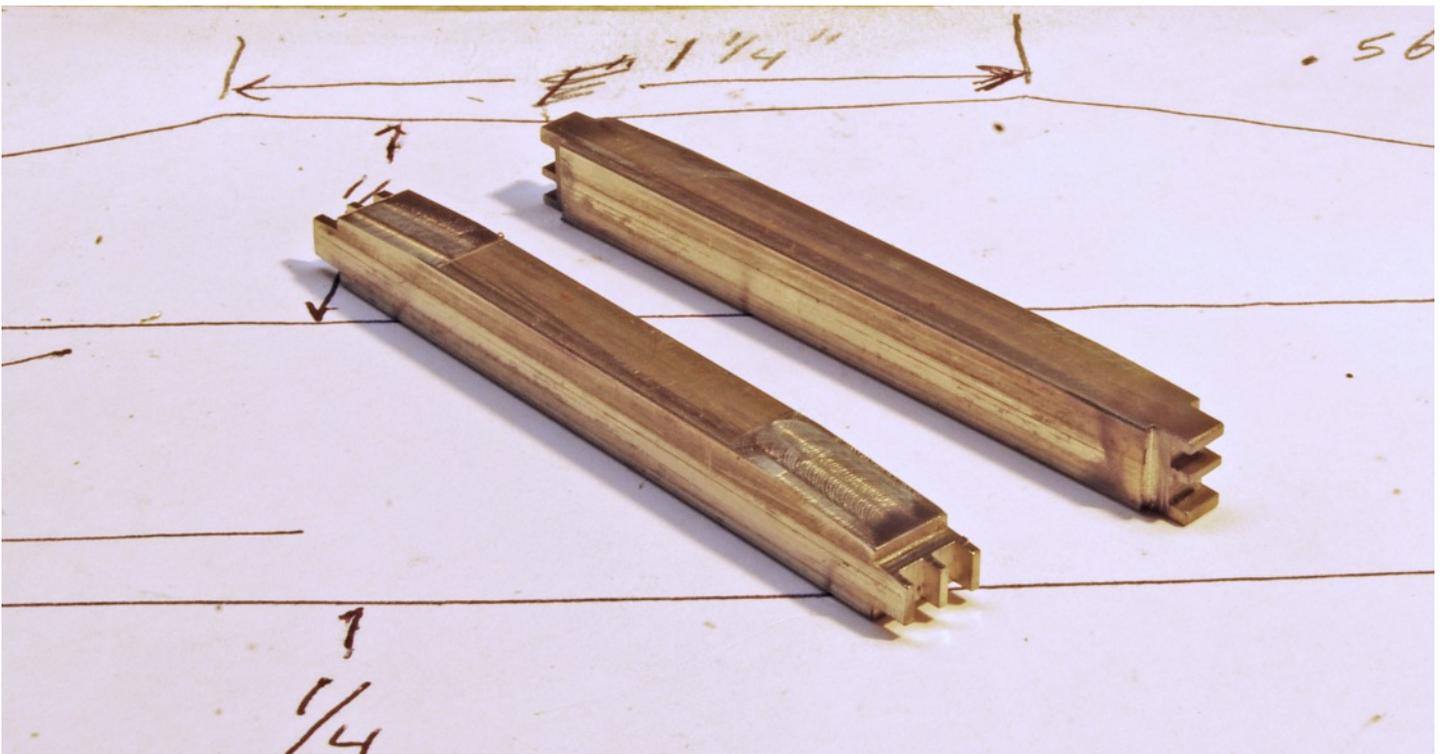
I have a small Sherline mill which is a good machine for model work, but it has some things you need to watch for. The “Z” axis, up and down, is changed by moving the head of the machine and not the table. When lowering the head, like you would do to make a deeper cut, you screw the head down. This takes all the slack out of the lead screw to move the head down. When you start cutting, the head will slip down and take the slack out of the lead screw. You will end up taking a deeper cut than you want. This is a problem with all machines of this design, so you just need to think about what you are doing. In this case, I touched off at the bottom of the part and started moving the cutter up to make the cuts. This way, I was always working the lead screw tight, and what I read on the dial was what I got for a cut.



This is what one of the ends looked like after I had the slots cut. You can see the notch I cut for the .040” brass on the face of the part facing you. I used a .040” slotting saw. When you touch off the part, crank the head up .040” and the bottom of your saw will be flush with the bottom of the part.



In this view, I am cutting the .040" notch in the face of the pilot beam. I did the notch on the back at the same time I had it set up to cut the taper.



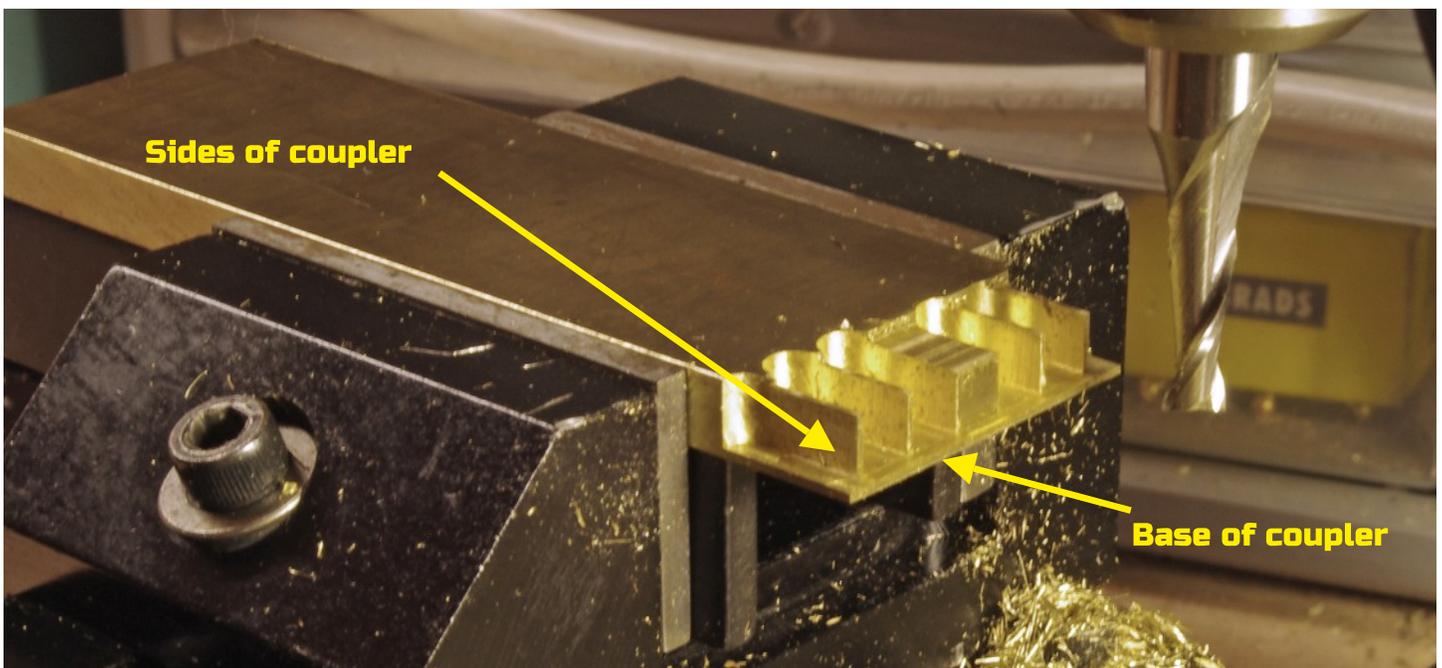
These are the two pilot beams after the machining. The next step will be to solder the .040" brass in the notches on the front and back. That will give us two nice square holes on the end.



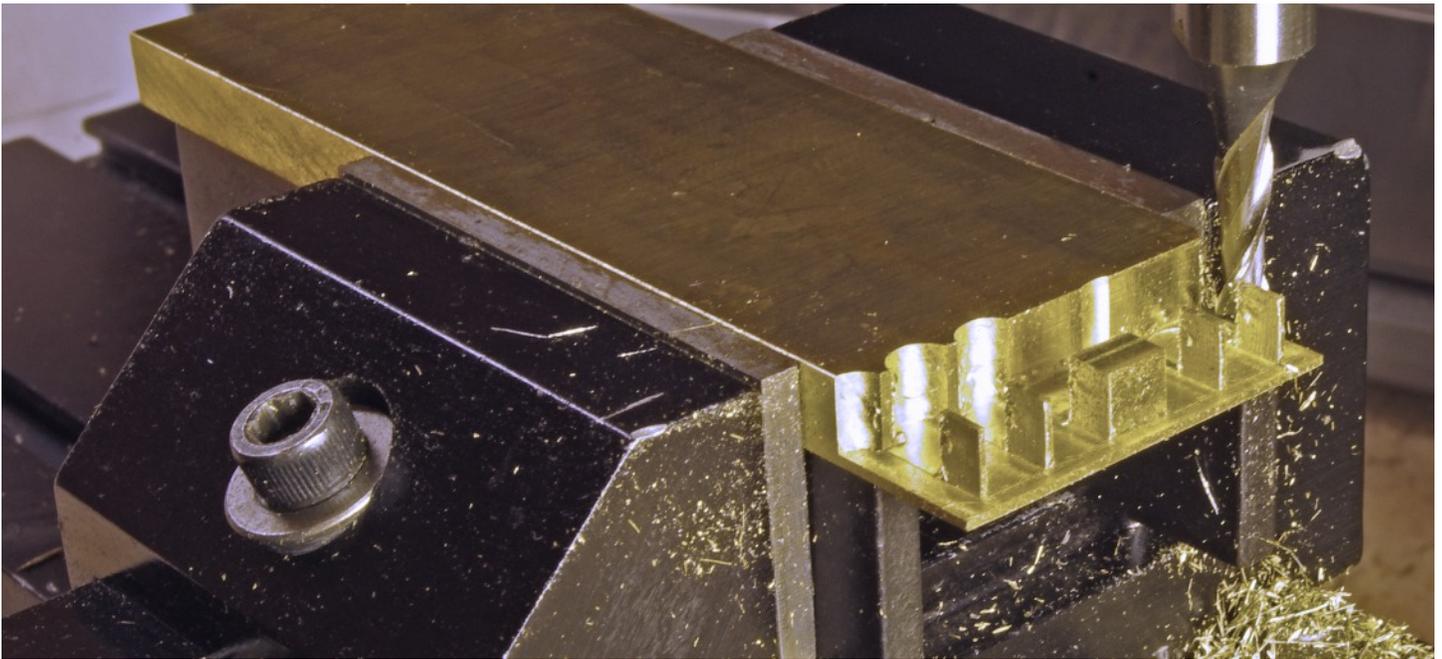
This is how I soldered the .040" brass in place. Leave the pieces big and file them off later. Don't try to make an exact fit. I soldered the piece on the front side as shown in the top photo. Lately, I have been using a paste silver solder and really like it. You can cut small snips of hard solder, which is what I have done in the past, but I like the paste better for these types of jobs. I put a little on the part, and place the part I want to solder in place. Then I heat it with a propane torch. The flux will melt first and you will see the solder start to get shiny. Keep heating, and when the solder gets hot enough, around 1200 deg. F, it will flow into the joint. I was afraid of the front piece coming off when I soldered the back piece on. To fix this, I put the pilot beam on my fire brick and held it down as shown. Then I soldered the .040" brass to the notch on the tapered side of the pilot beam. These pieces are now held in place with very strong solder that melts at 1200 deg. F, and they will not come apart while doing any other soldering on these pilot beams.



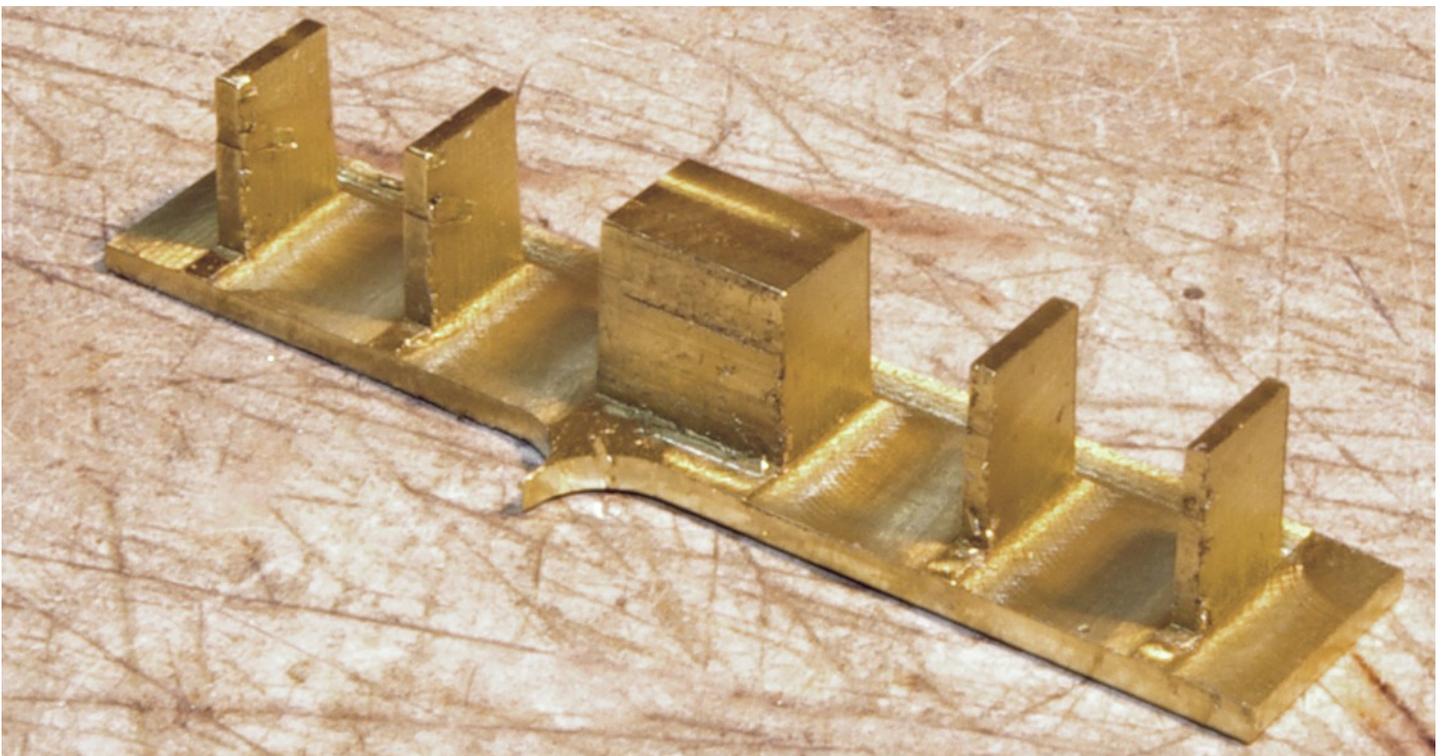
Here is a photo of one of the ends finished. The square holes look good don't they? I was happy with how they turned out, and the way I did it. If I do it again, I may consider making the .040" pieces thicker. That would mean using some .062" brass and maybe make the notches .050" deep. The excess could be filed off easily. It would make the holes taller than they are wide, which would be good, giving me more material to file a larger radius on the corners.



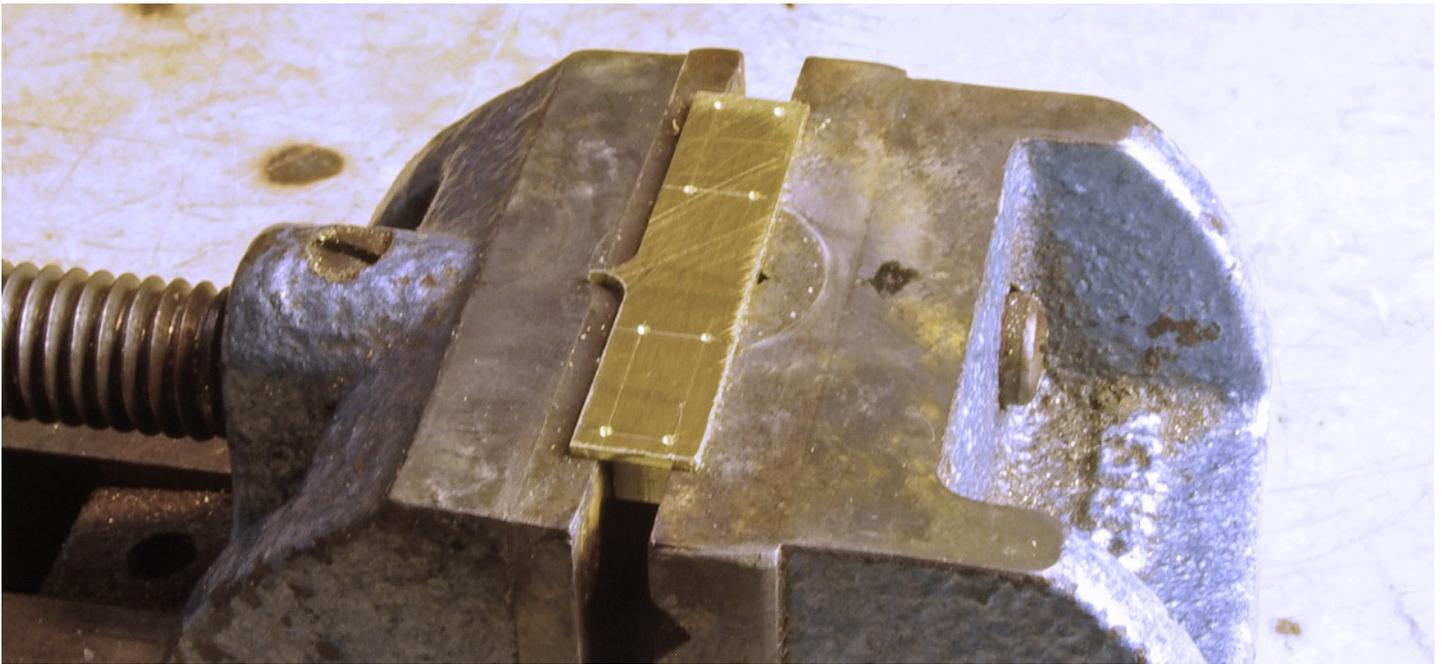
After I had the pilot beams roughed, out I started on the coupler pockets. My first thought was that there would be trouble ahead with a bunch of small parts falling apart while I tried to solder them. Therefore, I decided to machine part of it thus eliminating some of the solder joints. This is the first step, there are two coupler pockets here. I have the base of the pocket and the two sides milled as shown. As the photos progress, you will see how this worked.



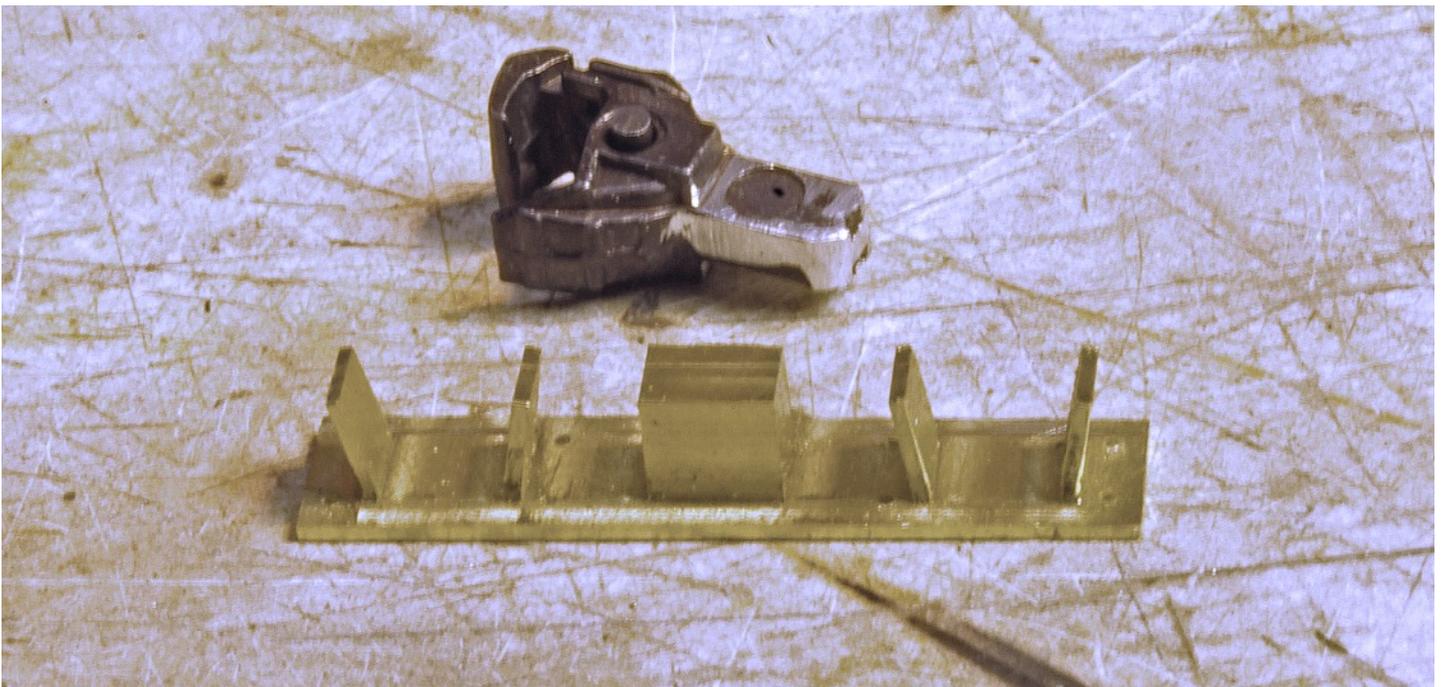
This was the second milling operation on the coupler pockets. I now had the height of the sides established. The sides are the four thin parts. The thick part in the center will be cut off later.



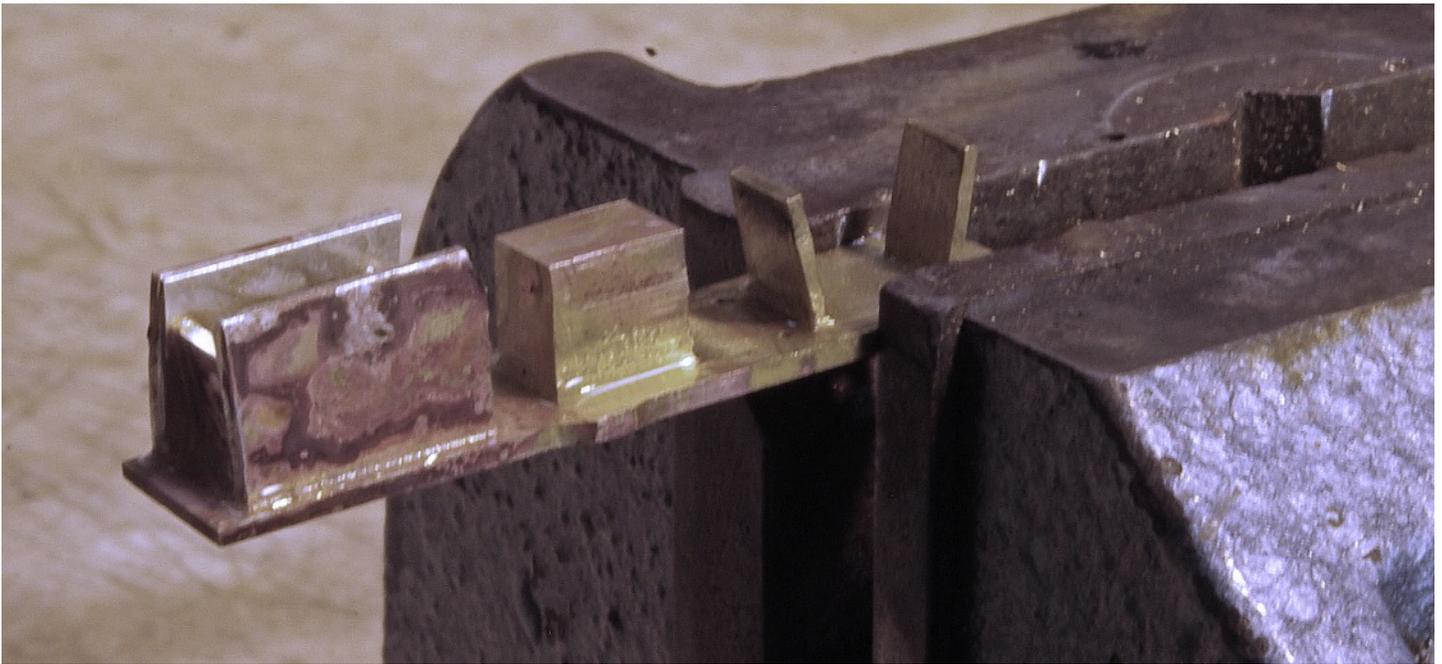
This is what I ended up with after I cut the parts off the block of brass. I did wood work for a living and only dabbled in machining, but there is a lot in common when thinking your part through. One of the most important things to consider is how you will hold the part during each operation. My machinist friends call it leaving a handle on the part. You can imagine how small the parts are at this point. How would you hold this in a vise to mill more off? By making this all on the end of a bar of brass, I was able to hold onto it and do most of the machining. The same would apply if you were doing this all by hand. If you wanted to work this all down with a file you could, but you still need a way to hold onto the part while you are filing. I try to think each part through to determine how I will hold it to make a cut. Sometimes I don't get it right, but most of the time I do.



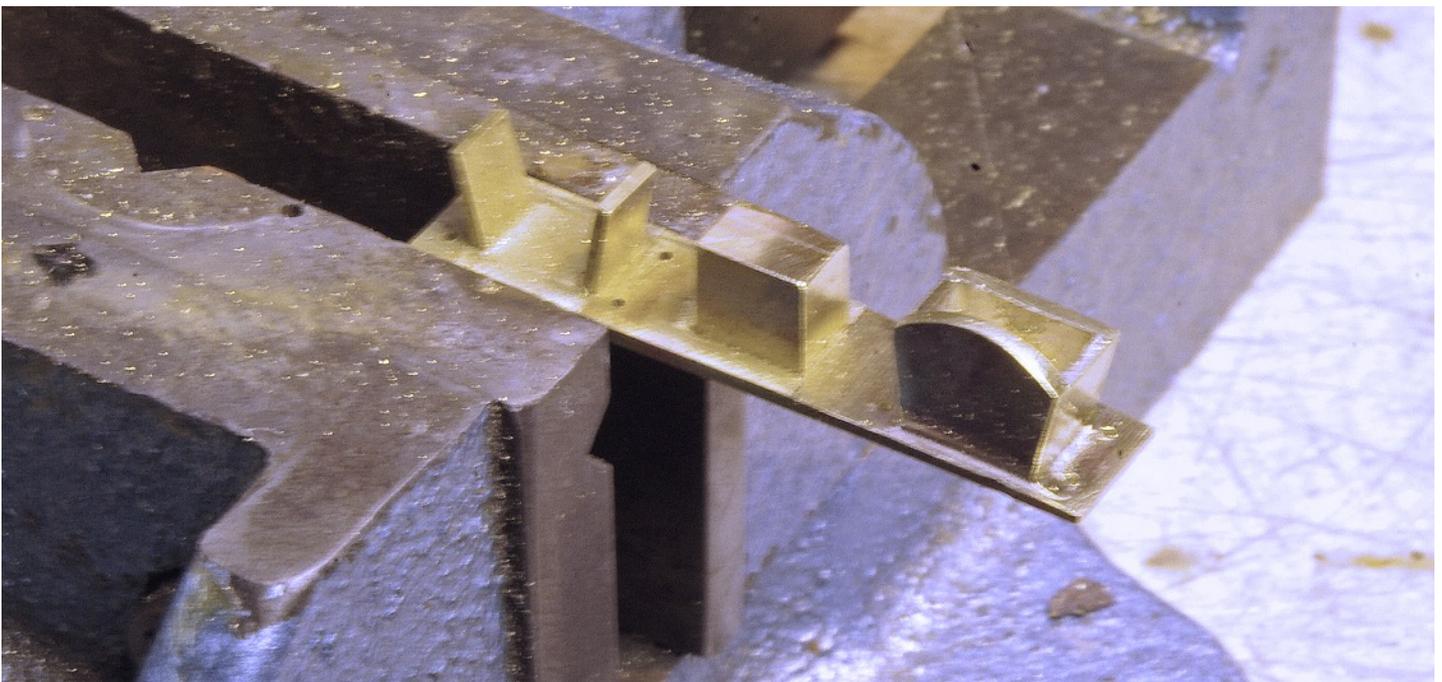
The coupler pocket is held to the pilot beam by four large bolts. I was going to use nut bolt detail here and decided to drill the locating holes at this time. I scratched the layout lines as shown, drilling holes where the nut bolt detail would be.



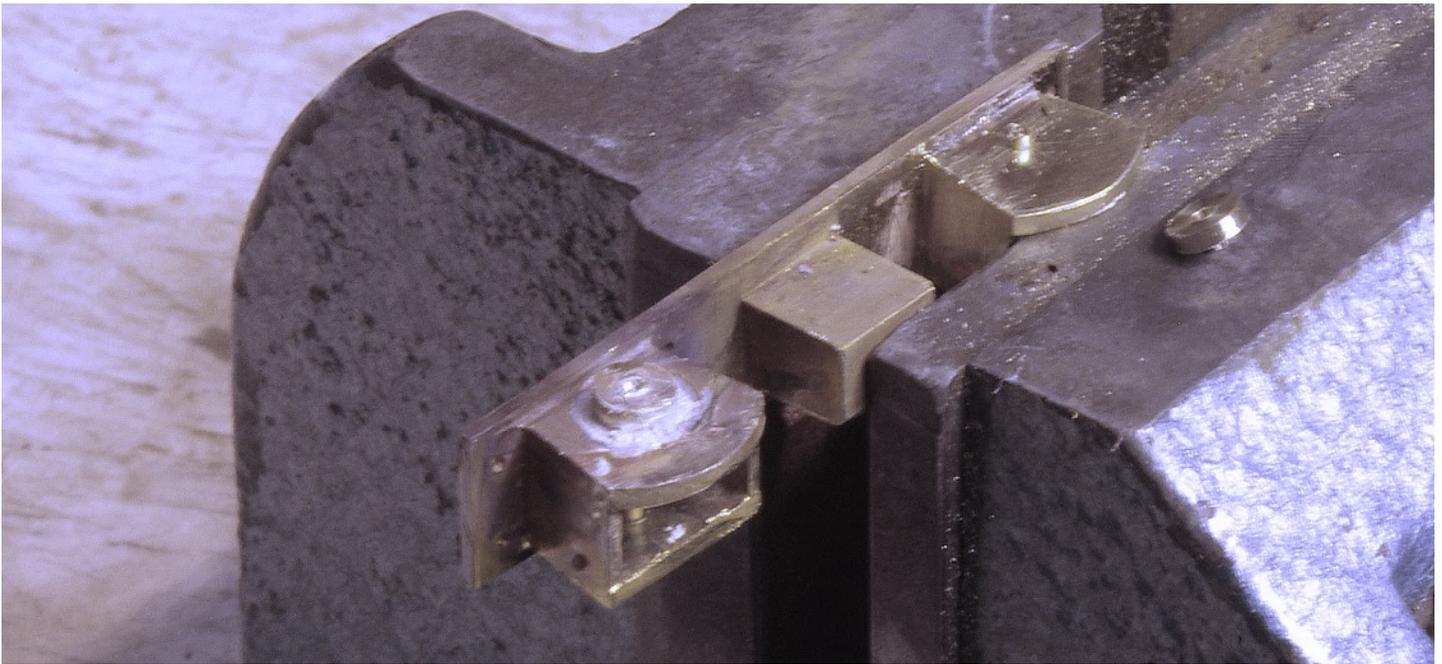
On the prototype photo, the sides of the coupler pocket are splayed out. I did that by bending the sides out as shown with some flat pliers. Imagine trying to hold all these parts in place while you soldered them. Then imagine how you would keep them there while you soldered the next parts on. For the coupler, I just cut the shank on a standard coupler shorter. I would use an 0-80 screw to mount the coupler. The 0-80 screws need a clearance hole of .062" which is what I drilled in the coupler shank.



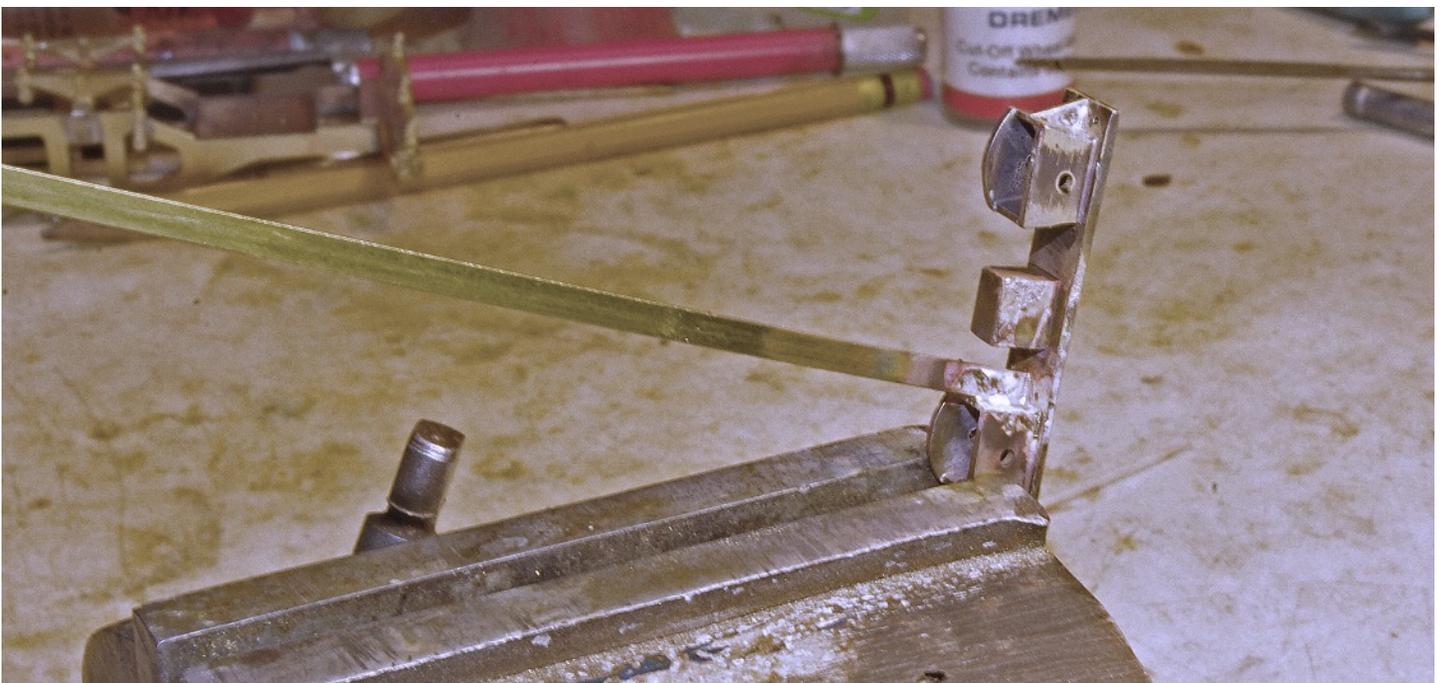
The next step was to solder the top and bottom on. I used the 1200 deg hard silver solder again for this. I made some small pieces as shown, and held them in place with a small spring clamp. Then I put some of the silver solder paste on the assembly and heated it with the small torch. I have been using a small propane oxygen torch for this and it works very well. There is a lot of heat in a small space.



This is what one of the coupler pockets looks like with the top and bottom soldered on and then filed to shape. It's starting to look like a coupler pocket.



I wanted to use an 0-80 screw to hold the coupler in and felt I needed more brass on the bottom of the pocket for threading. I drilled the coupler mounting hole first. Then I made some small washers as shown, and hard silver soldered the washers to the coupler pockets. One of the advantages of the hard silver solder is that it tends to alloy with the base metal. When this happens, the melting temperature of the silver solder goes up. I was able to silver solder the two new washers in place without the rest of the assembly coming apart. This was where the small torch really came in handy. A lot of heat quickly in a small area allowed me to solder the washers on before the rest came apart.



This is another technique I have shown before. Most articles show soldering this small piece in for the web. I do it a little differently by soldering a large piece in and filing it to shape. It's much easier than trying to hold a small piece in place. I also soldered this together with hard silver solder. The top pocket has the web soldered in place and filed to shape.



The last step was to solder the nut bolt detail in. Again, I used 1200 deg hard silver solder paste for this and the small torch. The whole coupler pocket is soldered together with 1200 deg solder. When I solder it to the pilot beam with 350 deg solder, nothing will come apart.



This is what the coupler pockets look like when they are cut apart. The one on the right needs a bit of trim with a file and it will be ready to go. I was happy the way these turned out.



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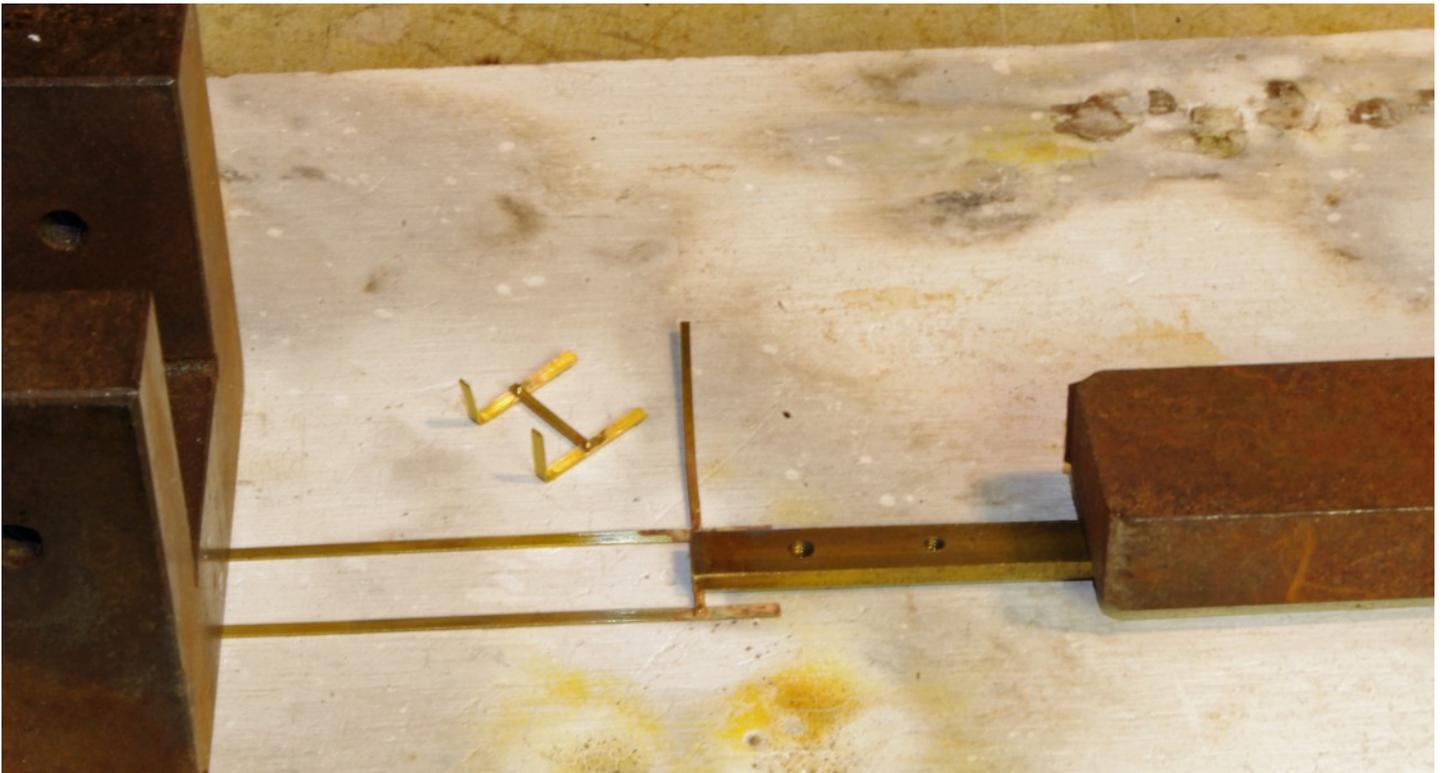
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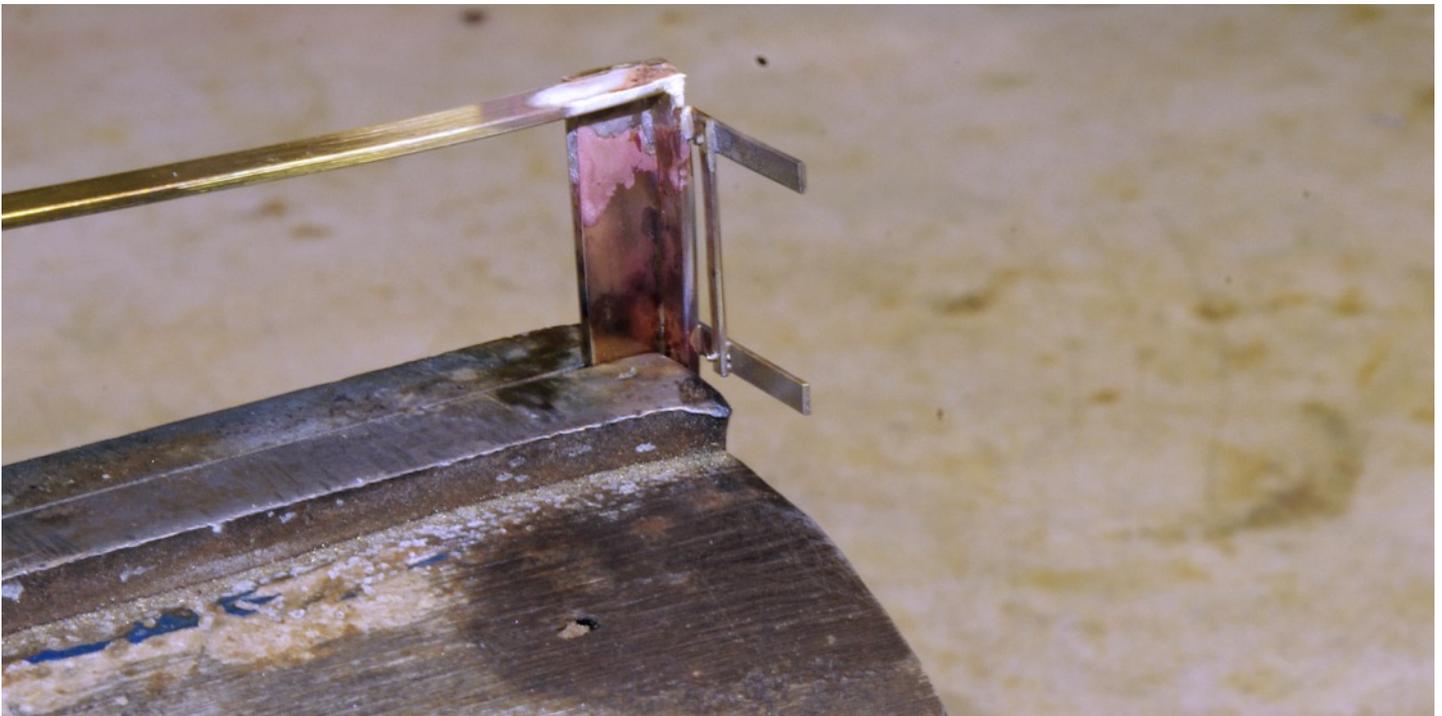
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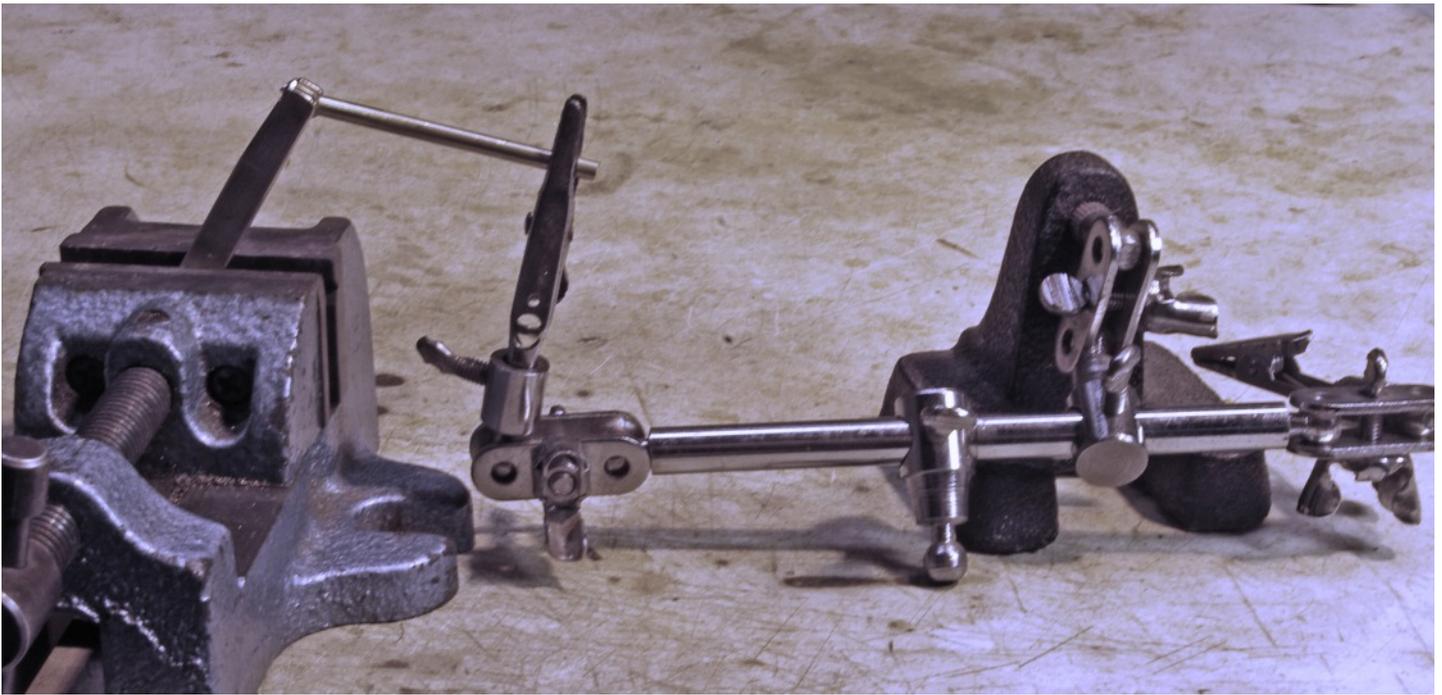
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By the time I got to the foot board brackets, I was feeling much better about hard silver soldering. I hard silver soldered these brackets together as shown. For this I used a small butane torch. The propane oxygen torch was too hot and melted the parts.



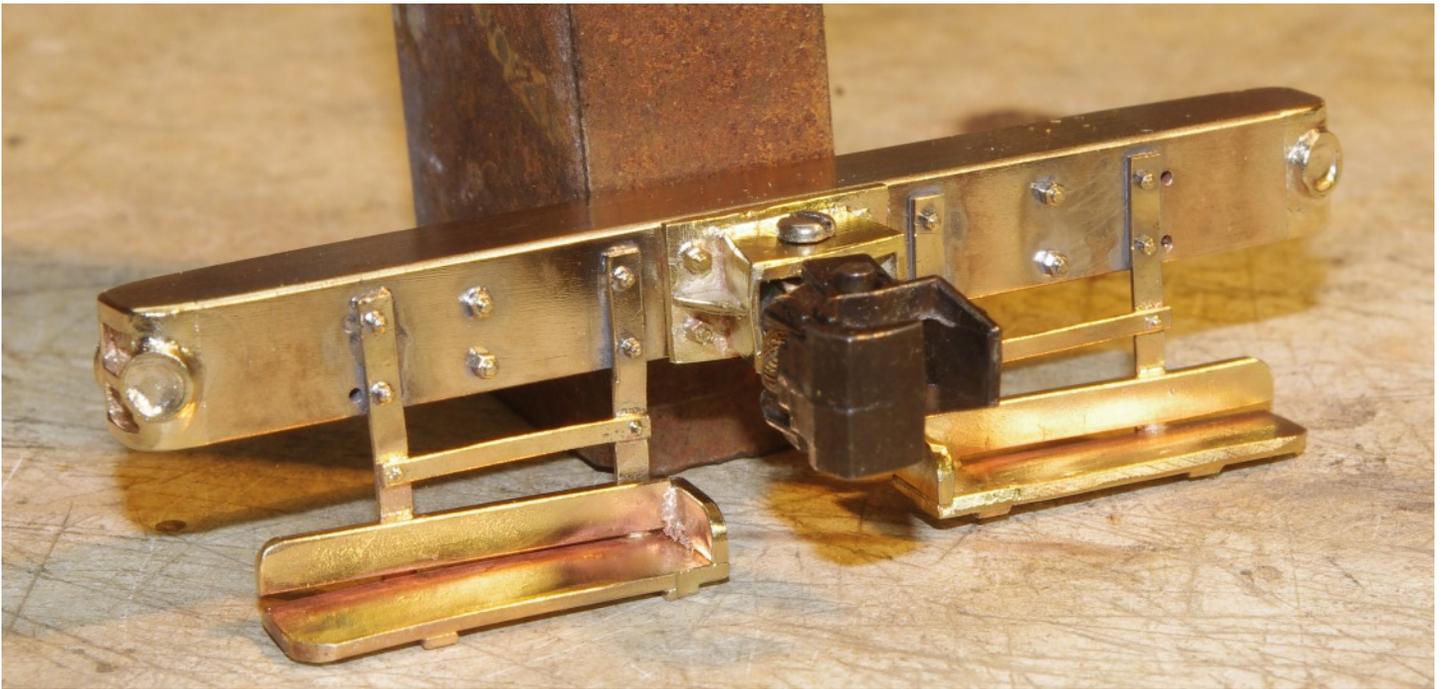
Since I was getting better with the silver solder, I decided to see if I could solder the steps on. I was able to do it using the small propane oxygen torch. The step treads are .032" brass and are a bigger heat sink than the .020" thick brackets. By using the small torch with a 1/16" very hot flame, I was able to do this. Heat the step since it is the larger part. If you try to heat the bracket, it will melt before the thick step gets hot enough. For doing the sides, I did the same as before – soldering the whole strip on and cut it off later.



This is how I made the polling pockets. I fit a piece of brass tube with a file. Then I held it in place and soldered it as shown. I did this again with the hard silver solder and small torch. In this case, I heated the tube and got it hot first. Then all I needed to do was place the torch on the pilot beam for a second and the solder flowed right in.



I drilled the pilot beam for the bolts that hold the steps on. Then inserted some nut bolt detail. I used the hard silver solder again and the small torch. Heat the pilot beam first until the flux starts to melt and then place the torch on the nut bolt detail. The solder will melt and flow into the joint.



Here is my first scratch built pilot beam and coupler pocket. It was a lot of fun, and I learned a lot.



Here is another view of the two pilot beams.

So there you have it, my first two scratch built pilot beams. Not flawless, but they do look good. I made some scrap along the way, but that is the cost of education. This was a lot of fun, and I learned a lot. There are some basic principles I keep harping on, but they work. The first thing is get out some paper and pencil. Start sketching while thinking the job through. Think about the tools you have and how they can be used. You may have different tools than I do, but this job can still be done. Think about how you will hold each part during machining or fitting. Include some of these thoughts in your sketch, it will help you sort things out. And most important of all, don't be afraid to try.

# O Scale Ohio DE 400 Crane or How to Work with Brass

By Richard Cooke

*Editor's note: This is not a step by step building article, but rather a general overview of Richard's project with pictures to encourage modelers who might be hesitant to work with brass.*

This model can easily be built at your workbench. No lathe or mill required. The trick to building any model, in any medium: brass, plastic or wood, is using jigs and fixtures. A jig guides the tool while a fixture holds the part. A simple jig can be used to drill holes for grab irons.

First a few basics. When cutting brass sheet with snips, I cut about 1/8" larger then cut as close as possible to the line. ( I think this eliminates almost all curl in the finished part.) File to exact size.

A jewelers saw is a modelers best friend. A good one can be had for \$20. I have been using mine, by Exacto, for the last 45 years. Get good blades. 6/0 (76 tpi) and 2/0 (56 tpi) are good for brass work. A #2 blade is good for thick brass, wood and styrene. I also have 4/0 (66 tpi), but it is not necessary.

To go with this saw, a vee block for the bench is needed. I just screw mine to the bench rather than clamping. You ca make one from a piece of 1 x 4 lumber.

When tapping threads, I always use a drill .002 or .003 of an inch larger than recommend. It makes for easier tapping, and the tap will last longer. Always use cutting oil or fluid when tapping and drilling. It also helps the jewelers saw.

I frequently soften the brass before bending. The part will bend easier with little or no springback. I purchased some .020 brass wire that snapped when making grabs. After softening, no problem. Heat the brass cherry red and quench or air cool.

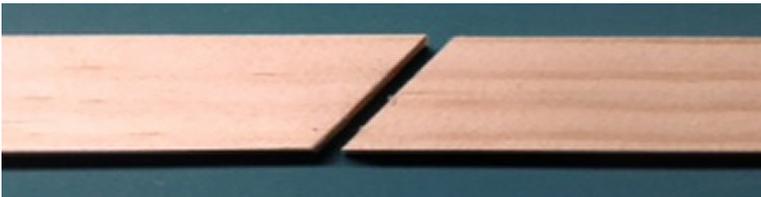
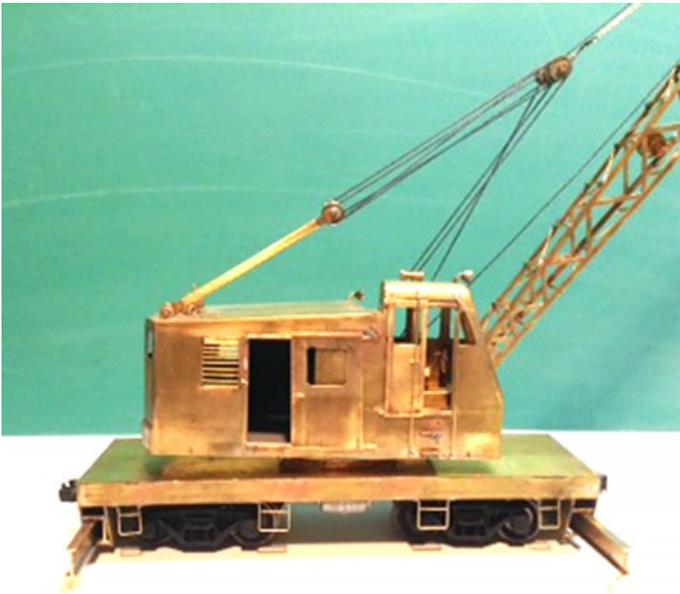
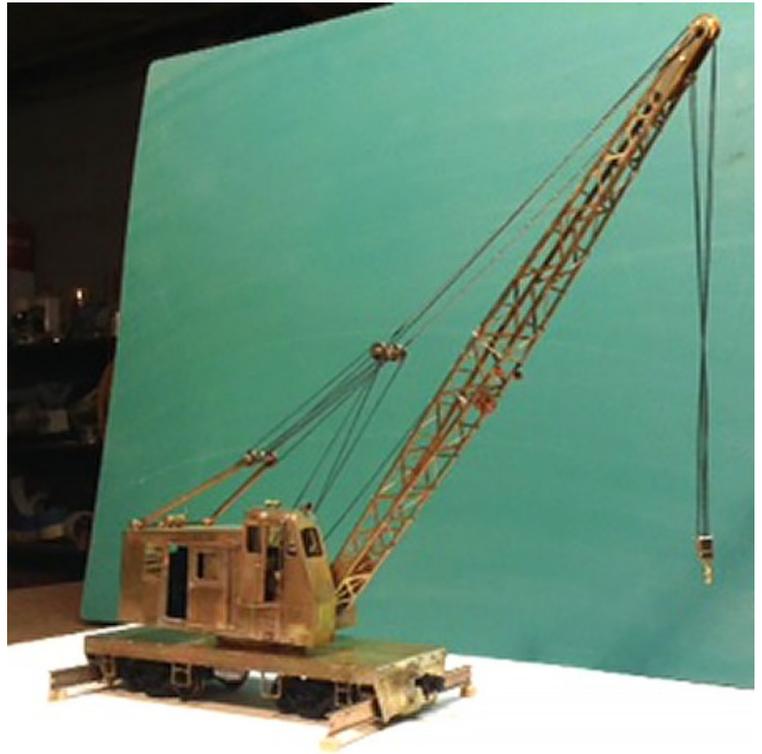
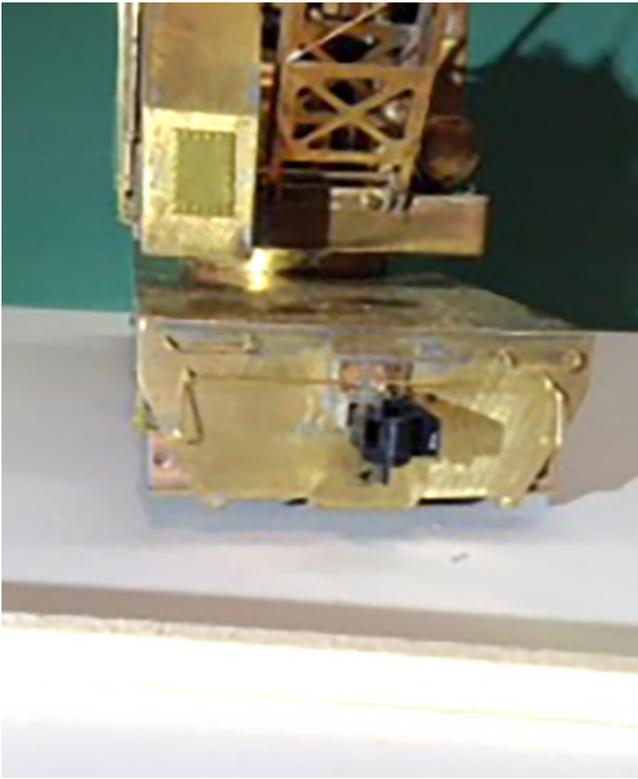


## Let's make some parts

The carriage frame ends have an inner and outer plates that support the stabilizers. Rough cut four pieces of sheet brass and sweat solder together. Use clothespins for clamps. Apply a little flux around the edges and solder. A mini torch makes fast work of this. Now finish cutting and filing the longest side. Coat the top piece with layout dye or magic marker. Your layout lines will show up better on the brass. Use that finished side to layout the other sides and all holes. After the stack is finished, heat to separate them. Stick a dull Exacto blade or screwdriver between the parts. When the solder melts they will pop apart. Clean up the residual solder and deburr.

Put a wood block between the inner and outer end plates when attaching to the frame. It will keep them spaced and square with the frame.

The slew rings were made from purchased bar stock. The inner bottom ring is 1/16" x 1/8" softened and bent around a piece of PVC pipe of correct diameter. A wood dowel could be used. The ends of the bar were filed at an angle and soldered. This scarf joint is stronger then a butt joint. The larger ring, 1/16" sq, was bent



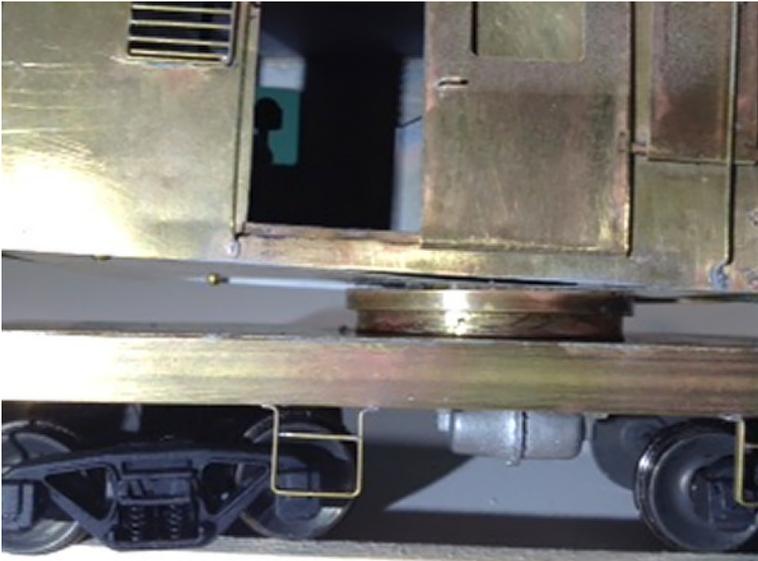
around the smaller one while still on the pipe. Offset the joints and slip a bit of aluminum foil between the rings at the second joint to be soldered. This will prevent the rings from soldering together.

When attaching the rings to the deck and floor just use a dab of solder in four or six places. This is called skip welding (soldering).

Much has been written about soldering, but I will say that I use a mini torch, a pencil and a resistance soldering (RS) unit. Mine is the inexpensive one from Micro-Mark. It works great for my O Scale projects. I did get the tweezers which help in many situations. They are not like the American Beauty tweezers that have both power and ground legs. This one has both legs the same polarity, but can hold a tiny part while soldering thus eliminating clamping. An aside about tools. Purchase good tools, they will last a lifetime. Many of my tools were my dad's purchased in the 1940's. On the other hand, you don't need a 1 ton pickup to carry a quart of milk from the store. As I wrote, my jewelers saw cost \$20. I have seen them

for as high as \$200. Are they ten times better or do they just cost more?

Cut a wood block as a former 1/32" narrower than the engine room. .015 brass was used for the engine room walls, roof and floor. Cut all openings. The three back panels are made as a single piece and bent to the proper angles. Clamp the parts to the wood form and solder. The cab needs another block. Cut the front angle and file the curve on the roof. With the sides clamped to this block, cut and file the front wall to fit between the sides. Cut the window and bend to fit. Don't solder just yet. A piece of brass for the roof was cut slightly



oversized, soften and bent around the former. Trim the two side edges till it sits down on the cab sides and the block. Solder in place. File the front edge of the roof to match the side angle. Replace the front to mark the roof curve. Remember, the front goes between the sides and under the roof. Solder in place. Repeat for the back wall.

For the two sliding doors, cut their widths to size and height plus 1/4". Bend a 1/16" lip 90 deg and repeat to form a channel on the top and bottom edges. Solder door tracks of 1/16" angle just above and below the door openings. Slide doors in place and check for fit.



Before making the boom, make the sheaves. I make a sandwich of different sized washers. Most are a #00 between two #2 washers. Tin both sides of the center washer. Slip the washers onto a toothpick and clamp with tweezers, then heat. Open up the hole of your new sheave to slip on its shaft. A handheld tapered reamer works well for this. Mine is from General Tool.

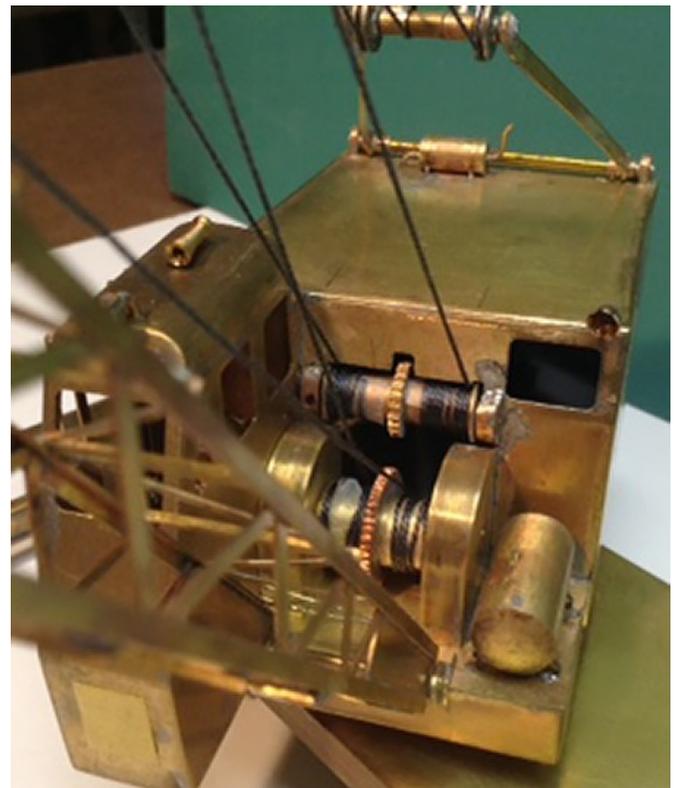
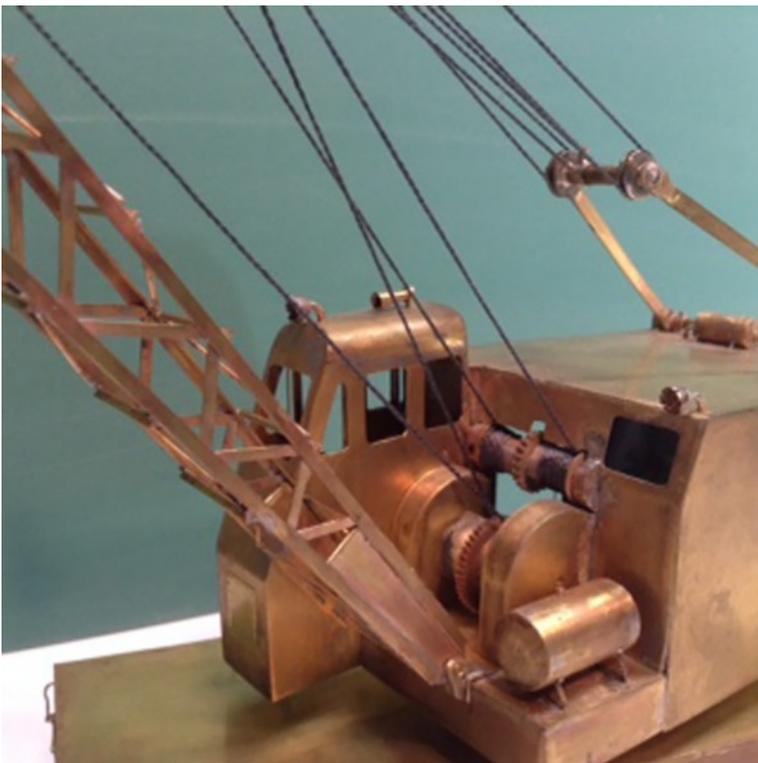
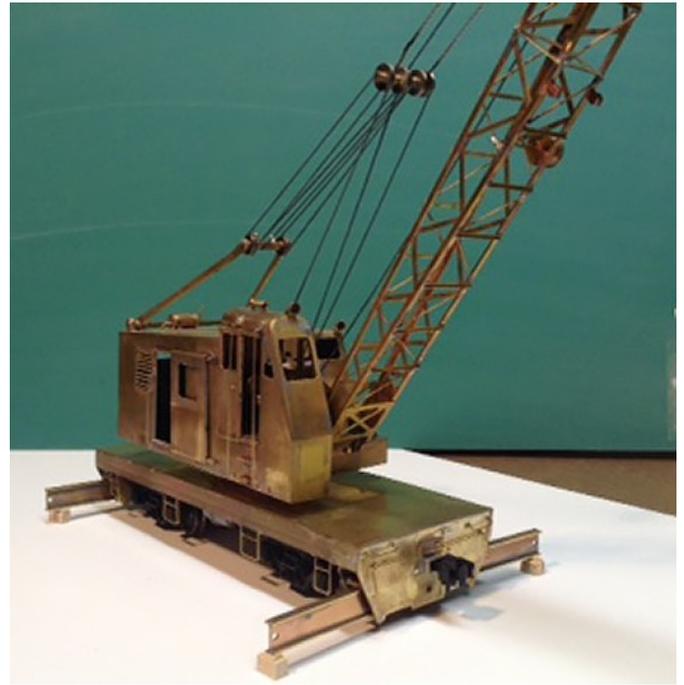
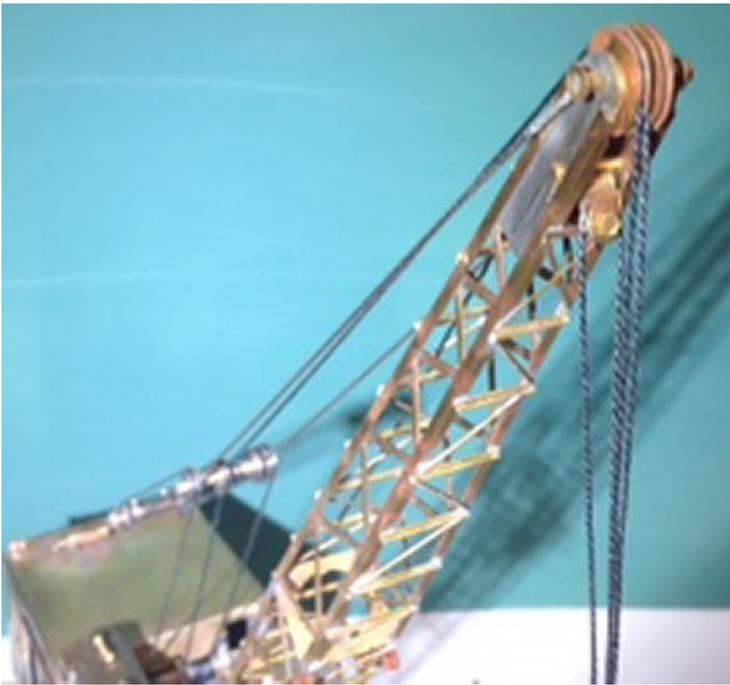
On to the boom. Tape a drawing of the sides of the boom to a board. Use pins to locate the two main angles. Drill a hole and insert a rod to locate the end bearings. Place the end plates on the rod and between the legs of the angles. Solder. Flip the boom side over with the angle legs down and back on the rods. Add all the Zee bracing. Put a tiny drop of liquid flux on each end of the brace piece before locating. Use the smallest diameter solder you can find. Slice off little pieces of solder and put it next to the joint. I use the RS unit on low power. Apply heat. When hot enough, the solder will get sucked into the joint. If the bit of solder is small enough, it will disappear and there will be no cleanup.

Next, stand the boom sides up with a spacer block between each end. Measure the thickness of two sheaves for the size block needed at the boom tip. Temporarily add a long rod in the bearing holes. Square up the sides and add bracing.

The cable drums are the last major pieces to be made. Find tubes of correct size. For the end plates, first punch a center point then scratch the tube diameter and the end OD. Drill the bearing hole and cut the blank to size.

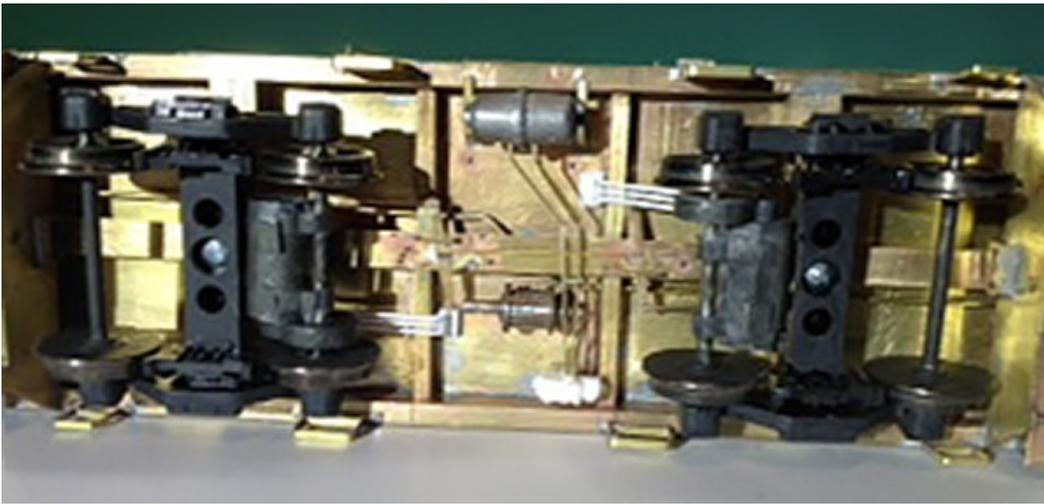
Next come the gears on the drums. Use 1/16" brass and layout the OD and gear tooth minor





diameter. Drill to fit snugly over the drum tube and saw out the OD. Mark the gear tooth spacing with small dividers.

I used my high school drafting set. Now saw on each mark down to the minor diameter. When finished, use a triangle file to form each tooth. Since this is a static model the triangle shape is not noticeable. Leave a tiny flat on top of each tooth. This only takes 3-5 light strokes of the file. Yes sawing each tooth takes time, but speeds up the filing and helps to guide the file. My first two teeth were filed without sawing and trust me, saw first.



Stand the drum on end, slide the gear on and center with a couple wood blocks. They will keep the gear square with the drum. Solder in place. Now set the drum on the end plate, center on the scratched diameter and solder. Flip over and repeat.

Draw the hook shape on a brass sheet. Drill the bearing hole and a hole at the hook throat.

Saw out the hook and file to shape. A hook cross section is like a teardrop, a larger radius on the inside of the throat tapering to a smaller radius on the outside. This is very noticeable, even in HO scale so don't cheat.

At first, this project looks impossible to most, but after breaking it down to subassemblies, it just a lot of small projects. The flat car, cab, engine house, boom, drums and hook block.

Remember, unlike some sports, this is not a race. Enjoy the process!

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# Card Stock Models

## Part One: Getting Started

By Anthony Stevens



I've been fascinated by miniatures that can be created with economical color printers and free software for quite a few years. When I decided to get back into model railroading after a forty year hiatus, I was more than a bit shocked at the cost of structure model kits. This led me to experiment with some kits from Clever Models, as well as, some free European structures.

After a fruitless search for a specific structure for my layout, I decided to try my hand at creating my own. Just for the record, the hardware and software tools I have used and recommend will be listed at the bottom of this article.

This simple structure appeared on my module at the National Narrow Gauge Convention in Hickory, North Carolina, back in 2011.

As you can see, I've dressed this up with some foliage, an irate cowboy, and an alien stealing a cow.

This simple kit can be printed on a single 8.5"x11" sheet of plain white cardstock. It will create an O-Scale structure. If you print the same image at 75% of the default size, it should work well for S-Scale.

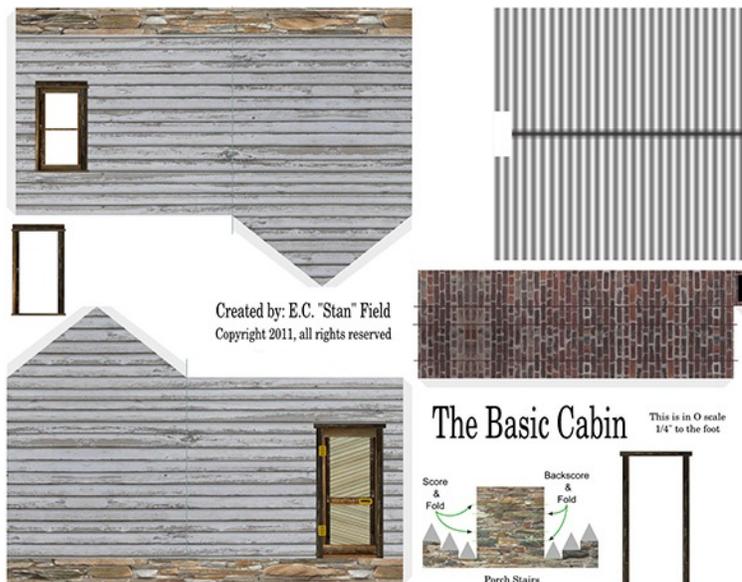
[Click here to download the full size file of the Basic Cabin.](#)

### Cutting Parts

Before we go any further, be sure you are always working with a new, sharp blade. During this build, plan on using and discarding at least a couple of blades, one for each sheet of cardstock.

### Center Cuts

Take your time and place the steel straight edge on the cutting line where you can just barely see the line. The idea is that the knife blade is running against the steel rule and the actual cut is half the thickness of the blade away from the edge. You might want to experiment with a couple of scraps and then cut out the advertising posters as practice. When you are done, you should see a very fine black line leftover on each edge. In order



to avoid tearing out or over cutting inside corners, make sure the knife is held vertically and carefully press the tip down at a corner point. Draw the knife along the steel straightedge until you are almost, but not quite at the end. Don't try to cut it all the way to the other corner. Leave an 1/8" or so of space before you reach the end of the cut mark.



After you have made each of the four interior cuts, go back over and start at the opposite end of each of the cuts and carefully insert the tip at the exact corner and draw the blade out to complete the final 1/8" of the cut. When you complete the last one, the scrap center should just drop out with no tearing. If something is still connected, CUT IT! Do not tug it loose as that will leave a nasty rough edge.

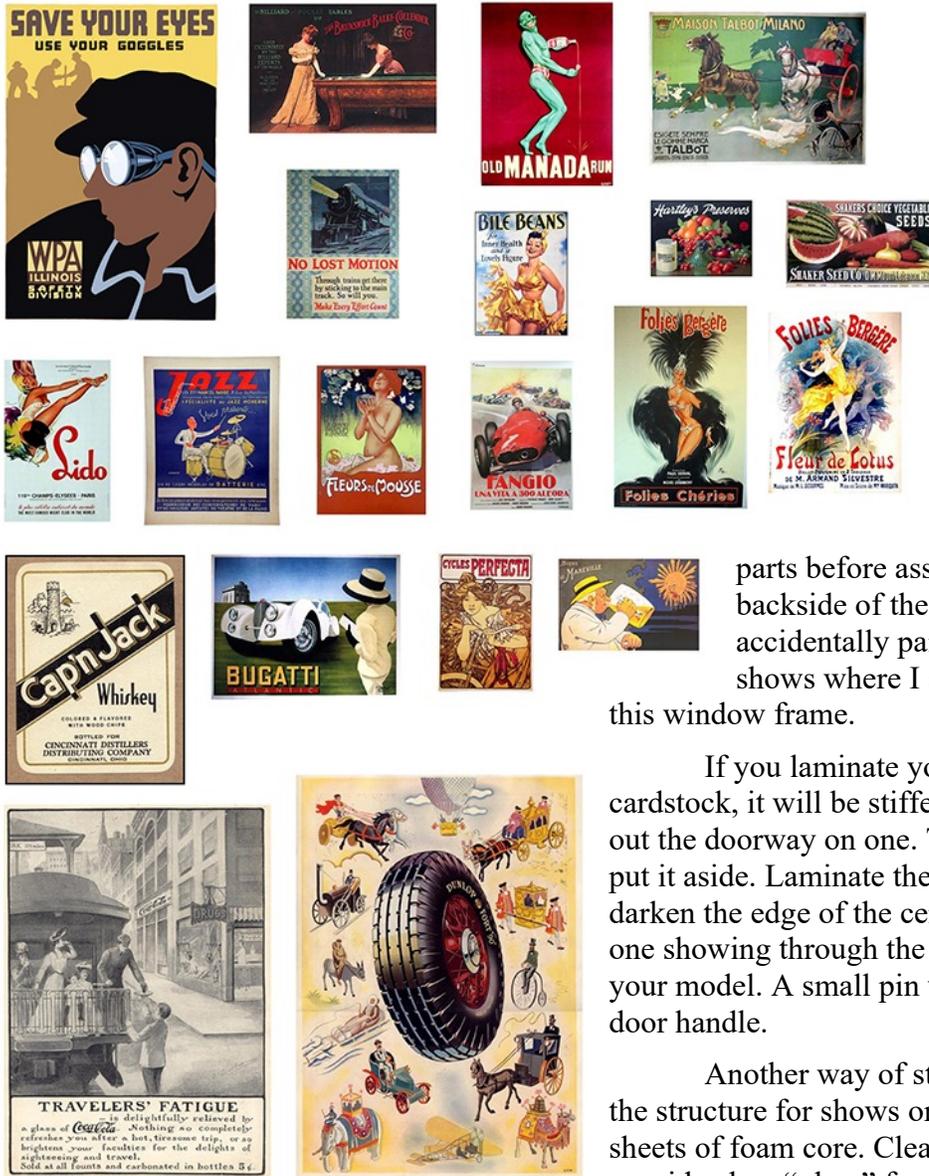
### ***Fold Cuts (crease)***

Carefully cut only halfway through the card stock on each of the pale, blue lines. This will allow a nice, sharp fold at those points. You may wish to practice this technique on a few scraps.

In various places, you will note the parts have been marked for a "back score & fold". When you see this, use the blade to make a very small cut all the way through on each end of the fold. Then, turn the paper face down and use your straightedge to make a fold cut between the cut marks that are now showing. That way, you can back fold the paper along the score in exactly the right place.

### ***Practice***

I'm including a collection of advertising posters from long ago. These can be resized and used to decorate not only the cabin, but other structures.



## Construction Tips

The simple cabin shown in the image on the first page of this article has no internal bracing and as such, is more than a bit fragile. Obviously, the experienced modeler may wish to use strip wood in the corners to strengthen the structure.

There are alternatives that offer interesting variations. If you're going to use a layered technique with cutout doors and windows, then be sure to paint the pure white edges of the card stock

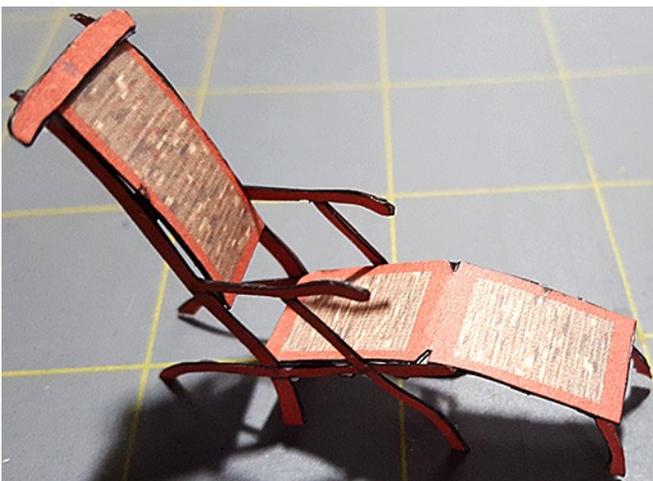
parts before assembly. Always work from the backside of the sheet when doing this to avoid accidentally painting the printed face. This image shows where I slipped while darkening the edges of this window frame.

If you laminate your printed sheet to another layer of cardstock, it will be stiffer. Print two copies of the walls and cut out the doorway on one. Then cut out the center door brace and put it aside. Laminate the two sheets and after they are dry, darken the edge of the center door brace and glue it over the one showing through the cut out section. This will add depth to your model. A small pin with a tiny plastic ball makes a great door handle.

Another way of stiffening if you're going to be moving the structure for shows or module meets, is to use dollar store sheets of foam core. Clear celluloid sheets can be used to provide clear "glass" for windows and doors.

[Click here to download the full size image.](#)

**NOTE:** Large sheets of cardstock will soak up the moisture in the glue and will tend to warp. That is why you need to press each wall assembly for at least several hours before continuing. I have found that working on this in the evening and then leaving the weights on overnight helps to stabilize each wall.



### Part Two: Furniture

In the next installment of this series, we'll work on some tables, chairs, barstools, and a recreation of the famous Titanic Deck chair.

### Part Three: A Roadhouse Pool Table

Every roadside watering hole needs one or more pool tables. This one was developed for Terry's Tavern, but will fit most anywhere.



**Part Four: Terry's Tavern**

Terry's place is a typical small bar with tables, chairs, barstools, a pool table, and a fancy bar. It includes clear windows, doors, and interior details. LED lighting can be added to show off the interior furniture.



## Resources

### *Tools*

There are a few tools and supplies I recommend in order to enjoy building card stock kits.

- Excel padded grip hobby knives with a package of #11 blades
- A self-healing cutting mat
- A stainless steel ruler
- A set of colored markers like the Sakura Pigma Brush Pens
- A glue pen such as Arlene's Tacky Glue
- A handful of clothespins or other small clamps
- A source of plain, white light
- Smooth Copper Clips (note these are available from several other online sources)

### *Resource websites*

- There is a LOT of great info on this forum. <http://www.papermodelers.com/>
- Here's an extensive FAQ on cardstock modeling. <http://www.cardfaq.org/faq/>
- Clever Models makes some awesome kits! <http://clevermodels.squarespace.com/>
- Some good O scale resources on the J&C Studios Blog. <http://www.jcstudiosinc.com>
- Ed Traxler has a ton of unusual 3D model parts. <https://MicroMimesis.com>
- Ed Traxler also provides inspiration on his personal blog. <https://deepriverrailroad.com>

Comments, questions, and critiques, are all welcome in my email. [masteranthonystevens@gmail.com](mailto:masteranthonystevens@gmail.com)



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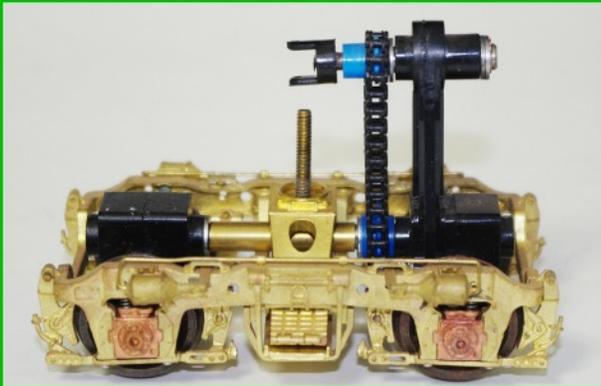
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# Oddity

***n. 1. One that is odd. 2. The state or quality of being odd; strangeness.***

By Daniel Dawdy

Many people take photos of engines and even cars, but most stop at that. I, on the other hand, just love to shoot things that I may want to model in the future. I love to model details and have people say, "Must have made that up... never seen a real railroad do that.". That's when I whip out the picture to show them that indeed the real railroad did.

**Caution: This tactic does not make many friends :-)**



*ACR GP7 (rebuilt) was wrecked in 1994 at Mile 111 and eventually scrapped. Now this would make a great modeling scene! Photo shot on 12/24/93 while on board ACR train Number 1 to Hearst, Ontario, Canada*

# WHAT'S ON YOUR WORKBENCH?

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

In the [November/December 2017 issue of The O Scale Resource](#), I wrote an article on my Grandfather and the Onalaska Pickle and Canning Company he managed. I had the decals made from drawings from the Burlington Historical Society as they had not been done in O scale before. I brought one of my cars to the O Scale National last August along with the article. Surprisingly, a few people asked if I had decals to sell. I did not, but offered to run a dozen or so if people wanted them. One of those people was Steve Kerr, who read the article and wanted to a few of these cars. Below are his cars painted by Paul Hopkins with Scalecoat II paint.

These turned out beautiful and will make a great addition to the layout.



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New in box, looks like it has never been unwrapped. Box and foam in excellent condition but with some writing on the end, and a Norm's "O" Scale Trains small label. Bought it from Norm in 2004 for \$218. Would be delighted to see it do to a good home for \$200.

Unpainted Hallmark Models Baltimore & Ohio M-53 Box Car (Wagon Top). Made in Korea by Dongjin.

New in box, as usual with Hallmark w/o trucks or couplers. Maybe unwrapped once or twice--like new. \$175

New in box Atlas 2 Rail F-9 Diesel Loco Union Pacific No. 1475A. Box is good except for a bit of wear on one corner. Foam is fine. I got it in the 1980s with the idea of making it into a B&O F-7. Interesting how time simply escapes and good intentions simply dissolve into reality. Maybe was out of the box--I can't tell. Looks pristine, and I would be happy if someone thought it was worth \$75.

Pacific Limited "USRA Box Car Double Sheathed -with Trucks #PL 900 Made in Korea by F.M. Model Precision." It is essentially new in box with a decent coat of box car red, unlettered. It is a very nice representation with Andrews trucks and fine detail. I simply no longer have the eyesight or motor skills to finish it. Box and foam are very good. No couplers. \$175

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