

N SCALE RAILROADING

#142 MAY 2022

THE BEST OF 1:160 SINCE 2000

Kim Saign

- Single Axle CMW Box Trucks

Dan Roback

- Bracketing MR Photography with Smart Phones

Mike Pagano

- Models the E-L Croxton Sand Facility



N SCALE RAILROADING WELCOME!

Conrail power lines up to top off their sand tanks at the Croxton sanding facility originally built by the Erie. Mike Pagano scratchbuilt the structure and is a great setting for the high quality modern power we now have.

Welcome to *N Scale Railroading* #142, the May, 2022 issue.

Page 04. **Kim Saign** shares how he customizes Classic Metal Works single box trucks.

Page 27. **Don Roback** shares his experience stacking photographs shot from smart phones. Thanks to Rich Yourstone, NSR introduced Helicon Focus to our hobby. Don experiments with some new methods.

Page 32. **Mike Pagano** shares how he designed and built a model of the Erie's Croxton sanding facility that went on to serve the E-L and Conrail.

Page 46. **NCalendar** and **NSR Contributor preview.**

NSCALE RAILROADING

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* ESU LokSound Versions are also available by special order - contact your preferred hobby retailer for details and to reserve yours today!



IMPROVING

THE CMW SINGLE AXLE BOX TRUCK

By Kim Saign/ Images by author

Image 00. **T**he Classic Metal Works single axle box truck just never looked quite right to me. It comes with an IH R-190, White WC22, or a 1954 Ford cab. They all suffer from the same thing. The floor of the box is too thick and sticks out too far in the back. Here we see a modified box truck and an unmodified box truck for comparison.



01

Image 01. The first thing we'll do is remove the box and floor from the chassis. Here is a view of two chassis. The one on top shows the underside. The bottom one shows the top side. The bolsters where the pins to hold the floor to the chassis have been shaved off. The pins broke off in the bolsters during removal but that doesn't matter.

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Image 02. Here we see the unmodified truck on the right has way too much clearance between the tire and the wheel well. We're going to fix that so it looks like the truck on the left.



Image 03. This is before elongating the hole for the axle to allow the wheel to rise in the wheel well.

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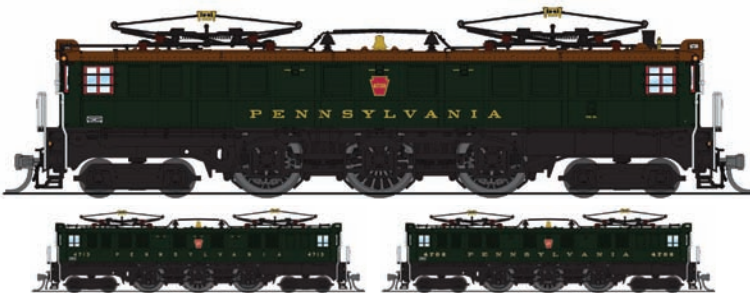
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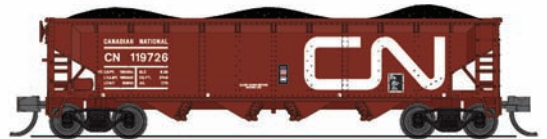
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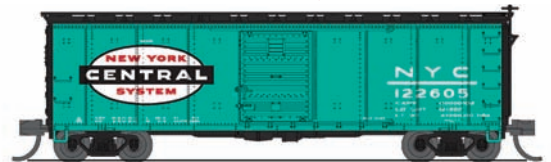
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04



Image 04. Using a hobby knife I cut the hole for the axle even with the underside of the chassis.

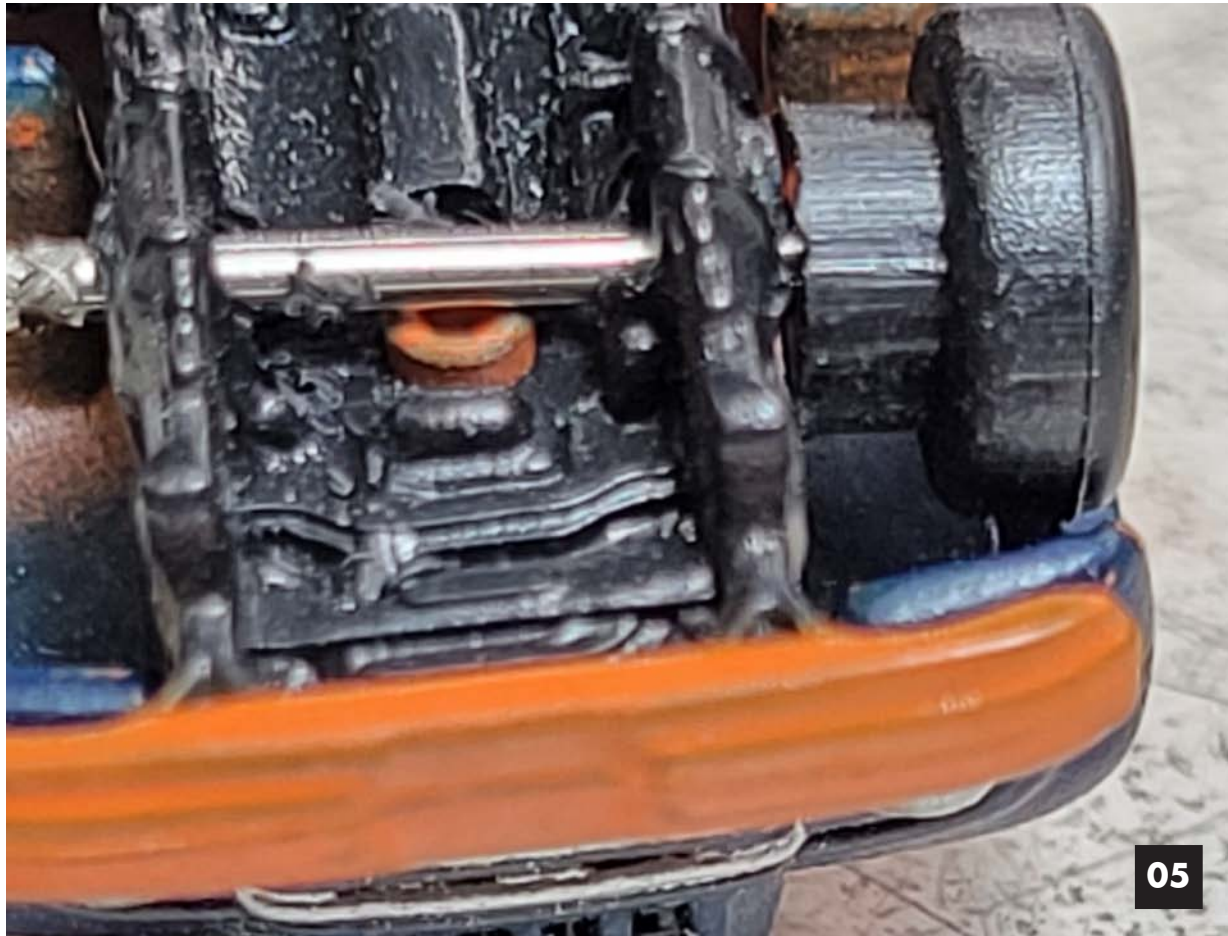


Image 05. However when I inserted the axle to see how it looked. It was no different. The pin for attaching the cab to the chassis was holding the axle away from the chassis.

05

HOPPER-TIME!

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06



Image 06. The pin had to be trimmed back to be flush with the chassis to fix this issue. BTW there are two different versions of the CMW IH R-190 trucks. The Roadway versions had the cabs made of metal. The Goodyear versions had the cabs made of plastic. Other than that they were the same.

07



Image 07. I wanted to test fit the box on the chassis to see how it was looking. Already a significant improvement.

NEW TECHNOLOGY IN N-SCALE SOUND!



Recently released drop-in decoders and speakers from ESU and SOUNDTRAXX make installing sound in N-Scale easier than it once was. Though small, these new offerings have the full feature sets of ESU's LokSound 5 and SOUNDTRAXX's Tsunami 2 decoders. Not able to DIY? We have some KATO locomotives with these new decoders custom installed.



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08



Image 08. From the back, the modified box looked a little naked. So I looked to the prototype for ideas.

09



Image 09. A prototype Cass-Clay delivery truck has a lower step below the box with gussets on the sides to reduce the chance of the step getting bent. For those that may wonder what Cass-Clay is, it's a creamery in Cass county North Dakota (Fargo). Clay county is across the Red River in Minnesota (Moorhead). They are the dominate creamery in the area.

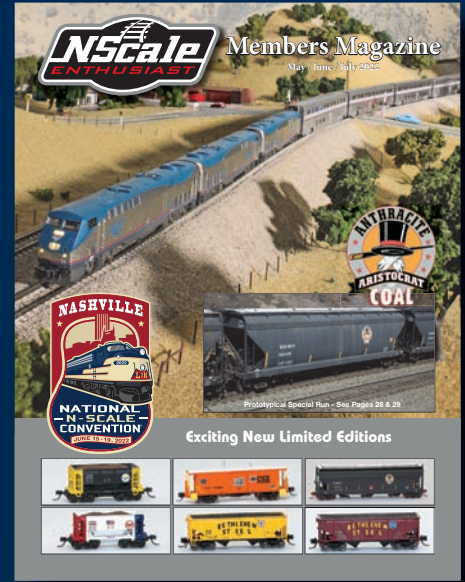


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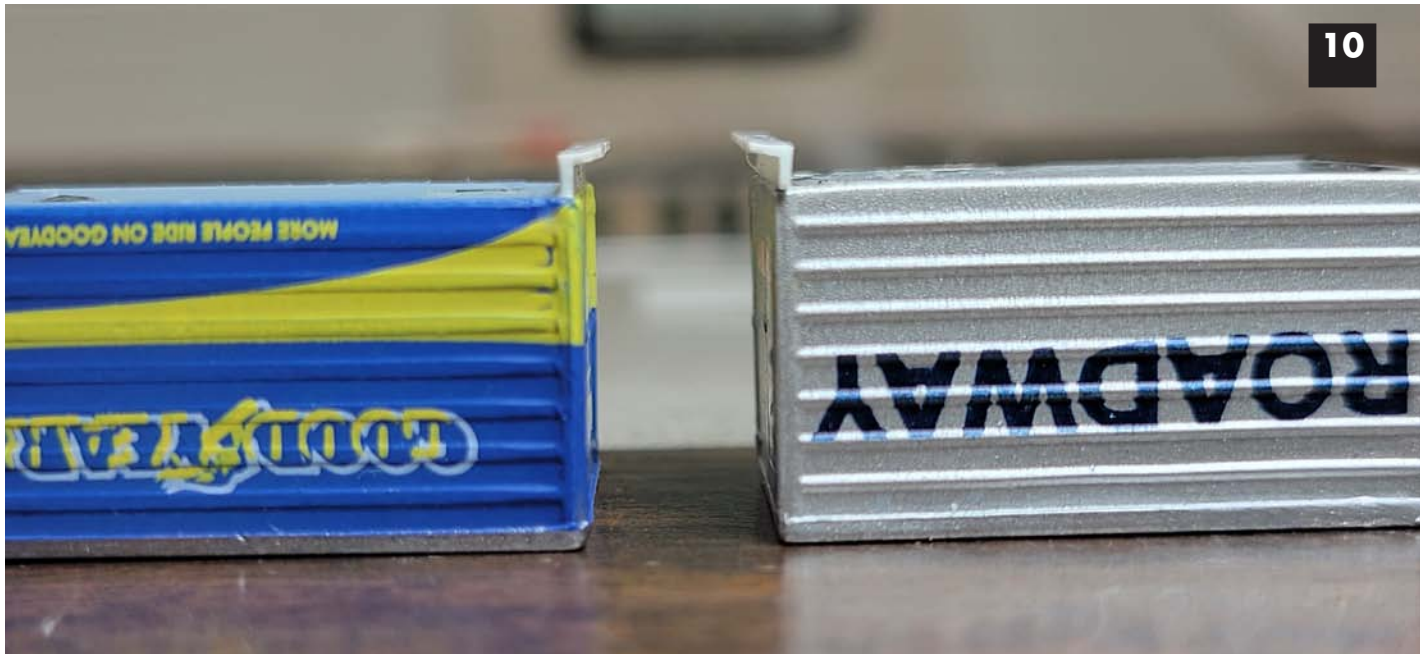


Image 10. To create the step I used Evergreen .060 angle. It seemed to give the look I wanted. It was attached with Flex-I-File Plast-I-Weld cement. It's similar to Tenax 7R.



Image 11. Already the boxes look better.

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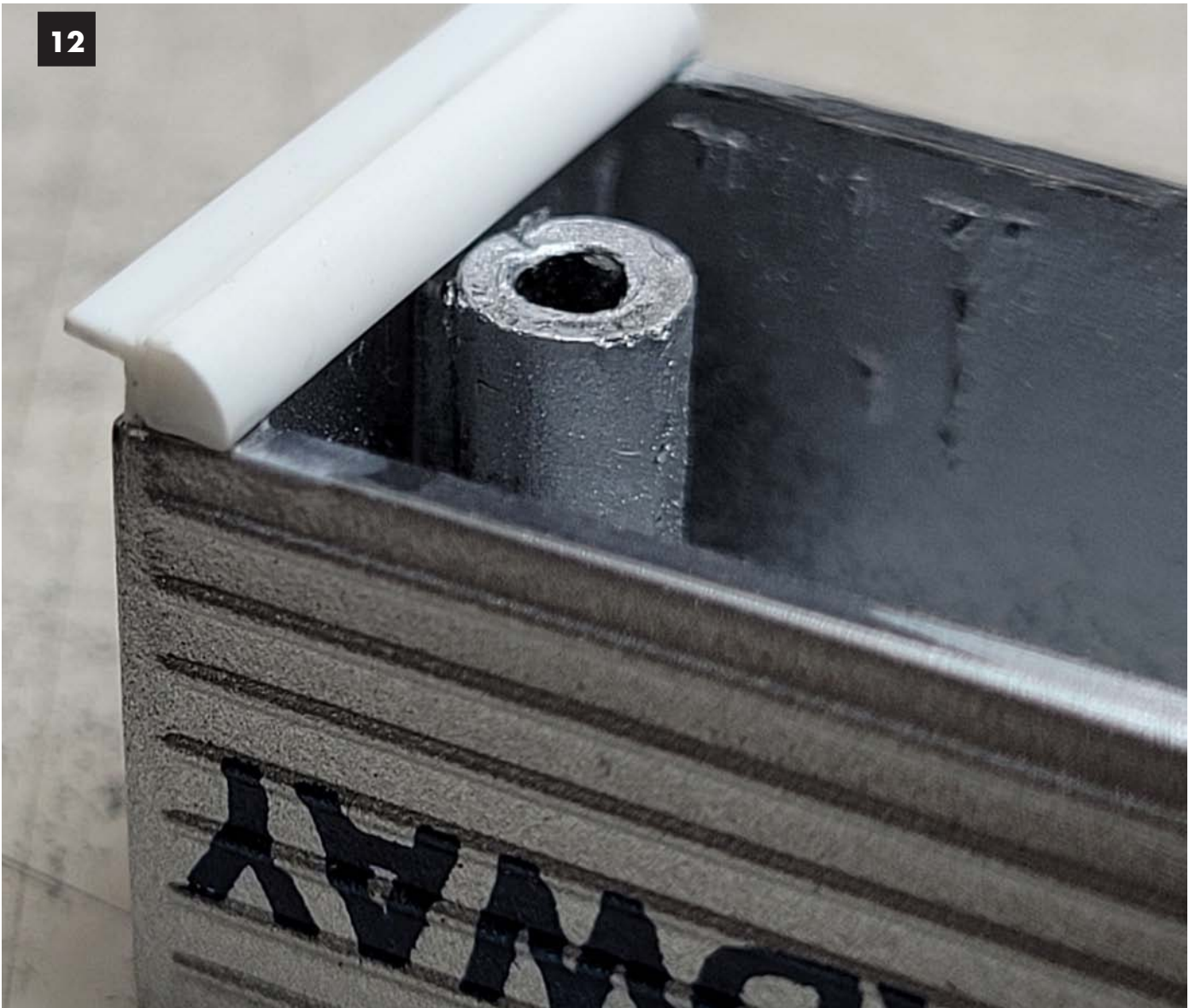


Image 12. I had concerns about reliability of the joint on the edge of the angle styrene. But then I remembered there was a gusset behind the step on the prototype. A piece of Evergreen .060 quarter round styrene represents the gusset quite well.

13



Image 13. Rather than try to cut the angle and quarter round the right size it's easier to make them a little longer then trim flush with the side after the glue sets.

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14

Image 14. After the solvent dries file the bottom of the step so the quarter round is even with the angle.



15

Image 15. In image 8 you see the chassis nearly comes to the end of the box. Now that the quarter round has been added the chassis needs to be shortened. The chassis on the right is the original length. The chassis on the left has been trimmed to provide clearance for the step.

Fleischmann

Electric locomotive 460 019-3, SBB



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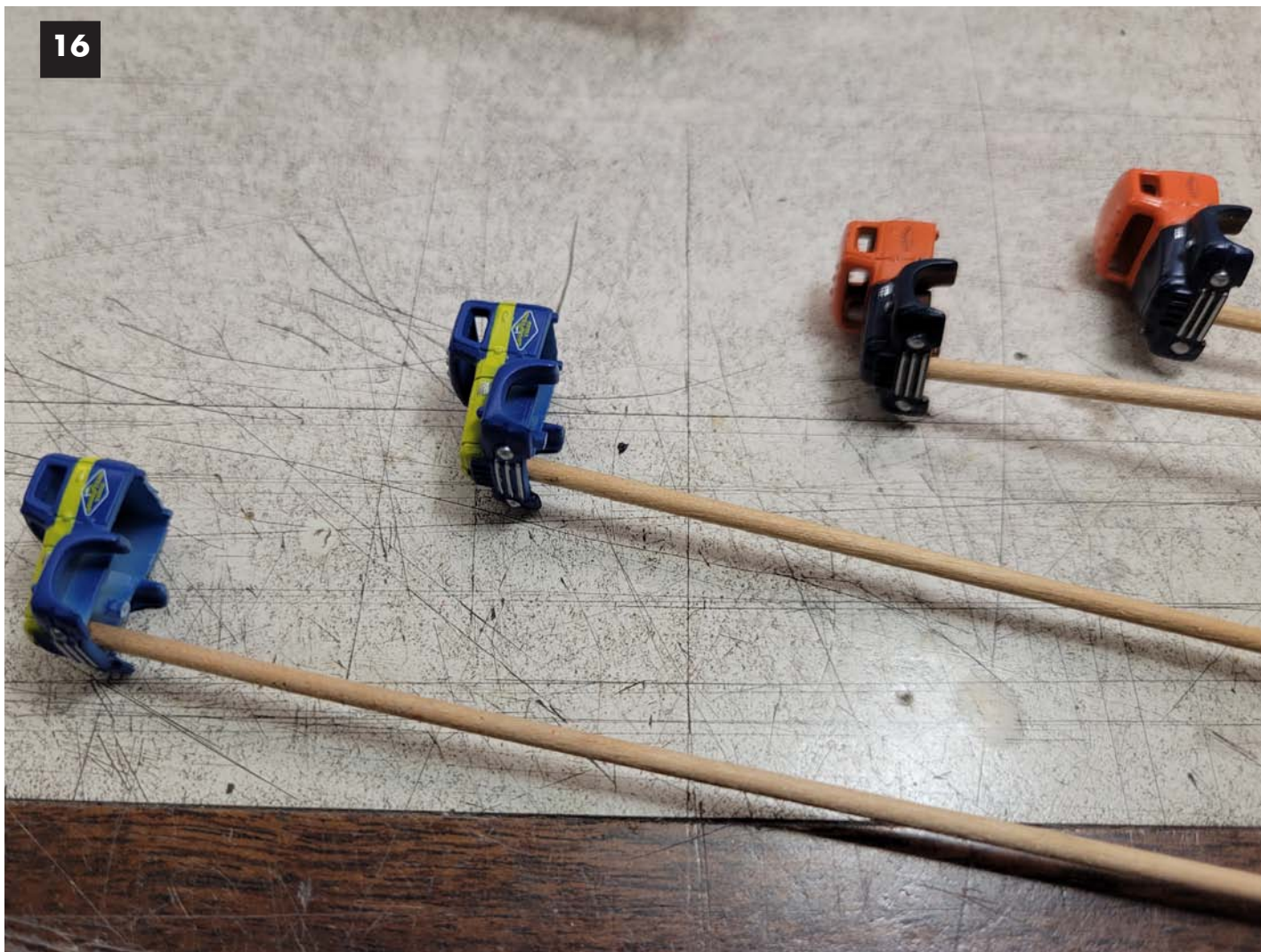


Image 16. Jamming a stick in the cab is a good way to hold the cab for painting.

17



Image 17. I find it easy to just step outside with Tamiya Fine Gray Primer and give the cabs a quick coat to provide an even surface for the final colors. Wearing a glove is a good idea if you don't want your nails to be primer gray for a few days.

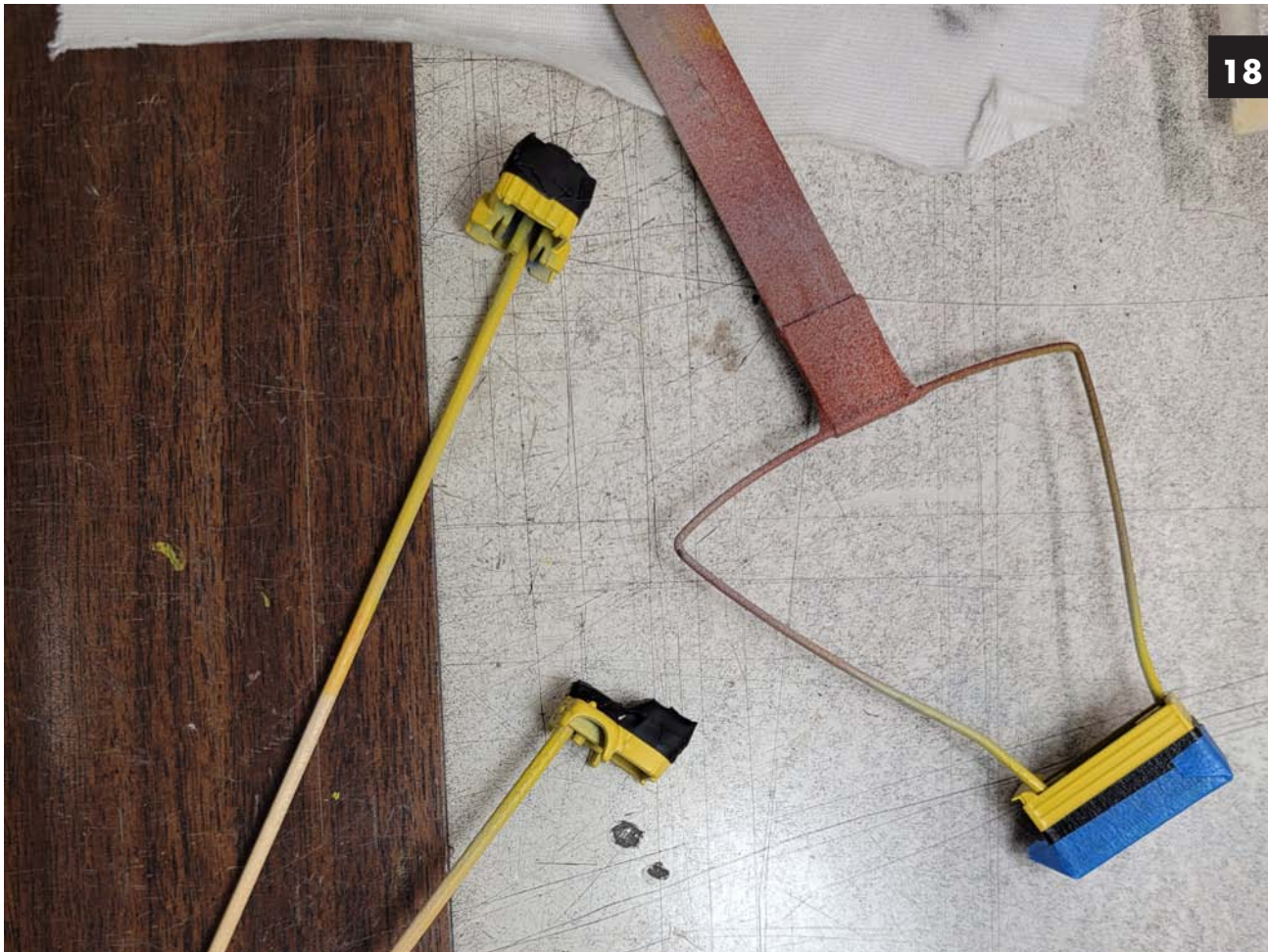


Image 18. I shot the cabs and bodies Tamiya Chrome Yellow. Then masked off what I wanted to stay yellow so I could shoot the rest with Tamiya Racing Green.



Image 19. I also shot the wheel yellow to try and get the rim yellow. It was only partially successful. But that's OK. Adding some weathering on the rim will look right. To remove the over sprayed yellow I put the wheel in a drill chuck then scraped off the unwanted yellow with a hobby knife while it was spinning. This also took the shine off the tire which was a plus.



20

Image 20. I used the wrong masking tape and it shows. The mask lines allowed some green to seep under. I put a spot of silver where the headlights are to make them stand out.



21

Image 21. The boxes turned out a little better. The rear step is looking good once painted.



Image 22. The decals I was using didn't want to lay down between the ribs. Normally they are very good but the thickness of the pigment on the logo seemed to be a factor no matter how much Solvaset I applied. So I wet my thumb and pressed down firmly on the decal to make it lay down.

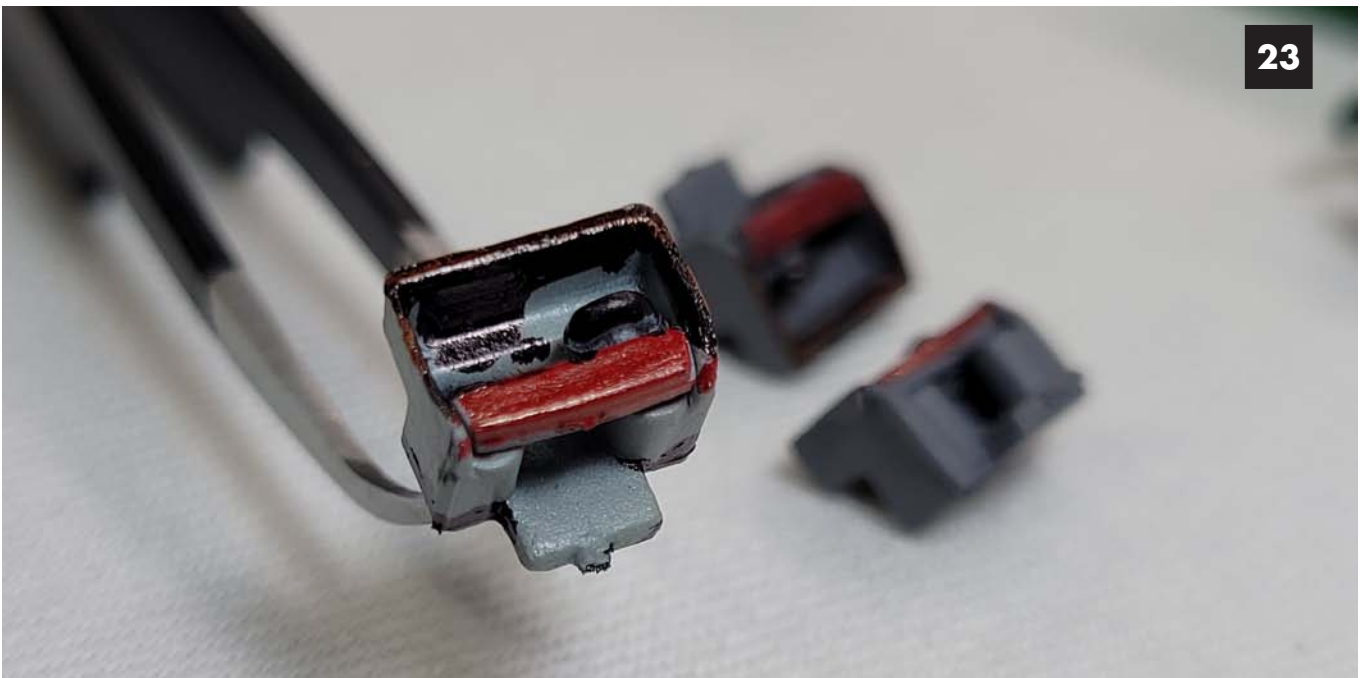


Image 23. While the cab is apart it's a good time to color the interior. I just used a black Sharpie and a red one to color the interior.



Image 24. To hold the glass in the cab put a dab of Aleene's glue on the top of the glass.



Image 25. Insert the glass and give it a few minutes to dry.



Image 26. For additional visual interest I used a red Sharpie to touch the lights on the cab roof and the fenders on the cab on the left.



Image 27. Put a dab of Aleene's glue on the bolsters to hold the box on. Also put glue on the post to secure the cab to the chassis.

28



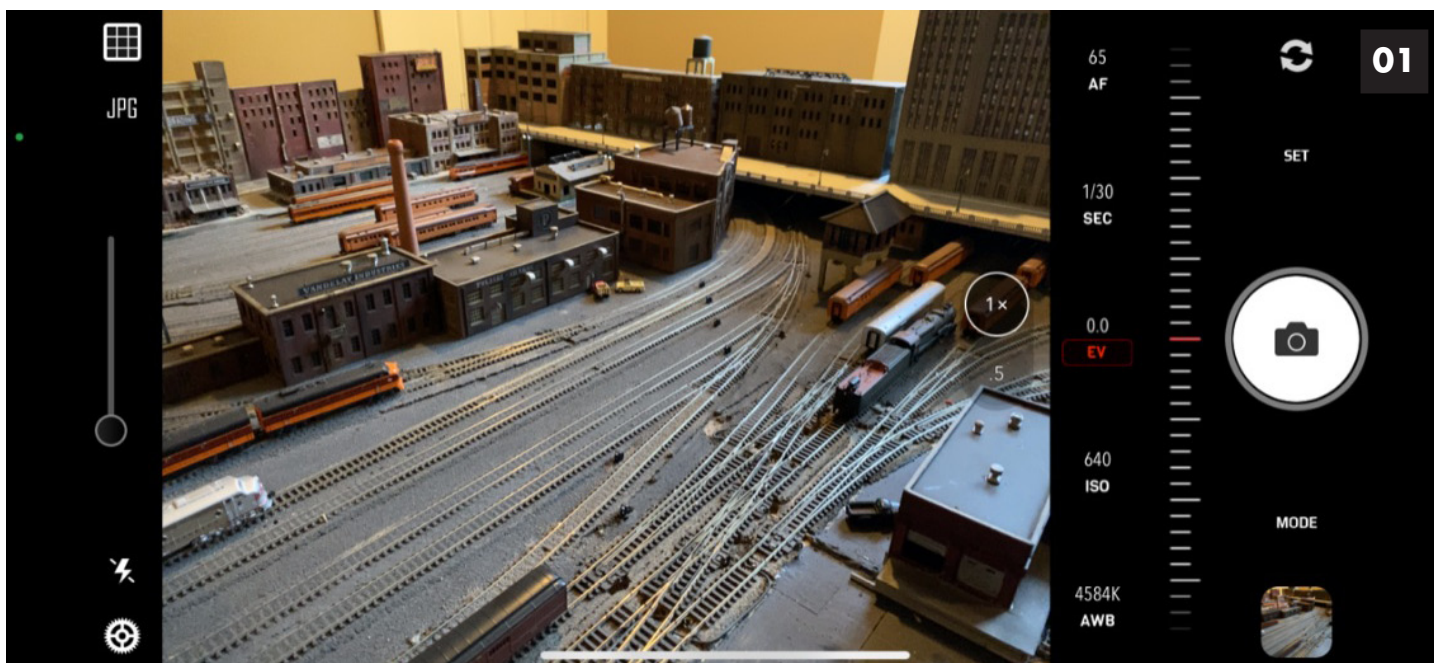
Image 28. What a difference between the modified truck and a stock truck! The thin step in the rear is quite an improvement over the thick one from the factory..

29



Image 29. I used a red Sharpie pen to give the truck taillights. Not shown, but later I cut the leaf springs shorter so they weren't so close to the ground.

SIMPLE GUIDE TO FOCUS BRACKETING FOR



MODEL RAILROAD PHOTOGRAPHY

By Don Roback/ Images by author

Introduction

There are many ways to enjoy our model railroads, from the most toy-like and fantastical to the most prototypically-operating miniature transportation system. No matter in what way we enjoy this hobby, however, it seems universal that we like to take and appreciate photos of the work. If you compare pictures taken from the early days of model railroading to those taken now there are obviously many aspects like lighting, equipment and model quality that make the more recent photos better. One aspect of model railroad photography that has not improved, however, is limited depth of focus. Even when taken at the equivalent of ground level, many model railroad photos are obviously of a model because of the single point of focus. Luckily photographic techniques have improved over the years and we can now create very realistic photos of our models.

In this article, I will describe the photographic technique called focus bracketing or focus stacking and show some examples of what can be produced. I am not an expert in photography and my layout is not very far along, but I was able to produce several images using a smartphone and simple software that looked much more realistic than previous photos.

I was inspired to try this technique by Greg Smith from Minnesota who has created some great photos of long trains along the Mississippi River on his layout. I also learned a lot from Ed

Merrin's talk on this subject at the July 2021 Rails by the Bay virtual convention.

Definition

Focus bracketing is a technique that combines multiple photographs of the same scene, but at different focus distances. These photos are then combined in software to create a single photo with sharp focus throughout the image. The technique is widely used in landscape and macro photography. A quick internet search of 'focus bracketing in model railroading' shows that people have used the technique for at least a decade in the hobby, but to date it has not become widely adopted.

Practical Application

The realism of model railroading photography depends heavily on the contents of the image – the modelling, the colors, the background, etc. Ideally we are striving to create scenes that perfectly emulate the real thing. Elements of photographing full-sized railroad scenes often include low perspectives, long distances and complete scenes. These photos are also generally in sharp focus at all points near and far, except perhaps at the extremes.

In order to mimic such photographs, model railroad photographers need to place the camera lens at a spot comparable to the eye level of a real world photographer. This is difficult using digital single-lens reflex (DSLR) cameras since most

spaces on a layout are too tight and fragile. Even if placed on a layout, the center of the DSLR camera lens will be too high for a scale-appropriate viewpoint. Of course, the camera can be mounted on a tripod off the layout, but the photographer must be careful not to include unrealistic components such as fascia. Note that some DSLR cameras have built-in focus bracketing capabilities, but I have not tested any of those. Smart phones, on the other hand, are well suited for this type of model railroad photography: picture quality is excellent and the lens in most smart phones is situated in a corner which will be at a reasonable height for comparable real-world photographs. For example, if a lens is about 1" from the edge of a smartphone, the photograph's point of view will be about 7' (H0-scale) or 14' (N scale) from the ground. For larger scales the phone can be propped up higher on a makeshift stand. Unfortunately, the lenses of smartphones are fixed open so depth of field needs to be addressed by focus bracketing.

Materials and Software

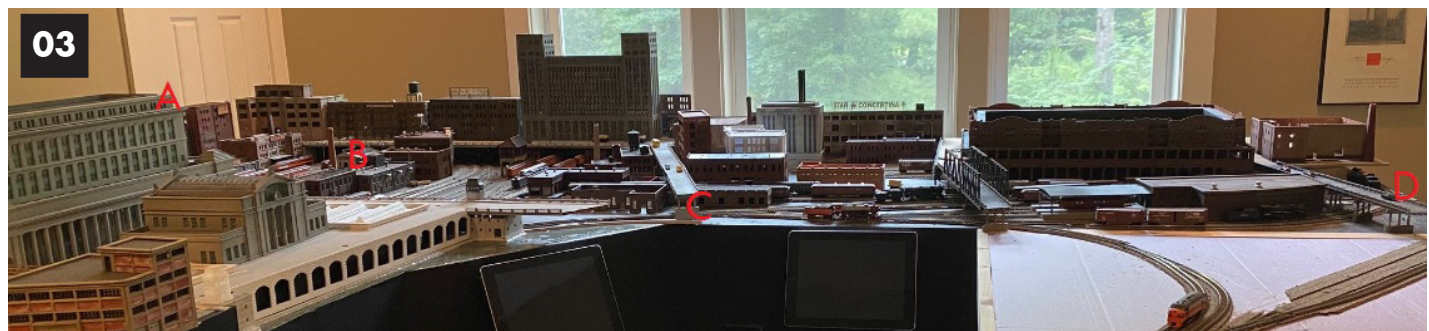
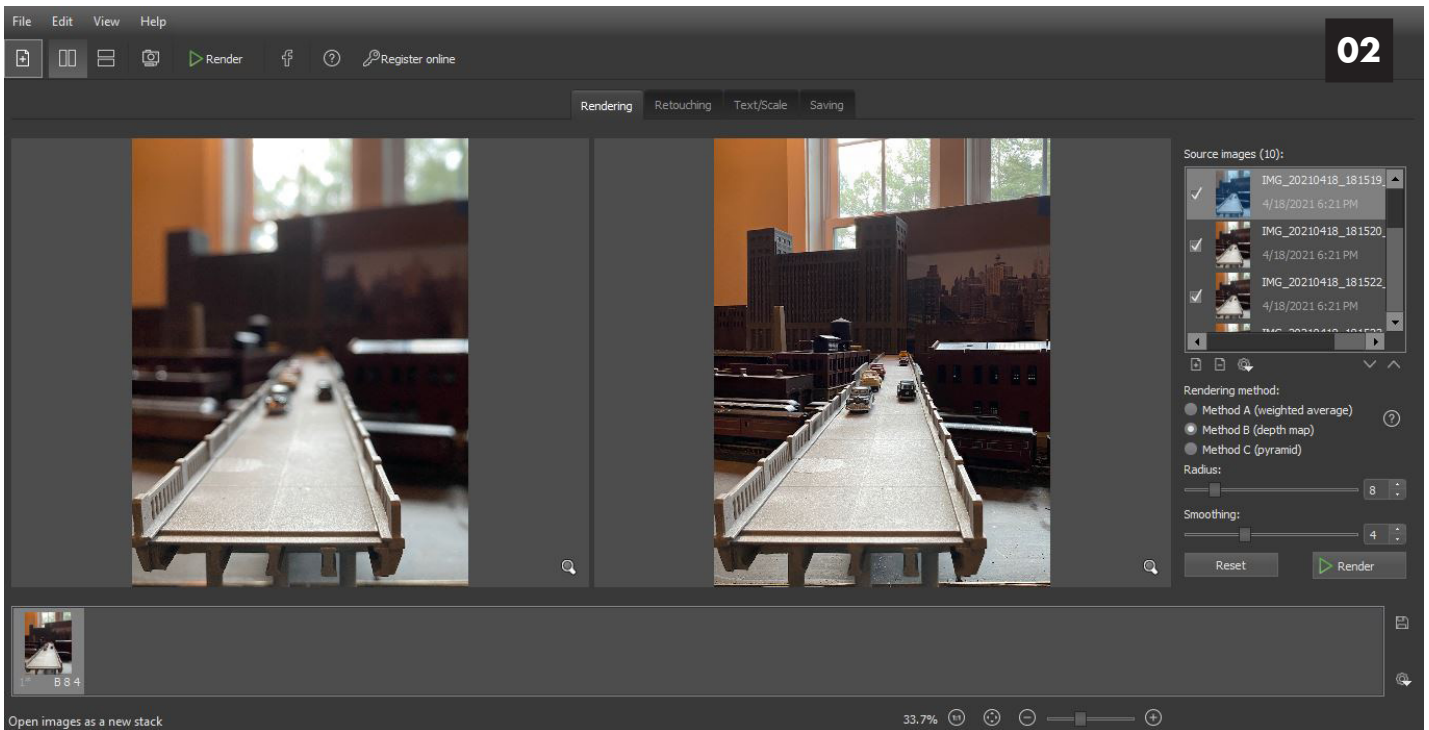
Phone

The pictures in this article were taken with a 128GB Apple iPhone 11. The phone has two lenses: wide (f/1.8) and ultra wide (f/2.4). The lenses are both just under 1" from the camera edge.

Software

Apple phones have at least two apps that I know about: Stay Focused and Camera Pixels. I have only used Camera Pixels (Photo 01) and haven't tried any apps on Android phones. Note the 'Mode' and 'Set' menu buttons on the right in the photo. Options in the 'Mode' menu include bracketing either by focus or by exposure along with time lapse and slow shutter acquisitions. Once focus bracketing is chosen, the 'Set' menu is used to choose the number of images to be acquired (up to 15) and the minimum and maximum distances to be used (chosen as a percentage of total image depth). After securing the camera in a tripod or by other means on the layout to eliminate movement, the multiple exposure acquisition can be triggered by a Bluetooth remote control. The images can then be uploaded to a computer via email, flash drive or cloud for post-processing. The focus bracketing process generally leaves the picture edges blurry so a wide field of view should be used for the initial pictures.

There are numerous computer programs that will combine the images into a single sharp image. Adobe Photoshop, ON1 PhotoRaw and Affinity Photo are a few examples. Helicon Soft Helicon Focus is the program that I used because it had a 30 day trial period for experimentation (**Photo 02**). Creating a final image from the focus bracketed exposures is very easy: import



the images and hit a button to render. The final image will need post-processing to fix issues such as composition, cropping and color. In my tests I cropped out portions with incomplete modeling and changed colors to black and white to evoke the feel of the time I'm modeling. Helicon Focus has simple post-processing tools, but I also played with the rendered image in Microsoft Paint with good results.

Layout

The model railroad photographed in the examples below is a small N scale layout in a room upstairs at my house. (**Photo 03**). The benchwork and initial trackplan were designed and built by Custom Model Railroads in Baltimore, MD in 2018. Since then, I've modified the track arrangement a bit and al-

most totally rewired the layout to include block detection and a JMRI interface. The theme is passenger train operations at the Chicago Union Station in the early 1950s. Though the prototype is considered, the layout is largely freelanced. Scenery (which is mostly structures) is about 1/3 complete. The labels in the photo refer to locations on the layout relevant to the photos below. Shown are Chicago Union Station Head House (A), location of night photo in Milwaukee Road Coach Yard (B), location of road bridge photo facing Chicago Post Office (C) and location of the Pennsylvania Coach Yard photo (D).

Photos made from Focus Bracketing

Below are some examples of photos created using focus bracketing on my layout.



Photo 04. This photo is still not completely finished but I thought that viewing down a road bridge towards the Chicago Post Office would be a good way to test focusing at different distances. This photo was taken from point C in **Photo 03**. I cropped the image and turned it black and white to evoke the era and to hide the incomplete parts of the scene. I combined 10 photos for this picture and the total distance from front to back is approximately 4 feet.

05

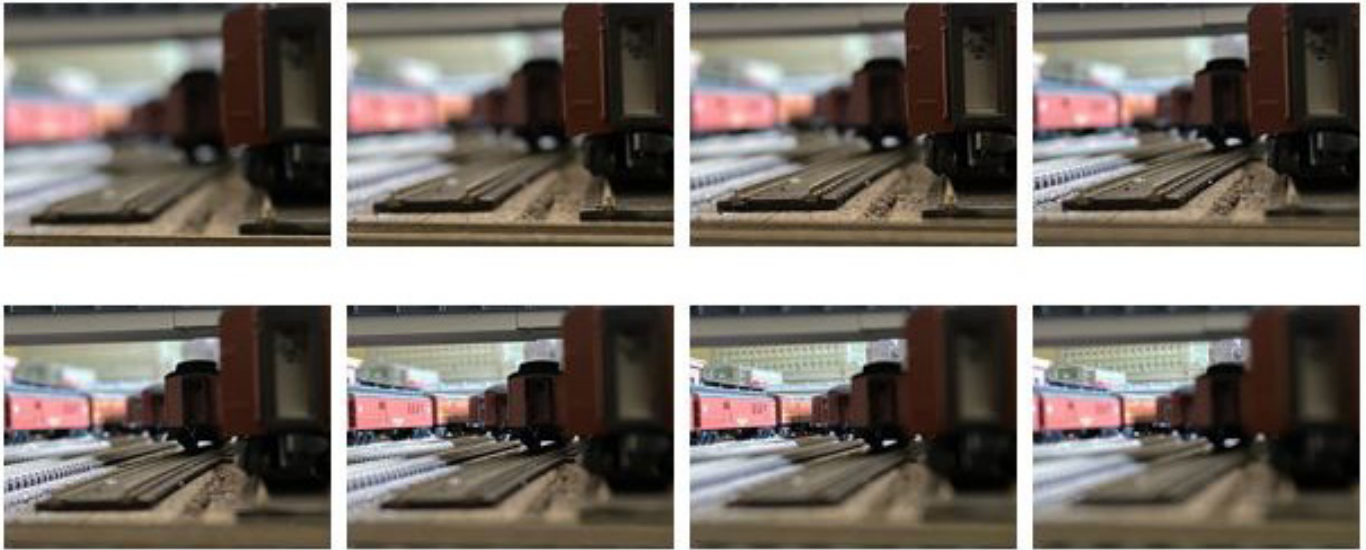


Photo 05. This photo was made to test focus bracketing in night scenes. I'm not totally satisfied with it because even though the lighting draws your eye to specific areas, it is over-saturated. I turned all the lights down as low as they could go, but I still need to experiment more with post-processing. This picture also was created by combining 10 photos and was taken in the area of point B in Fig 3. The distance from the camera to the sign on the building roof is approximately 4 feet.

06



Photo 06. This photo best exemplifies the power of focus bracketing. The cropping was easy because all the interesting stuff was framed by the overhead bridge, the building on the left and the passenger coach on the right. I tried to remove as much track as possible since it isn't ballasted yet. My favorite part, and the part that really sold me on the technique, is that the models of the Chicago Union Station (point A in **Photo 03**) and the building behind it are approximately 9-10 feet from the passenger coach on the right of the photo near point D in **Photo 03**. Even the photo backdrop behind the two buildings was reasonably well focused and that was approximately 12 feet from the camera lens. Again, I used 10 component photos and I chose black and white to make it more era-specific, but it also hides the lack of weathering.



07



Photo 07. This is from an early version of **Photo 06** before I finalized the coach configuration and shooting angle, and before any post-processing for cropping or color. Also included are the 8 component photos at different focus distances so you can get an idea of the process. The final image is very sharp everywhere but I didn't like the composition.

Conclusion

I have very little experience in photography and I don't spend a lot of time considering how to best photograph my layout. But with a few examples from other model railroaders I was able to produce very realistic photos. After I found the appropriate applications to use for focus bracketing, the process was very easy. I tried to experiment with various configurations such as favorable geometry, long distances and lighting and was very pleased with how the final products looked. I ended up doing some simple post-processing mostly to hide

incompleteness or modeling flaws and I think I will always have to crop and perhaps fix small irregularities, but the general process is really simple. As I slowly complete small scenes I am experimenting with focus bracketing in different settings and am finding great results in all settings that I've tried. After playing with this technique for only a short time, it is now blindingly obvious to me when I see a photo that is not focus bracketed. Give focus bracketing a try – I think you'll really like the results!

MODELING E.L.'S

CROXTON SAND TOWER

By Mike Pagno/ Images by author unless notated



01

Image 01: (Croxton Yard Secaucus, NJ Nov. 1966 by Tom Murray) Erie Lackawanna F-7A sits along the side of the Croxton Sand Tower in 1966. The DL&W sand tower is seen in its original piping configuration with only four-drop locations to supply

sand to locomotives. By the 1970's the delivery piping was modified to deliver sand in seven locations while making the dispensing of sand easier to newer diesel cab power on the E.L.

Picking a Prototype for a Engine Terminal

Locomotive service facilities can be found at almost any major terminal across America. Erie's Croxton terminal in Secaucus, New Jersey is just one location that once serviced steam locomotives in preparation for their trip out west to Chicago.

This facility was later transformed into a diesel service facility as more and more diesel-electric locomotives were joining the roster. The Croxton yard is one example of a service facility that transitioned from steam to the diesel generation. As



Image 02 (Croxtan Yard Secaucus, NJ April 1976 by Bob Yanosey) Erie Lackawanna GP-35s line up under the sand tower before starting their day heading out west of the Croxtan yard. Notice the weathering on the top of the silo vent cap.



Image 03. (Croxtan Yard Secaucus, NJ Feb. 1976 Mike Pagano collection) EL's NW-2 #421 is standing by on a side track to receive some sand once the last road engine is finished with its service. E.L. #3632 is a bicentennial SD45 Locomotive that is last in line. Notice all the sand in the foreground area.



Image 04. (Croxtan Yard Secaucus, NJ Nov. 1979 Mike Pagano Collection) With all the road units now serviced, the yard switchers can finally start preparing the servicing tasks by first taking in some sand and then passing under the coal tower foundation to receive fuel for the day's work. Adding a pile of sand around the base of the sand towers is an easy detail to add.



Image 05. (Croxtan Yard Secaucus, NJ April 1976 by Karl Erk) Sand servicing is messy business due to the large amounts of compressed air used to convey the sand to the locomotive as seen in this view.



Image 06. (Croxtan Yard Secaucus, NJ Feb 1978 by Paul Carpenito) This ex-Reading GP-35 is now part of Conrail and sporting the CR patch that is commonly seen in the late 1970s. This view reveals the wood catwalk along the back of the sand towers.

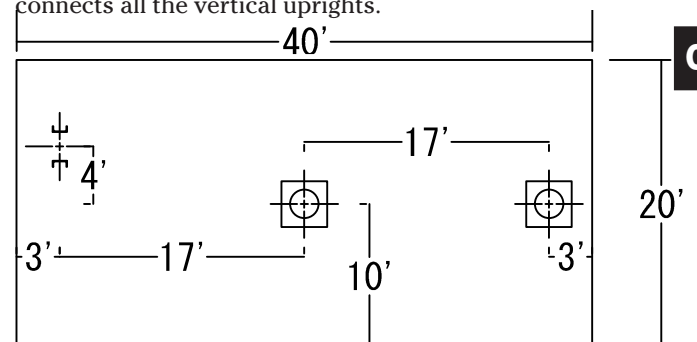
time continued for the EL and later Conrail, Croxtan was one of the most common photographed areas used by rail fans to photograph their favorite locomotives during the colorful merger years. When I was looking for an Erie based prototype of a service facility for my pike, I was willing to spend a little time and effort in looking for an iconic structure that would be recognized in the Croxtan yard. I decided to model from what I could find of Erie's Croxtan Engine Terminal before it was torn

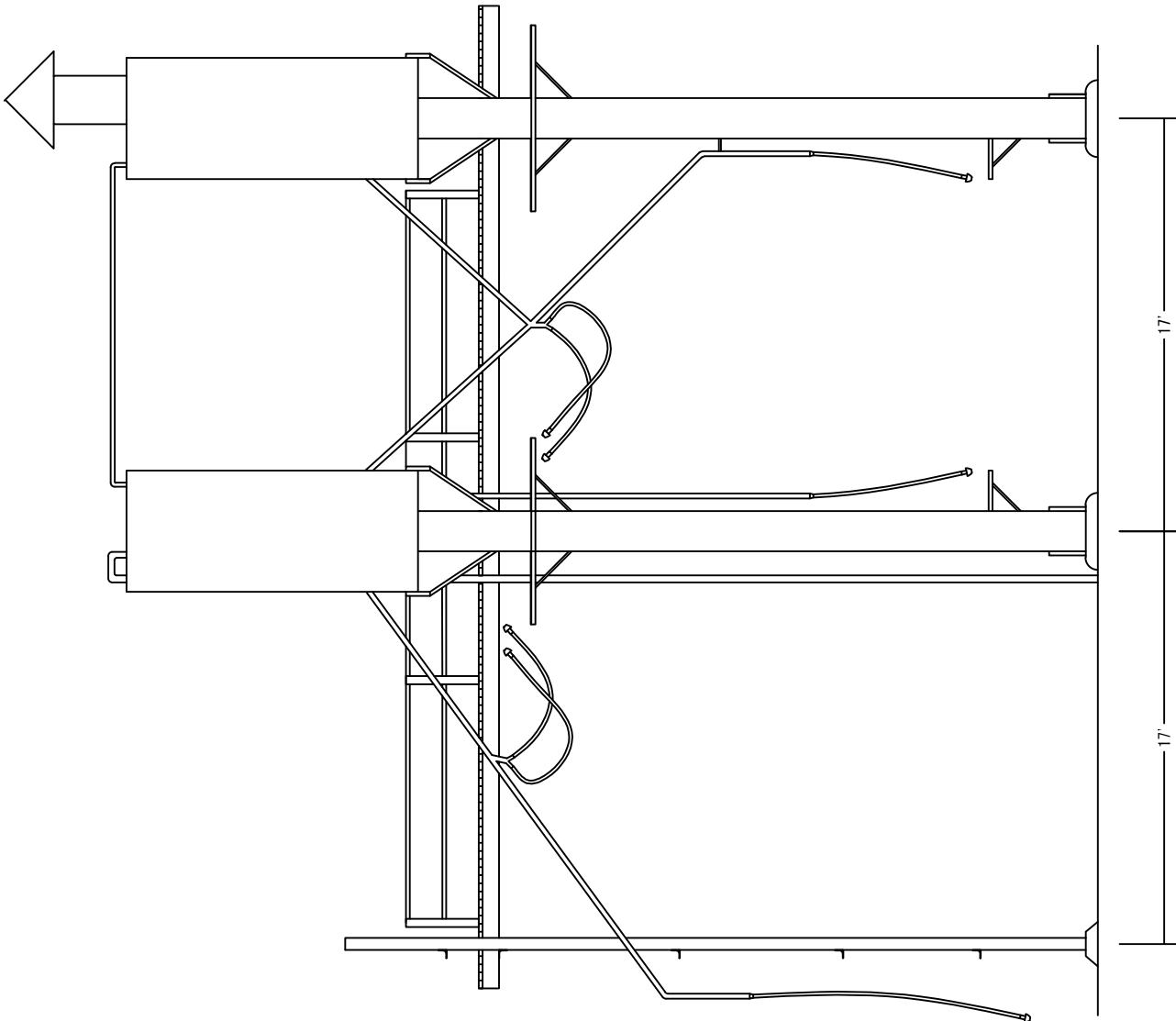
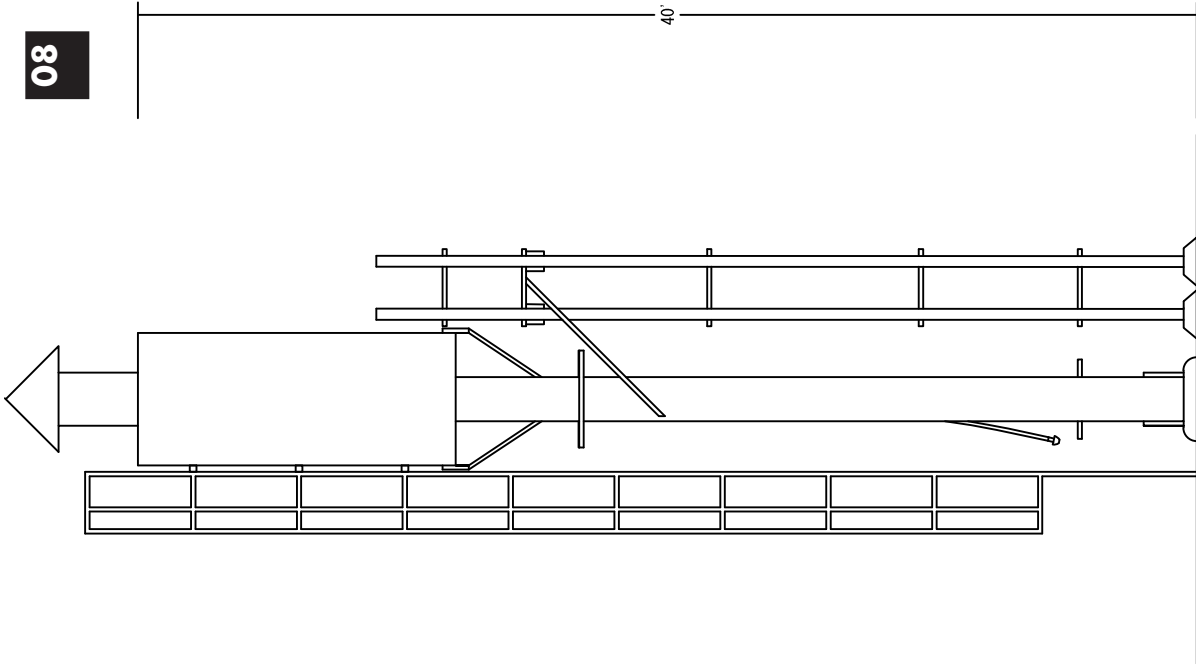
down. The Croxtan engine service facility along with the sand towers are long gone, but thanks to rail fan photographers, internet reference photos and in photographs in publications, this service facility is remembered as a hub for Erie Lackawanna-Conrail era. Thanks to our hobby, locomotives from the Erie days and through early Conrail years can still idle at the service tracks along the meadowlands of Secaucus in miniature form.

Constructing the Twin Sand Silos

I decided to build one of the iconic structures at the Croxtan Yard, the DL&W sand tower. My modeling project starts here in building this twin sand tower structure that once was located at the Croxtan engine service facility in New Jersey. My plan was to build this sand tower in sub-assemblies that attaches to a common base (Image 07). This was the best modeling practice after studying prototype and having experience in assembling common commercial kits. I started building the model by assembling two identical sand silos using 7/16" (.438") Evergreen styrene tubing. The NWSL True Sander is a great tool to make sure each end is squared off to a scale dimension of twelve feet. I capped each end with an oversized circular piece of .020" styrene and then installed the tube in a drill chuck to rotate it while sanding the edge of the cap to the contour of the tube. This trick mimics a lathe action by using a common battery operated drill. Each silo is supported with a 5/32" (.156") styrene tube upright. I cut each tube at forty scaled feet allowing the tube to protrude through each end of the silo and protrude through the .060" styrene base plate. Refer to the base drawing to locate the holes for the upright supports. I recommend using an undersized 19/64" drill bit for the hole and filing the opening to press fit the 5/16" tube to stand up on it's own. This will allow an easy adjustment to permanently mount the uprights perpendicular to the base. The

tube also protrudes through the top and bottom cap of the silo. This design makes the silo ridged to the upright and prevents the silo from breaking off accidentally. I added another circular cap to the top of the silo to cover the hole and used the same method in sanding the edge to the contour of the silo. The third upright is built with two .080" channels cut at 28 1/2 feet long. I used a piece of .090 styrene stock as a spacer to keep the upright members parallel as I attached the 3/64" cross-angle supports in five random locations as seen in the illustration. After I had all three uprights properly mounted onto the base, the next step was building the horizontal walkway that connects all the vertical uprights.





Installing the Service Walkway

The personnel walkway is constructed with a piece 066"x .090" styrene cut at forty scaled feet long and sandwiched with in two .010" x .188" strips. I attached these strips along each side of the .066" length. The topside is planked with .020" x .040" styrene. One end should fit through the channel upright about two feet beyond the channel and positioned twenty-five feet from the top of the planking to the top of the styrene base plate. I made a temporary cantilevered leg and lightly secured it to the base in order to support the other end of the walkway while the angle brackets were in the process of being attached. I used the Plastruct 3/64" angle to support the walkway from underneath to each side of each vertical silo upright. The four platforms under the silos are made with .020" styrene strips using two different widths to simulate the random wood planking. The four posts located along the walkway that support the wood handrails are made with .040" x .040" styrene strips cut at four-foot lengths. I started adding details along the bottom of each vertical silo supports starting with two pairs of 3/64" angles at four feet in length and placed 90° from each other. I also added four triangular pieces of .020" styrene under each silo as seen on the prototype. The bottom of each tube is framed with a .060" quarter round styrene and filled if modeling putty to simulate a concrete footing. I filed the radius flat to a chamfer to match the prototype footings. The last detail added near the ground level is a pair of personnel platforms made from .010" styrene strip and supported with angle brackets. These platforms are only found between the two silo vertical supports. Next, get ready for adding some brass details!

Finishing with the Brass Details

The sand tower model is complimented with piping and safety cage assemblies made of brass materials. I used two different sized piping to distinguish the delivery sand pipe from the receiving piping. The brass ladders and safety cages are built using any readily available brass etching kits. I made brackets out of .060" styrene channel and attached each channel at three top locations where the safety cage is connected to the ladder stock. The channel is filed to a radius matching the contour of the 7/16" tube used to create the silo. This type of

arrangement easily secures the ladder assembly rigid to the sand silo. The sand delivery piping is made with .019" brass rod soldered along the connecting hose joints. I used .033" brass rod as the vertical delivery sand pipe that is located along the left silo. I used .010" brass rod in short stub lengths soldered to the areas that needed hose connections. The end of the brass rod fits easily into the wire insulation during the installation. The sand hoses are made from insulation stripped from 29 gage wire at lengths that match the prototype pictures. I decided to attach some Central Valley Model Works code 55 ties between each silo and placed a locomotive on the temporary rails to determine where the track centerlines are located. This step is to make sure all my close clearances were acceptable. I made sure all my motive power enters each track at a crawling speed with no interference. Once I was happy how everything was assembled, I moved into preparing the model for painting and weathering to look like the prototype.

Painting and Final Touches

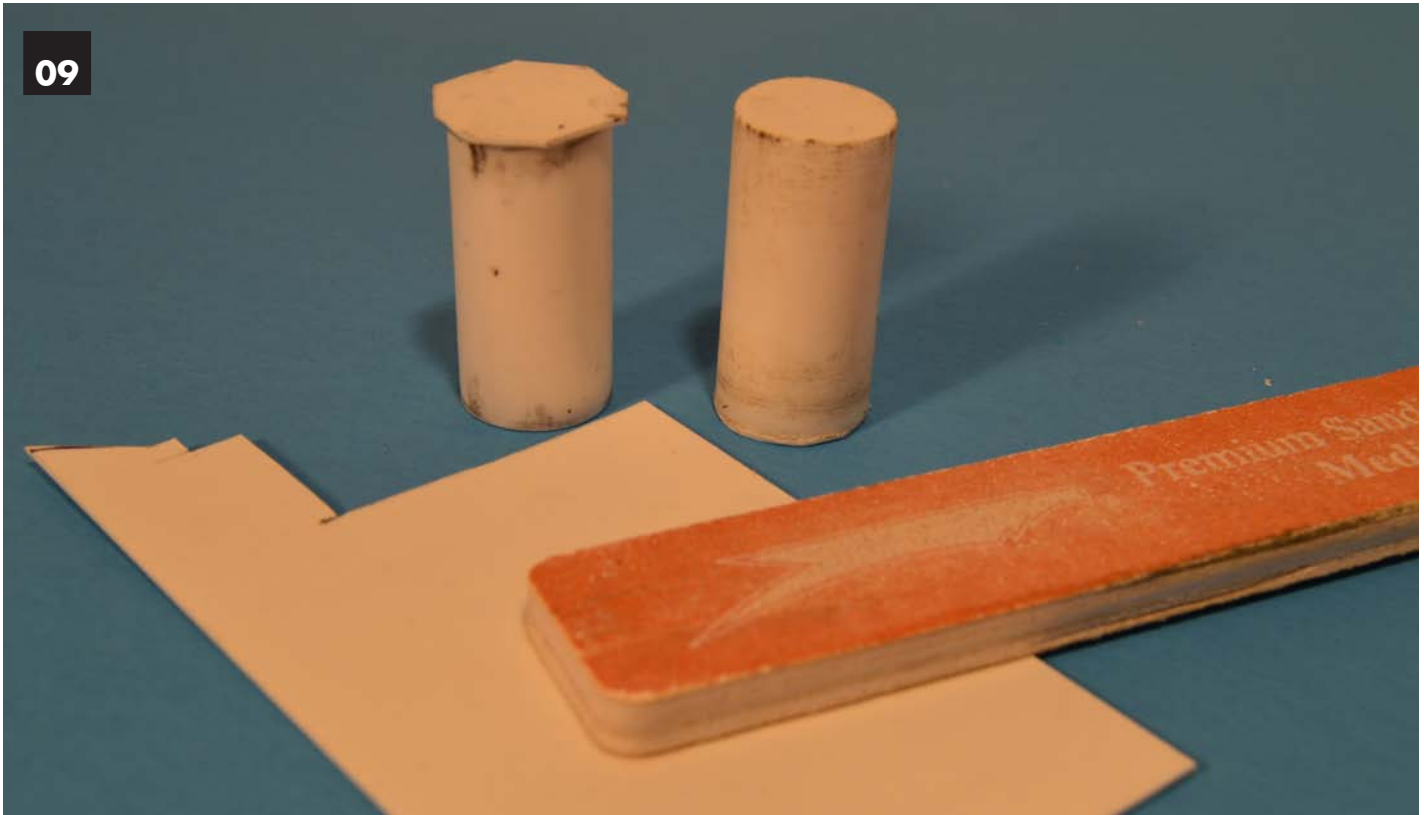
All painting projects start of with a soft toothbrush and a drop of dish soap detergent in order to get any film or oil off the model prior to painting. Once the model is clean and dry, I then gave all the surfaces a coat of primer using Tamiya Surface Primer for plastic and metal. I let that dry for twenty-four before the base coat was applied. I custom mixed my weathered color by mixing flat black and grey in a 3:1 ratio and applied the mix with an airbrush. The base of the sand tower received a coat of tan and the ties are weathered with a brown. I finished the model with some chalk pigments before sealing the model with Textors Dullcote. The last details I added to finish the model are the ferrule hose ends. Each hose end received a 1/8" long ferrule cut from some stainless .050" tubing that slides on a piece of .010" brass wire sticking out of the insulation. Your Sand tower is now ready to service the fleet and will add a little nostalgia to your engine service facility.

Web Sites to visit:

<https://www.flickr.com/photos/41263940@N02/5240288072/in/photolist-mDV9Jv-8Z4R5m-8Xicbn-8XiawT>

Parts Breakdown for the N Scale DL&W Sand Tower

Manufacturer	Item	Part Number	Call Out Notes:
Evergreen Scale Models	.010"x .188"	108	Walkway Side Plates & Platforms
Evergreen Scale Models	.020"x .030"	121	Planking
Evergreen Scale Models	.020"x .040"	122	Planking
Evergreen Scale Models	.040"x .040"	142	Handrail Posts
Evergreen Scale Models	5/32" Tube	225	Silo Uprights
Evergreen Scale Models	7/16" Tube	234	Sand Tower Silo
Evergreen Scale Models	.060" Quarter Round	248	Concrete Footing
Evergreen Scale Models	.060" Channel	261	Ladder Silo Mounts
Evergreen Scale Models	.080" Channel	262	Vertical Frame Uprights
Evergreen Scale Models	.066"x .090"	8608	Upright Jig Spacer & Walkway
Evergreen Scale Models	.020" Sheet	9020	Silo Caps and triangular supports
Evergreen Scale Models	.060" Sheet	9060	Sand Tower Base
Plastruct	3/64" ABS Angle	90001	Miscellaneous Silo Angle Brackets
Detail Associates	.010" Brass Rod	2503	Sand Hose Connections
Detail Associates	.019" Brass Rod	2506	Sand Delivery Piping
Detail Associates	.033" Brass Rod	2509	Sand Receiving Piping
Gold Metal Models	Safety Cage Ladders	160-38	Brass Safety Cage
Ngineering	.050" Stainless Tubing	N-2065	Sand Hose Ferrules
Ngineering	#29 super Flex Wire	N-5029	Sand Receiving Hose



09

Image 09. Construction starts with a 7/16" tube capped with .020" sheet stock.



10

Image 10. Glue a piece of .020 styrene to each end of the silo and file down the cap to the contour of the tube.



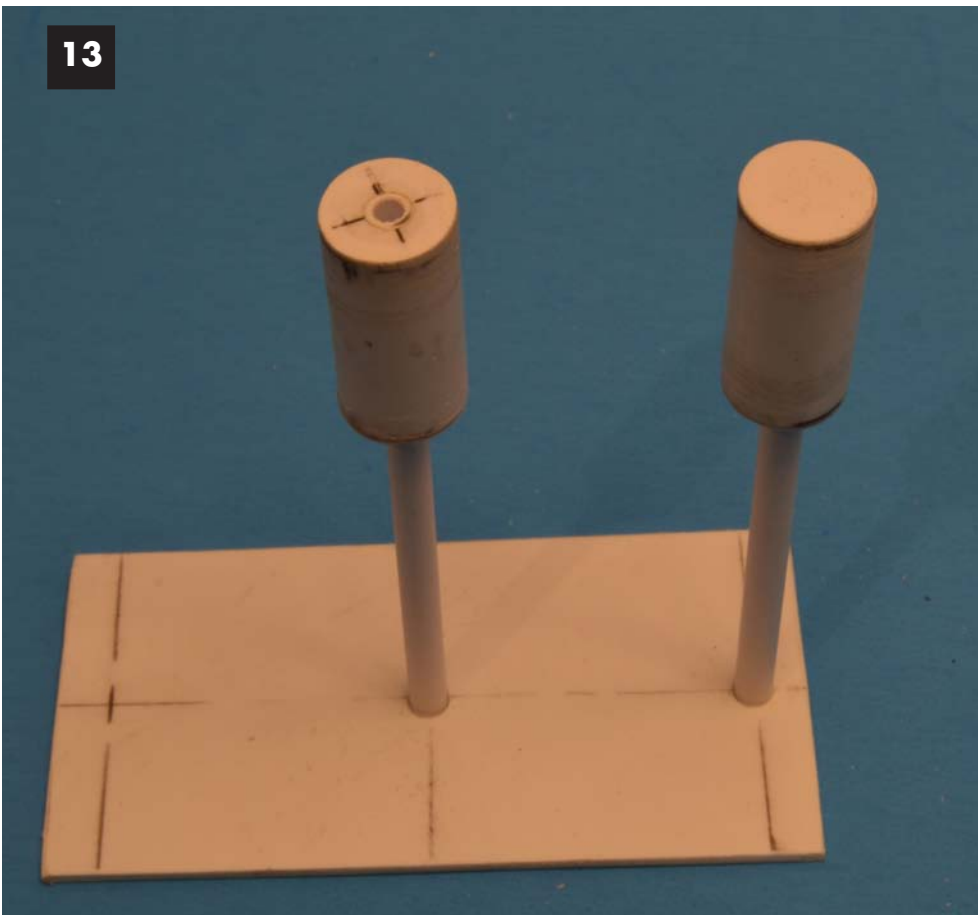
11

Image 11. Slowly rotate the tube in a battery operated drill while sanding the top and bottom of each silo.



12

Image 12. Temporarily mounting a straight edge at 45° in between a square will make a great tool to find a center of a circle.



13

Image 13. The support is attached through the top and bottom of the tube (left) and a second end piece at the top will hide the hole. (Right)

14

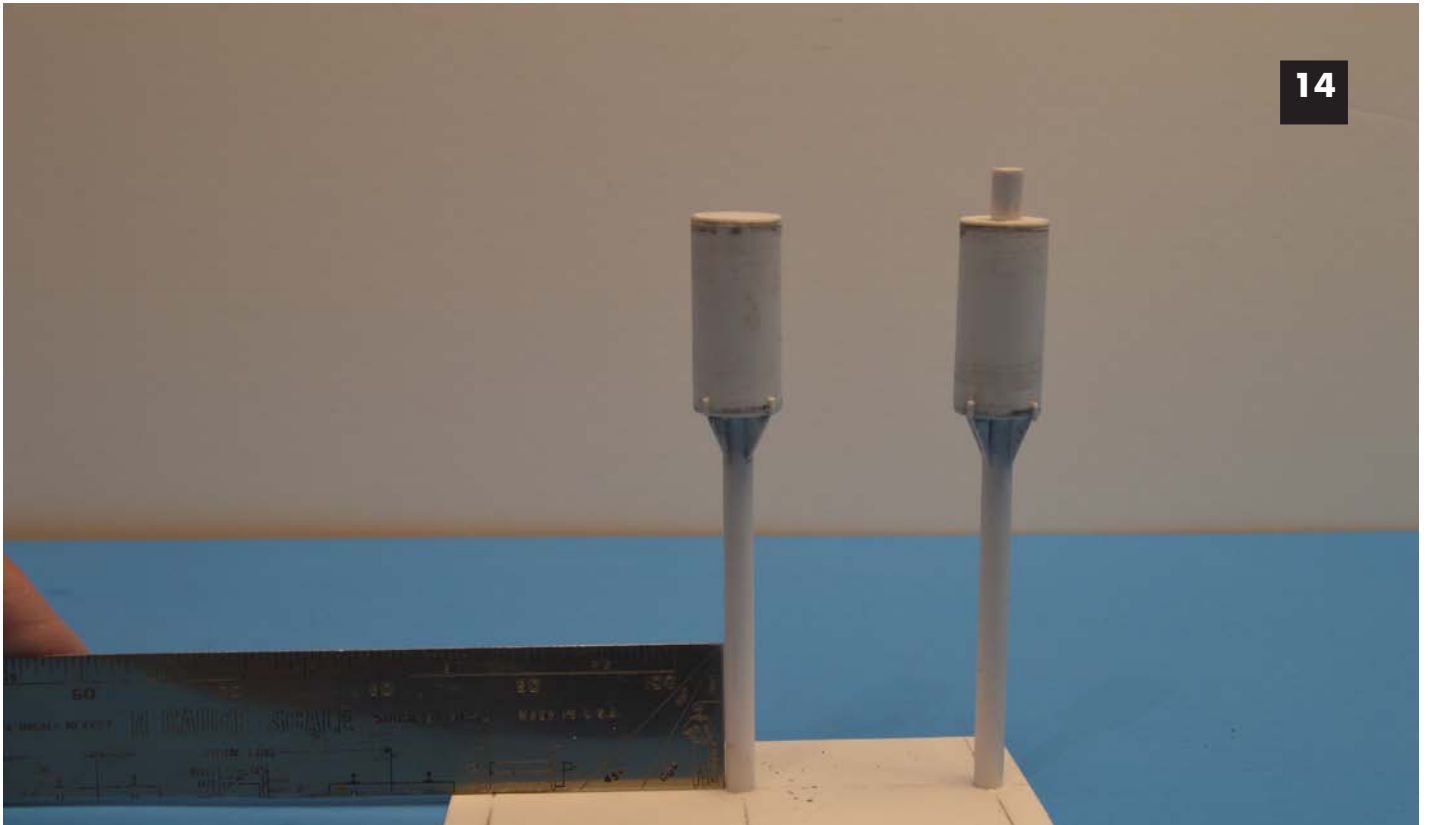


Image 14. Check each upright to confirm the structure is 90° to the base.

15

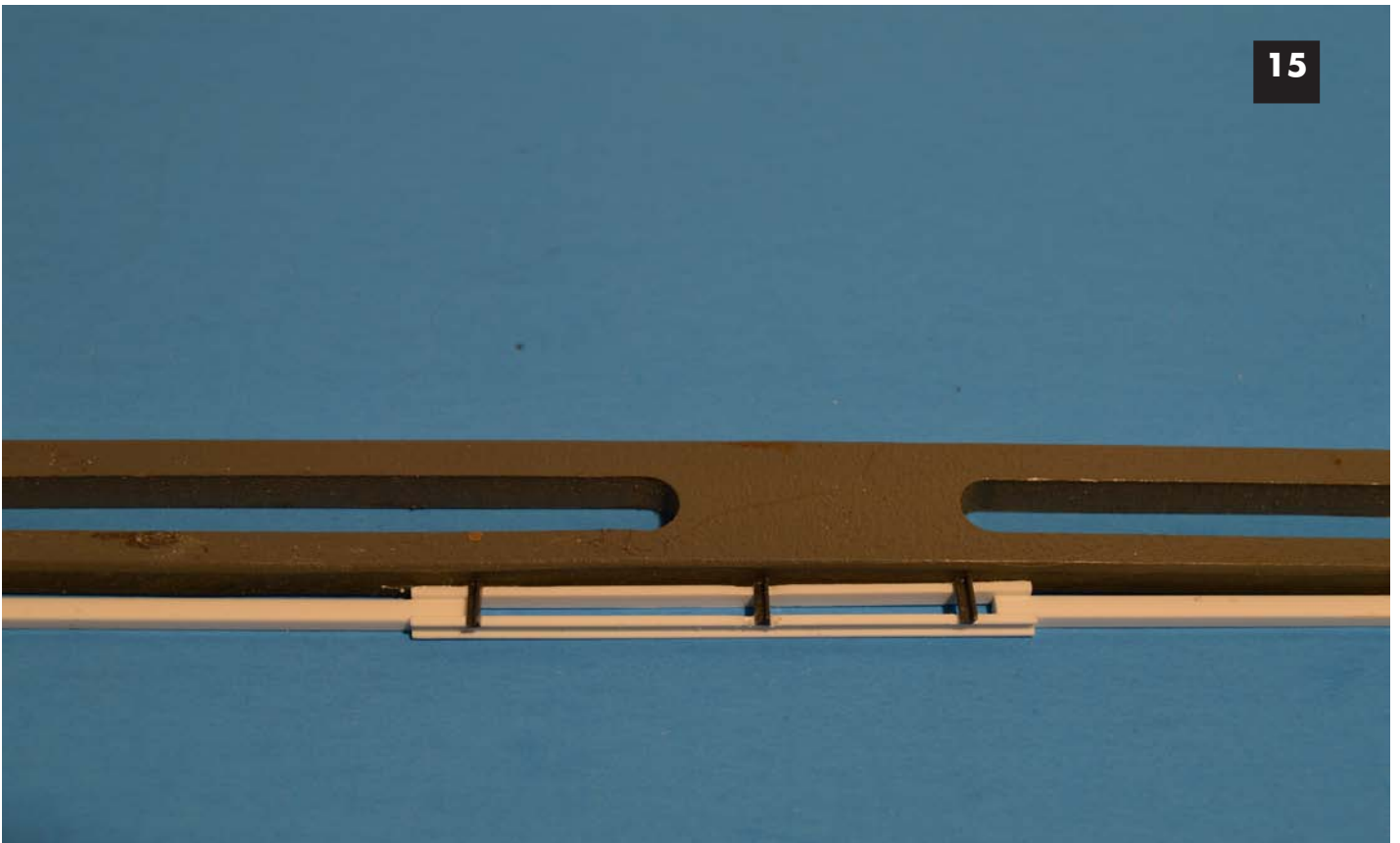


Image 15. Use a straight edge and the .090" styrene spacers to create the two parallel channel uprights.

16

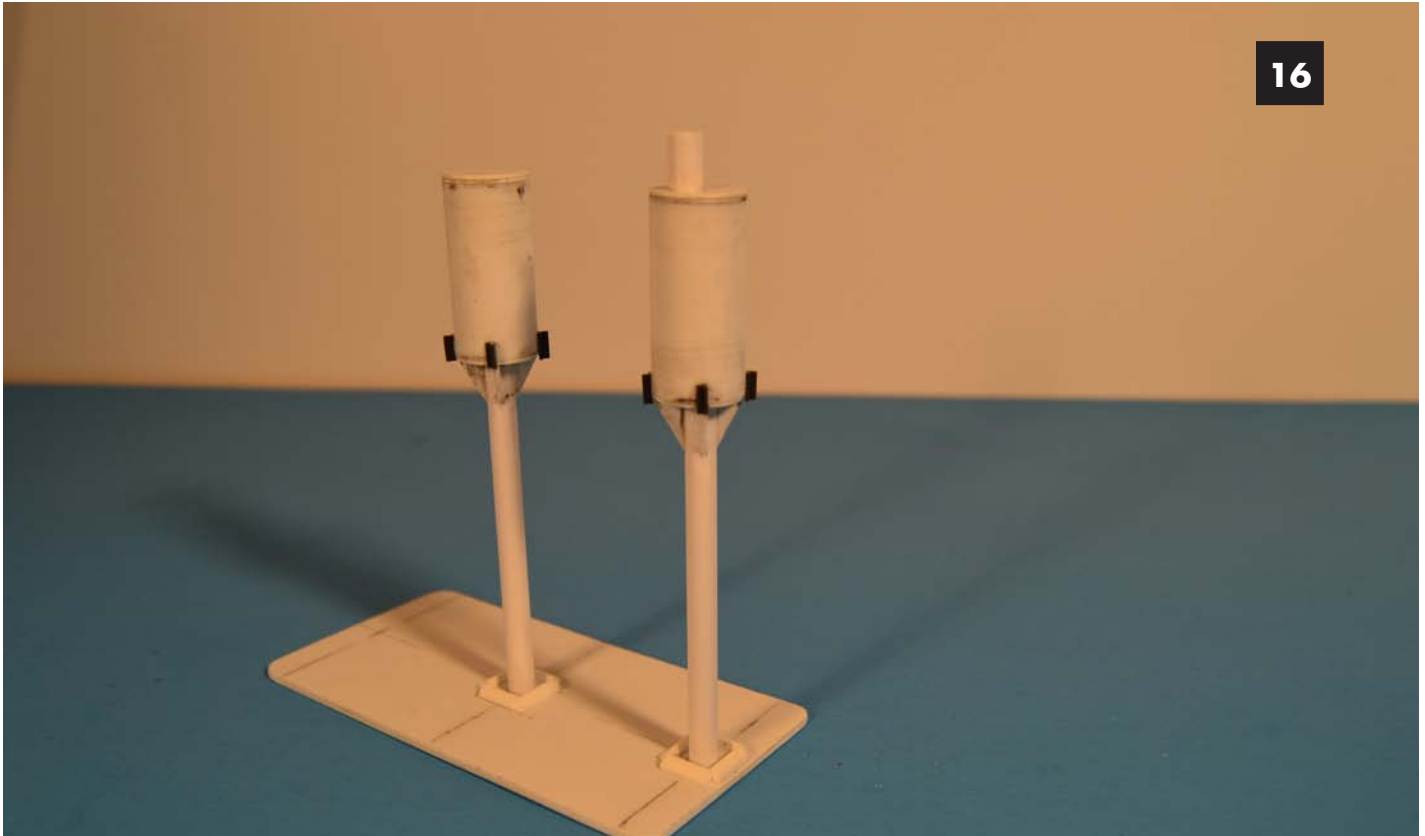


Image 16. Add the four angle brackets to each silo once the uprights are mounted to the base.

17

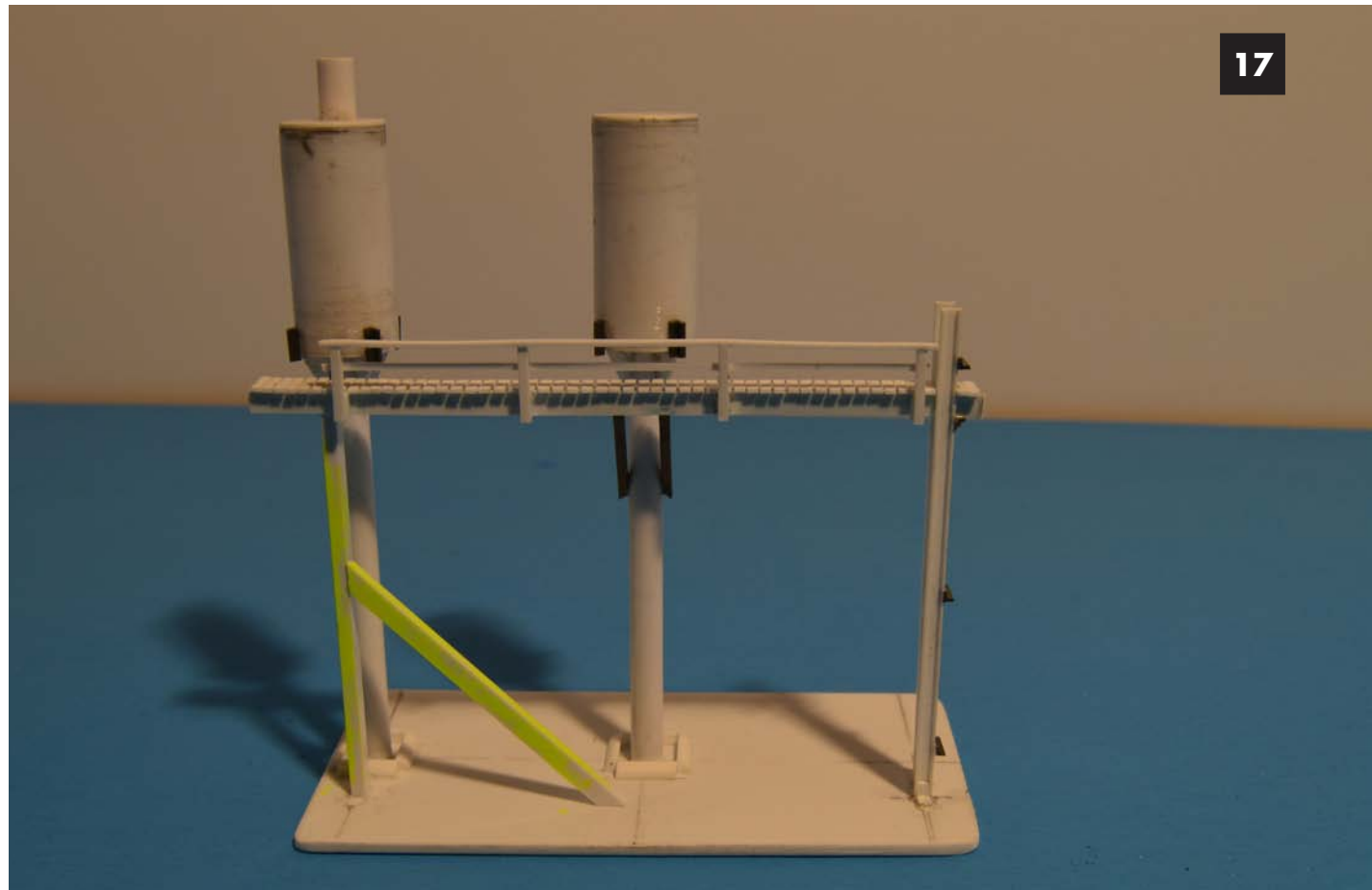


Image 17. I made temporary bracket to hold the platform with some stock styrene (painted yellow)

18

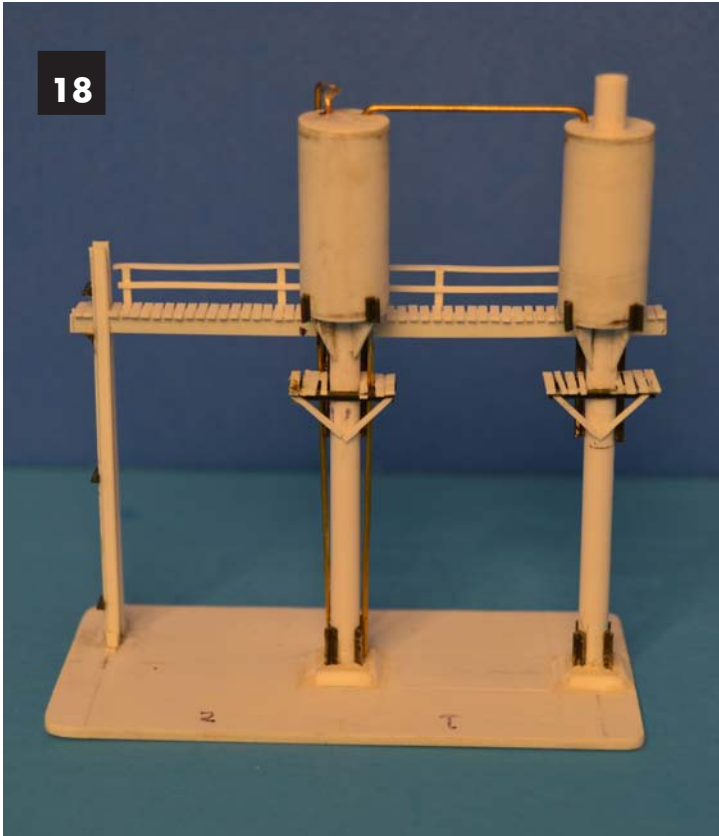
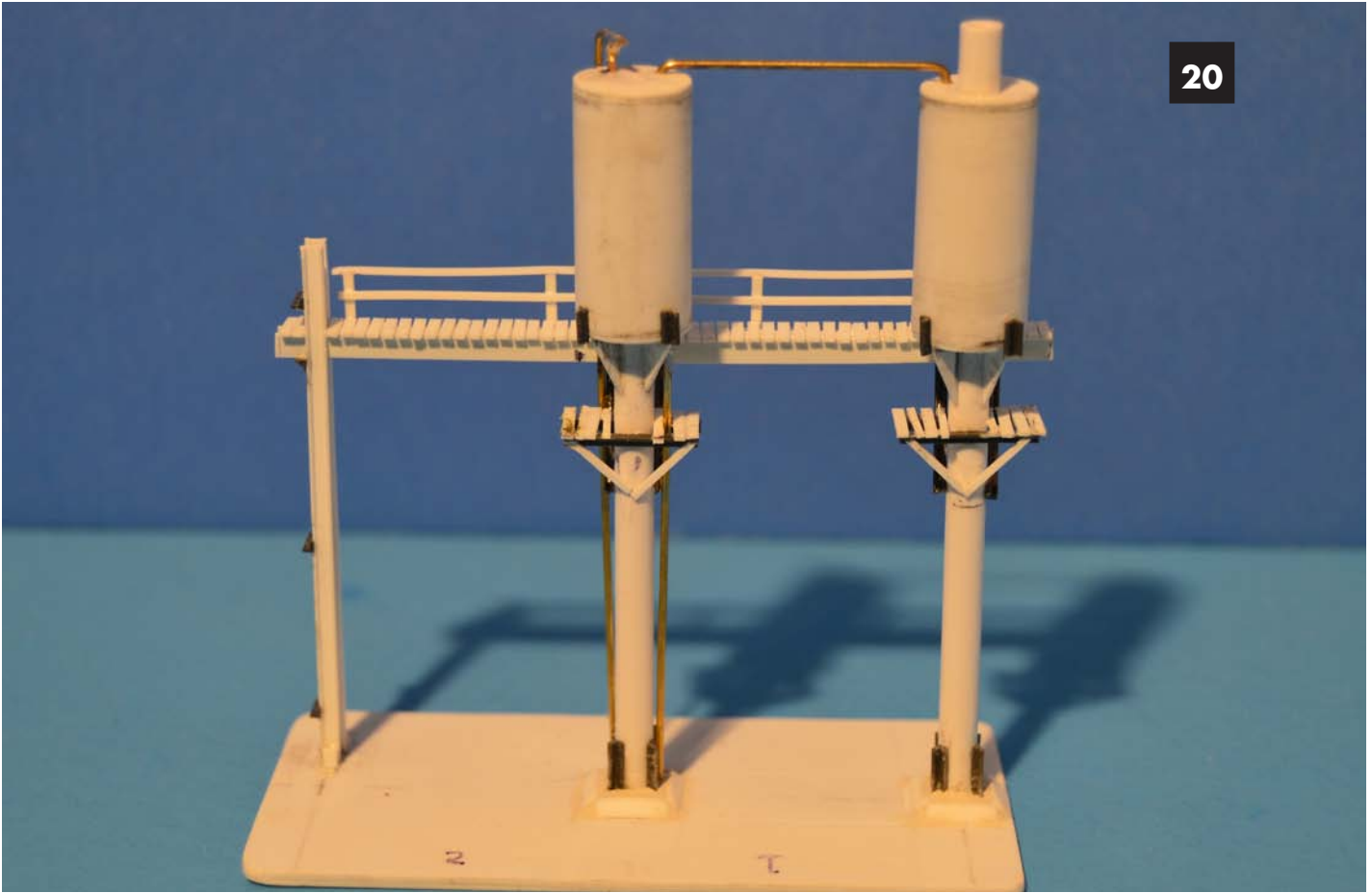


Image 18. Finish adding all the styrene details from back to front before moving on to the brass components.

19

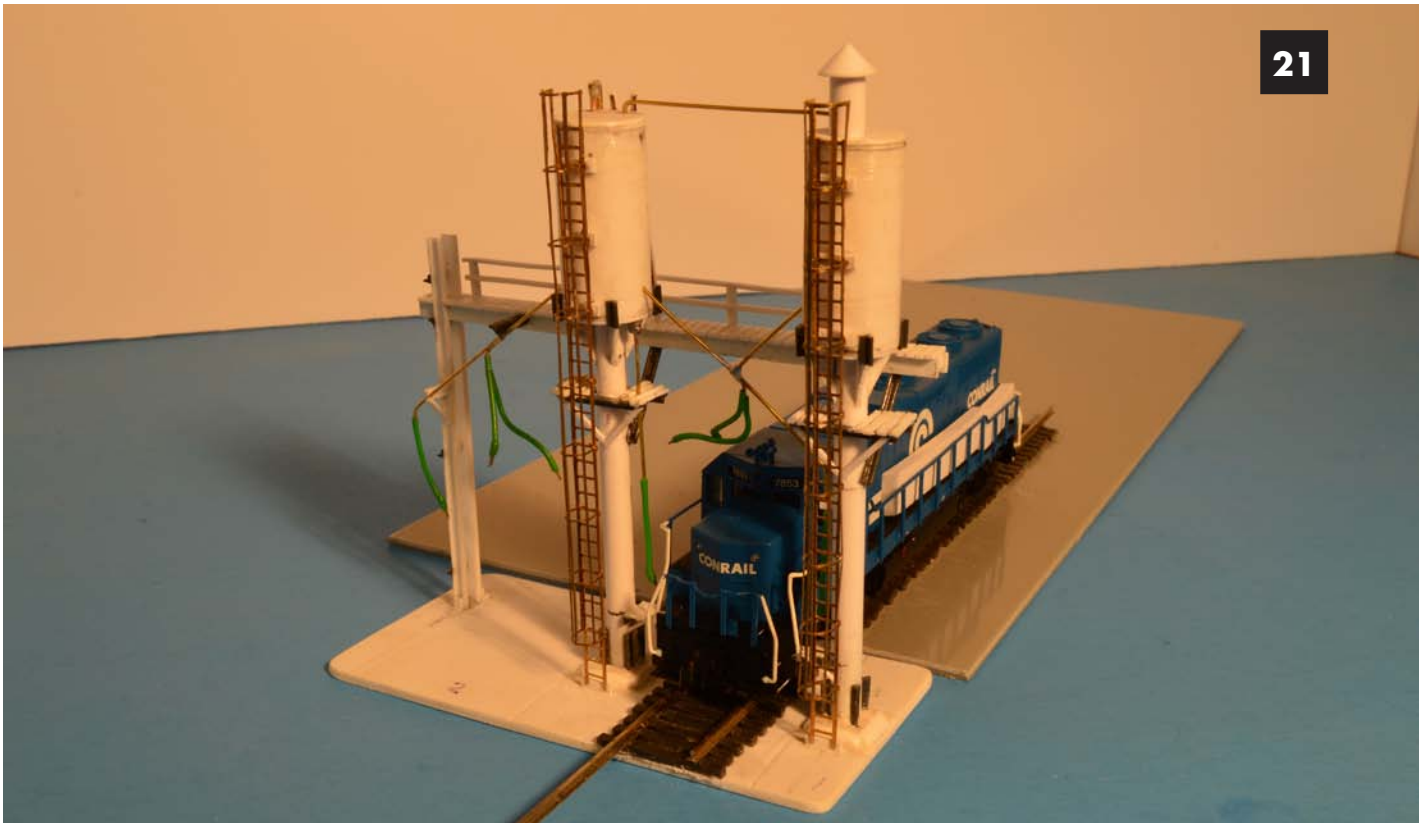


Image 19. I fabricated three mounting brackets from styrene channel and mounted them on the safety cage assembly.



20

Image 20. I started adding the sand delivery piping using .033" Brass Rod



21

Image 21. I determined the locomotive clearances by sliding my locomotive fleet through the model after I affixed some ties to the base plate.

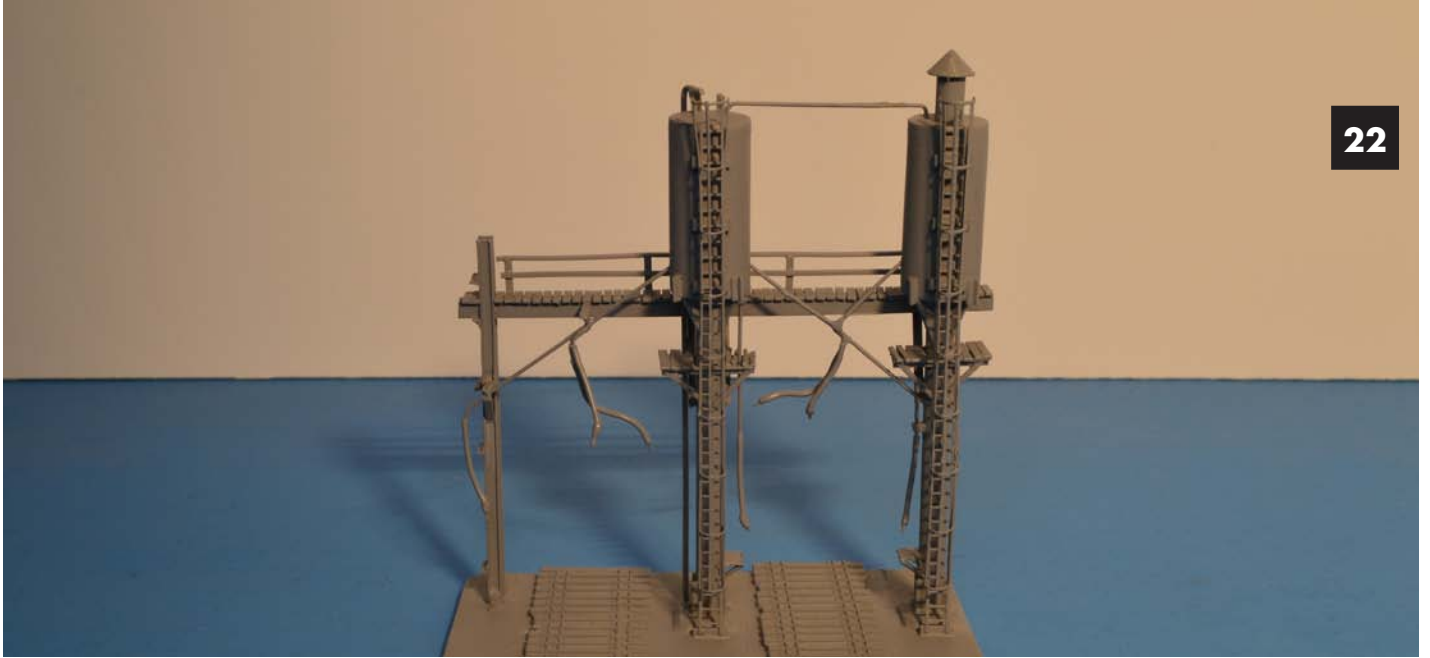


Image 22. Primer applied

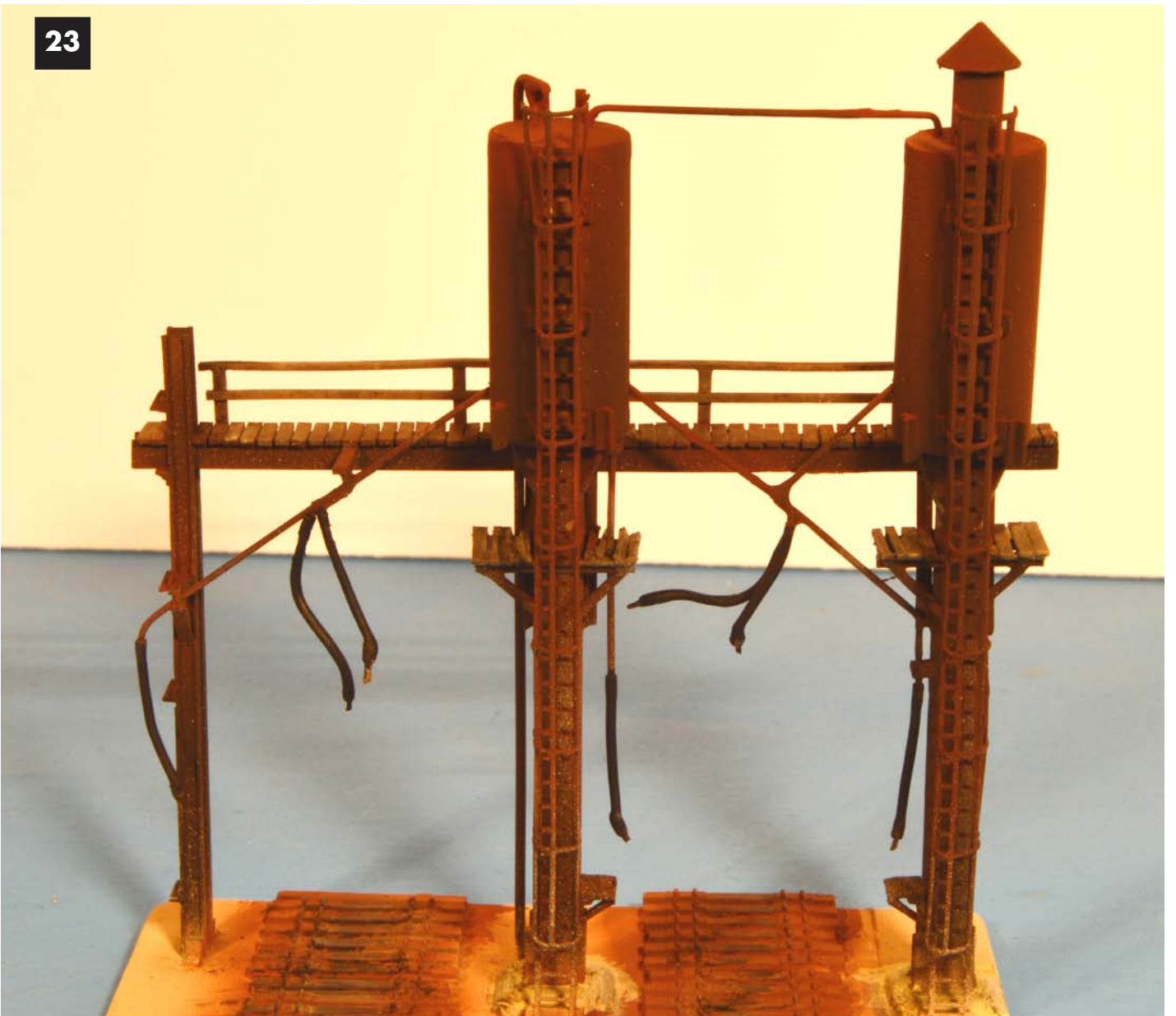


Image 23. Painting and weathering



Image 24. Finished! ▶

TRAVEL GUIDE N EVENTS

2022 MAY 21-22 CA San Pedro.
Belmont Shore Model Railroad Club Spring Open
House. [Click Here.](#)

2022 JUN 14-19 TN Nashville.
28th Annual National N Scale Convention
Registration opens December 06.
<https://www.nationalscaleconvention.com>

2022 SEP 10-11 UK Altoona
2022 International N Gauge Show at Warwick-
shire Event Centre, Nr Leamington Spa
Visit: www.ngaugheshow.co.uk

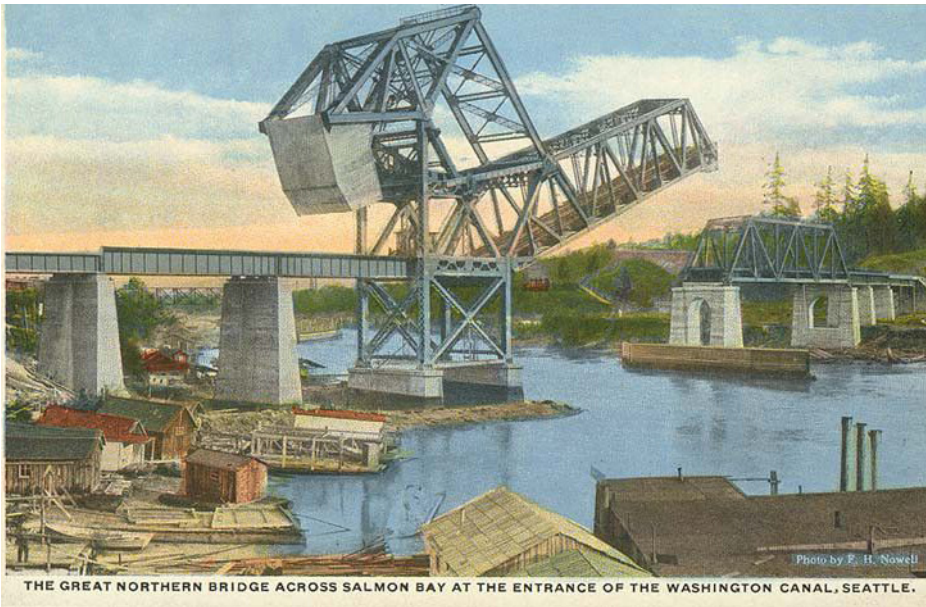
2022 SEP 16-18 PA Altoona
The 2022 N-Scale Weekend™ at the Blair County
Convention Center. Visit: [HTTPS://WWW.N-
SCALEWEEKEND.COM/ABOUT-THE-SHOW](https://www.n-scaleweekend.com/about-the-show)

2023 JUN ??-?? NV Sparks/ Reno area.
29th Annual National N Scale Convention. ▶

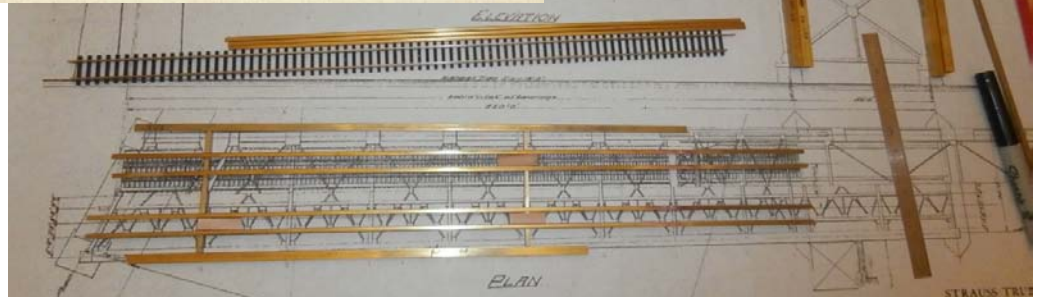
N HORIZONS

ScaleTrains. Winter2022/2023 should see an all-new Thrall- Trinity 42' Coil Steel Car from ScalewTrains. See page 17 and www.ScaleTrains.com.

NEWS FROM NSR CONTRIBUTORS



More teasers for building Great
Northern Bridge #4.



SEE YOU NEXT ISSUE!