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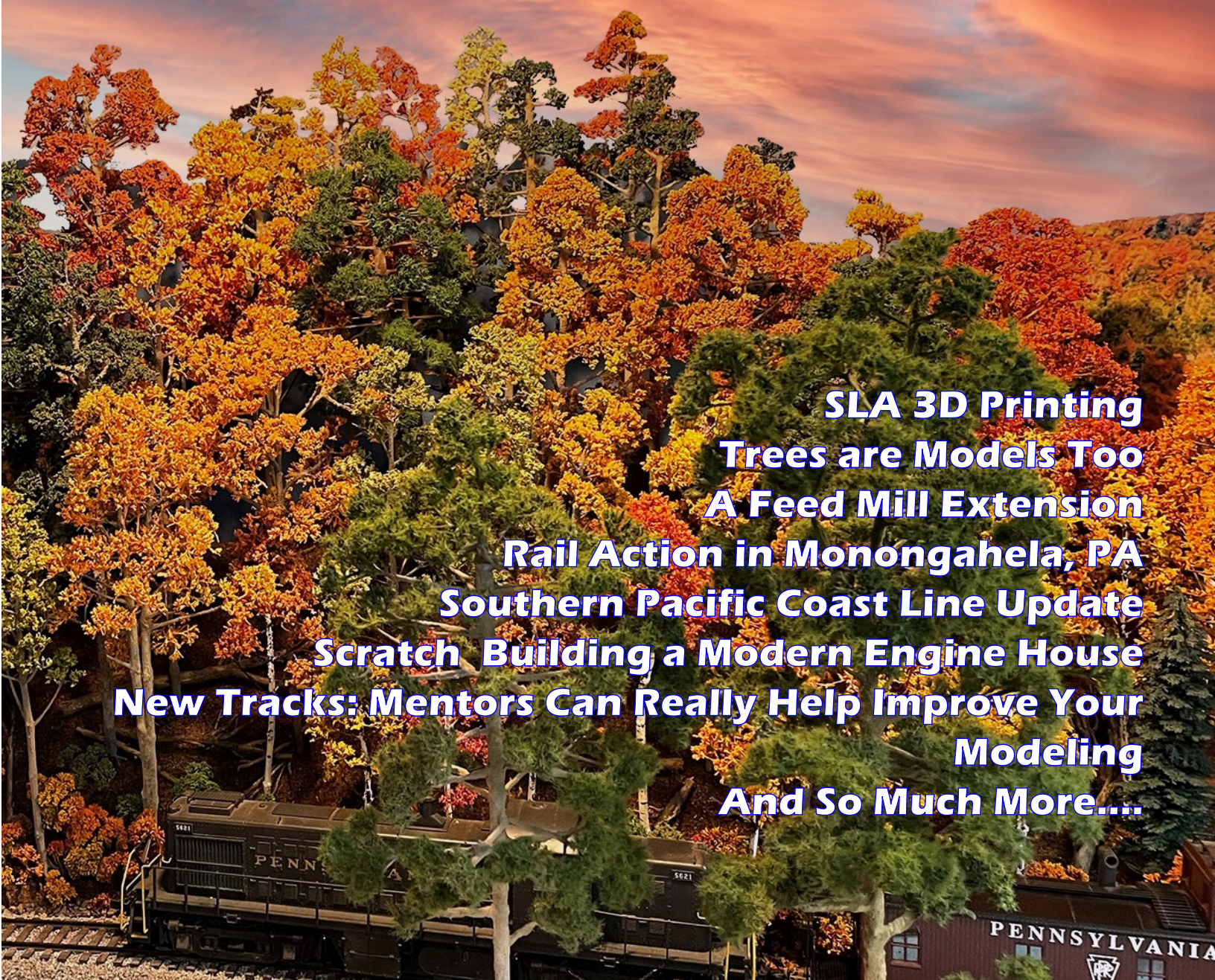
*NEWS, REVIEWS, INFORMATION TO USE*

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*Volume 9 No. 4*

*March/April 2022*

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Trees are Models Too  
A Feed Mill Extension  
Rail Action in Monongahela, PA  
Southern Pacific Coast Line Update  
Scratch Building a Modern Engine House  
New Tracks: Mentors Can Really Help Improve Your  
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**Questions? Visit MARCHMEET.NET, call 414-322-8043 or Facebook: <https://www.facebook.com/MarchOScaleMeet/>**

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Published Bi Monthly

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**March/April 2022**  
Volume 9 No. 4

*Owner / Publisher*  
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*Managing Editor*  
**Daniel Dawdy**

*Advertising Manager*  
**Jeb Kriigel**

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

*Beautiful sunset showing off the scratch built trees from Biagio Pace's article Trees Are Models Too.*

*Photo by Biagio Pace*

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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.



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# From the Publisher's Desk

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It's that time of year again. The Chicago March Meet is coming up fast. I have been attending the "March" show since it was in Mundelein, IL back in the 80's. Once the Hills took over, it really expanded to become the premier O scale show for North America. Now under new leadership, it promises to continue that tradition. [Check out their Website](#) and register on-line for the event and hotel. Stop by our table and say hello and see what we have been up to. We are looking forward to seeing everyone again, supporting the show and buying from the multitude of vendors.

Again this year, we will host the model contest with a cash back certificate (valid up to \$25.00) for the winners in each category if you purchase something from any of our current advertisers. And if you purchase something from them at the show, we'll actually hand you a check when you present us the certificate and a paid receipt. The contest will be held in the front foyer this year, so you don't have to go looking for it. [You should download the contest packet here](#) – that way you will have the information and all paperwork filled out before arriving.

Amy and I will also be hitting the road for the Strasburg 2 Rail Train Show on April 23<sup>rd</sup> and then O Scale West - S West and Narrow Gauge West, May 26-28.

We again have a full issue with a scratch built engine house by Myles Marcovitch. I guess if you look closely, you will see that Myles models in three rail, but since the article is about scratch building and 3D printing, that is immaterial so no emails.... 😊 Scratchbuilding principles, printing, scenery and [much](#) more are the same regardless of scale, that's why we encourage you to also read *The S Scale Resource Magazine*.

Biagio Pace joins us with "Trees are Models Too" as he shows us his method for making beautiful trees from a variety of sources. George Paxon is back with Rail Action in Monongahela, Pennsylvania. George is not only a great modeler with a wealth of knowledge, but a great historian as well. With this issue, we begin our journey into the crazy world of 3D printing and so much more.

If you are wondering about Glenn's scratch built steam locomotives, he will be back after his winter in Florida.

Let us know what you are up to. Email [daniel@modelrailroadresource.com](mailto:daniel@modelrailroadresource.com) with any projects, large or small, and let's talk. Don't worry if you don't fancy yourself a great writer, we'll work with you and help get your thoughts down.

Thank you all for your support, and remember to tell our advertisers you saw them in *The O Scale Resource Magazine*!

Happy Reading & Happy Modeling,

*Amy & Dan Dawdry*

# NEWS YOU CAN USE



[All Nation Line](#) has brought back and released the Chicago & North Western Bay Window Wood Caboose. As a part of our ongoing efforts to introduce to those new to O Scale 2 Rail, or simply to get those RTR guys and gals interested in building kits, this is another bare bones easy to assemble kit for beginners at a low cost point box of enjoyment.

The prototype wood bay window cabooses were built in 1928 for the Chicago & North Western and its subsidiary the Chicago, St. Paul, Minneapolis & Omaha. [We invite you to have a look at all our C&NW kit photos here on our website.](#)



As a bonus, we will include some original paperwork with the kit for your reference pleasure. If you want to keep up with "What's New?" on our website, [visit the following link here.](#)

[We hope to see you in Lombard at the March Meet B 5-6-7-8 featuring the C&NW Bay Window Caboose.](#)

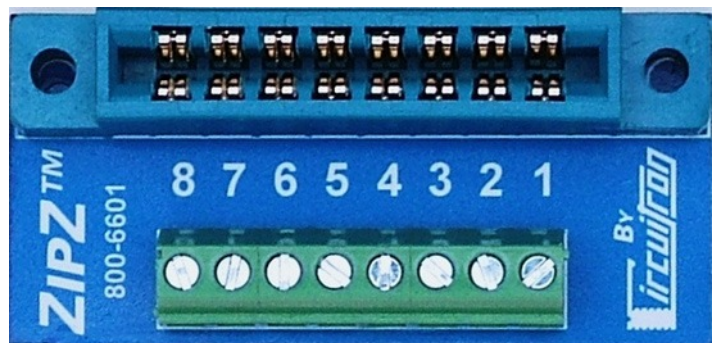
[See their Website for all their products.](#)

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In 1984, Steve Worack, the owner/president of [Circuitron, Inc.](#), designed and constructed the first TORTOISE™ Slow Motion Switch Machine and the model railroad switch machine industry was forever changed.

However, there was a quirk in the original TORTOISE™ design. Because of an overlooked design issue with the stamping die needed to punch out our circuit boards, the width of our board extending

from the machine needed to be undersized by about 0.1" by industry standards. So, although it would fit an industry standard edge connector, there was some extra room at each side in the connector which created a condition where the connector could be shifted to one side (or the other), possibly creating a bridging of the conductors on the board. For this reason, CIRCUITRON chose not to sell mating edge connectors over the years.

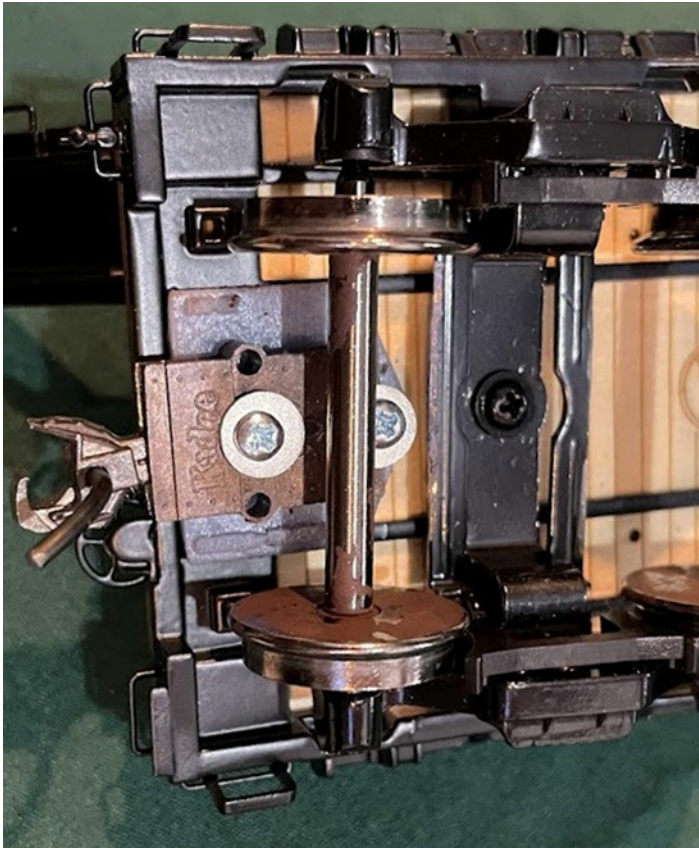
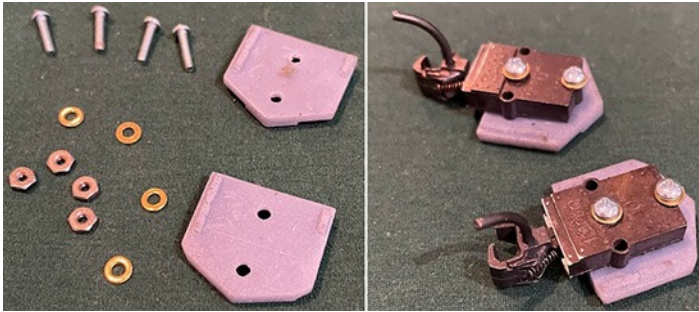


In early 2020, we changed suppliers on our TORTOISE™ circuit board and in the process, modified the design to comply with industry standards. And now that we are "standard", we have decided to offer our own solderless connection system. Because it is SO quick and easy to use, we are calling it ZipZ™. Now layout wiring can be easily connected to the ZipZ™ terminal block and then the edge connector simply slides onto the TORTOISE™ or SMAIL™ circuit board. No soldering necessary to the machine. ZipZ™ also fits the older TORTOISE™ circuit boards (the tan ones). Available in a single piece package, a cost saving 6 pack and for even more savings, a 6 piece do-it-yourself kit version where soldering IS required, but not to the switch machine. This item should be available by the time you read this.

---

[Bruce Blackwood](#) has decided to sell his coupler conversion kit. The 3D print division of CASH for TRAINS announces the first in a lineup of conversion kits. The first one is made for specifically made for converting Lionel PS-4 flatcars, using the existing

trucks, owner converted to 2 rail. We are offering these as a kit or built up with Kadee 805 couplers. Designed to be glued to the frame and floor, putting the coupler at the perfect height. This installation requires no drilling or tapping and does not show from the deck of the car.



The kits will run \$24 shipped, the built-ups \$40 shipped. Please contact me at [burrett@Comcast.net](mailto:burrett@Comcast.net) for all the details.

---

Update from [Roger Lewis of Wasatch Model Company](#).

The Dallas P.O. Box is NO LONGER Active!  
Please use: 27 W. Hammond St. Mundelein, IL 60060

The trucks are in production, but I don't have a shipping date

This has been difficult because Johann is not his Father, and doesn't really have any interest in model trains. But because of my long time relationship with Mr. OH, Johann is producing the trucks. He's had difficulty finding people to help produce them. Things are not the same in Korea. Many of the builders are gone forever, and the remaining builders are have issues finding workers.

I was trying to produce the 41-HR and 61-R trucks, but the old pattern makers are also long gone. The new kids want everything in 3D-CAD drawings!

That was part of the reason for the delay in producing the trucks that OCS has all MY Patterns for. He was spending all his energy and time trying to get the 41-HR and 61-R trucks patterns, and he let everything else go!

This really is the very last call for Wasatch Model Company Passenger car Trucks!

OCS will do another run, but only if I can get enough reservations to make it worth his time.

This is a No Profit to me project. I am just trying to fill a need for some of you guys!

So if you think you will ever need any of the trucks that I produced, now is the time to reserve them.

I will be asking for deposits on any trucks you reserve. I can't produce trucks for zero profit and then get stuck with them. This is kind of a group effort!

The cost of production in Korea continues to increase. I am also doing this to try and help out OCS as they have had a difficult time because of the virus.

Any questions, please email or call me.  
847.83.5862 [wasatchmodelcompany@mac.com](mailto:wasatchmodelcompany@mac.com) and please check our [Website for more information and pictures](#).

[Richard Rands of Berkshire Valley Models](#) says: We have just added a new laser cut wood and white metal wagon to our line of O scale (1/48) kits.

Our surrey (with the fringe on top) is comprised of laser cut wood and white metal parts. Easy to assemble kit.

Horse available separately.



[See their Website for all their great products.](#)

---

More colors from our friends at [Tru-Color Paint](#).

March, 2022: 3D-Printed & Cast Resin  
9360- Metra Commuter North- Blue  
Aerosols

4043- Gloss Bright Yellow

4044- Gloss Fire Engine Red

April, 2022: Aerosols

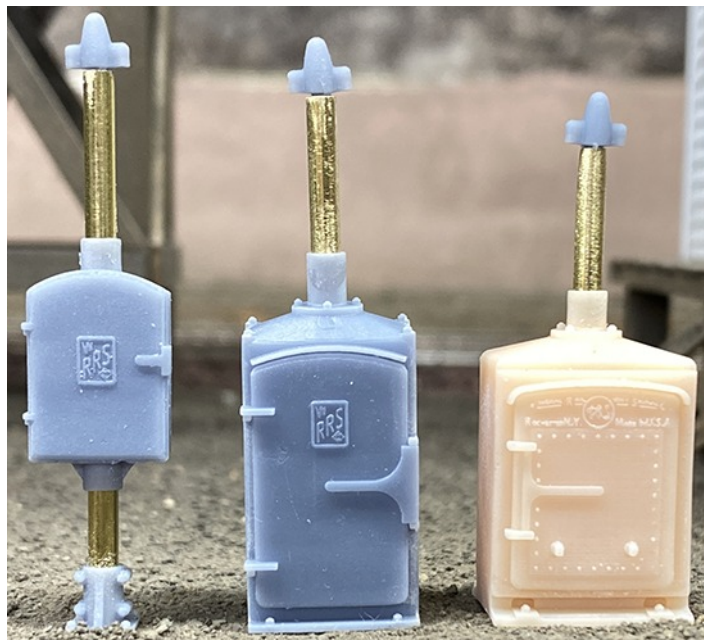
4045- Navy Gray #5- 1939

As always Tru-Color Paint is always open to new ideas for paints. If there are colors that our readers need but aren't made, have them shoot them an email at [tru.colorpaint1@yahoo.com](mailto:tru.colorpaint1@yahoo.com). If they can find enough information on the color, they could put it in the next year's production schedule. [See their full line up at their Website!](#)

---

[The Model Railroad Resource LLC 3D Division](#) is pleased to announce our new trackside details. These are resin castings and come unpainted. Brass tube is NOT included - You supply the 3/32 brass tube. (K&S # 8126) or aluminum (K&S # 8101).

Three new relay boxes are now available. These can still be seen along the rails today.



Western Railroad Supply Company pedestal and tall model along with a General Railway Signal Company box. Our new store will be coming, but for now [click here for more details and how to order](#).

---



[Narrow Gauge Modeling Co.](#) is pleased to announce the acquisition of Grizzly Mountain Engineering O Scale wagons. This new product family makes NGMC the largest provider of horse and people drawn wagons in the hobby market place. [See their Website for more details.](#)

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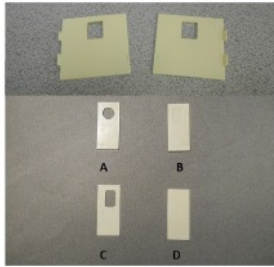
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# RAIL ACTION IN MONONGAHELA, PENNSYLVANIA: FOOD FOR MODELING

By George Paxon

I have lived down here in Australia for a long time now. Sometimes it feels like a lifetime. I came here almost 40 years ago on a year and a half contract from Los Angeles and just stayed. We all need to be somewhere, and this is certainly not a bad place to be.

I do have fond memories of growing up in southwestern Pennsylvania though. My thoughts wander back to those early days quite often now. It was a rough and ready place then. Industries were coal mining, steel mills and railroads – all in serious decline then. Towns were dying when I was young with shops closing. Not many people had much money to spend. But we got by. We thought our family was lucky as we lived on a good-sized piece of land and had chickens, rabbits and a big garden. We shot deer each yea, and were never hungry. I didn't know I was poor till I left home for military service and found out how some of the others lived.

Most all the boys in my class needed to find something to do after school finished as the local draft board was hot on the tails of anyone unemployed. I think the draft was the establishment's solution to juvenile delinquency. Well, it certainly worked where I came from.

Not much work could be had though. Local coal mines were working only intermittently, if at all; and steel mills were not hiring as they were in decline with many workers already furloughed. I always wanted to go to work on the railroad, had good connections on the Pennsy to do so, but they would not even talk to anyone that was draft eligible. And the extra boards were already bulging due to a slowdown in the local economy and rail traffic. There was no hope of going further in school then as no money for that was available. Going to work was my only option, but there was none available locally. I headed off to the US Air Force in hopes of learning a useful skill thinking it to be a better solution than sitting around all summer and then ending up in a US Army rifle company in the fall. I had nothing against the Army, but I already knew how to shoot and wanted to learn something I could make a living doing.

After leaving home, people I met would ask where I was from. I'd tell them "Monongahela, Pennsylvania". They would look at me like I was speaking in tongues all of a sudden. Eventually I grew accustomed to saying "near Pittsburgh" as most everyone knew that was a place somewhere up in the hills.

Well Monongahela was nothing like Pittsburgh. It was a small town about 30 miles south and up the Monongahela River from the big city. At one time Monongahela was a barge building center, had lumber mills, a small paper factory, breweries, a plant to produce carborundum, machine manufacturing, foundry, rock quarry, brick works and of course coal mines. When I was growing up most of those old industries were gone, and the town was more of a small market town to service the local population with necessities. It was a bedroom community with most residents working somewhere else in the valley or in the city of Pittsburgh. And, of course, some of the area coal mines were still going.

And then I really didn't come from the town itself, but out of town. It was actually a good place to grow up. I learned lots of things there. Not having a father at hand, my mother's father was my "dad" and he taught me many life skills that I value to this day. Certainly, I learned more practical and useful stuff from him than I did in five years at college. Even though he went into the mines at 12 years of age, he was a smart man. We planted and harvested, maintained fruit trees, took care of the chickens and rabbits, cleaned deer, put up vegetables for

the winter, did a lot of wood and metal work, made repairs to our old house, and fixed the car when needed. I learned to use an axe, chain saw, shovel and rifle not too long after I learned to walk it seemed. We did anything that needed doing as there was no money to pay anyone else to do it. And, I certainly learned the need for, value of, and became committed to, a good day's work. City boys were not as lucky. Lessons learned in those early days have placed me well for a life in a tough world.

Monongahela was not a big place or a railroad center by any means, but we had a good bit of rail activity to keep me interested. When I lived in the area the town probably had a population of 5,000. I see that has now fallen to 4000. At one time during the booming 1900-1920s, the town had over 8000 people.

I have always been a rail nut. Nothing better than watching a train go by. It was one of my first joys and past times. With any luck, it will be my last. We had steam when I was young. I loved to see them. I recall my mother not being as keen as I was as they seemed to roll though belching smoke, ash and cinders just after she hung out all the whites on the clothes line.

The Pennsy ran through Monongahela just along the river shore. At one time this was the Monongahela Division and a division was, of course, a major operational chunk of a railroad. The railroads along both sides of the Monongahela River had the distinction of being the busiest bit of freight railroading in the nation at one time. By the time I was growing up, the line through town was just the Monongahela Branch of the Pittsburgh Division. I think even later it was downgraded further to the Monongahela Secondary Track.



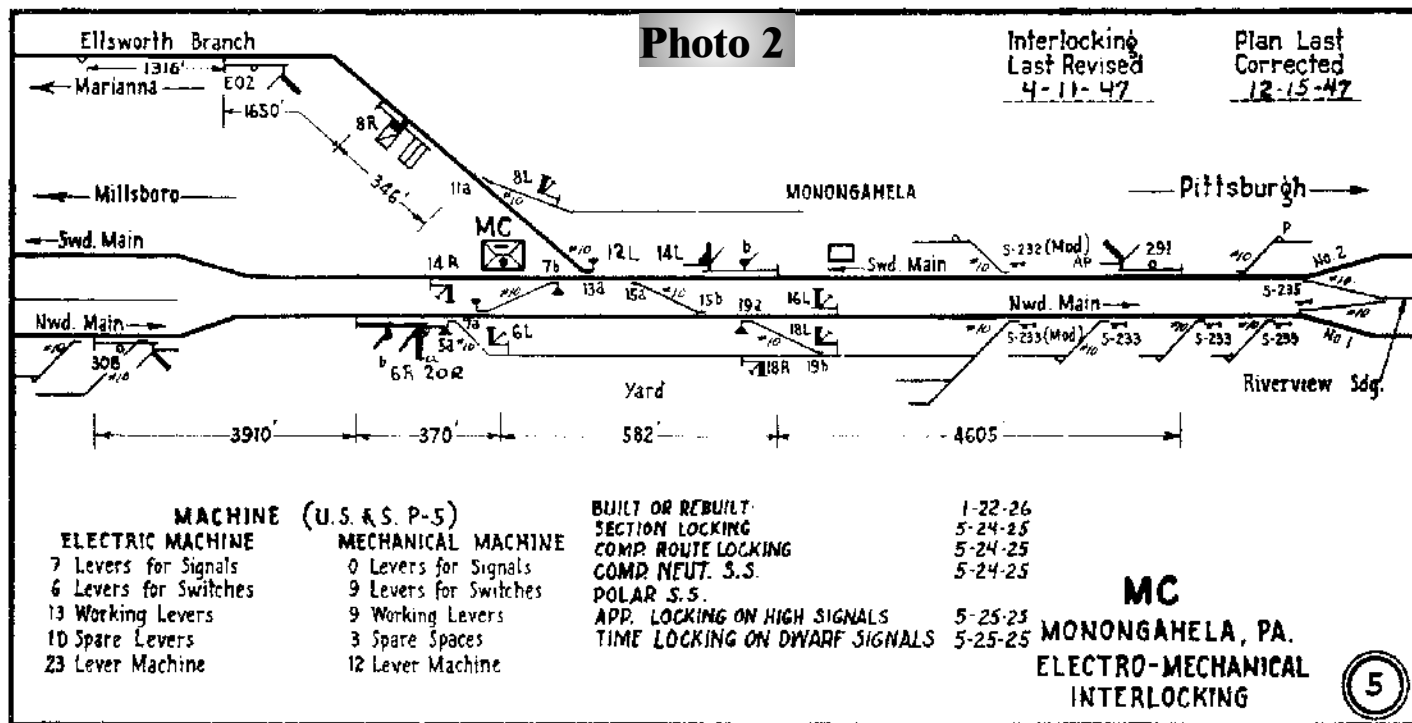
**Photo 1**

We had a Pennsy tower in town, MC tower, where the Ellsworth Branch took off and headed southwest following the wanderings of Pigeon Creek to service a good number of coal mines. The main stem of the Monongahela Branch headed further upriver from MC tower. It was also very active with coal trains coming down river from the mines in West Virginia off the Monongahela Railway and heading mostly toward Pittsburgh and Ohio steel mills.

A gentleman, Attalee Taylor, modeled MC tower and a good photo of Mr. Taylor's model, taken by our editor, Daniel, was in the [May/June 2021 issue of OSR](#). See Photo 1 where this earlier photo is reproduced.

I spent many hours in MC tower, knew all the

operators, and often had the pleasure of throwing the Armstrong levers for switches and signals, handing up 19 orders to passing trains and even OSing trains through when the dispatcher was friendly. It was an electro-mechanical plant and the track diagram for it from Pennsy records is shown at Photo 2. These are days I still remember with fondness.



**Photo 3**



Photo 3 is from an old 1905 post card and shows the tower. Looking at the coal box, it appears the operator is left to burn dirt in his pot belly stove to keep the tower warm. In a book on the Pennsy there is an excellent photo, taken in 1960, of MC tower, and it is just as I remember it with faded paint, but still with the Victorian wood trim. Alas, I have not been able to find it elsewhere and determine the source and ownership to share it with you. Photo 4 is a more current one after it was covered with “insulbrick” siding and the stairs removed. It appears the mechanical linkage to switches has also been removed. The Ellsworth Branch is the track on the left. This later photo is credited to Jack Ross and dates to 1987.

I remember there was a very tight circular metal internal stairway as well. When I was young, train control on the branch was all via train orders. I suspect they later changed to radio dispatching and it was then unnecessary for the operator to run up and down the stairs to hand up the flimsies to passing trains. The small circular stairway must have been deemed sufficient to get the operator to and from his workplace on the second floor. The tower was finally pulled down by Conrail. I assume they went to remote control of the few needed signals and switches and the operator became unnecessary.

**Photo 4**



Across the river bridge in East Monongahela was the Pittsburgh & Lake Erie. On our side of the river, the trains consisted almost entirely of Pennsy hoppers. They were mostly red with a few black ones creeping into the mix then. Trains of empties crept up the river and loads came down. Track on the Monongahela Branch by then was probably well below average for the generally poor later day Pennsy track and would not support much in the way of speed.

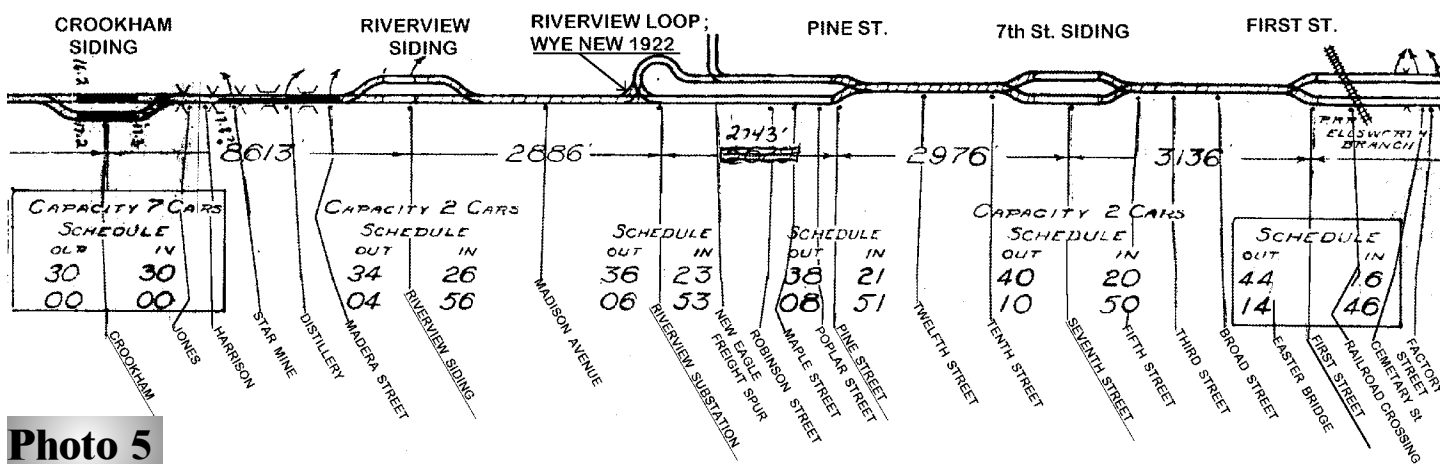
It was rare to see even a Pennsy box car or a foreign road car of any sort on our side of the river. Stauffer Chemical

Company did have a plant along the Ellsworth Branch at Frye Station and occasionally a tank car would come through for them. And once in a while a box car or gon would appear in a train. Otherwise it was just hoppers, hoppers and more hoppers on our side of the river.

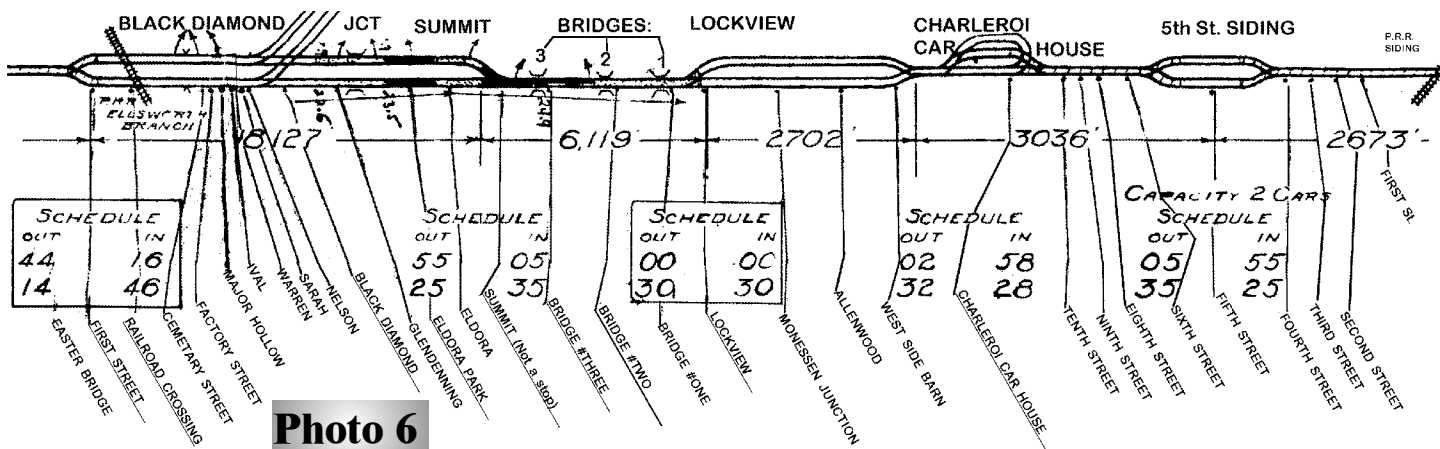
On the other side of the river, it was different. The P&LE was a real show. Trains came through at considerable speed and many were merchandise with all sorts of car types and railroads represented. A real treat was walking across the river bridge and spending the better part of a day watching trains on the P&LE. The trains there ran often, too.

And, we had a trolley line that ran down the Main Street of town. It was Pittsburgh Railways Company and provided a connection with the big city. The trolley came out of Pittsburgh, passed through the southern suburbs, traveled through the country, joined the river at the north end of Monongahela, and then serviced many small river towns on its way south. The trolley to and from Pittsburgh ran twice an hour according to the passing times on the track diagrams. Old timetables from 1941 and 1952 continue to show two trolleys an hour. The 1952 timetable shows additional turn backs at Riverview Loop and Charleroi. The track diagrams, Photos 5 and 6, are from PRCo archives and they, as well as the timetables, came from Jim Holland. A few things to note on the track diagrams include:

- ***The town of Monongahela began just south (to the right) of the Riverview Loop and extended to where the double track left the main line after the Ellsworth Branch rail crossing. The double track leaving the main line at Black Diamond immediately turned into a single track and became the, about five miles long, branch to the town of Donora.***

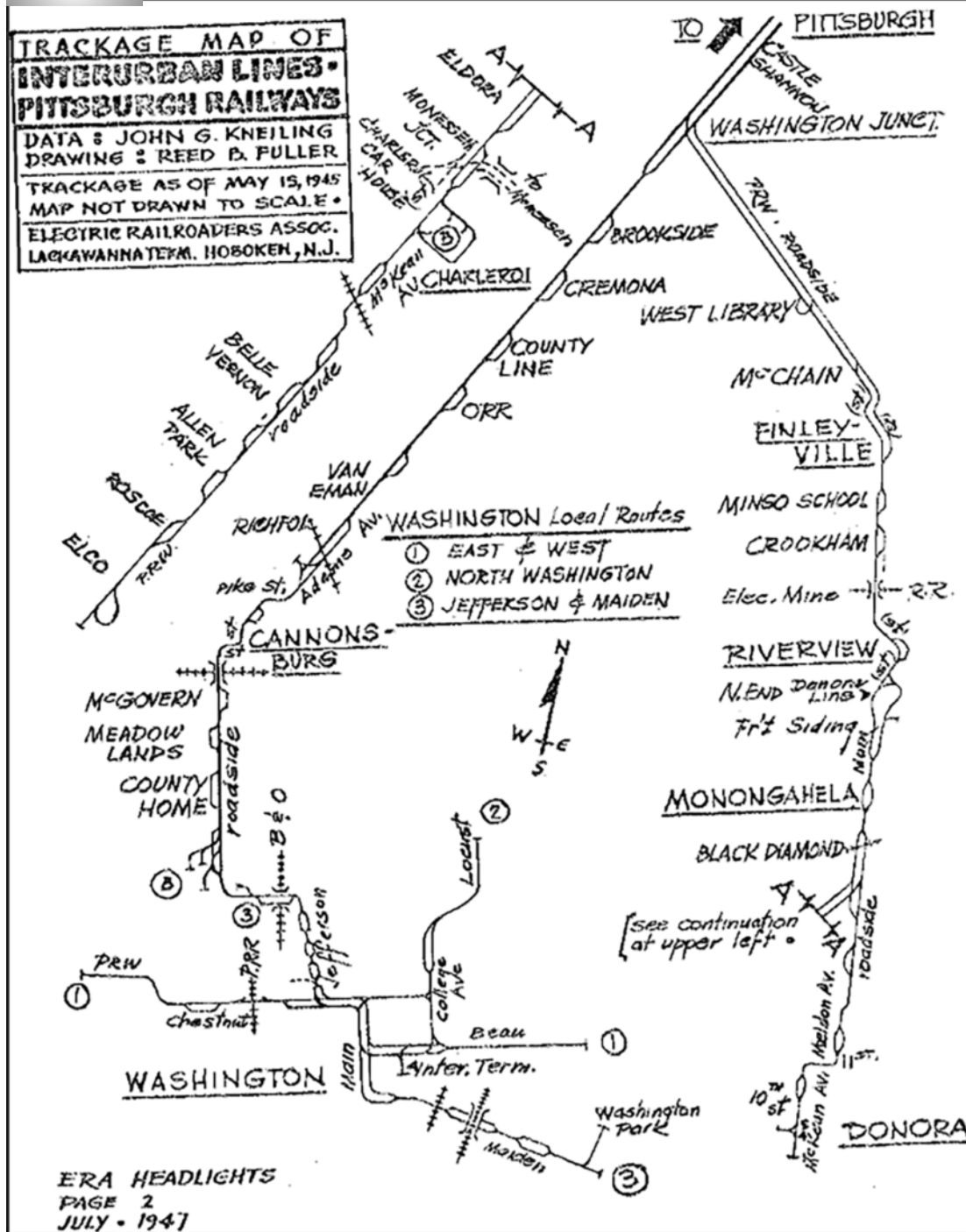


**Photo 5**



**Photo 6**

**Photo 7**



•Referring also to Photo 7, a more pictorial area track layout, you can see how the main line from Monongahela to Charleroi actually peels off and heads southwest with the branch continuing south to Donora. This diagram is from an early newsletter of the Electric Railway Association.

•A little further south on the Photo 6 diagram you will notice three bridges just after the "Summit" double track ends. Well, these were actually very substantial viaducts that carried the trolley line high on the hillside along the river. The track spanned large gullies formed by streams running into the river. See Photo 8 for southern most of the bridges. This bridge was number 1 on the diagram and known locally as "Lockview" as it looked down onto lock number 4 on the river below. Photo 9 is a view taken from across

Lockview Trolley Bridge  
North Charleroi, Pa

**Photo 8**

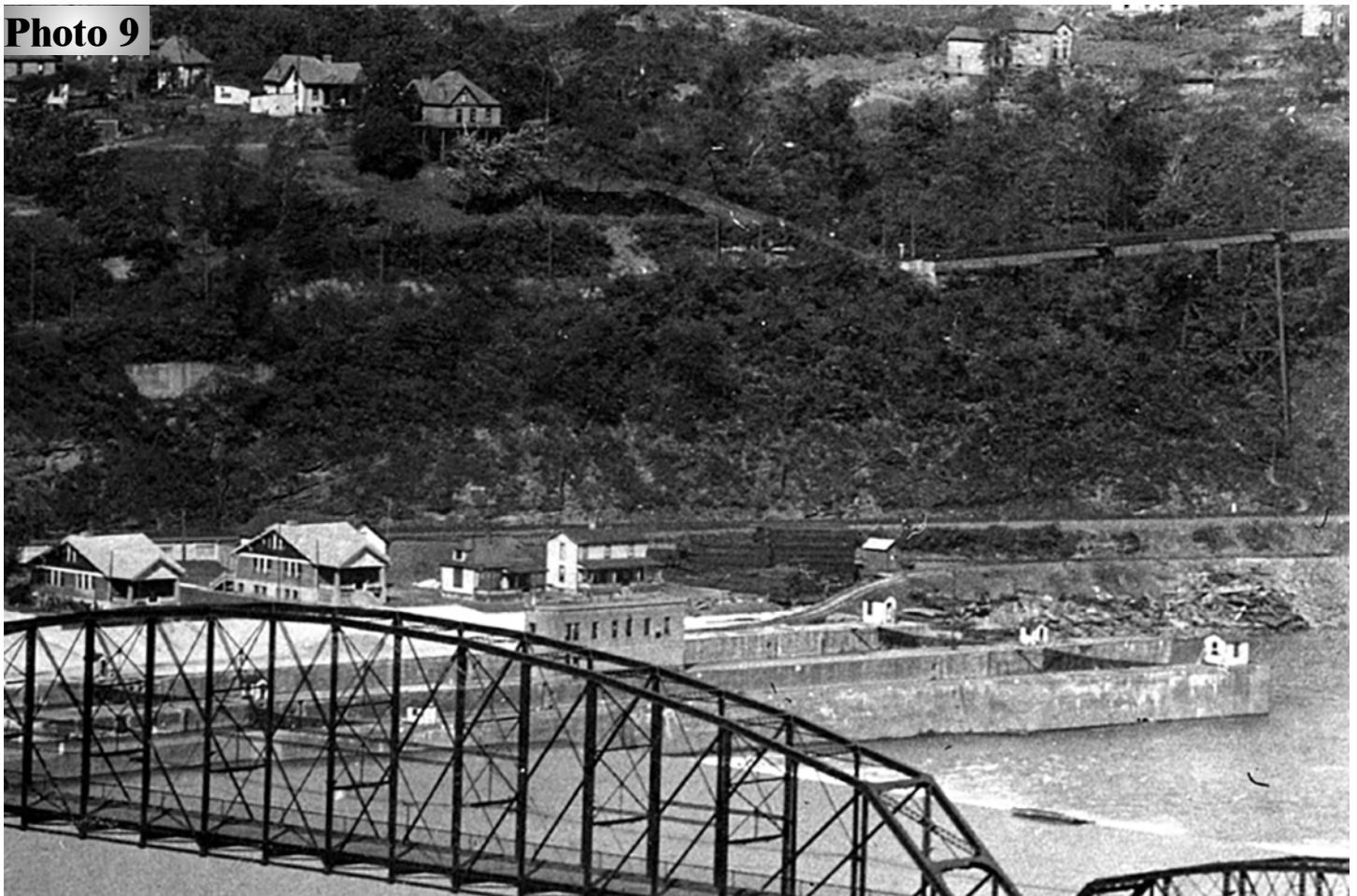


*the river, overlooking the lock on the river, and looking to the northwest. The Lockview, number 1 bridge, is at center right on the photo. As you can see it is on a grade which was 5.7%. Nothing says we must build all our model bridges and trestles level as the prototype certainly did not. The track below the bridge is the Monongahela Branch of the Pennsy heading south (left) and to Charleroi. It appears there was a switch back siding coming off the branch and down toward the lock. I assume this was a temporary track to deliver materials to the lock site during construction. This photo dates to about 1930, about the time the new lock was built. A previous lock was just downstream from this new one. Once the new lock was built, the dam of the old lock was*

*removed as seen underway in Photo 10 in 1932. You can see the No 2 bridge just left of the center of this photo. And to the very far right is bridge number 3 as well. All three of these bridges were similar large viaducts. A P&LE yard is visible at the right on the east side of the river, too.*

But in addition to the interurban, we also had a local trolley that operated between the towns of Monongahela and Donora, next town to the south. Other local trolleys went to Charleroi, two towns up river to the south, as it was bigger and had a little more shopping choice than did Monongahela.

**Photo 9**



**Photo 10**



Mon R. Lock 4 (old)

Section of old dam removed- downstream

U.S.E.O.Pqh, Pa. Aug 15, 1932

6610

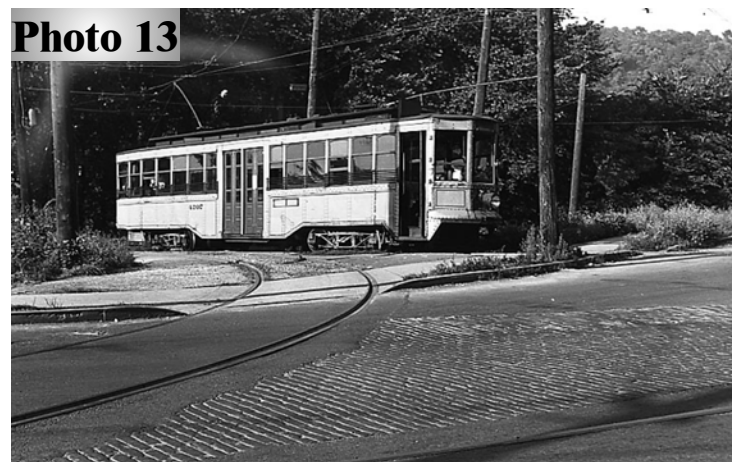
Photo 11 shows the Donora local car. It has just crossed the Pennsy Ellsworth Branch and is headed north on Main Street in Monongahela. Photo 12 shows the local at the Donora end of the branch changing poles to return north to Monongahela. Photo 13 shows the local sitting in the Riverview turnback loop getting ready to make another run south through Monongahela and on to Donora. The local is probably waiting at Riverview Loop for the arrival of a through car to or from the big city.



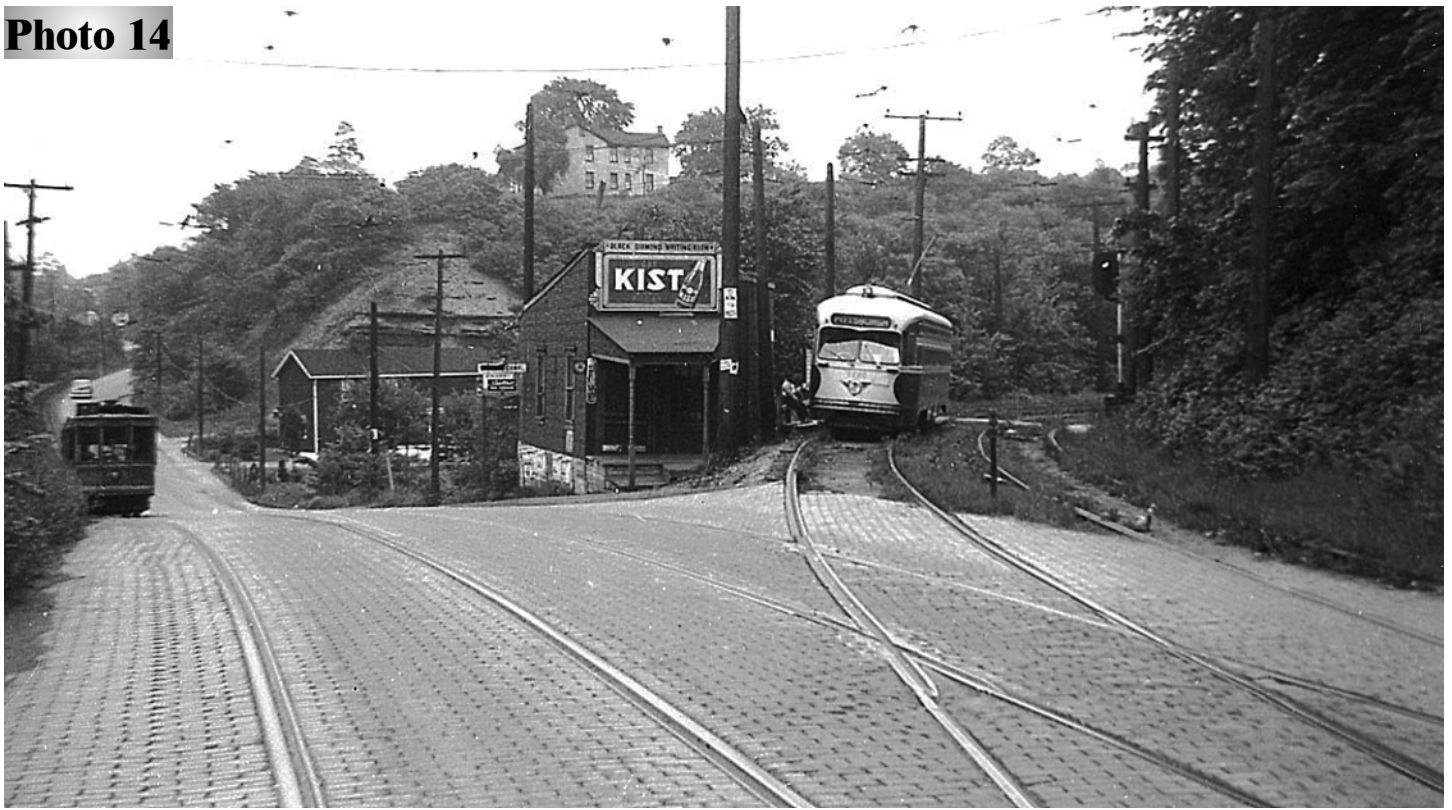
The local service was not a long run as Riverview Loop to Donora was about 8 miles. Photo 14 shows Black Diamond where the trolley lines to Donora and Charleroi split. On the left is the Donora local on the branch. The PCC car to the right is on the main line to Charleroi.

The interurban trolley from Pittsburgh usually ran to the end of the line at Roscoe, but some trippers turned back at Riverview loop, just north of Monongahela. I also think some runs from Pittsburgh terminated at Donora rather than going on through to Charleroi and

Roscoe. I assume this from a few photos that show interurban cars signed for Donora. Most all cars from Pittsburgh were signed for Charleroi even though the car traveled through Charleroi and on to the end of the line at Roscoe. I assume this was because Charleroi was the biggest town on the line and the line was always referred to as the Charleroi trolley line. As Charleroi had a loop at the carbarn, cars from Pittsburgh could turn back there, too.



**Photo 14**



**Photo 15**



Many Pittsburgh Railway trolleys were single ended with one pole. The Donora local was one exception and it had two poles to enable it to shuttle in and out of Donora. There actually was a wye in Donora, where a single ended car could turn around, but the car routinely ran past the wye and on to First Street where it turned by just changing pole ends in the middle of the town street. At the Riverview Loop end of the run, the car could use the loop without changing pole ends. Riverview also had a wye as you can see on the track diagrams. It could be used to reverse direction, too, if the loop was congested with through cars or cars turning back toward the city which did happen at this point.

Although there were towns like Monongahela and Charleroi on our trolley line, it predominately ran through very rural countryside once it left the Pittsburgh urban area. On Photo 7 you will see “Castle

Shannon” at the very top of the diagram. This is actually about where the line turned from an urban to a more rural orientation. Photo 15 is of Washington Junction, just south of Castle Shannon, where the interurban line split. One line (left one) went to the little city of Washington and the other was the Charleroi line. This is a later day photo in the PCC car era, so likely early 50s, as it was after PCC cars took over interurban work. Here you can see that Washington Junction is quite a rural area even then. The big heap behind is the gob dump from a coal mine, Montour Number 4 Mine, I think it was.

Photo 16 and 17 are typical open country on the line south of this point. And Photo 18 could be along the line just south of Monongahela on the branch to Donora where it ran between the road and the Monongahela Branch of the Pennsy. The loco is a Pennsy I-1 class 2-10-0, the standard heavy hauler, dragging gons and hoppers north. Pennsy had 600 of them. The cars are probably full of coal. I say “could be” due to the signals in the photo. Since the Donora Branch was a one car operation, I have my doubts that the PRCo would have splashed out and signaled it. The photos could also be just south of Charleroi as the trolley there also ran between the road and the Pennsy branch. A signal on the trolley at this point would make sense as there were three passing siding in the area.

**Photo 16**



**Photo 17**

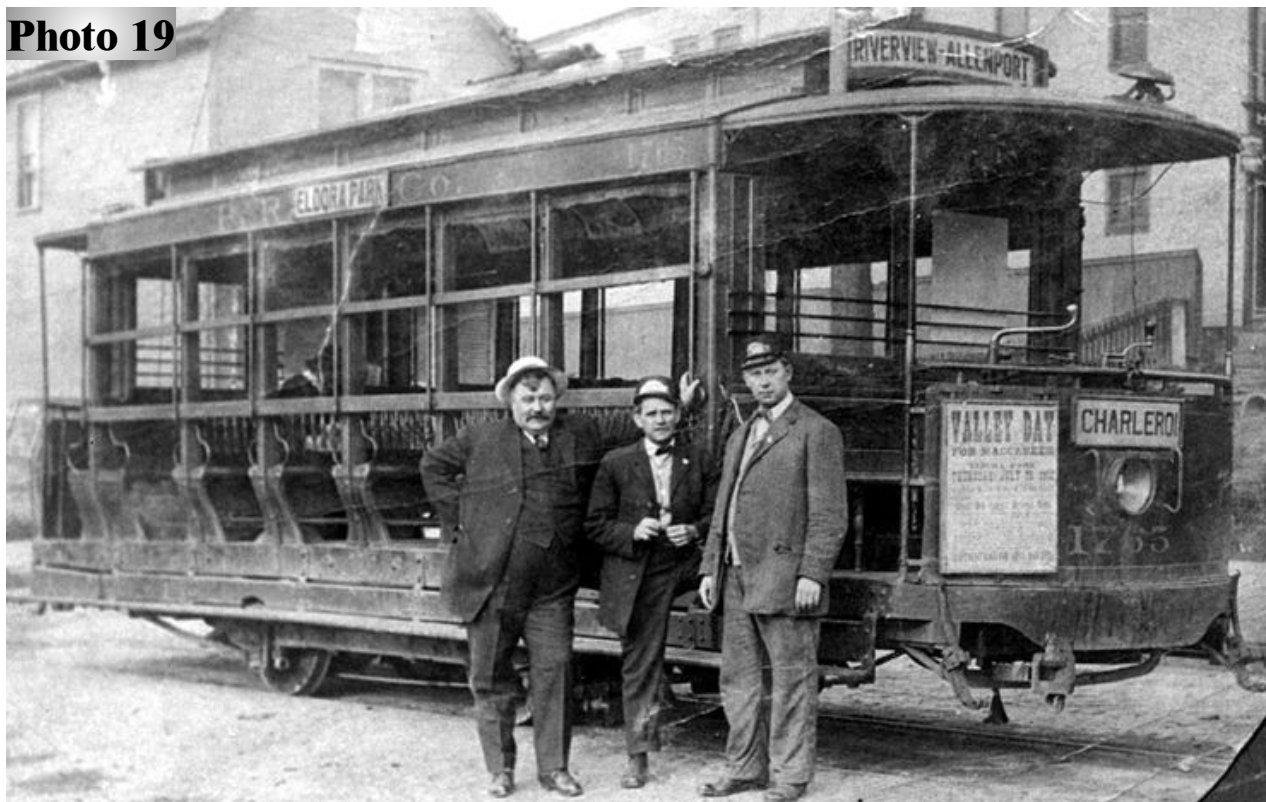


**Photo 18**

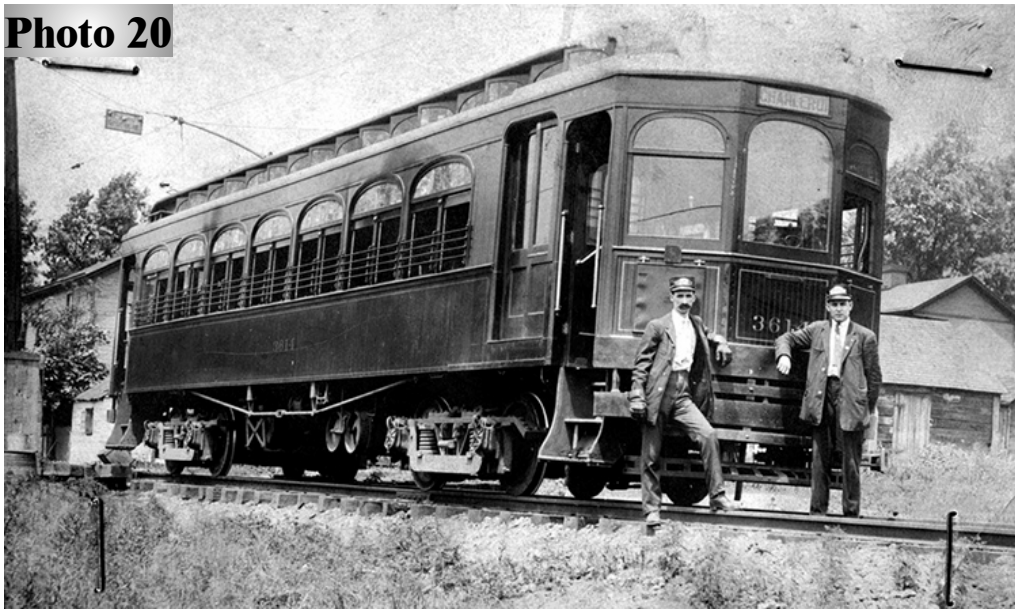


The first trolley in Monongahela was as depicted in Photo 19. This one is signed to run from Riverview south to Allenport, a small steel mill town a few miles and two stops south of Charleroi. This car was probably owned originally by a predecessor line and became a PRCo car when the line was merged into the larger traction line. This photo came from the Charleroi Historical Society.

**Photo 19**



**Photo 20**



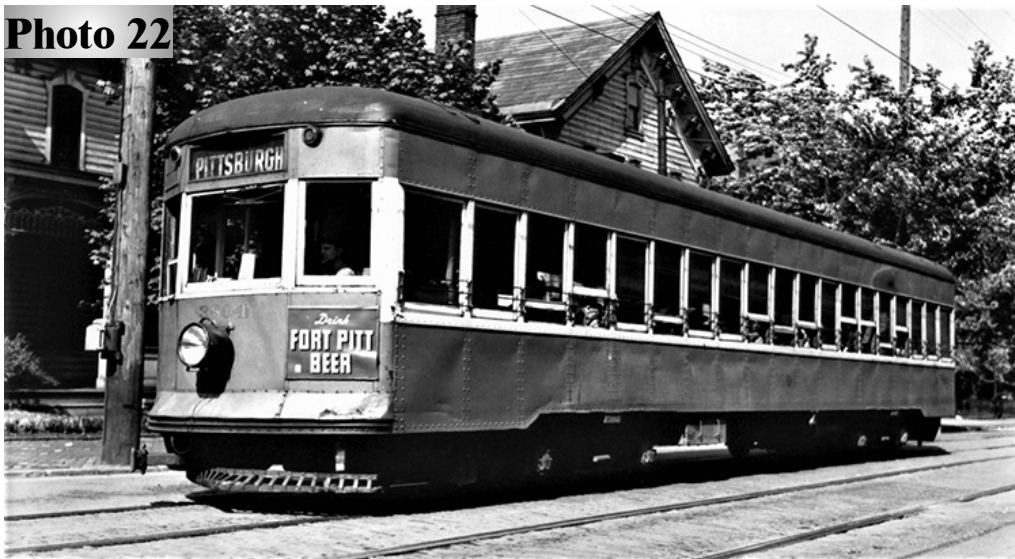
Once the through line was completed into Pittsburgh, interurban service from the city through Monongahela was initially provided by big heavy wooden cars of the 3600 class. See Photo 20.

**Photo 21**



In 1917, after some experimentation, 15 lightweight cars were purchased from Brill for interurban service. These 15 cars, 3700- 3714, were supplemented by 15 more lightweight, but somewhat different, cars in the 3800 class, built by St Louis in 1928. See Photos 21 and 22 for 3700 and 3800 cars respectively. The 3700 is sitting on the Riverview loop according to notes on the photo. As it is signed for Charleroi, and on the turnback loop, it must be in local service between the loop and Charleroi. The 3804 is on the 7th Street passing siding in Monongahela headed north toward the big city.

**Photo 22**



These two groups of cars, aided by low floor city type cars numbered from 3750-69, geared for interurban service, provided a good and frequent service until about 1950. By then the new PCC cars were doing most all the urban work in downtown Pittsburgh and the suburbs. Trials were run to test the PCC on the interurban lines. After a redesign of the trucks to better accommodate the track conditions and higher speeds, the PCC took over the interurban work as well and the 3700 and 3800 were sent to the scrap heap. One of my real heart aches was that I never got to ride a 3700 or 3800 car.

And none was preserved. I have built a model of a 3700, see Photo 23, and will build one of the 3600 and 3800, too, if lucky.

**Photo 23**



I do remember riding from Monongahela all the way into Pittsburgh with my great grandmother on an orange low floor car when young. The car had rock-hard wooden seats and we banged, clanged, and bounced all the way into the city. But I loved the ride never-the-less as it was on rails. Photo 24 is a model of such a low floor. This model is signed for the East-West line which was a local line in town of Washington, Pennsylvania, and it is a city car rather than an interurban car. They were identical except for a few mechanical details. I did not build this model: it is a fine hand-built model offered by the St. Petersburg Tramcar Collection some years ago. I bought this from a friend and have yet to install power trucks.

**Photo 24**



Our trolley service in Monongahela disappeared in 1953 when the line was cut back to the turnback loop at West Library, at the county line. I am led to believe this was the result of an argument over taxes in Washington County. The county wanted more than the the low ridership could justify, I guess. After that, the trolley ended about 15 miles to the north of our town.

After I left the area, I returned to visit my mother and grandfather occasionally. I always made it a point on each visit to drive north to the West Library “park and ride”, leave the car there, and ride the PCC car into the city and then back to the stop. It was always a thrill. And, when in the city I would stop in at Bill and Walt’s

Hobby Shop on Smithfield Street to see what was new there. This shop was an institution for model train nuts in the Pittsburgh area for many years.

Pennsy had both a passenger station and freight house on Railroad Avenue in Monongahela. I remember them both as drab looking unpainted wood buildings. At one time the passenger station was more impressive. Photo 25 is a colorized postcard shot of the early days at the station. You can see the freight house to the right in the photo. After passenger service ended, the passenger station was pulled down, to reduce taxes no doubt, and all local business was conducted out of the old freight house. Its original shiplap siding was eventually covered by “insulbrick” siding which was a popular building material in the mid-century. The later photo of MC tower shows it covered in a similar fashion. This was a composition board made from pressed wood fiber, I believe, that was then covered with tar and had a fake brick surface imprinted on it. The old house I grew up in was covered with it as well. It was very common in the area. As far as I know, this freight house dates to the 1880s and stood for many years. But, based on Google views of the area now, I think the old building has now been replaced by a smaller structure.



Several Pennsy commuter passenger trains operated through Monongahela into, and then from, Pittsburgh morning and night when I was growing up there. I had a great aunt living in town and she took the train to her job in the city every day. I recall the passenger service stopped about 1960, and it was necessary to ride a bus from then on.

At one time there was a more frequent passenger service from Brownsville through all the valley towns and into Pittsburgh. It was always more of a commuter type of service though. The Pennsy service was coordinated with passenger trains on the Monongahela Railway. The Monongahela Railway ran from Brownsville south and well into northern West Virginia where it serviced some reasonable sized towns such as Fairmont and Morgantown. Trains from other rail lines connected at Morgantown and provided service deep into West Virginia.

Photo 26

818

**PENNSYLVANIA RAILROAD**  
Serving the Nation

Eastern Standard time.

**Table 115—MONONGAHELA DIVISION.  
PITTSBURGH AND BROWNSVILLE.**

May 30, 1948.

		810	814	812	804	806	Mls.	May 30, 1948.		807	801	815		
		PM	PM	PM	PM	AM		LEAVE	ARRIVE	AM	PM			
		447	419	419	410	715	0	Pittsburgh	655	745	640			
		450	422	421	102	717	0.5	Fourth Avenue	d	d	d			
		—	429	428	109	—	3.0	Thirtieth Street	645	—	—			
		8501	6435	—	—	—	5.8	Hays	—	—	—			
		8504	6438	435	115	729	6.6	Mesta	635	—	618			
		511	445	438	119	738	7.4	Homestead	633	725	618			
		514	448	440	121	—	8.2	Munhall	629	—	—			
		522	456	448	129	750	11.7	Duquesne	624	717	609			
		524	458	450	131	—	12.6	South Duquesne	621	713	—			
		530	504	456	137	757	15.4	Dravosburg	615	708	558			
		536	510	501	142	801	18.4	Wilson	610	703	—			
		542	516	504	145	806	20.0	Clairton	607	700	547			
		546	520	508	151	814	21.8	West Elizabeth	602	655	542			
		549	523	—	—	818	23.4	Florence	559	—	537			
		552	526	512	155	821	23.8	Elrama	557	—	—			
		555	528	—	1202	—	28.0	Courtney	548	—	—			
		600	534	—	—	838	30.7	Monongahela	542	640	524			
		610	543	525	208	838	30.7	Donora	533	633	509			
		620	553	532	215	851	35.2	West Columbia	530	—	—			
		—	—	—	—	—	35.9	West Monessen	525	—	—			
		626	559	539	1221	—	39.4	Charlton	522	623	452			
		635	608	543	225	901	40.5	Belle Vernon	510	—	448			
		638	611	545	1227	911	41.9	Allenport	514	—	442			
		641	614	—	1230	—	44.5	Stockdale	—	—	438			
		—	—	—	—	—	45.6	Roscoe	510	—	435			
		647	620	553	1235	—	49.3	Coal Centre	504	—	—			
		655	628	—	1240	—	49.3	California	502	608	430			
		702	635	600	242	925	49.9	West Brownsville Jn.	457	603	—			
		707	640	605	247	930	52.8	Brownsville	450	555	1420			
		717	649	614	255	938	54.3	ARRIVE	ARRIVE	AM	PM			
		PM	PM	PM	PM	AM		(Monongahela Ry.)						
		—	—	—	—	AM		LEAVE	ARRIVE	PM				
		—	—	—	—	19 48		Brownsville	—	410	—			
		—	—	—	—	11 23		Morgantown Jve.	—	238	—			
		—	—	—	—	12 13		Fairmont	—	150	—			
		—	—	—	—	PM		ARRIVE	LEAVE	PM				

Table 117

..... Mls.

..... 0

..... 3.6

..... 5.0

..... 6.9

..... 11.3

..... 16.9

..... 18.6

..... 21.8

..... 23.3

..... 25.7

..... 28.1

..... 32.1

..... 34.1

..... 37.1

..... 39.1

..... 40.1

..... 41.1

..... 42.1

..... 43.1

..... 46.1

..... 47.1

..... 49.1

..... 49.1

..... 11

..... 15

..... 18

..... 20

..... 28

..... 31

..... 34

..... 37

..... 41

..... 44

..... 51

..... 55

..... 55

Freight Service only.

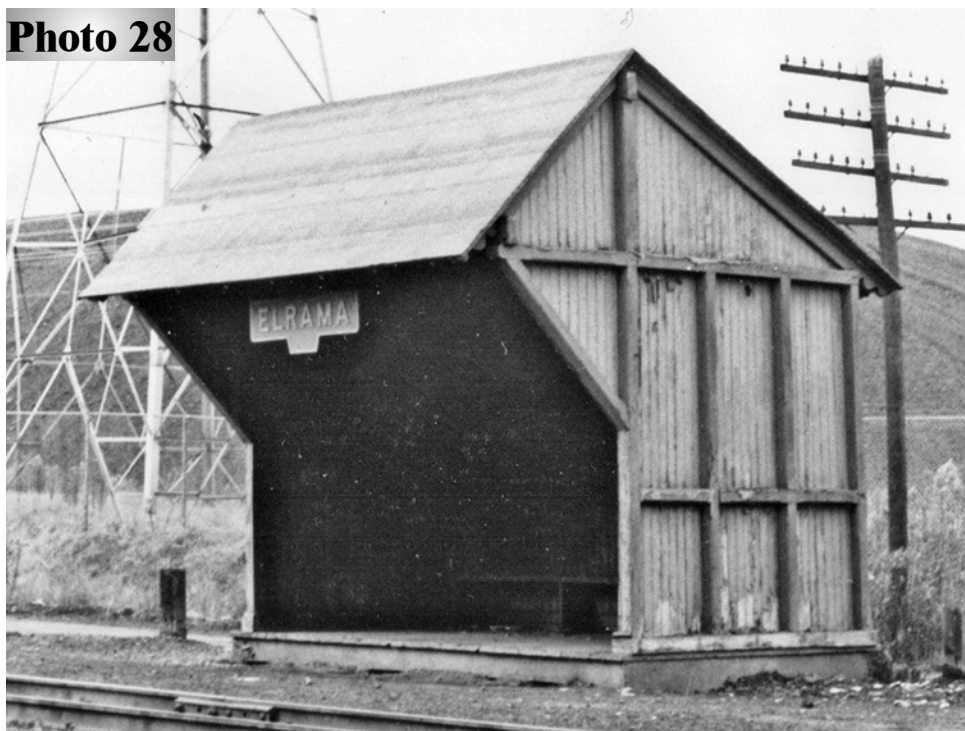
Photo 26 shows the page from a 1946 Official Guide, and at that time there were eight trains between Pittsburgh and Brownsville via Monongahela. Photos show these passenger trains pulled by Pennsy D class 4-4-0s, and later the G5 class 4-6-0s. Eventually commuter locos were mostly RS3s, when the diesels took over the work on the Pennsy. Commuter trains continued to operate from Pittsburgh to Elrama stop until 1964, after the more southerly service ended. Elrama was about five miles north of Monongahela. Photo 27 shows a Elrama commuter train about to arrive in Pittsburgh. This is a 1961 photo by Rodney Peterson.

And Photo 28 shows the station in greater downtown Elrama. Why, you ask, would service to a town the size of Monongahela be cut while service continued to a metropolis such as Elrama only

Photo 27



**Photo 28**



a few miles to the north? Even today there are only 300 or so living in Elrama.

I surmise two issues came into play here. In later days, all branch locomotives were stabled at Shire Oaks Yard and all branch crews operated out of this yard. Elrama was on the north end of Shire Oaks Yard. We'll discuss Shire Oaks Yard more in a few minutes. Providing service into Pittsburgh beginning at Elrama would mean that a locomotive and train could leave Shire Oaks Yard and travel north to the city. Providing service anywhere south of Elrama would mean dead mileage when a train had to operate from Shire Oaks south to

the start of the commuter run each morning, as well as run dead from the south most point back to Shire Oaks at night. The even more expensive alternative would have been to stable the locomotive and train, and house the crew for the night, somewhere south of Shire Oaks. The second issue was that Elrama was the point where Pennsy employees working at the large Shire Oaks Yard would get off, and on, the train going to, and from, work. I suspect many yard workers would use the train if they lived north of Shire Oaks as the travel would have been provided free by the Pennsy. I believe one, the other, or possibly both of these issues were the reason service as far south as Elrama was maintained until the Pennsy gave up all Pittsburgh area commuter service in 1964.

**Photo 29**

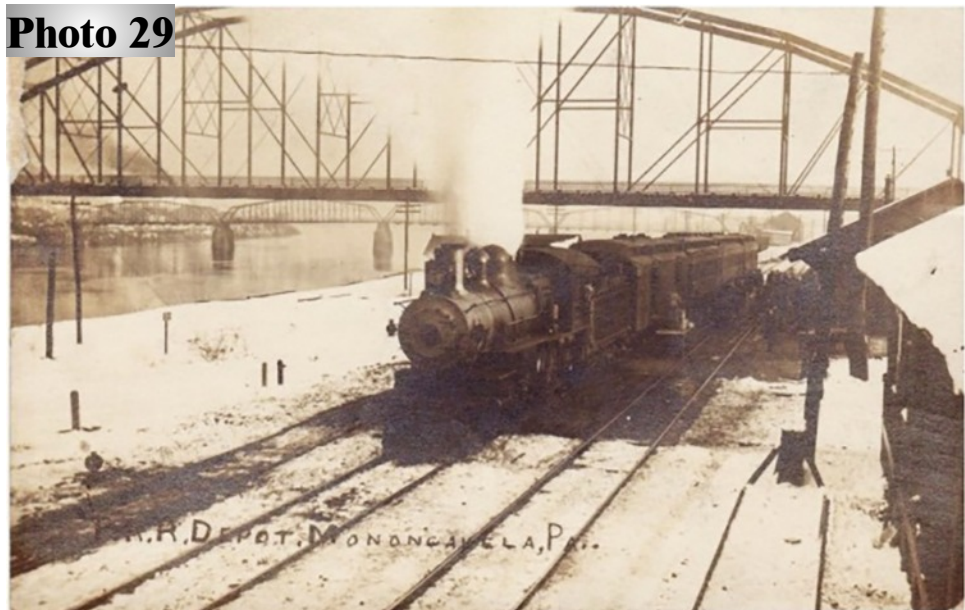


Photo 29 is an old shot of a passenger train loading at the Monongahela station on a typical winter's day. It was a cold and sometimes dismal place when I lived there. The photo says it is 1911, but it may actually be a little later as the new bridge across the river, above the train, is up and the old bridge, in the distance, has yet to be removed.

The real value of the Monongahela Railway connection was not the passenger business, but the millions of tons of coal it brought to the Pennsy's

Monongahela Branch at West Brownsville from the many coal mines it serviced in southwest Pennsylvania and West Virginia. All this coal funneled through Monongahela headed for Shire Oaks Yard, and sometimes points further north, usually in about 100 car trains.

The P&LE had a "Monongahela" passenger station across the river, but it disappeared early as I don't remember it. Photo 30 shows it during its prime. I have not been able to find out much about passenger

**Photo 30**



operations on the other side of the river so far. I assume passenger service along the east bank of the river to Brownsville ended in the 1950s as the 1961 Official Guide shows freight only service at that time. A 1930 timetable shows 5 P&LE trains each way from the city to Brownville through Monongahela then. This photo of the station is from the P&LE archives.

We had a small Pennsy freight yard in town where work trains were often parked. A bad order might be set out there as well. From

the condition of the local track, it wasn't obvious they were doing any work on it. But they must have been working somewhere as the work train was a frequent visitor. It could have been just for repairs after derailments, I guess. I recall the modified X-23 box cars used as work cars. The X-23 is probably my favorite box car. Photo 31 is my model of an X-23. This is a brass car by Pacific Limited. The old Pennsy work cars were third hand. After box car service, they had been NX23 emergency caboose cars during the war, and then put into work train service. Photo 32 shows an NX-23 in work car service.

**Photo 31**



**Photo 32**



I would ride my bicycle to town with my camera, take photos of the cars, and talk to the track workers when they were around.

Occasionally, I would see a box car that had been set out at the local team track. Otherwise, it was just the hopper through Monongahela. My favorite Pennsy hopper is the GL which was the first steel Pennsy hopper design. They reckon it was just a steel version of the previous wood GG class of hoppers. The GL was a relatively, by Pennsy standards, small series of 20,000

cars to test the initial design concepts. Lessons learned from this series led to the design and build of 35,000 hoppers in the Pennsy GLa class of cars. These were nothing like the previous GL class and served as the blueprint for many similar and popular hoppers used by most rail system in the US for about 30 years. Photo 33 is my model of a GL class hopper. The pioneer GL steel cars also provided the basic engineering for about 55,000 more Pennsy cars, in addition to the GLa cars, in later H21, H22, H25 and H 31 classes of hoppers.

**Photo 33**



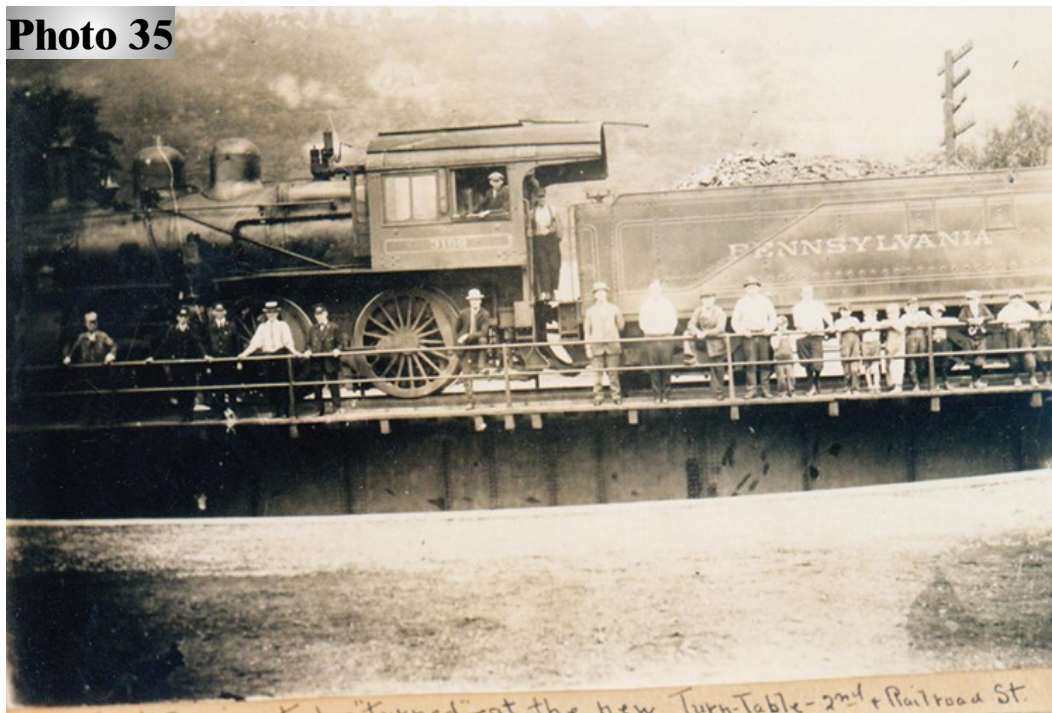
**Photo 34**



The Pennsy line from Pittsburgh to Brownsville was originally the Pittsburgh Virginia and Charlestown Railroad (PV&C), and it was built starting in the 1870s. The Pennsy took it over very early, and I believe financed much of its build. It was formally merged into the Pennsy system in 1905. Monongahela was the southern terminal of the early PV&C line. There was a turntable and small workshop between the tracks and the river. Photos 34 and 35 show trains there quite early on. One photo shows a loco on the

turntable. By 1881, construction pushed the line on up the river in search of coal to Brownsville. The shops at Monongahela were not really needed then. The yard continued in use for quite a while though until Shire Oaks was constructed. I don't think the PV&C ever owned cars and locos, but they were always supplied by the Pennsy. If I remember correctly, these two photos are from the archives of the Monongahela Area Historical Society.

**Photo 35**



About three miles north of MC tower was H tower at the south end of Shire Oaks Yard. Shire Oaks was built during Cassett's reign as president of the Pennsy in the 1902-1907 timeframe. The construction was part of Cassett's master plan to deal with the terrible rail congestion and bottleneck that was Pittsburgh. The idea was to build yards around but outside the Pittsburgh area, and to build bypass trackage between these new yards. This would enable the Pennsy to move trains around the Pittsburgh area without the need to go

through the Pittsburgh congestion. Shire Oaks was one such yard. It was the destination for all the coal from the south. And, much of the coal and coke coming from the coke region east and southeast of Pittsburgh, and bound for destinations in Ohio and west, also came through Shire Oaks as well. This traffic came in a round-about fashion from mines north of Connellsville, south through Uniontown on the Southwest Branch, then west via the Redstone Branch to West Brownsville, then north and down river on the Monongahela Division, as it was in those days, to Shire Oaks. Coal and coke headed for the west, for Ohio steel mills, and for Great Lakes ports, was built into trains at Shire Oaks and sent north to Scully or Conway Yard and on to Ohio and western destinations via either the Panhandle or the Fort Wayne lines without the need to go through Pittsburgh. This was preferred to, a much shorter haul: moving the coal and coke a short distance north on the Southwest Branch to Greensburg and then west on the Pittsburgh Division main line through the Pittsburgh congestion to reach Ohio destinations. The later would have added to the already serious problem of too many trains through Pittsburgh. Routing via Monongahela also avoided the need to classify the trains at the already overworked yard, at Pitcairn just east of Pittsburgh.

Shire Oaks importance and traffic volume was such that it was rebuilt several times. It was expanded during World War I to accommodate increased traffic. Again, in the 20s it expanded to include a 21-stall roundhouse with a machine shop. By then it had both south and north bound receiving and classification yards. There was also a fair-sized multi-track yard on the south bound side of the yard just for car repairs to hoppers to ensure all empty cars heading back south to the mines were fit for purpose. The yard was over 40 tracks wide, three miles long, and designed to accommodate 3850 cars. In WWII, it was still a very busy place, and the War Production Board allowed the Pennsy to replace the wood coaling trestle with a concrete 300 ton coaling station.

I would ride my bicycle down river to H tower when one of my friendly MC operators was providing vacation coverage there and spend hours watching the action there. It seemed to me at the time a busier and therefore much more appropriate place than MC tower. But the additional action was mostly switch engines shuffling hoppers into loaded trains to move north and empty trains to head back south to the mines. Actually, all the cars in and out of Shire Oaks came through MC as well.

Shire Oaks was not the busy place it once was when I went there. It still had the, by then, disused large concrete coaling station for steam locos and the very large roundhouse. At one time, the Pennsy had a large fleet of 2-8-0 and 2-10-0 locomotives stabled here and they powered the coal trains north and south. By the time I was old enough to prowl the area tracks without adult supervision, the roundhouse just held a few smelly

diesels. The yard also had the large car repair facility. I remember visiting the yard and car repair facility during a strike with a man living not too far from me who was the car repair foreman. We drove in through the picket line and he showed me around the shops that were quiet due to the strike. I could not spend too much time on or near a railroad at that point in my life. Unfortunately, I am not much better now according to my wife.

Another interesting bit of rail operation was a little switcher at very large scrap yard at Black Diamond, the southern end of Monongahela. The little four wheeled machine moved cars of scrap around several miles of track there. Loaded cars were switched to the Pennsy interchange track and the cuts of cars were occasionally pulled by the Pennsy and taken to steel mills to the north. We enjoyed watching the little switch engine work among the mountains of scrap when we were up that end of town. One awful site in this scrap yard was the piles and piles of Pittsburgh Railways trolley cars stacked there awaiting scrapping. They had already been cut in half to move them to the scrap yard. It was a sad sight. I always wished I had taken photos of this rail operation.

We also had a nearby short line named the Donora Southern. This was a common carrier, owned by United States Steel Corporation, and it serviced an integrated steel mill in Donora that specialized in wire and nails. The mill, now long gone, once had blast furnaces to produce iron from raw materials; open hearth furnaces to convert iron into steel; and rolling mills, wire drawing and nail factories. It also had a large zinc works to produce that metal from raw materials as it was needed to galvanize the products of the mill. This zinc works was an infamous source of deadly pollution that made the air here even worse than that usually found near other valley iron and steel making facilities.

The Donora Southern at one time had a sizable fleet of heavy 0-6-0 switches and lots of gondolas. See Photo 36. This gon is on my “to build” list. Later they used EMD switchers for power. This photo is from the builder, Ralston Steel Car Company, archives.

**Photo 36**



The Donora Southern connected with the Pennsy just outside the mill gate; switched the 20-mile maze of tracks to and between the raw material storage piles, furnaces, rolling mills, factories, and warehouses; and it had a line that ran northeast past slag dumps and on to connect with the Pittsburgh & West Virginia Railway(P&WV) at a place called Baird. When the P&WV built the extension of its main line from Pittsburgh to Connellsville in 1930, it included the Donora Branch in that new construction. This branch came off the P&WV main at Sudan, not far from where I lived, and ran southwest a few miles to reach the Donora Southern. This interchange provided the United States Steel Donora Mill a rail alternative to the Pennsy.

One of the great sights was the Donora Southern dumping slag from the blast furnace down a hill side at Baird at night. The white-hot slag, molten limestone actually, would really light up the sky. The molten slag would bounce off rocks as it tumbled down the embankment and sometimes looked like sky rockets in flight. As kids, we found that something worth watching.

Later on, I had a friend that lived in the Black Diamond section of Monongahela and we walked the tracks of the P&WV Donora Branch often between our houses. There were several tunnels and bridges, one a very long and high viaduct, on this short branch. Being the foolish sorts you are at that age, we would put our ear to the track, and hearing nothing, would set off with gay abandon through the tunnels or across the bridges and viaduct. What we did not know at that point was that the P&WV mostly operated at night on the branch which was a good thing for us. Photo 37 shows that P&WV viaduct from the ground below where the trolley line on private right-o-way passed under it going from Monongahela to Charleroi. That is a 3800 car on the PRCO track.



Operations on the Pennsy Ellsworth Branch from MC tower at Monongahela heading southwest were always difficult. The branch had been built about 1900, and it was crooked enough to be narrow gauge. Some references say the original PV&C was started as narrow gauge and some say it was always standard gauge. Early planning for the branch may have been for narrow gauge and it could then have been built as standard gauge using the old narrow gauge alignment, I guess. I'm not sure about this as it was long ago and all the references I have consulted are not clear on this point. But, once the Pennsy had control of the PV&C, I would think it highly unlikely there would have been any narrow gauge construction.

The first name for the Ellsworth Branch was the Monongahela & Washington Railroad. When the Pennsy took it over, they maintained the original alignment and the route was nothing but tight curves as it followed the winding creek southwest and up into the hills. Pigeon Creek was in a valley cut deep into the sedimentary rock, and the train just followed the creek up to the various coal outcropping that were developed into mines. I suspect building a better alignment would have involved major earth works that, even during its prime, the Pennsy would have been keen to avoid. Building and financing a better alignment would have been a

speculative venture in the early days, too. The branch served no centers of population, and the few towns along the line were small coal towns built by mining companies to house their workers. There were few other industries. Although a long branch with 40 or so miles of track, it always existed only to pull coal out of the hills. It was never certain how long a coal deposit would last in the early days of mining.

Later Pennsy operating policies did not make the Ellsworth Branch runs any better either. Early two bay 50 and 55 ton hoppers could be moved up and down the seriously crooked track successfully with care. Eventually they went to using the longer 70, 77, 80 and even 100 ton hoppers up there and derailments really became a common occurrence. The mines up the branch in those later days were just about all owned by Bethlehem Steel. Most big coal customers after WWII wanted fewer and larger cars as they were easier to work with when unloading at the receiving end. The switch to big cars was due to Pennsy marketing, traffic department, trying to please a big customer I suspect. They obviously did not talk to the right operating department guys.

I knew many of the Pennsy crews as quite a few lived in town. I remember listening to them complain, particularly when the Pennsy sent them some six axle Baldwin passenger locos that had been regearred for freight work. We understood they had been removed from passenger service as they were unreliable. The unreliability of the units did little to inspire confidence among the crews, but the real heartburn was the length of the rigid wheel bases, and the length of the locos in general, which made the derailment issue substantially worse when they operated on the Monongahela Branch. I am not sure if they ever tried to take them up the Ellsworth Branch. I would have loved to have seen that! I certainly remember the paired A and B Baldwin units rolling through Monongahela with hoppers trailing behind. They soon were pulled from Shire Oaks and sent east somewhere for use there I heard. Photo 38 shows the Baldwins while still in passenger service somewhere on the system. The Branches, both the Monongahela and Ellsworth, limped along on a diet of four axle geeps and things were somewhat better. Except for the track which kept getting worse and worse due to lack of maintenance and the heavy hoppers.

**Photo 38**



I remember when very young the Pennsy having a crossing watchman in a little shack along the track where the Ellsworth Branch crossed Main Street. When a train came, he would stop road traffic with his lollypop-like

sign. Later they replaced him with bells and lights crossing protection. Good thing he wasn't there when the train derailed as he and his shack could have been tangled up in the railcar and bridge steel mess.

And I suspect due to the poor cash position of the Pennsy then, repairs to the bridge consisted of cutting off the remaining truss structure above the bottom chords, driving steel columns into the creek bed, and adding some caps across the tops of the columns to form a few bents under the bridge to hold it up. The bridge was quite an eyesore after the derailment there. Conrail later rebuilt the bridge with concrete piers and a ballasted concrete deck.

The Penn Central did no maintenance and the Monongahela Branch track got so bad that all the Monongahela Railway coal was switched to the P&LE at Brownville and came down the other side of the river for years. The Monongahela Branch almost died except for the substantial amount of coal coming off the Ellsworth

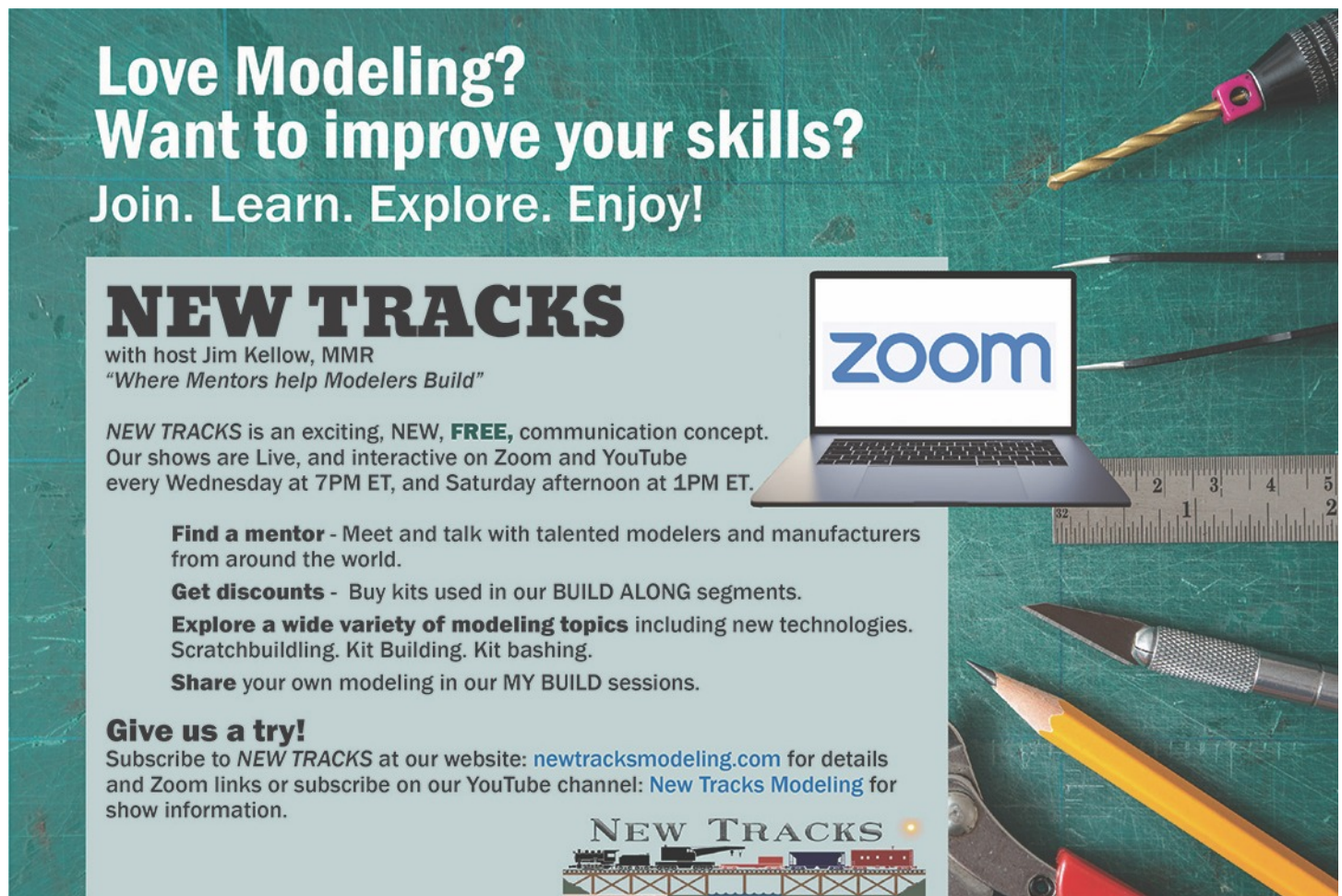


Branch. Once Conrail got up and running, they rebuilt the Monongahela Branch and took the business back from the, by then, rapidly disintegrating P&LE. The coal traffic coming off the Monongahela Railway grew substantially, with many unit trains, so the move by Conrail was a good one. The P&LE mostly shriveled up and died due to poor management, and helped along by the decline in the steel industry traffic in the later days. Some of the once great P&LE still exists as part of CSX, but a good bit has been abandoned and pulled up, or sold off to short line operators.

The mines up the Ellsworth Branch have since all been worked out and closed, and I understand no coal has come off the branch for over ten years. Coal trains still come down river from West Virginia mines through Monongahela however. And, it appears there is now some merchandise traffic in Norfolk Southern trains on the branch to provide some train watching variety. That is certainly different than the good ol' days.

One of the things I remember well was going to sleep listening to the squealing flanges as the hoppers fought their way around the tight curves of the Ellsworth Branch. You could hear that squealing for miles. They were good days. And memories of the rail action in the Monongahela area have provided me with interesting things to model for many years now.

The trolley photos that accompany this article I have collected over many years. Quite a few are from the archives of the Pennsylvania Trolley Museum in Washington, Pennsylvania. Some have come to me by way of Jim Holland, a gentleman that has also spent much of his life chasing information on the Pittsburgh Railways Company. Others are by unknown photographers and I wish I could properly credit them. The railroad photos are also from unknown sources unless credited in the text.



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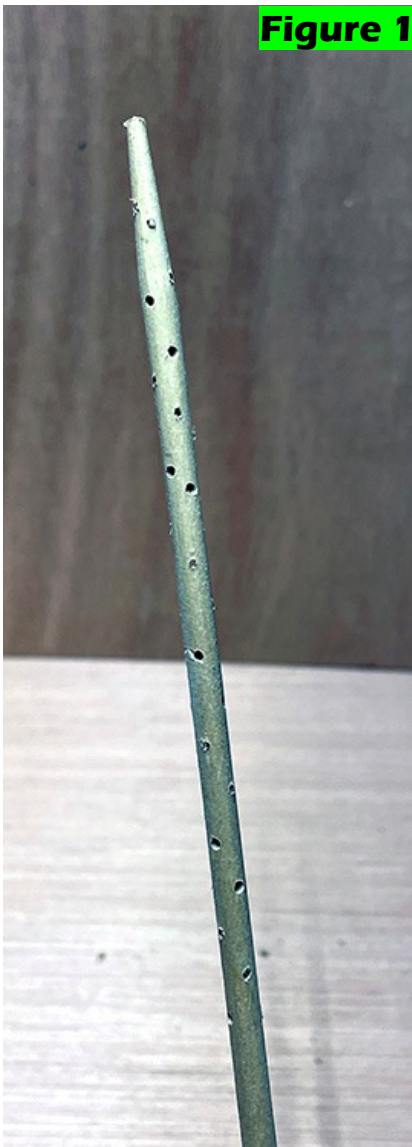
# TREES ARE MODELS TOO

By Biagio Pace



# My Original Technique for the White Pine:

*HYDRANGEA: In upstate New York, spent Hydrangea flowers are best picked when all the flower petals are gone (November/ December), or when they are dark brown. If picked earlier, then the task of cutting the petals is laborious and the buds of the flower are not dried out (speaking from experience, be patient, they will be ready for this winter). Not all Hydrangea flowers are good for making miniature trees. Some varieties are not good at all for this purpose, even though they all look the same when in full bloom. The best and easiest of them all is called "Baby Lace", as it makes a perfect deciduous tree with just adding a little ground foam or screened sawdust and paint. The Hydrangea plants I am using for the White Pine and the larger deciduous trees is called "Quick-fire" (one of a plethora of Hydrangea Paniculata cultivars).*



**Figure 1**

1. Taper a 1/4" dowel, and with a small drill, drill holes to accommodate branches, including a 1/16 hole on each end in as shown Figure 1. Make a few.



**Figure 2**

2. Disassemble the spent Hydrangea flower by holding stem and pulling off branch. This will leave a flange for gluing upper branches onto dowel. A flange will not be needed for the lower ones, just cut off and save. Leave the last 2 or 3 rows of the top of the flower to use as your starter top piece (See Figure 2)



**Figure 3**



**Figure 3A**

**3.** Trim the removed branches as shown (make a flat and thin out until only a few are left) except for the smaller ones, they will be used on top and with flange not removed. (See Figure 3 and 3A)



**Figure 4**



**Figure 4A**

**4.** Select a small container, fill with thin paint and dip the trimmed branches in the paint keeping in mind to just dip the buds, otherwise the static grass will also stick in unwanted branch areas. I cut off the flange of the larger branches, this does two things – it allows me to easily remove excess paint by giving a spin and I use the removed flange for making roots. Quickly apply 2mm or 4mm static grass, I tried both and prefer the 2mm onto the wet paint until the buds are covered, set aside to dry. (See Figure 4 and 4A)



**Figure 5**



**Figure 5A**

5. I start at the top, trim that special one for the top and insert it into the end of the dowel. Use Quick Grab glue and insert into top hole of dowel, make sure some glue goes into hole then pull in and out several times until it holds. This glue dries fast and not squeezing the glue out of the tube will last you a lot longer. (See Figure 5 and 5A)

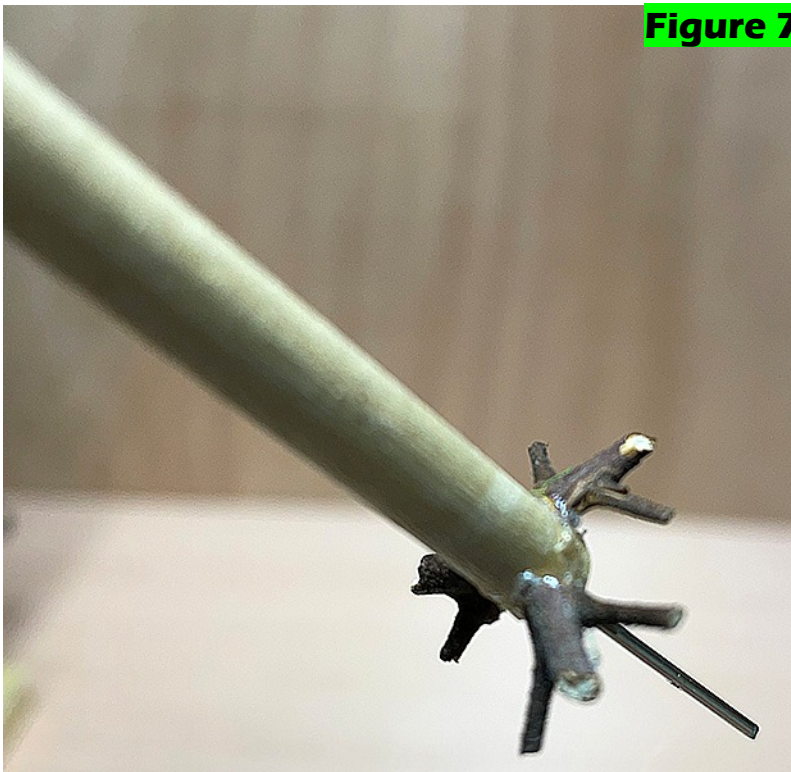


**Figure 6**



**Figure 6A**

6. Next, I start filling holes on the dowel and work my way down. You do not have to fill all the holes, the size of the branches sometimes allows this, and holes will be covered with a later process. Now starting at the top and working down, fill in holes with branches. Fill in the area above the holes with branches with flanges on them. (See Figure 6 and 6A)



**Figure 7**



**Figure 8**



**Figure 9**

7. Using the cut flanges, trim and add for roots for foreground trees. (See Figure 7)

8. Using "thick paint" bend the top and roots and perhaps a bit of bark at end of assembly on the dowel, now transformed into a pine trunk. (See Figure 8)

9. Lightly spray the entire tree with a conifer green and let dry. Branches are painted first with a coat of gray. (See Figure 9)

10. Paint the trunk and wooden part of the branches with gray paint and coat immediately with brownish-gray tile grout and shake off excess. Let it dry.



**Figure 10**

11. Excess dust is easily removed by gently tapping on hand while holding the tree by wire. On the left side is the actual one I just assembled without the static grass being painted. On right side is with the static grass painted a conifer green. Conifer green is made by adding a little bit brown paint to a green shade of paint used for deciduous trees. (See Figure 11)

Note: Some will struggle at first, and with some persistence, will prevail, while others will excel in making better trees than myself. The last time I wrote an instructional document was at work 15+ years ago, before I retired. Similar format, only I wrote repair and new installation procedures for nuclear submarines (still typing with two fingers).



# The Wire Method for the White Pine:



**Figure 1**

1. I use two sizes of bamboo shish kabob skewers that can be bought just about anywhere – 10" and 12", and 0.025" thick craft wire – other thickness will also work. For foreground trees, wrap the entire skewer all the way, as far as to the top of the tree. For the background trees, only finish 1/3 length from the top, as only the canopy will be visible. For dead branches, twist wire to the length of dead branch you want and cut. Loops should be at random lengths. (See Figure 1)

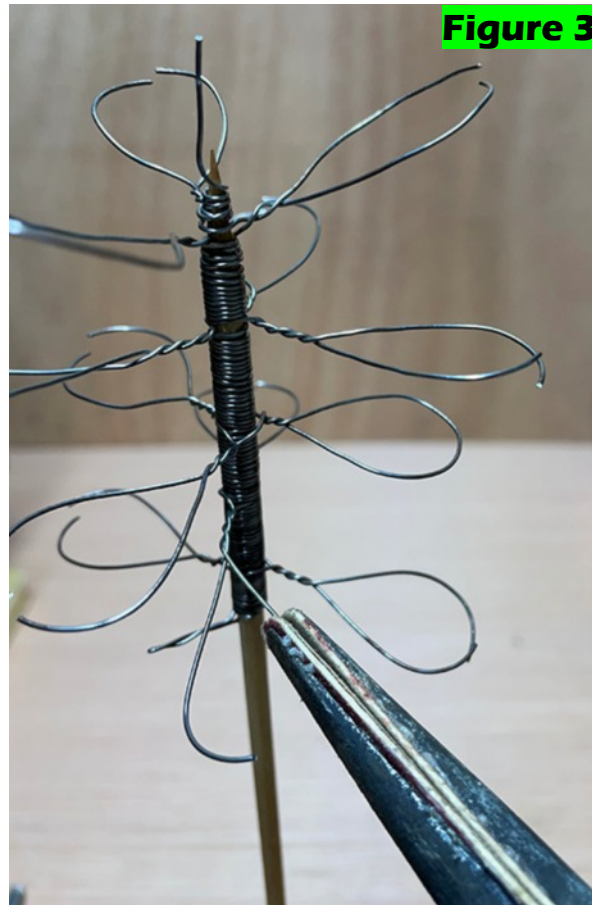
*\*A lot of the small pieces removed for the original process can be used for this process.*

2. Cut loops. (See Figure 2)

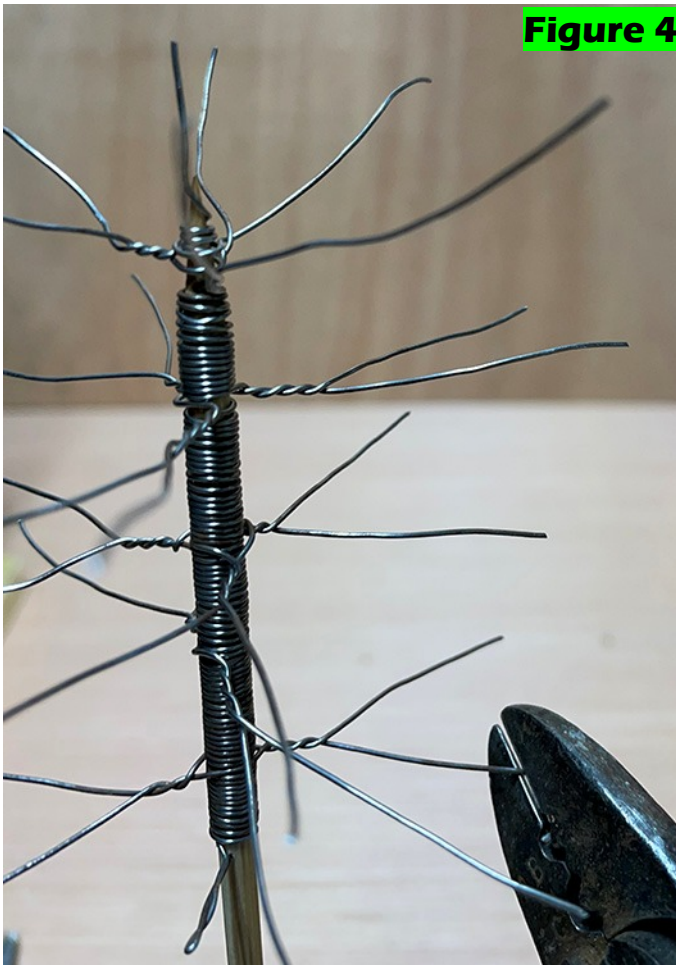
3. Straighten the loops. I use a set of duckbill pliers with wood nail files glued inside laws for a better grip. (Figure 3)



**Figure 2**



**Figure 3**



**Figure 4**

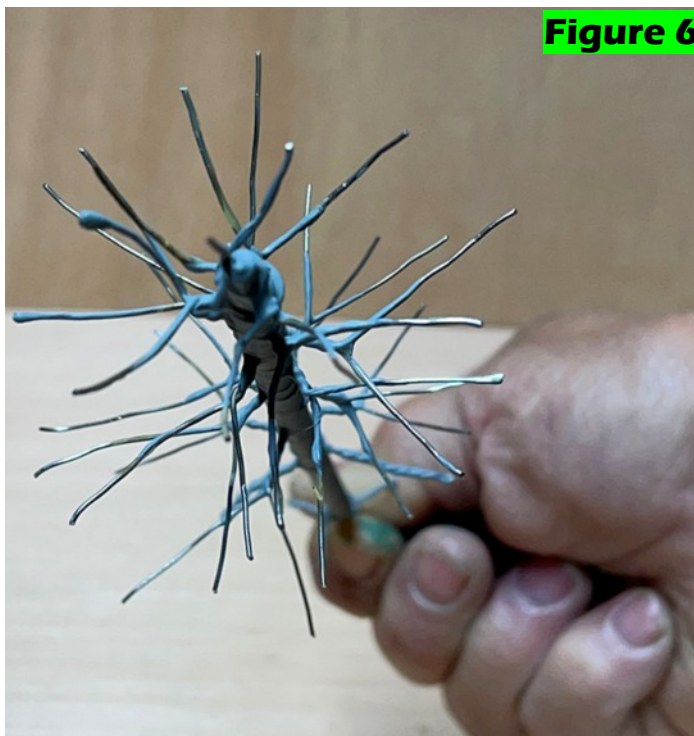
4. Trim branches ensuring a uniform length is avoided. (Figure 4)

5. Apply several coats of thick paint on the trunk to cover the wire. Let dry between coats, until wire is not visible. Branches will be done after foliage is attached. (Figure 5)



**Figure 5**

Add foliage. Dip wire branch into end of glue, immediately followed by the dipping of the foliage stem into the glue with both items coated with a thin layer of glue, touching both areas. Pulling back and forth on the glue will quicken the drying time. Do this until the branch holds in place. Do the same for the remaining branches. Using thick paint, blend the branches. Partially completed paint shows before and after detail. Not all branches will have foliage attached to them. For those not used, cut to simulate a dead or broken branch. (See Figures 6 and 6A)



**Figure 6**



**Figure 6A**

6. Finishing is the same as before. (See Figure 10 in the 'Original Technique for the White Pine' section)

The tools I use are shown on the right.









**Figure 1**

### **Baby Lace Hydrangea:**

1. For making a lot of trees fairly quickly, use Baby Lace for simple and quick production of a lot of trees. the size of the plant flowers depend on size of shrub picked from, (although both can be picked from the same plant). Figure 1 shows the plant flower in summer bloom.
2. Remove the flower petals that are remaining when picked in the fall or winter. See Figure 2.
3. Dip into a thin paint solution and cover the plant foliage with either course sawdust or ground foam, avoiding getting on tree trunk as much as possible . (Color does not matter at this stage) See Figure 3.
4. Using a spay can, paint again to lock the sawdust and foam to strengthen the fragile flower. (This is an optional step that I do.) See Figure 4.
5. Paint to the final color of your choosing, See Figure 5 and 6, Fall or Summer, then finish the tree by painting the branches and trunk as described previously.



**Figure 2**



**Figure 3**



**Figure 4**



**Figure 5**



**Figure 6**

1. For the making of foreground trees, it takes as much time as the white pine trees. Use Quick Fire Hydrangea or some other variety with larger flowers than the Baby Lace. The size of the plant flowers depends on size of the shrub it is picked from. Although both can be picked from the same plant. Figure 1 shows the plant flower in summer bloom and in fall or winter stage.



**Figure 1**



**Figure 3**

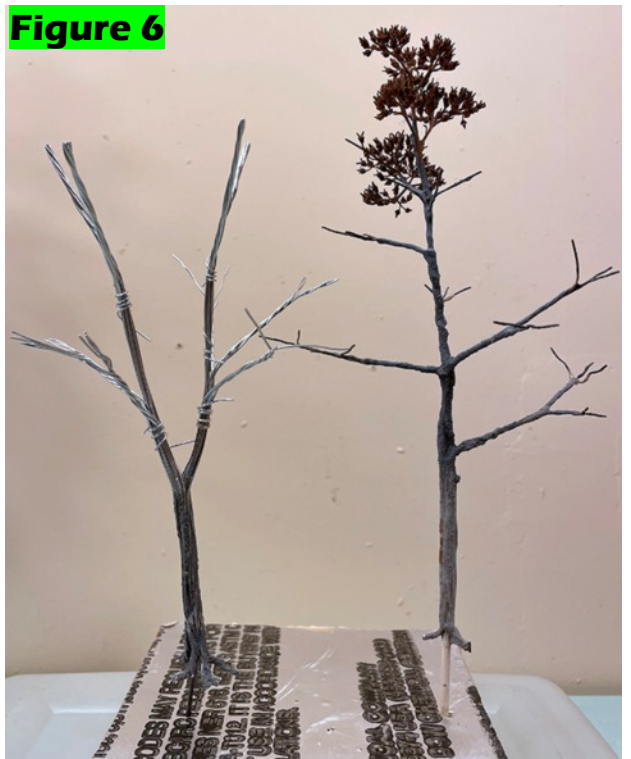
2. Remove the flower petals that are remaining, when you pick them in the fall or winter. See Figure 2. Pull the flower branches from the de-flowered plant and place in a tray for ease of access as shown in Figure 3 and 4.



**Figure 2**



**Figure 4**

**Figure 5****Figure 6**

3. Use similar armatures picked from various plants from golden rod to miniature lilacs as shown in Figure 5. Anything will work providing it has a lot of sub-branches. By adding the removed Hydrangea branches, this will complete the assembly of the tree. Cut the two branches at an angle and glue using Quick Grab to join the two together. For wire armatures, I use weld wire or craft wire for these armatures and shape them similar as shown in figure 6. Also, the larger flowers can be upgraded by adding branches in between existing branches for a fuller look. You can also remove the top portion of the plant and add branches to complete as shown in Figure 7 and 8.

**Figure 7****Figure 8**



**Figure 9**

4. Spray paint the brown foliage and then cover them with either course sawdust or ground foam, as shown in Figure 9. This helps camouflage the flower cups and give it a more leaf like look. Avoid getting sawdust or foam on the tree trunk as much as possible. Final color does not matter at this stage, for summer trees, use a light green and fall trees, I start with a light yellow.

5. Using a spray can, paint again to secure the sawdust or foam. This will help to strengthen the fragile armatures.

6. With an air brush, paint to the final color of your choosing (I buy sample bottles from chain stores for about \$5.00), variegate the colors using different shades of green for summer. For fall trees, spritz the yellow with orange and red to achieve various looks for different trees.

7. Finish the tree by painting the branches and trunk as described previously.





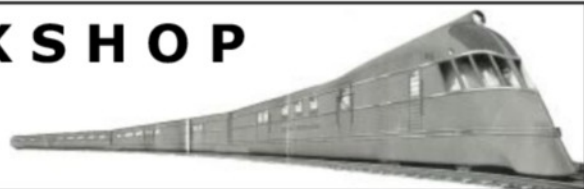
ABOUT ME: I have been a model railroad hobbyist for over 50 years. One of the things I enjoy modeling on my layout is making realistic model trees. After achieving what I believed to be a good facsimile, I went on to make more than a thousand trees for my layout over an extensive period of time. I have held many model tree clinics in my area for local modeler clubs. I also achieved being published in *Model Railroad Magazine* in July 1995 for the making of HO size trees. The methods I developed back then are the same for O scale, only with some new techniques developed over time.





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## Ballasted Deck Trestle



Laser-cut wood parts. Track and ballast are not included. Approximate size is a scale 16' x 50' #17103 O \$39.95

## Cheat Run Trestle



Laser-cut wood. Rail and spikes are not included. Approximate size is a scale 13' x 27' #17142 O \$37.95 #17143 On3/30 \$37.95

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# The Wonderful Frustrating, Exasperating, Maddening, Awesome World of SLA 3D Printing

By Dan Dawdy

In the January/February 2022 issue of The O Scale Resource Magazine Glenn talked about [Drawing for 3D Models: The Issues and Considerations You Need to Watch Out For](#). If you are designing models and have not read that yet, do it now.

I was not sure how to proceed with this article. I am no expert, having only been printing since last October. There are many of you who have been doing this for a few years. So I'll break this down into a few articles and start at the beginning, walking you through my experiences. I will also reference many good YouTube videos on specific subjects that really helped me. There is no reason for me to try and reproduce their information here. And to be clear, we are talking about SLA or resin printing and not filament printing.

[Here is a great Website that shows how a resin printer works](#). If nothing else, it will give you all the parts and what they do. You don't need to understand everything, but do need a basic knowledge of what's going on.

In the January/February 2022 issue of The O Scale Resource Magazine, Glenn talked about [Drawing for 3D Models: The Issues and Considerations You Need to Watch Out For](#). If you are designing models and have not read that yet, do it now.



There are many good printers out there and getting into a discussion of them is like the old Ford vs Chevy debate. Do your research and buy one. I bought the ELEGOO Saturn. I have two great Internet friends, one who has the ELEGOO Mars and the other has the Saturn. I figured if I needed help, I had backup.

I went with the Saturn because of its larger build volume of 192\*120\*200mm / 7.55in x 4.72in x 7.87in vs the Mars of 89.6mm\*143.36mm\*175mm / 3.53in x 6.65in x 6.89in. Now, there are even larger versions on the way like the ELEGOO Jupiter which could print a 40' O scale car in one shot!

OK, so once you have selected a printer and it's on the way, now what? Mine came with the basic accessories, but yours may not, so let get all that out of the way. I'll list what I bought and link to Amazon for some items. I do not do affiliate links so it does not matter to me where you purchase your items.



Safety first, so you will need nitrile gloves. You can buy a box of 100 at many drug stores. I ended up really liking the Kirkland brand from Costco, but any brand will do. You don't want the resin to come in contact with your skin. It's not going to burn you, but it can cause irritation.

Safety Glasses are a must especially as you weed (cut the supports from the printed model) the parts after printing. Bits of uncured resin can and will go flying all over. If your eyes are extremely sensitive, you might want to consider goggles.

Masks maybe needed depending on where you are printing. I have a large open area and the resins I have used so far have very little odor, but again, to play it safe, use a mask. I also bought these small [ELEGOO Mini Air Purifiers](#) which work well for me. Some resins are much smellier than others, but so far it's not been an issue with the resins I have used.



OK, now we need some tools. A good sprue cutter for weeding off the supports is a must. Many of you already have one of these, but buy one just for printing as it will get dirty and sticky.

A regular metal paint scraper to remove the print from the build plate. It's better use an extra-wide knife to remove the model from the build plate.

**Plastic spatula putty knife.** This is a must as sometimes your print doesn't stay on the print bed, and you need to remove it from the FEP sheet in the vat.



**A silicone mat for a work surface.** Because silicone is completely non-reactive, you can cure the resin directly to the mat and crack it off when it is safe. I use a DogBuddy Dog Food Mat as it's much less money than some brands that are made just for printing. My printer is sitting on one and I have another for weeding.

**Filter or funnel** for pouring unused resin back into its bottle. Simple paint filters work well, but I bought a funnel with removable strainer. You must filter this as there could be small bits of hard resin that broke off your print job. If you allow those back in the vat and begin a print that small hard piece of resin will damage your FEP.



**Clear Screen Protector** is an absolute must. If your FEP, we'll talk more about the FEP later, breaks or is punctured by a hard piece of resin, it will leak all over the top and down the sides of the printer. If it gets on the glass screen under the vat, it will be hard, if not impossible, to save it. If it leaks around the glass and into the printer, all bets are off. I ran for three months without one and luckily I had no issues, but it's better to be safe than sorry. Some people use a standard 8" iPad tablet screen protector.

**Lint free wipes** are needed to clean the FEP. Paper towels may be too harsh and cause scratches. Paper towels and glass cleaner are fine for the screen, but NOT the FEP.

**So, if you looked at the link showing how your printer works, and if you did not, do it now!** The FEP or Fluorinated Ethylene Propylene film is used on the bottom of resin printing vats. The material is a transparent non-stick material that allows the UV light to pass through and expose the resin. Because the FEP is non-stick, the resin has a stronger adhesion to the build plate so the print will release from the FEP film while staying attached to the build plate. The FEP is rather delicate, and you must use only the plastic spatula to remove failed prints that may stick to it. There is a picture of one of my failures later in this article. You can, and should, have extra FEP material so if/when yours breaks, you can replace it.

Paper towels, paper towels and more paper towels. Might as well buy the cheap ones, because you will go through them really fast!

OK, so let's talk about process and resins before software and workflow. I started with ELEGOO Water Washable 3D Printer Resin as I did not want to go the Isopropyl Alcohol route for cleaning. After you make a print it needs to be washed thoroughly to remove excess resin. Water washing is cheap. For smaller pieces you can use these **Pickle Containers**.



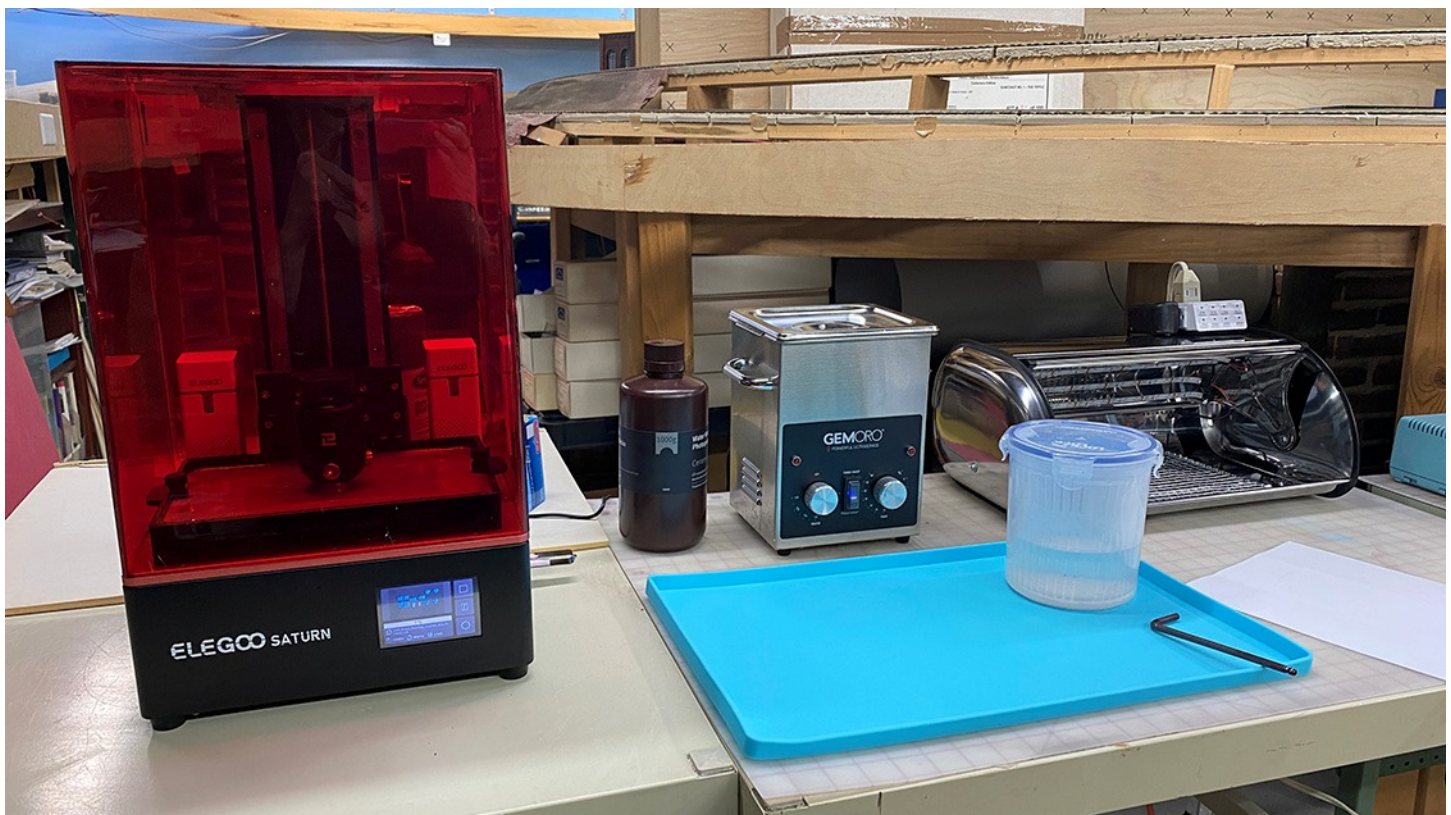
In place of pickles, add your parts along with water and swish the inner basket for about 10 minutes. Remove the parts and brush with a soft brush like an acid/flux brush. Once cleaned, set them aside to air dry or you could use a hair dryer if you are in a hurry. They must be fully dry before curing or you will see white spots



on the parts. After drying, the parts need to be cured under 405nm wavelength UV light. Now if you live in an area that is very sunny you can simply take the parts outside and let them cure in the sun. This is not an option for us here in the Midwest during winter. I watched a video on building my own curing oven. Here is the video <https://youtu.be/etLOLUowvPI> and parts list.

Here is my completed oven from the video. It worked well and was not that expensive.

So I got set up fairly cheap right? Not so fast... the water resin I was using is very brittle and for longer flat items will curl. Remember we are not printing little monsters or fairy figures, but model railroad parts like truck side frames and boxcar doors. And to add to the mix, I was going to produce masters for Glenn to make molds for use in brass casting. So I needed to switch to a less brittle resin, and was also looking at isopropyl alcohol cleaning. There had to be a better and cheaper way. [This video and others like it gave me the answer.](#) I would also suggest you [subscribe to Uncle Jessy on YouTube](#) as his videos are very well done and offered a lot of help to me. Once answer was Mean Green cleaner. It is less then \$6.00 a gallon at Home Depot. That's way cheaper then IPA. The only downside is the parts were just a bit sticky after the Mean Green so my workflow became,



*My original set up. I also had an ultrasonic cleaner to help with cleaning.*



wash in Mean Green, rinse with water and then dunk in a small container ([Pickle Container](#)) of IPA and then dry.

This worked well, but was getting cumbersome. You may not need to do this, but with the amount of printing I knew I would be doing, I broke down and bought an ANYCUBIC Wash and Cure Machine. This will wash, and once dry, cure the parts with UV lights all in one machine.

I know... more money, but a time saver. Again, you do not need this. My cure oven and pickle containers worked well, but took a long time and they have their size limits. I can fill the ANYCUBIC tube with a gallon of Mean Green and dump all the parts in, set the timer and let it do its thing. If I did go back to a water resin, I simply pour the Mean Green back into it's container and fill the tube with water.

**IMPORTANT: I have to assume you have read your instructions on whatever machine you bought but... after washing resin print in water, IPA or Mean Green, DO NOT DUMP IT DOWN THE DRAIN!** You can use it over and over, but once it gets really dirty you will need to change it out. There are some good videos about disposal. [Here is one](#), and if you search on YouTube for "resin ipa disposal" you will find many more.

OK, back to my journey. So now my full workflow for parts is 1) removing from the platen; 2) do the weeding now rather than after washing and curing; 3) dump parts in the Mean Green and let it spin for 10 minutes; 4) rinse parts with water; 5) place parts into the IPA and brush the parts; and 6) set on a towel to dry.

If I have small parts like the O scale truck parts for Central Locomotive Works shown below, I found a tea infuser on Amazon that works really well. I can simply dump the small parts into one these tea balls close the latch and toss the whole thing into the washer. So now you are probably wondering what did with my homemade curing oven. I found a great use for it curing all the supports and bad parts. Remember all the supports need to be cured before tossing them into the trash. You should not be depositing of any uncured resin!





*Junk resin ready to be cured.*

Therefore, I take all the junk resin and move it to the end of the mat and then slide that into the curing station and close the lid. I set it for a half hour or so and then toss the junk resin after it has cured.

OK, enough talk – let's print something! Your machine should have come with a thumb drive. Mine contained the instructions, a sample piece to print and the machine parameters (en).gcode for the printer. I had seen many reports of the ELEGOO and other drives being extremely unreliable. They may stop reading while printing. I used mine for awhile, but then [bought two from Amazon](#). Any good drive 32GB or smaller will work. So while one is in the printer, I can work with the slicing software and have the extra drive in my office. Also you need to format the drive for FAT32 if you are on a PC.

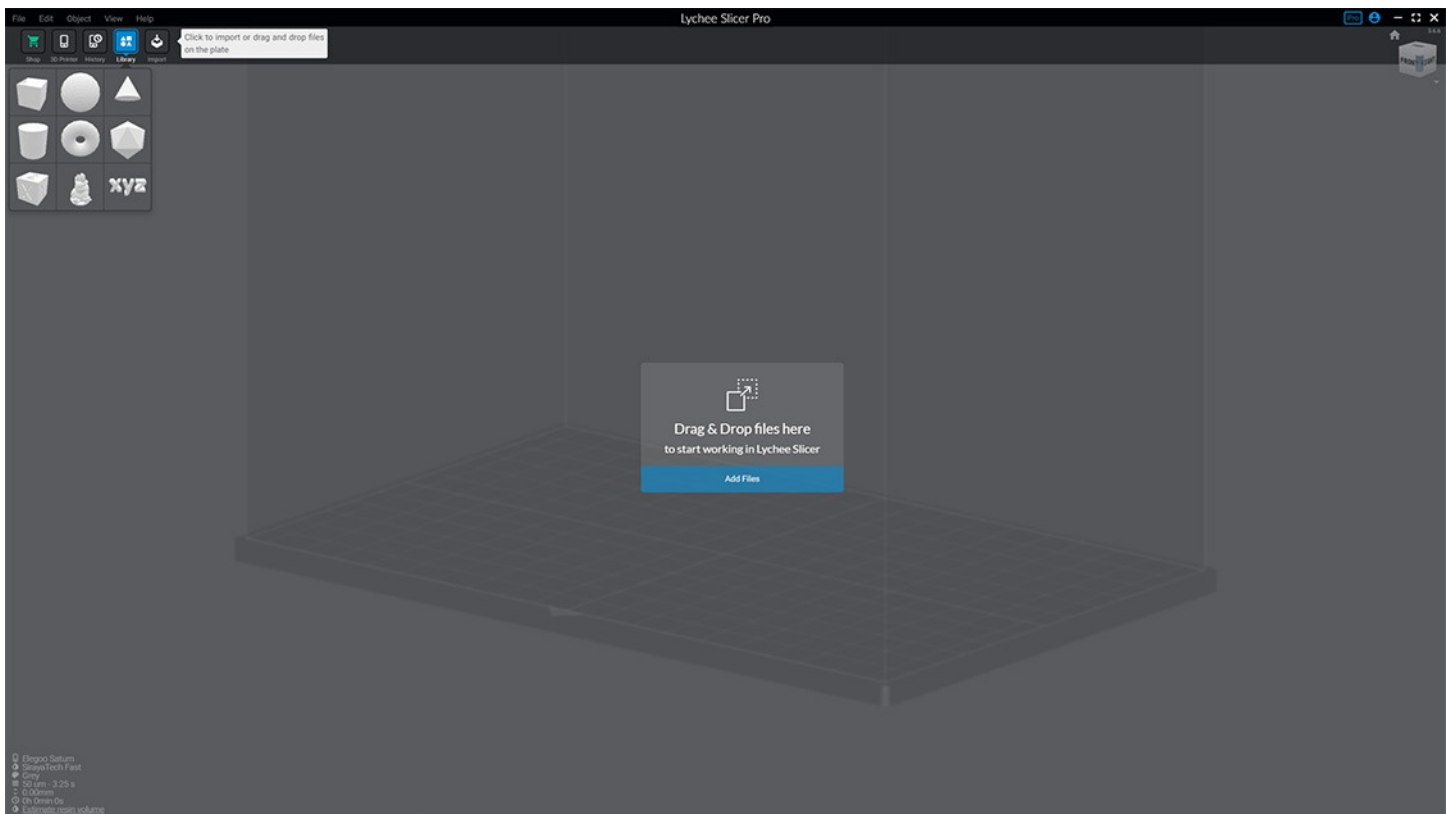


Now we need to install and run the slicing software. Mine came with [CHITUBOX](#) so that's what I installed. There is a free version, as well as a paid version with more features. The paid version is over \$200 per year at the time of this article. I'll cut to the chase here, CHITUBOX was a mess on my machine and Glenn's. Glenn made the mistake of saving an STL file to the desktop which caused the video card to start flashing and lock the machine. I was able to duplicate that so a word of warning here – don't save to the desktop! There were also other issues, so I looked around and found [Lechee by Mango 3D](#). Lechee slicer also has two versions and I used the free version for a few weeks and then paid for the extra features. Their subscription is only \$65.99 per year and I find the interface much cleaner, and I have had no issues with the software. All the upcoming screen shots and options will use Lechee, but if you use another slicer, and there are a few, you will still be able to follow along.

So what is a slicer and why do I need it? The slicer tells the printer how to print the object, as well as all the parameters like slice size, speed of the print platen, exposure time, bottom layers and so much more. [Here is a great overview of the Lechee slicer](#) and [one on CHITUBOX](#).

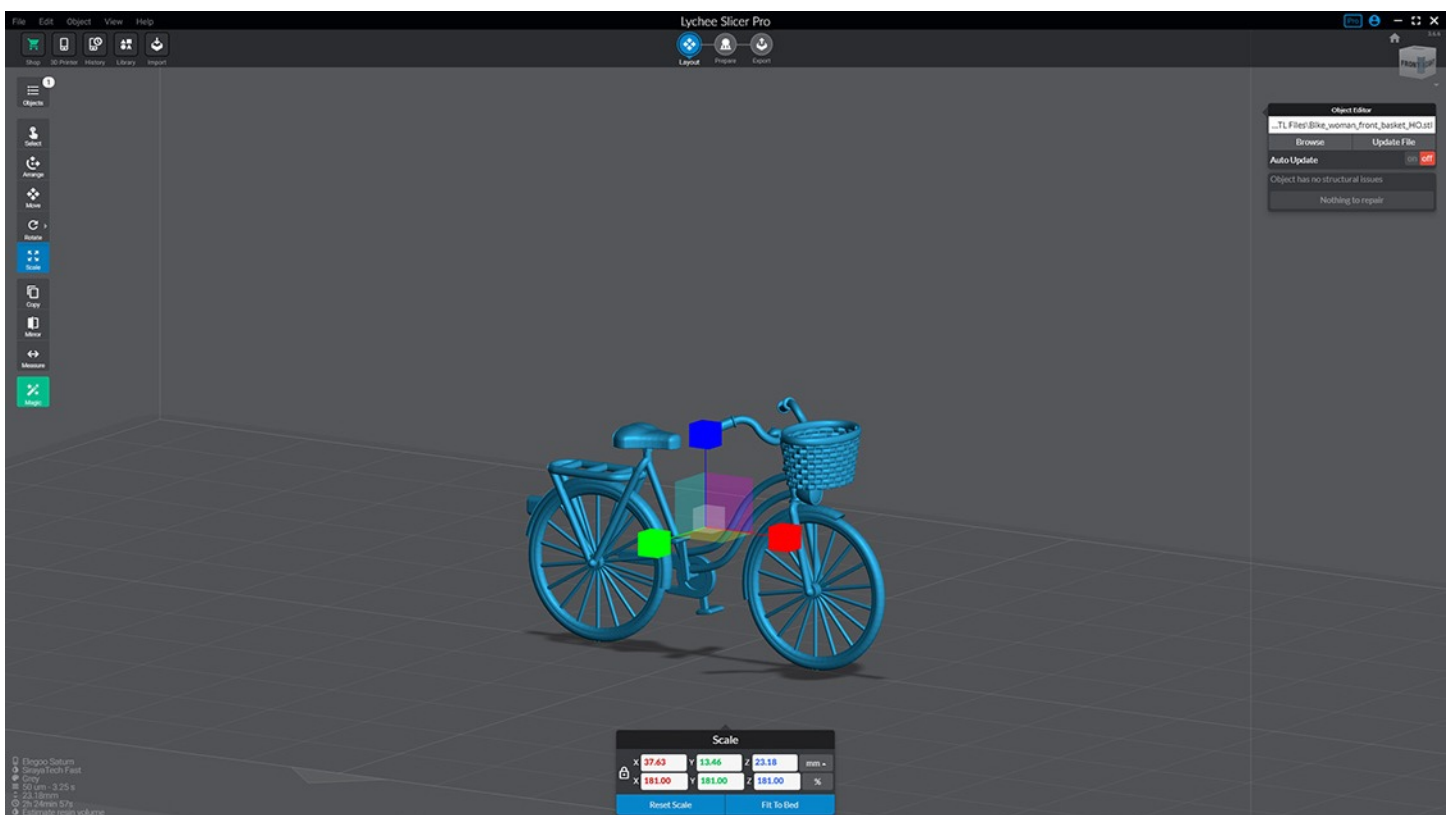
So what this means is we are normally printing in 5 microns or 0.005 millimeter slices. Every time the platen goes down into the resin vat and the LED's come on, only 5 microns on the X axis are hardened. This is not a lot of material. And this material is in a viscous state until the light hits it. Supports are important because if you have a now hardened 0.005 millimeter slice and there is nothing holding it to the platen or another already hardened piece of the model, it will simply float away and cause damage as the platen comes back down for the next pass.

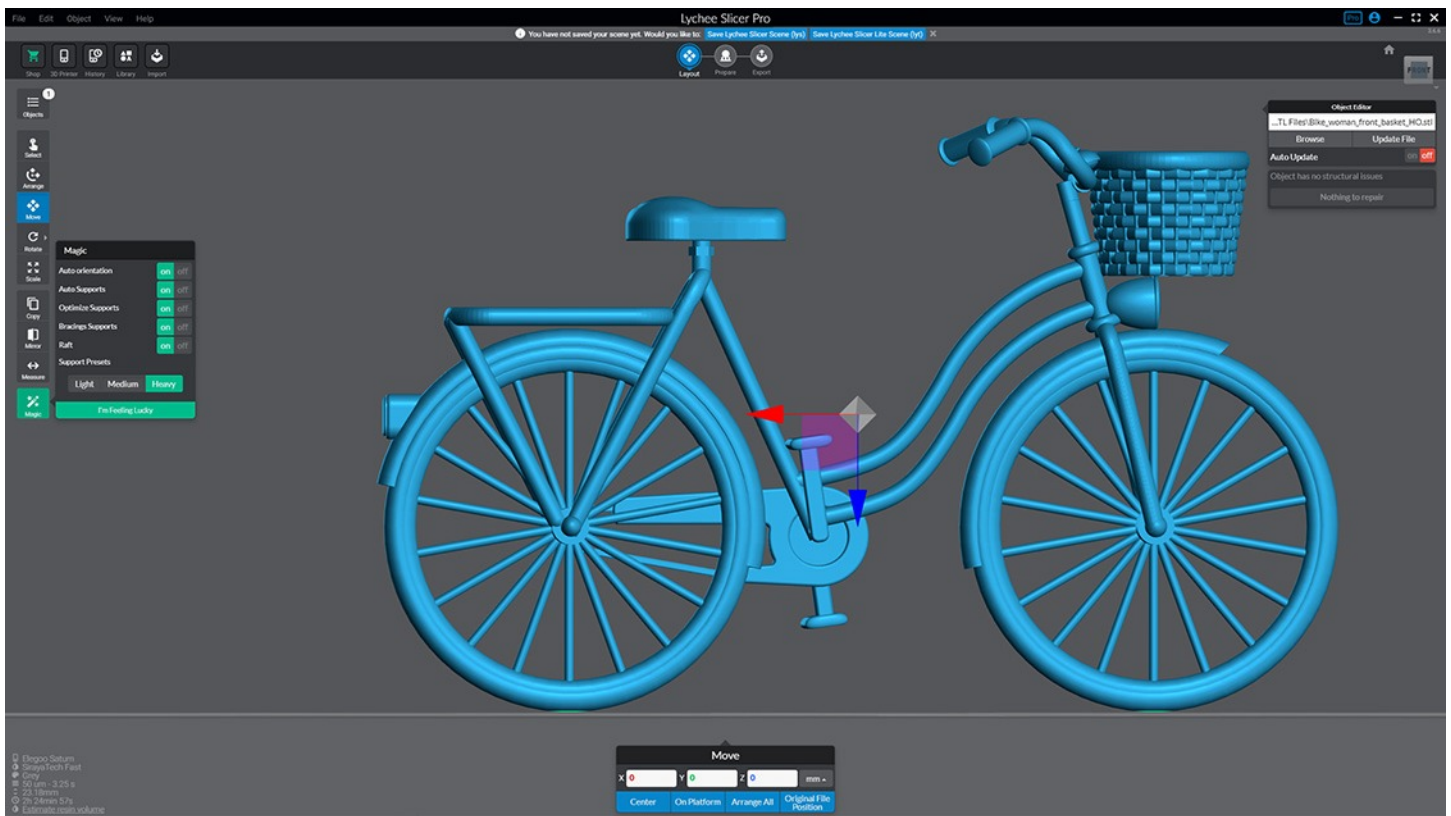
Learning to properly support a model is an art form on to itself. [Many videos have been made about this and this one is one of the best](#). The sliders for moving through the print are also on Lychee and most other slicer programs.



Above: Lechee slicer open and ready to import an STL file. AN STL file is normally created from some type of 3D modeling software. [Read more here](#). So you have to create a 3D file or there are many places that allow downloading of free and paid STL files to get you started. [Check this page for many sites](#).

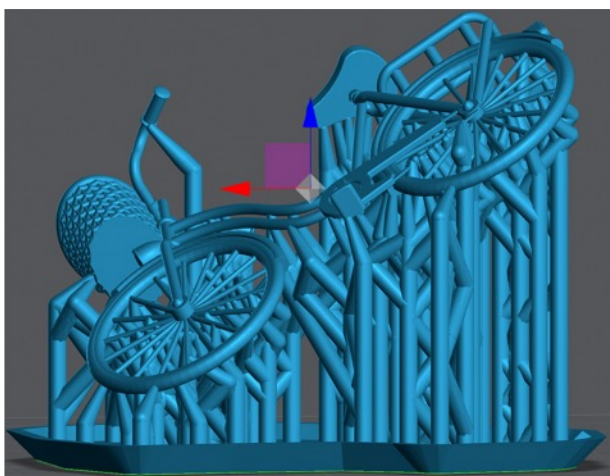
Below: I found a free [bike on thingiverse.com](#), but I did “tip” the designer as it was nicely done. It’s HO so we need to scale it up to O or S. I did this in O so the resize scale is 181%. Yes, if you read Glenn’s article this resizing is a no-no, but for some simple items, it’s fine.



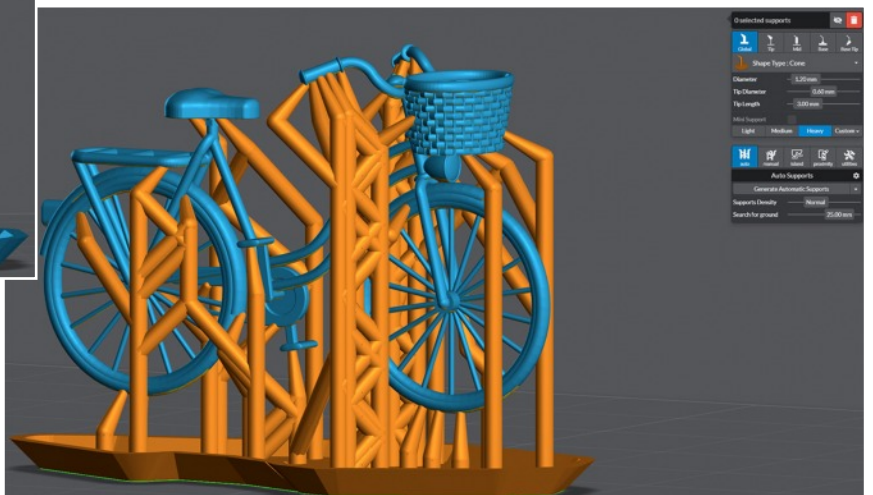


Above: One of the cool features is the magic button. Selecting the model and using that button Lychee will orientate the model, support it, set the raft, which is the bottom layers touching the platen, and more. Now no slicer is perfect at auto generating supports and most people will tell you not to use it, but hey, we are learning. At least let it do its thing and see what it comes up with.

Below left: Here is the result. It angled the part (we'll go down that rabbit hole in the next installment), added the supports and support bracing. Because we don't want a part like this to print directly on the platen, Lychee raised it and placed in a raft. At this point, we can take this and process it into a file for the printer. Your other option is to allow Lychee and others to auto support the model for you without the angle being sent and bracing. The image on the bottom right shows what it came up with. I told the program to auto support



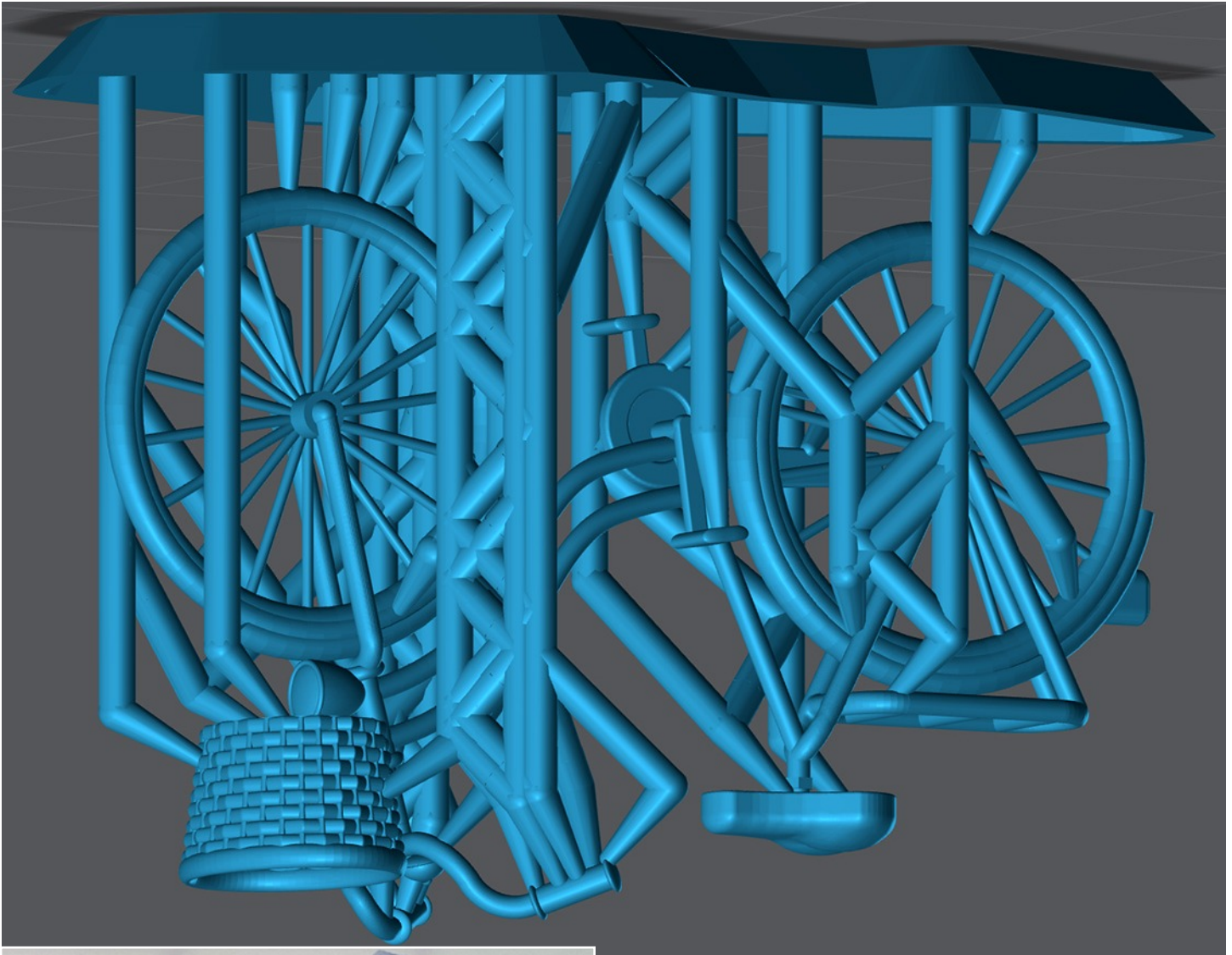
using heavy supports, with a normal support density and other default settings. This looks a lot less crowded than the magic version even with the different angle. But for learning, I like to auto support to get started. Now we can export this bike to our printer.



If you watched the video you will have set up your printer and resin. Resin exposure times can be tricky, but looking on the manufacture's Website, you will find a good starting point.

One cool thing with Lychee is you can look up the resin and see what other users have reported as settings for your printer and resin combination. Most all slicer software will show you the approximate print time, as well as, resin usage and cost if you put in that information for your resin.

**Now is great time for a reminder... you are printing upside down!**



*My very first print using auto supports.*

So now maybe the supports make more sense. Let's print this. When going to build the print file, you have many new options. From the resin manufacturer's Website you will find an exposure time based on printer type. Let's stay at the defaults for most of these. As an example, if we want to use Fast by Siraya Tech, we can go to their Website and see a [Google sheet like this](#). It will give us a starting point for our printer. So plug those numbers into the settings page of your slicer and give it a try. That was what I did on my first print. I found a few free STL files and ran them through the slicer and onto the thumb drive. Once at the printer, all

you really need to is level the platen. The printer came with a piece of paper or cardboard for leveling. Do that following your printers instructions. This is very important, and because my table is on wheels and I can move it when not printing, I always level before each printing session.

So the bike turned out well and I was all happy and ready to begin printing masters for Glenn to make molds from. Using Glenn's drawings, I supported each part remembering what I learned on the videos. Now we wait and see. You never know what's going to emerge from the goop until it's finished.



Wow, the picture above showed my next run. Signal cases in S scale from Glenn, along with a test underframe and a soft drink machine I found on-line. These were mostly auto supported and I thought this was fantastic! Then, as happens so many times, reality hits home... what the heck went wrong below?



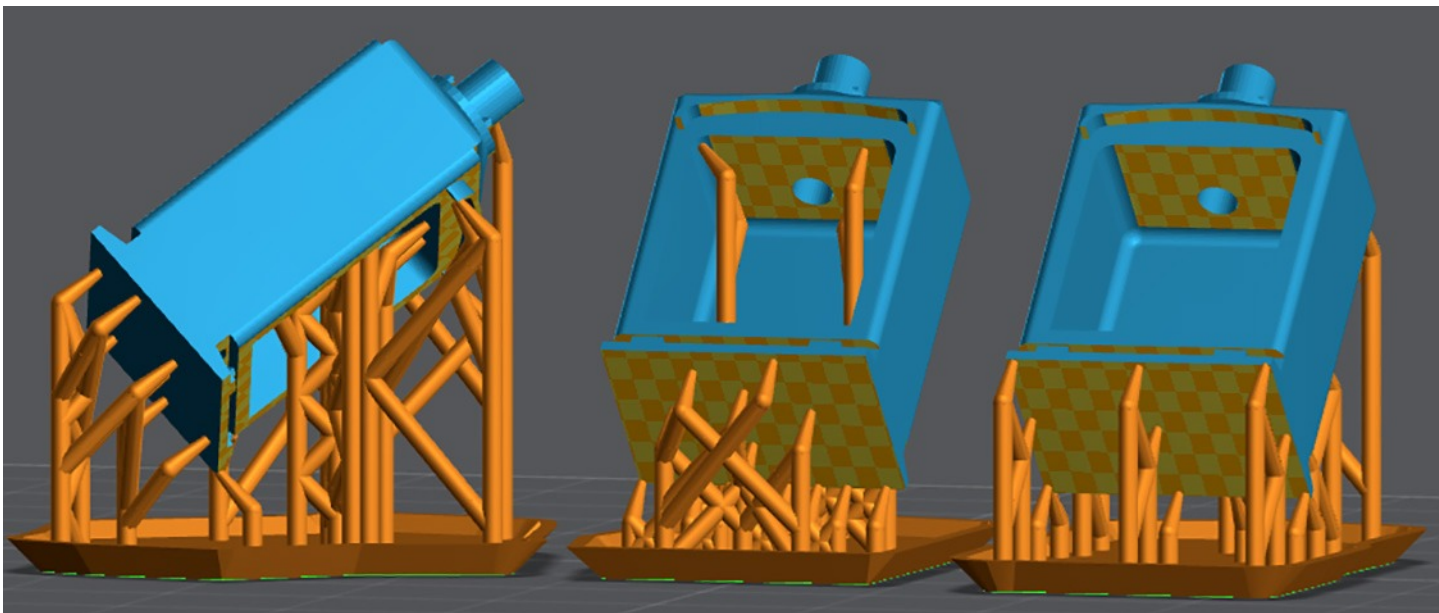


Some of you may look at the previous picture and scrape off the mess and try again, but it's better to do a post mortem and see what we can learn. I was playing around with supports and angles. What I sometimes do is let Lychee auto support with heavy supports. Then, I'll switch back to manual supports and remove supports I don't think are necessary, make some supports medium or light as we move away from the platen, and even add supports to places I think need them. The image on the top left shows that the door broke away from its supports, ended up on the bottom of the vat.

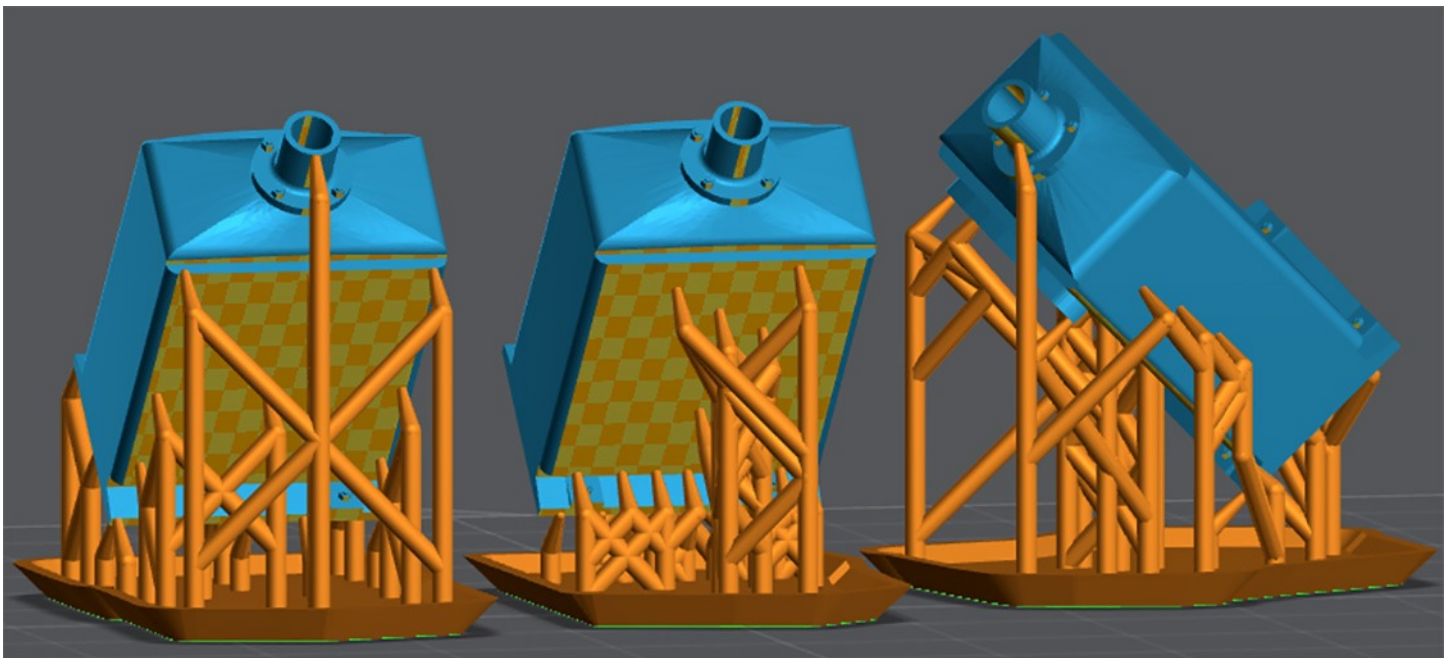


The side frame shown on the left also broke away from its supports. This is when you very carefully use your plastic scraper and remove the left overs from on top of the FEP. Why did it break away? Well, I printed flat to the platen with supports. If I were to have printed directly to the platen it may have not broken from the platen, but there is something called elephant's foot where the bottom layers spread out. We'll cover that in upcoming articles.

The point here is that as the platen when comes down, exposes the 0.005 millimeter slice and then begins to go back up, you have tremendous suction forces at work. Think of wearing boots and walking through a muddy wet hole about six inches deep. If you yank hard and pull your foot up, the suction will probably hold the boot while your leg flies up and you fall over. Now think of lifting your foot very slowly and allowing the muddy water to flow back under your boot. You will get your leg and boot back. The same principal is at play here. The suction on the door as it begins to print with all the surface area in the resin will cause the part to simply break off. This is why it's recommend to print flat parts at an angle. What's the best angle, well we'll get into that next time, but for now 20 to 30 degrees will work. You also want the best side down as the supports will then be toward the platen. After weeding, you may see some marks where the supports attached to the part. We want to be careful where these end up to keep the post production of sanding and sealing to a minimum.

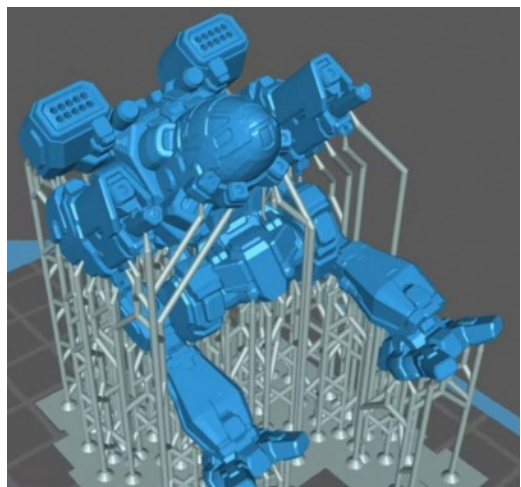
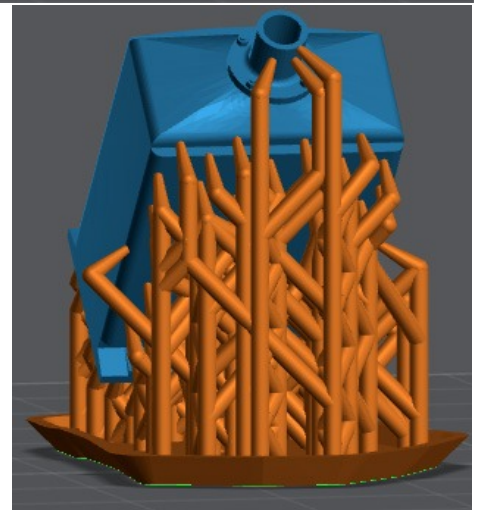


Let's look at the image above and the one on the next page. This was done in Lychee with the far left part using the Magic setting where Lychee did everything. The middle part was me setting the angle to 45 degrees and the using auto supports. The far right image was again 45 degrees, but I manually added the supports. If you use CHITUBOX, you will not have magic but you can run auto and then a manual support model. Look at the differences. The Lychee Magic setting is very bizarre. Will it print properly? Not really. Same with the center auto supported. I know now from a few failures that the bottom of the case will not print properly. In my experience, if you have flat part with corners, you must support those corners. The center part has lots of supports on the bottom but none on the corners. This will lead to round or sagging edges. If we add too many



supports to a small area, we can get resin bulges where the supports contact the print. Look at the center part that was auto supported. There are rear supports, but no corner supports. Why does it do that? Well, we can tell Lychee to add support density and then auto support again. Let's try that. Wow look at the image on the right, it is now supporting just about

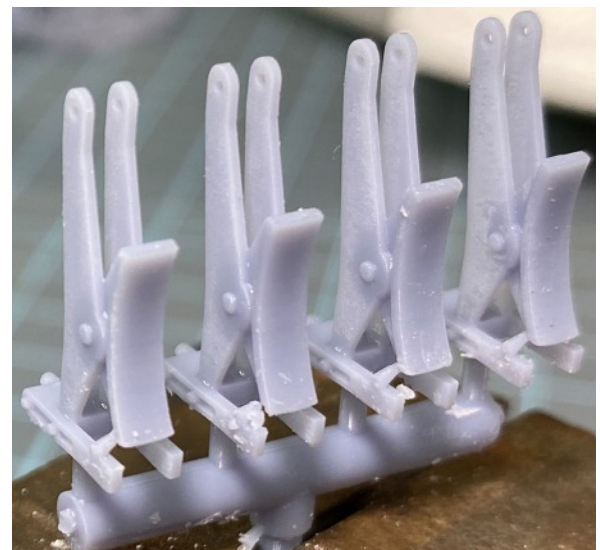
everything it can and there will be a lot of damage on the back of this part because of all the supports. So why is my version hitting the proper areas without going overboard? Well, other than the learning curve, I went through it the way the programs do their auto supporting.



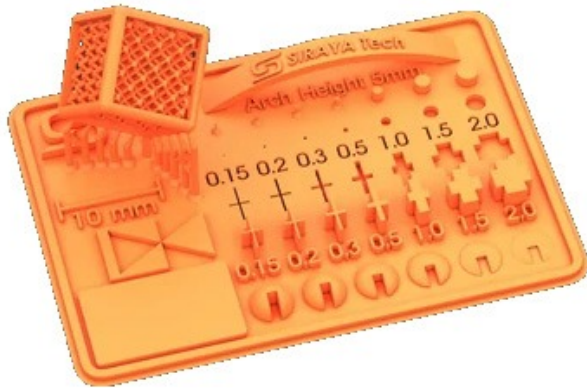
You have to remember that 90 percent of the people printing in resin are building monsters, fantasy creatures and the like. For the most part they don't have the issues we have when making parts. Oh they have issues... Imagine trying to support this (whatever it is) on the left.



But our models are of real things, and we know what they should really look like. For all the beautiful parts like the brake assemblies shown to right, we still have issues and need to learn from our failures like the one on the left.



One thing you must keep in mind is if you have a failure and you begin looking for solutions, be careful not to go in willy nilly and start changing settings wholesale. Changing many variables at once will always get you confused and in trouble. Temperature plays a major factor in resin printing. Each resin type will have its temperature range printed on the bottle. 20-30°C (68-86°F) is a very general range for many resins. So printing one day at 70°F and the next at 80°F many cause issues. We'll look at this in then next article. For now, let me show you some free test files to help you dial in your settings.

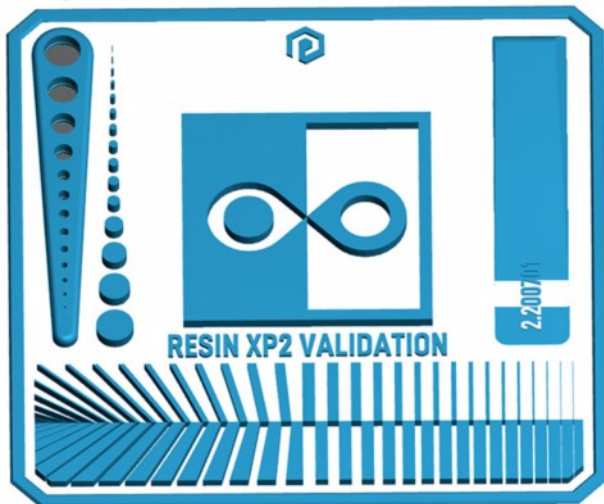


*Siraya Tech Test Model V5*

[Siraya Tech has one of the best test models and you can find it here.](#) By using the resin manufacturer's suggested settings for your printer and then printing this file, you can see if you need to add or subtract exposure time. They provide a set by step guide of how to read the results.

Another good test is the [resin xp2 validation matrix](#). A very good video [can be found here on using this test and understanding the results.](#)

The last test I would recommend is one that is easy to read and understand, but takes longer to do. The Cones of Calibration from TableFlip Foundry is a newer test and [here is their video telling how to use and download it.](#)

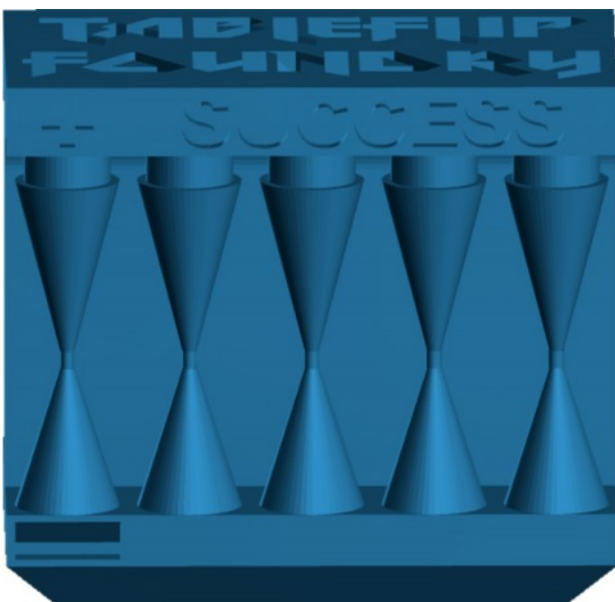


*Resin xp2 validation matrix*

Now I can hear you already... It's going to take hours to dial in the proper exposure making these tests. And you would be right! But once done, you will have settings for your printer and resin combination. Again, start with the resin manufacturer's setting and go from there. You may only need to run two or three tests and you're good to go.

OK, so we have covered the basics, and next time we'll get into many of the settings that the slicer software allows to really dial in your prints.

We'll also cover the art of supports and orientation. Look at the two tanks bellow. The one on the left was the first time I printed it. Look at all those lines running up and down.



*Cones of Calibration*



The one on the right is much smoother, and that was accomplished with the help of ARCTAN numbers or the formula of Orientation angle(°) = arctan (layer height/pixel width). So study up on your trigonometry boys and girls!

Also we'll discuss islands and how to find them along with what all these settings below are and what they mean.

Elegoo Rapid Beige

Brand

Elegoo

Name

Rapid

Color

Beige

Comment

Burn In Layers

Number of Layers

5

Exposure Time

12

s

Transition Layers Count

10

Light-off Delay

14

s

Lift Distance

8

mm

Lift Speed

40

mm/m

Normal Layers

Layer Thickness

0.05

mm

Light-off Delay

14

s

Exposure Time

2.8

s

Lift Distance

9

mm

Speed

Lift Speed

70

mm/m

Retract Speed

70

mm/m

Scene Scale compensation

Scale X

100

%

Scale Y

100

%

Scale Z

100

%

Compensation

Burn in Layers

0

mm

Normal Layers

0

mm

Support resin compensation

on

off

Price

Bottle Price

32.99

USD

Bottle Capacity

1000

l

Print Time Override

on

off

Time per Burn in layer

0

s

Time per layer

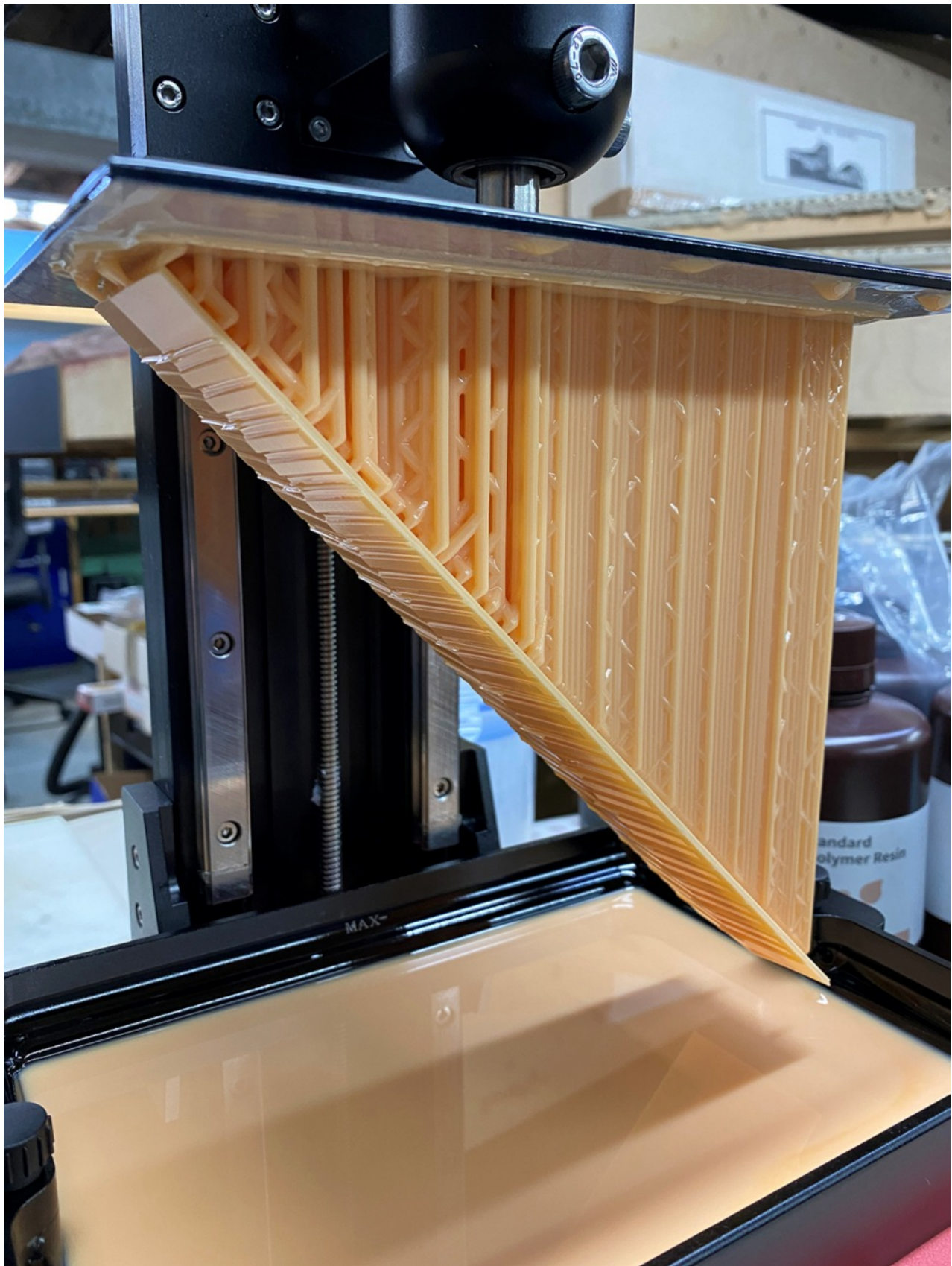
0

s

That's it for this time. If you have any questions or comments, please remember that I am NOT an expert, but I'll be happy to try and answer any questions you may have. In this case, Google and YouTube are your friends. Look up specific printers along with issues you may be having.

And, if you are on Facebook check out [3D Printing for Model Trains](#) and [3D Printing and Model Railroading](#).





*It feels so good to wake up after a 16 hours print and see that it actually works as it should! This is a test of an S scale roof that would be used for casting as you would never want to print it each time. There is more resin volume in the supports than the roof itself.*

# PENNSYLVANIA & PACIFIC RR

## MODERN ENGINE HOUSE

### Scratch-built Project Using Conventional and 21st Century Techniques

By Myles Marcovitch

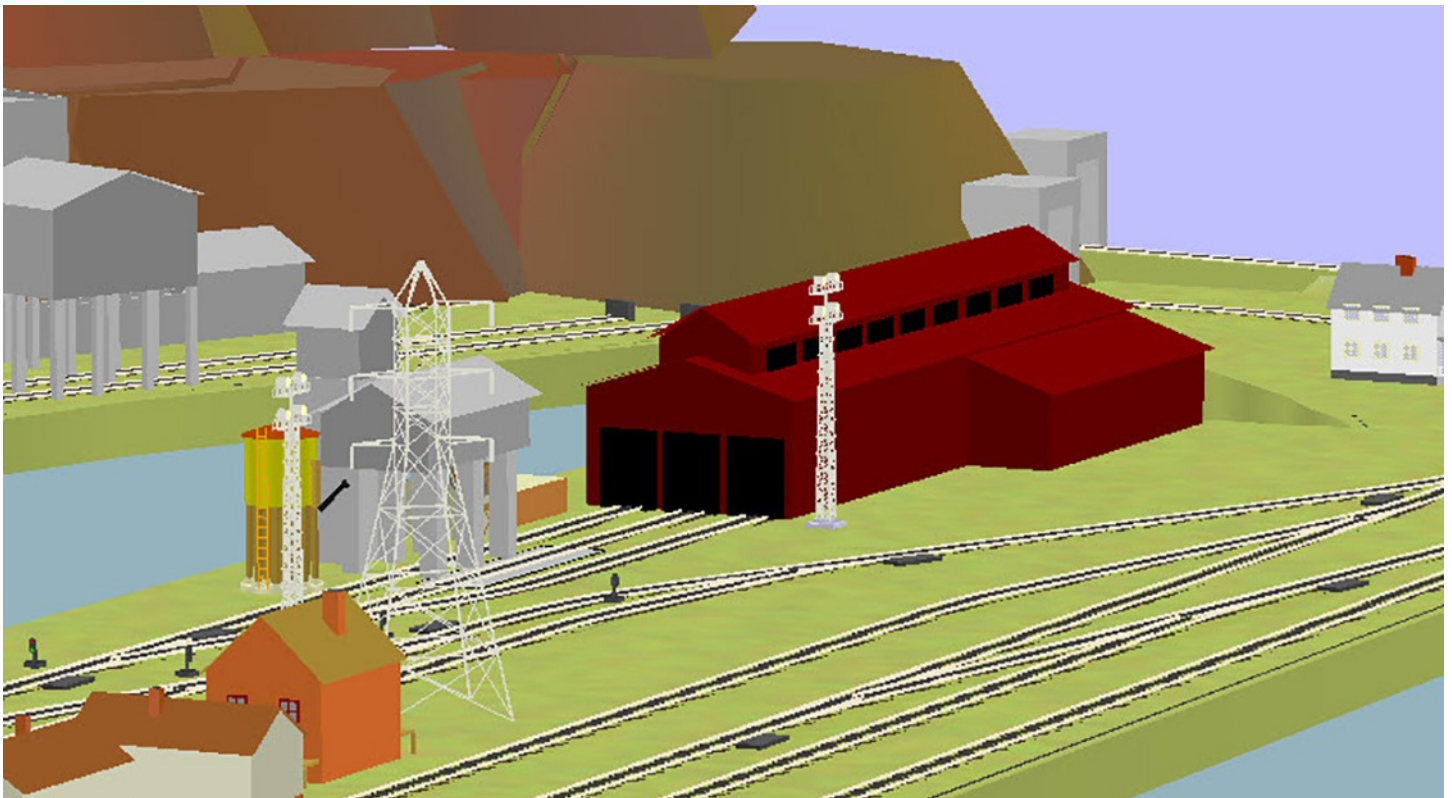
#### CONCEPT AND DESIGN:

From its inception, my 39 foot by 15 foot O gauge high-scale layout had an engine house. I laid the yard tracks in anticipation of its creation. My design had some restrictions. They were:

- accommodate some very large engines (Pennsy Duplexes: S1, T1 and Q2; and a C&O H8 Allegheny)
- 3.5" track centers which precluded commercial kits.
- 3-rail track

Building large, scratch-built projects is working without a net. There are no instructions with challenges waiting around every corner. When I was a kid, I would buy models based on instruction manual thickness and the number of decals (still do). With scratch-building, you're on your own.

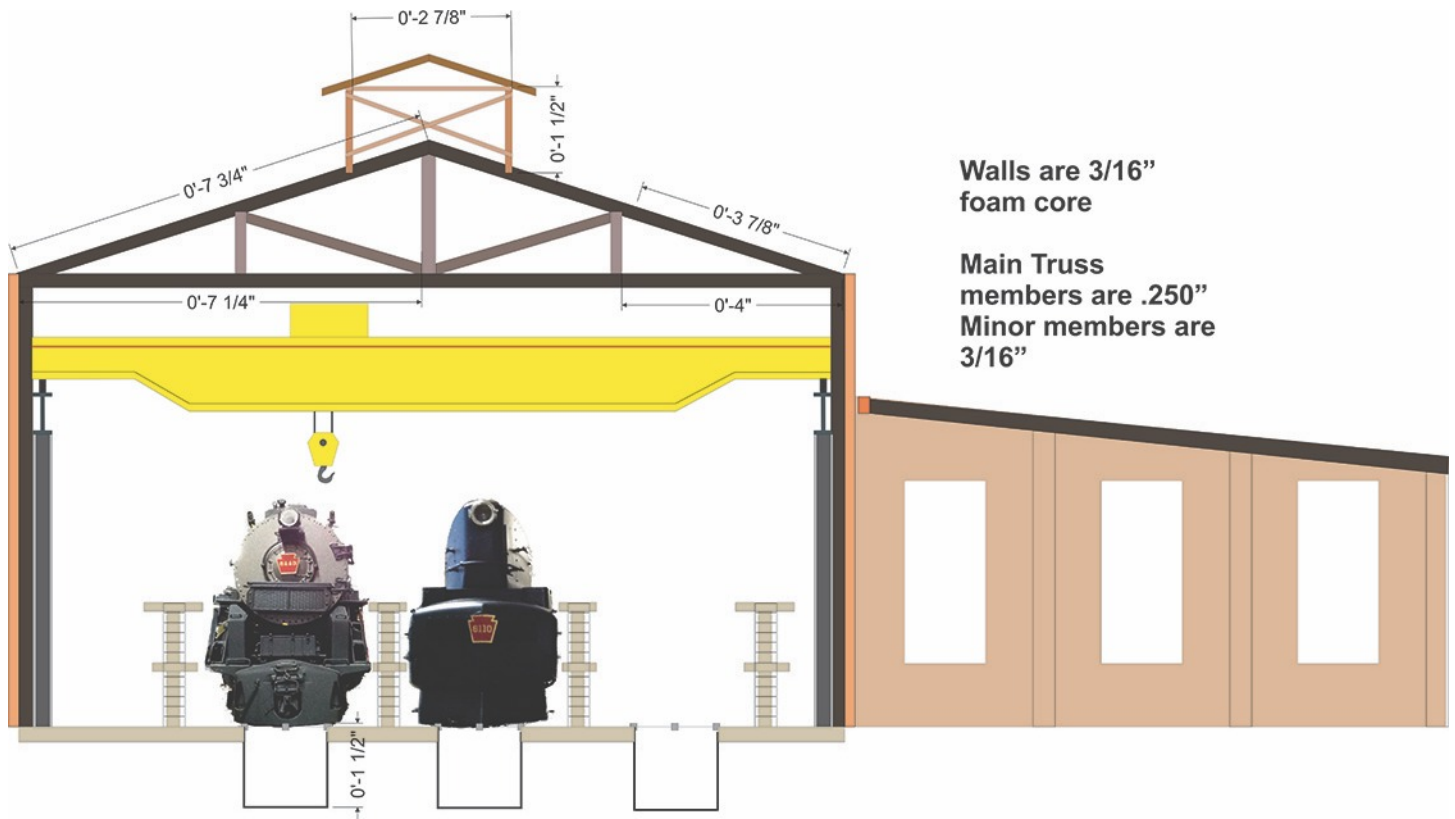
I was anticipating a challenging project that would probably be a bit boring with long straight sides, huge flat roof and numerous windows, but as you'll see, it didn't quite turn out that way. Design began with scaled front pictures of my two largest steamers to determine clearances. The loading gauge of these big engines is enormous. As it turns out, my Q2 actually snagged the door opening on the finished building, forcing me to do



*Early layout plan showing engine house prominently in place.*

some selective grinding to enlarge the opening. The engine house, like my other buildings is not permanently attached to the layout. Making this large structure removable created even more complexity.

Long before construction began, I created a cardboard mockup to get an idea about mass and space considerations. Did I have enough track on those sidings? Did I have enough space behind it? All of these questions were answered in the affirmative with the mockup.



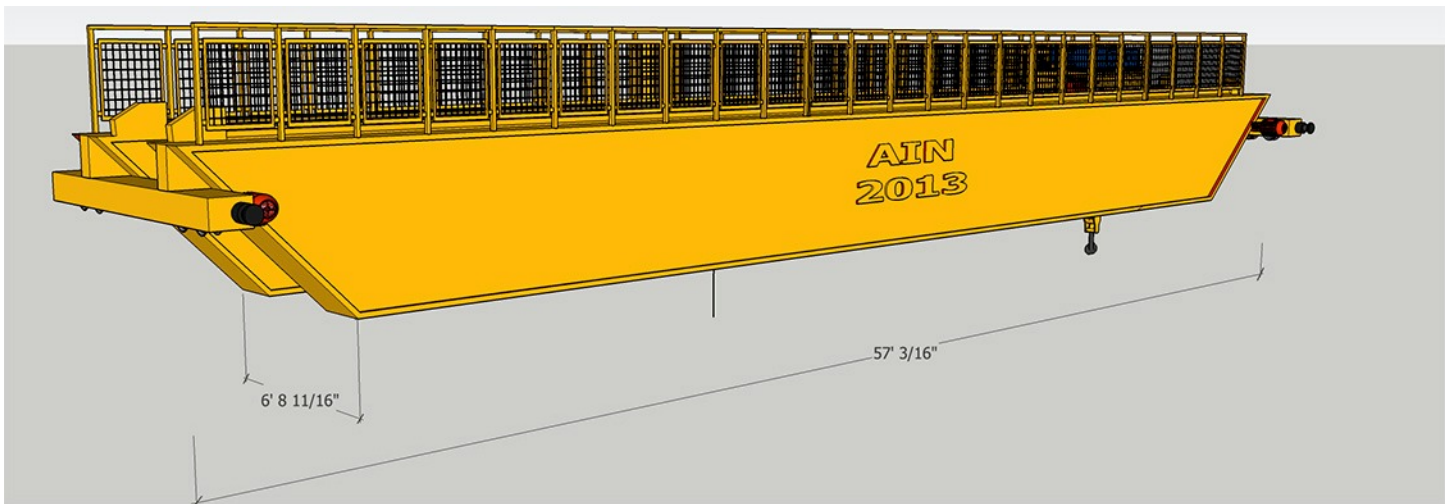
*My initial design mocked up to get an idea of fit. I went to a taller building to accommodate the overhead gantry crane.*

I changed to masonry construction for a more modern look and reduced laser-cutting cost. Laminated strips formed thick pilasters to provide side support. And there would be a machine shop connected to the building.

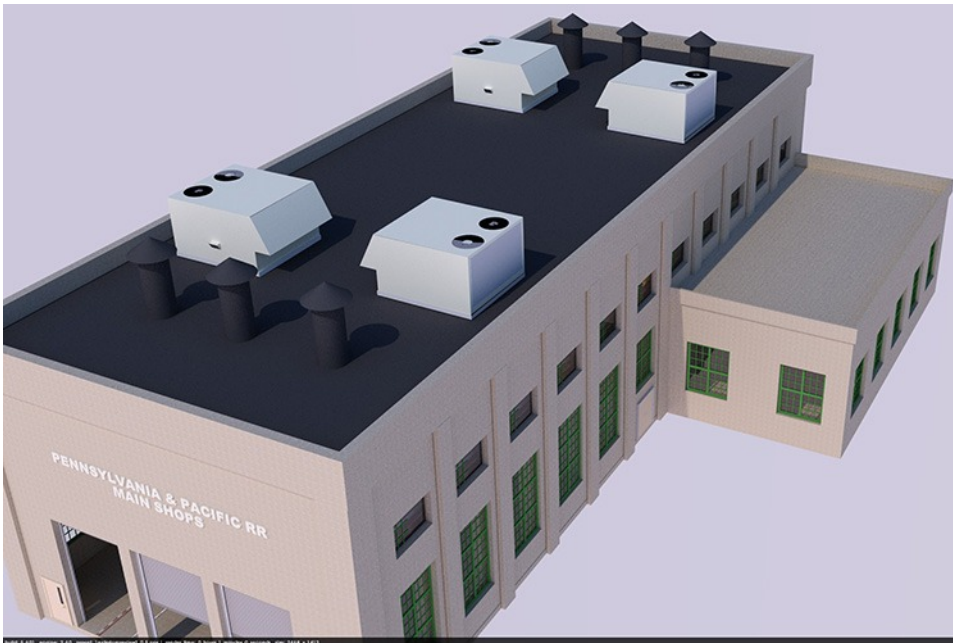
The building was going directly over very well-secured existing track. Not only was the track and vinyl roadbed held with construction adhesive, it was also ballasted and surrounded by Hydrocal casting plaster. The Hydrocal raised the mean ground level simulating buried yard track. That track was not coming off, ergo no inspection pits.

My design included a non-working overhead gantry crane. I found a design in the SketchUp 3D

Warehouse, but it was too narrow. On SketchUp, I stretched it to make it fit. I still wasn't sure how I was going to make the gantry.



*Modified Overhead Crane drawing downloaded from SketchUp 3D Warehouse.*



*Initial roof design included modern HVAC units which were changed somewhat as built.*

Stephen Miley, Rail Scale Models, did the laser cutting. While I would have liked 1/4" wall thickness, Stephen was restricted to 1/8" thickness and 24" length. With laminating the pilasters on both sides of the walls, the 1/8" thickness worked. Stephen's length restriction required me to include splices on both long walls, the floor and roof. The splices complicated the job especially with the floor and roof comprising four parts each.

At this point, I was still unsure of how I was going to make certain parts. Shapeways 3D printed the hoist machinery from my drawings for \$45 dollars. I did not use them. They were beautifully done, but were too big!

I had no idea what I was going to do to build all the rest of the details including the machine shop, but began by ordering the laser cutting. The laser cutting included the walls and windows, roof and trusses, acetate glazing and lettering. The roof, floors and walls were MDF, windows were adhesive-backed RC board. Incidentally, Rail Scale now produces Rusty Stumps entire laser cut product line since Walt Gillespie's retirement.

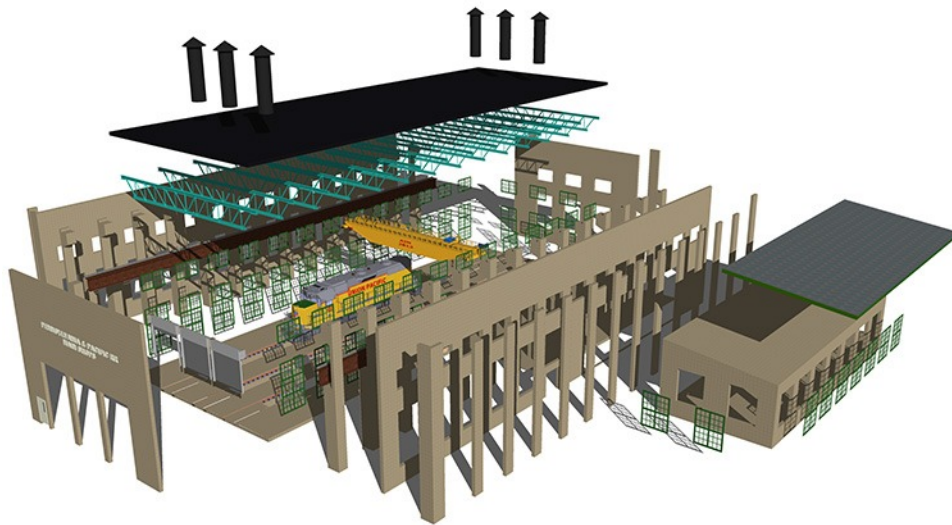
Even with my best efforts with my SketchUp drawings, there were some site specific issues that needing resolution. The multipart floor was one. The two outer panels are attached firmly to the 40" side walls, but the two center strips had little gluing surface and were very weak. My exploded drawing showed the part relationships and showed the large parts count. As complex as it is, the exploded drawing did not reflect the multi-part walls, floor and roof, thereby adding to the already complex design. I converted the SketchUp drawings to 2D, exported them to CorelDraw and I drew the laser cutting drawings directly on these images.

I Emailed the files to Rail Scale Models.

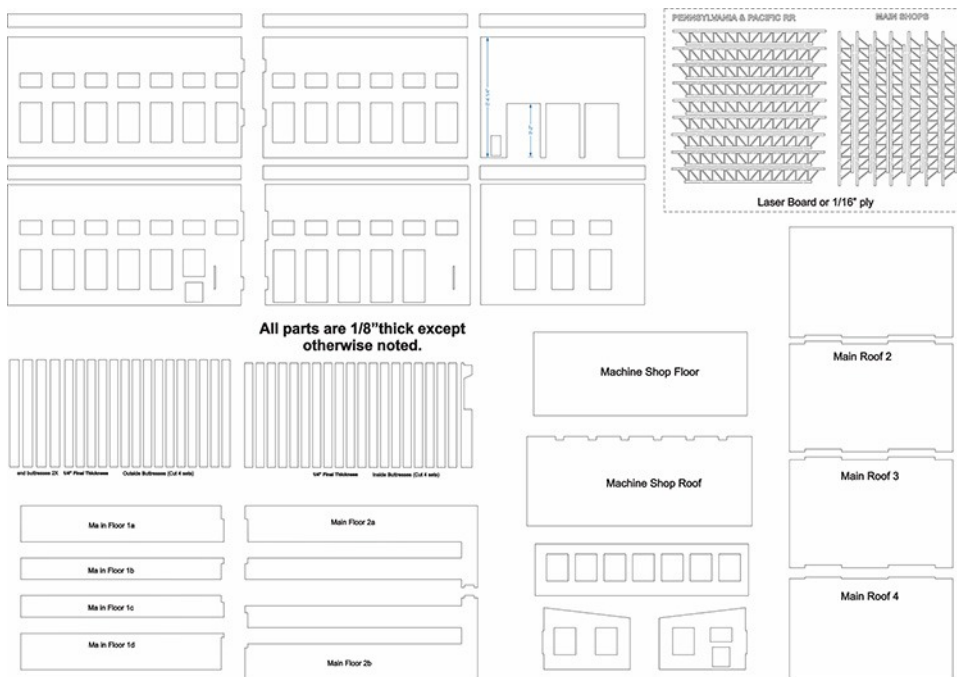
## CONSTRUCTION BEGINS:

The product arrived from Rail Scale in March 2019. I couldn't wait to clamp the walls together to double check critical dimensions like track spacing and how it fit on the site. I got the parts out for the machine shop and realized that I had put the tabs on the wrong end of the short walls. I thought I had this figured out during design, but did not. A quick call to Rail Scale and the correct parts came in a couple of days. Stephen was also annoyed that he didn't pick up the error.

Working on another project gave me time to think about how to approach the Engine house. My biggest concern was preparing the site and how to remove the ballast and plaster surrounding the tracks. I found that ballast really sticks especially where you're trying to remove it. Using the clamped-together building as a template, I marked out the perimeter where the site needed to be excavated.



*Lots of parts to make what is essentially a simple building.*



*The entire cutting plan was on one huge page which was separated to load the cutter.*

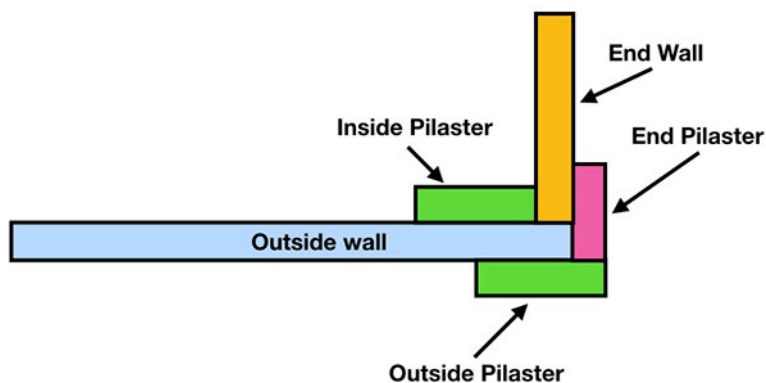
After trying to cut the foam base with a hotwire cutter, I ended up removing the foam layout base completely with a utility knife and straight edge. I then cut some wood biscuits to provide a firm base for the building.

The machine shop needed the same treatment, but I held off until the main building was constructed to be sure of its location. I backfilled the gap between the building and the excavation after construction.

Construction started with gluing the floor pieces together starting with the troublesome narrow joints. I reinforced the joint with some strip wood running lengthwise.



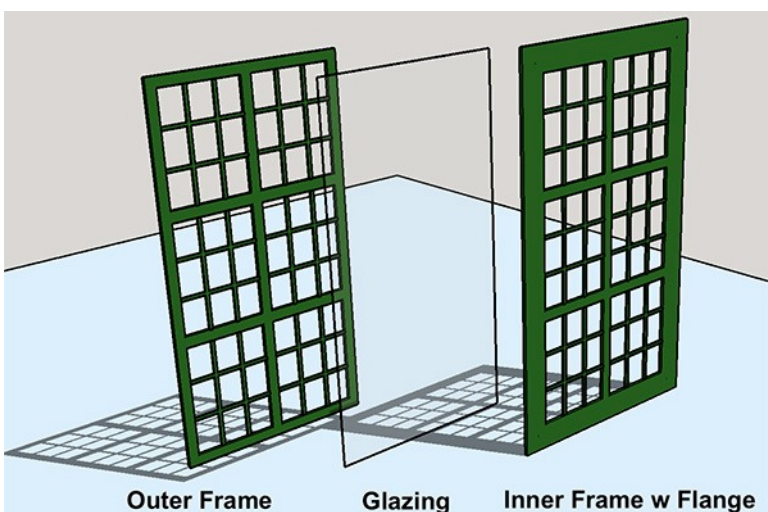
*Wooden foundation blocks raise the building to the correct height in relation to the railhead..*



*Because of all the pilaster overlays, the corners became complicated and, at times, confusing.*



*A laser cut buttress gluing template helped me position the gantry and roof templates for glue up.*



*Windows are a 3-layer sandwich of laser cut, adhesive-backed laser board and acetate glazing.*

This was too weak for the right and left side joint and I ended up using aircraft ply doubling to keep it together during handling. Clearance was needed around feeder wire solder joints.

With the floor done, I glued the building's two-part main sides together without concern about this joint's strength as they would be reinforced on both sides by the pilaster laminations. For side-one I glued the interior pilasters in place which sat between each window. After making sure I was using the shorter inside pilasters, I aligned them on a scribed line representing the floor thickness. The floor sits between the walls and the pilasters sit on top of the floor. I used Titebond II wood glue and held everything using gravity and quick release clamps. For side two, I started by adding the pilasters to the outside first. This change led to confusion around the corner overlaps, and this confusion led to some rework. The illustration shows this complicated relationship at the corners.

Sitting on top of the interior pilasters are two sets of  $\frac{3}{4}$ " square buttresses. The lower longer ones support the overhead gantry crane girder on alternating pilasters. Above these sit extensions that support the roof trusses on each pilaster. I sanded the upper buttress' lower chamfer on a newly purchased 4" belt/disc sander. The crane rail buttresses glued flush to the bottom of the pilaster. The roof buttresses glued below the pilaster top by the thickness of the roof truss extension.

During glue-curing time, I started building the self-stick windows. The windows were three sizes: 3-panel main, 2-panel machine shop and 1-panel upper tier. Window construction was straightforward with the outer frame, glazing and inner frame with mounting flange.

The windows installed from the engine house interior and fit very closely. Any overhanging glazing prevented the window from seating properly requiring trimming the overhangs with a new #11 blade. These were set aside until later.

Interior painting preceded wall gluing. The paint scheme was gloss white up the 8 scale feet, and Rust-Oleum gloss gray to the roof. I painted the white without masking and then marked the demarcation line with a surface gauge. I masked

the scribed line for the gray. When the paint was dry, I fit the four walls together for inspection. It looked terrible! At one corner the paint line was a  $\frac{1}{4}$ " higher than the other corner. This repeated on the other side.



*A Starrett surface gauge was supposed to engrave a level line around all the interior walls... that was until it was slipping during the process.*



*After correcting the scribing error, the wall paint came out as it should... matching in the corners.*



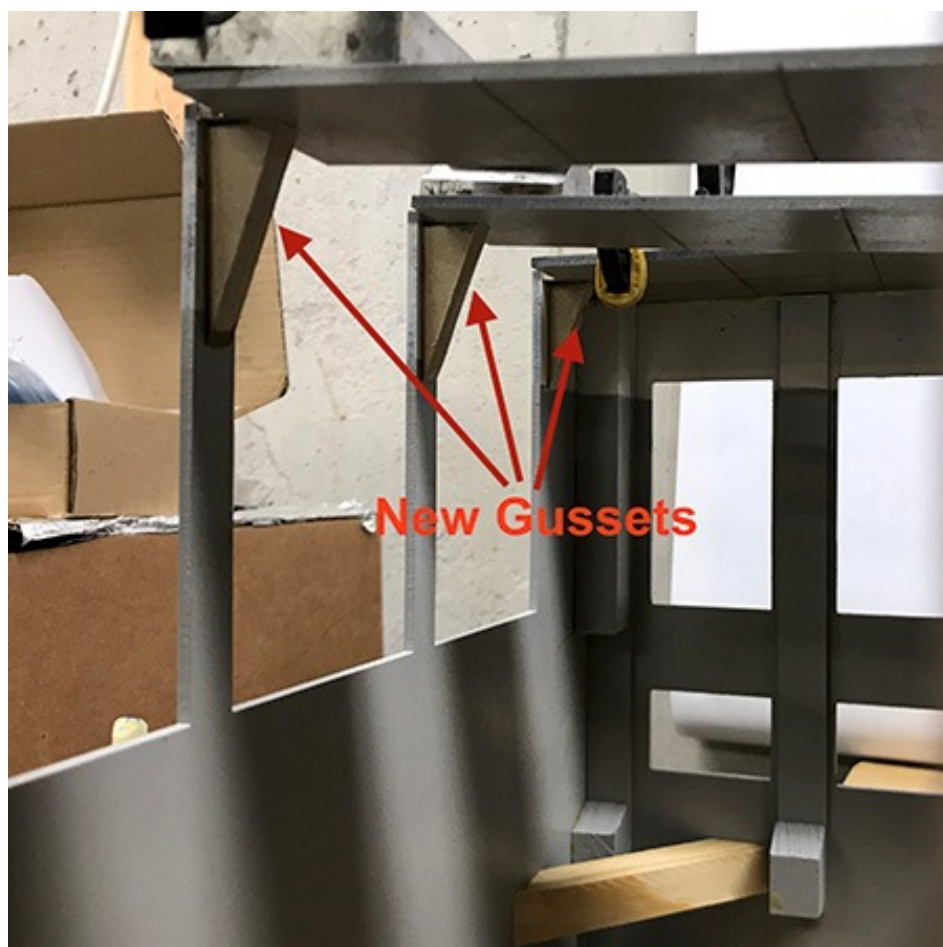
*My method for reducing the sag in the center floor legs until the glue dried.*

I hadn't tightened the lock screw on the surface gauge sufficiently and it was moving as I scribed the line. After re-scribing, masking and re-painting, the paint was correct.

After interior painting, I was able to glue the sides together to make a building. I glued opposite corners to their respective sides and after they dried, glued these right-angled structures together to make a rectangle. This facilitated handling the large pieces. The corner buttresses provided ample gluing surfaces and produced square corners.

I had to add some stock to correct the floor plate being short by one material thickness. While gluing the side floor portions went well, gluing the center two legs were another matter. They were unsupported for their entire length except at the back and front. Furthermore, they were flexible 1/8" MDF. They sagged terribly which impacted the gluing angles at the ends. I put some temporary rods across to lift them in the other direction until they dried.

The middle two floor pieces had very little surface area to hold glue at the door end with the thin walls between the doors barely a half inch wide. I glued some angle brackets to the floor and wall at those points to increase strength. The picture shows the building upside down.



*Jerry rigged gussets to reinforce the critical front to floor joints.*



*Rattle can painting of Rust-Oleum Camouflage Tan was done outside to avoid smelling up the entire house.*

## EXTERIOR PAINT:

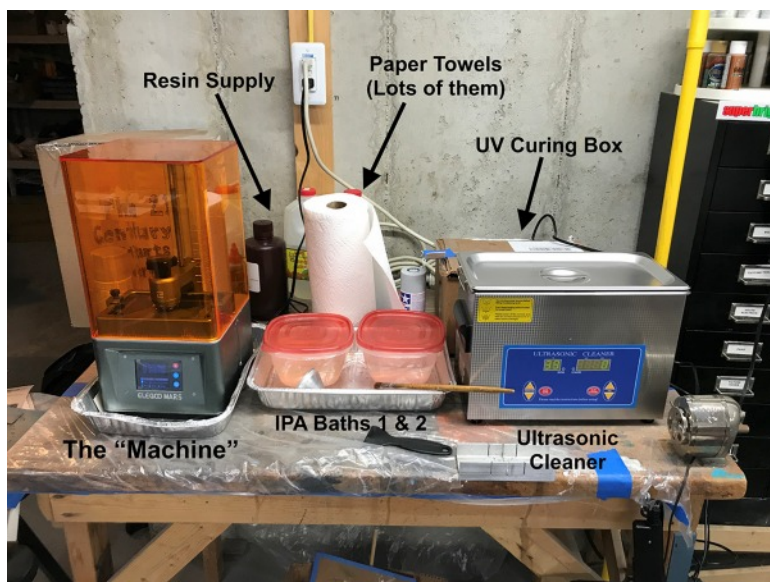
Exterior paint is Rust-Oleum Camouflage Tan; a perfect concrete color. All the openings had to be fully masked so overspray would not reach the fully painted interior.

I don't spray solvent paint indoors and it was a very hot day when I brought the building outside to paint. Due to the heat, some of the paint flashed before hitting the surface, resulting in some areas of very rough paint. More paint did not help. After the building was painted, I let it fully dry overnight, sanded the bad areas and just did a little touch up work.

## NEW TECHNOLOGY ARRIVES:

In mid-June 2019, I was told that Amazon was selling a UV High Resolution Resin 3D printer for \$350.00. Thinking this was a mistake since resin printers cost something more than \$3,000, I rechecked and it was a fact. After years of waiting, Hi-res 3D printers were available to the hobbyist. A resin machine under \$500 was a game changer. I bought an Elegoo Mars 3D LCD Matrix printer with resolution 5 to 10X better than existing Filament Additive Machines which populated the amateur market at the time. (author note: in the two years since I bought my unit, the market is flooded with more manufacturers, upgraded technologies and larger capacity units. You can get my model for \$150.00 USD.)

The two previous resin printing methods—laser or Digital Light Processing—used expensive schemes to create the patterns in the resin to make an object. This new method, LCD Mask, uses a smart phone screen to pass UV light from a UV LED lying below.

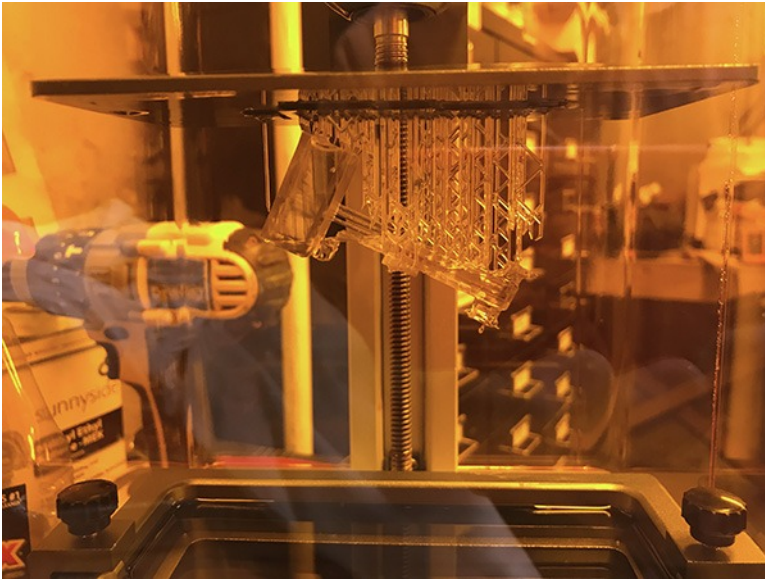


*A complete 3D Resin Printing workstation includes the printer, alcohol rinse baths, an ultrasonic cleaner and a post-curing UV box with a turntable.*

By the time the printer arrived, I had already brainstormed how it would affect the engine house project. The printer changed everything! Besides the hoist for the gantry crane, there were roof details, doors, lights and the machine shop. There are few machine tool models available in 1:48. Western Scale Models produced a white metal line of Turn-of-the-Century machines, but I needed contemporary tools for a 1960s building. Therefore; I had to make my own. Scratch-building was not an option for me.

It was a steep learning curve. 3D printing is an entirely new skill set involving the machine itself, drawing parts for 3D, and setting up those parts for printing. Prints take time, but I was able to print most parts overnight. Print time is directly related to the part's height in the machine, individual layer thickness and exposure time of the UV light to harden each layer.

The just-printed part is coated with uncured resin. I clean mine with concentrated isopropyl alcohol in two baths and an ultrasonic cleaner. After removing the support network also created along with the part, I harden



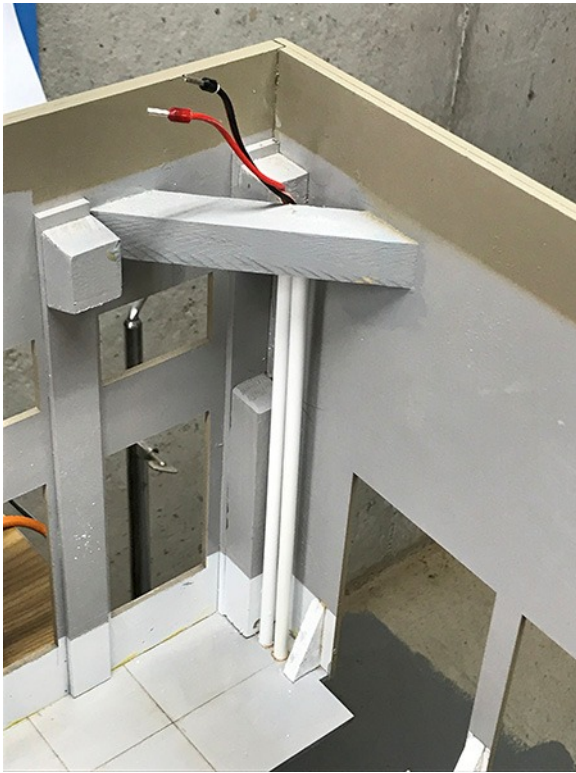
*My first print failed because the drawing wasn't a solid. The lathe bed wasn't actually connected to the headstock and the print had a large gash through its middle.*

the resin under 405nm UV light. The placement of supports is the most difficult aspect to master and is too comprehensive to describe here. Suffice it to say, most print failures stem from support failures. There are many excellent tutorials on YouTube to help you along.

The second most common failure mode is poor part design. To be a good at 3D printing you must master 3D drawing software and understand the printer's dynamics. While there were some ready-to-print objects on the Internet with more being added all the time, most were not usable for us model railroaders. After mastering 3D Printing basics, I redesigned the hoist and printed it as a single part.

### **The Gantry Construction:**

The gantry rail consisted of 3 pieces of Plastruct I-beam and some Atlas O gauge rail J-B Welded on top. I used solvent cemented styrene splice plates to hold the I-beams together. The rail was from some spare Atlas O track. I soldered the rails together using Atlas rail joiners to make the almost 40" track length. Archer Fine Transfers rivet decals on the splice plates finished the job.



*Top: Corner brace added to stiffen the side walls since the roof was no longer going to be glued to the side walls. This unscheduled change caused some problems later in the build.*

When cured, I was able to bring girders and building together. It was difficult and required bringing the building back into the shop. To secure the rails while the epoxy cured tiny wood screws. Pilot holes were created with a 0.032" drill in a Dremel. Once the gantry rails were in position, I was able to take accurate gantry measurements. The printer also let me design and grow the entire gantry truck assemblies and the wheels, thereby eliminating any machining or soldering.



*I enlisted lots of clamps to stabilize the rail to J-B Weld it to the Plastruct I-beam forming the gantry support rails.*



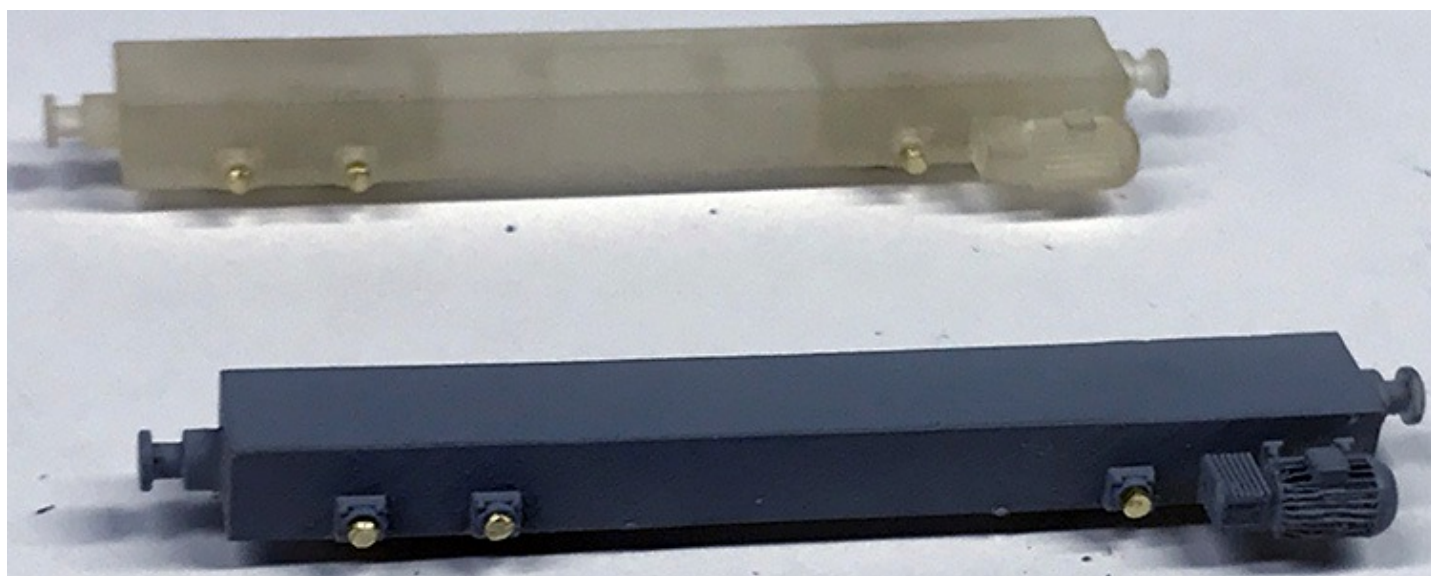
Before the machine, I would make these out of soldered brass. The wheels are held in with some 1/16" brass rod.

Using the trucks placed on the gantry rail, I measured the span. Gantry girders have a 1/4" square lug that sits on truck top so the measure was from two trucks' back edges. I transferred this measurement to the 0.040" styrene sheet comprising the girder faces. The girder ends tapered 45 degrees so the angle apex represented the total measurement. The girders needed internal stiffeners due to their almost 15" length. Building the gantry structure was the most conventional aspect of this entire project. After fitting some internal Plastruct spacers between the crane girders, I epoxied the trucks to the gantry frame while sitting on the gantry rails. I weighed the gantry with gravity clamps to keep this alignment while the epoxy cured.

*Below: Completed gantry trucks prior to painting. While the wheels rotate, the gantry is a static model.*

*Bottom: Gantry girders are the one straight forward styrene scratch-build task in the entire project. The trucks attach to the 1/4" square protrusion at the girder ends.*

*Gantry rail installation showing tiny screws that I used to hold the girder in place until the epoxy cured.*

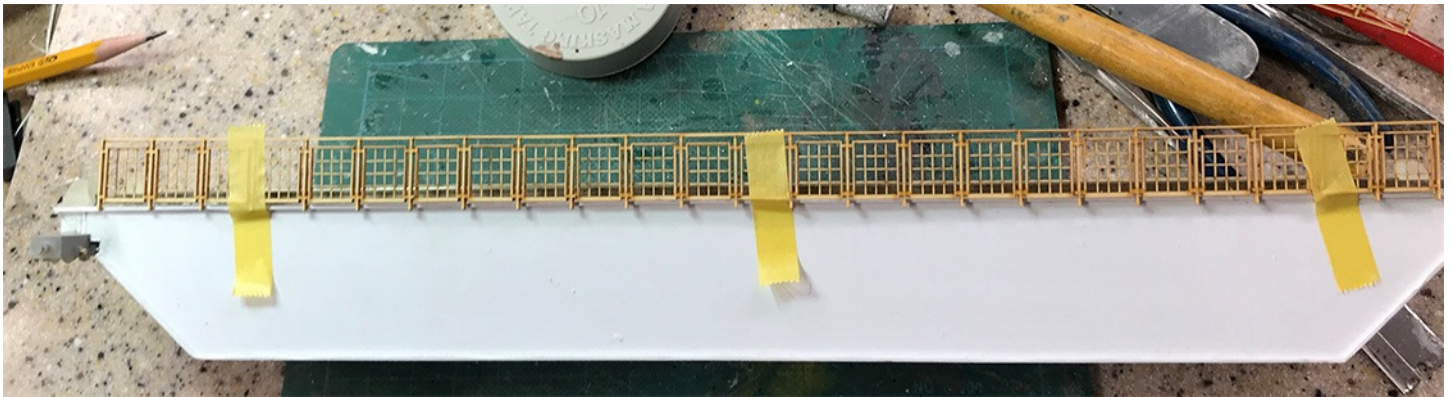




*Gravity clamps held the gantry tightly to the trucks until the epoxy cured keeping the assembly aligned.*

I had Rail Scale laser cut the 3-part gantry railing from self-stick laser board. It's a lamination of a center piece with the grill work and two outer layers with the railing frame. It resulted in a good looking and stiff model railing. If I were to build a gantry again, I would have the main upper surfaces laser cut with accurate notches for the railing mounting posts. Without the notches, I had to glue the railing to the edge of the styrene top plate which was touchy with very narrow glue surfaces. CA didn't work so I used epoxy. Regardless, even epoxy has challenges adhering to styrene.

The gantry color is Tamiya Flat Yellow minus the hoist mechanism. The last gantry part to install was the 3D printed hoist mechanism and hook. My final hoist print ended up about 1:32 scale. 1:48 was too insubstantial and wouldn't have been seen.



*I taped the railing to the gantry girder edge to stabilize during the glue up.*



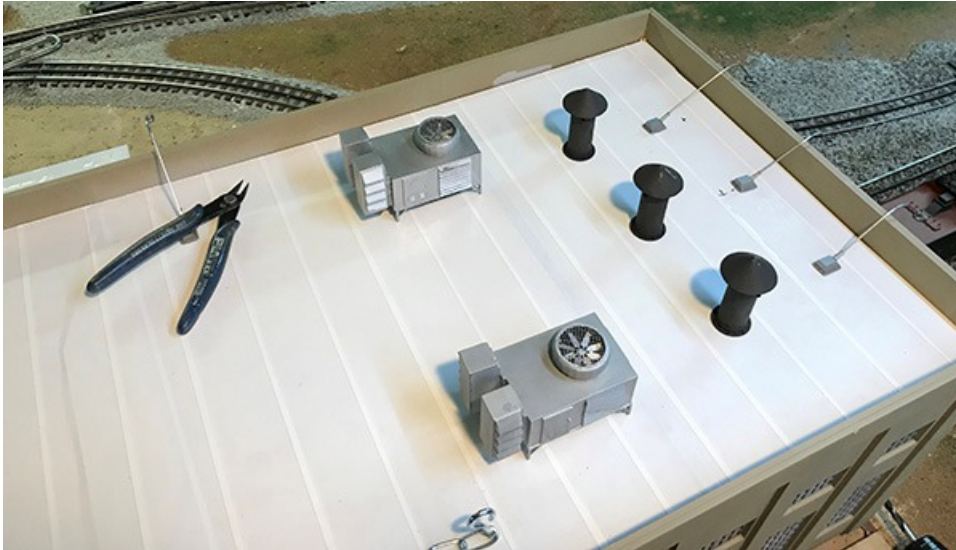
*Completed gantry with hoist and hook. Everything is glued down tight and is not operable.*

The hoist drum is separate which facilitated winding the hoist string using my slow speed power screw driver. Thin CA holds the string in place. I hung weights on the hook to pull the cables taut and again applied thin CA to keep the proper hanging posture.

### Building the Roof:

When I changed my design to have the roof trusses attached to the roof, there was a lack of support holding the long side walls in alignment and they bowed outwards. I pulled the walls straight with a single 3/4" square piece of wood screwed to the upper middle of the side walls. I also added diagonal braces of the same material to the corners on the right side. While these mods solved the strength problem, they later caused interference with the roof trusses.

The roof is a huge and flimsy construct with four pieces of 1/8" MDF edge glued together. I put CA-soaked



carbon fiber tape on each joint to strengthen them. It was still flimsy! The joint failed when carrying it. I then used an aircraft plywood doubler at the center joint. I arrived at the decision to glue the trusses to the roof when I realized that not doing so blocked access to the interior. I also added longerons between trusses which stiffened the entire roof. These longerons provided a location for the LED light fixtures. These field mods, again, forced additional changes in the building's framing.

*Both the HVAC units and the smoke jacks were produced on the new 3D printer. Also shown is the exterior lighting whose bases and heads were 3D printed.*

With almost a 1/4 acre flat roof, it needed details to prevent boredom so I added a mix of modern HVAC equipment along with smoke jacks for the steam engines. I drew some HVAC units based on another SketchUp design. Each unit consisted of 6 parts. I 3D printed four and then sprayed them rattle can Tamiya Bare Metal Silver.

I also 3D printed the smoke jacks in three parts: main tube with cone, bottom collector bell and trim ring. The cone to tube joint took several trials to get right. The trim ring, including NBWs, finished off the rough opening in the roof.

I went with white duct tape to simulate a vinyl membrane roof. I drew guidelines so the strips would be relatively straight, but keeping the overlaps consistent was



*Cross bracing between trusses greatly stiffen the entire roof. Image also shows LED strip lighting and lower portion of smoke jacks.*



*Both the highly detailed entry doors and the roller door mechanisms were 3D printed. Really adds some interest to an interior that you view through the windows.*



challenging. I made cutouts so there was bare MDF to get a good glue joint with the HVAC units. With the trusses stiffened, the entire roof could now be easily lifted to get inside and I had to get inside often.

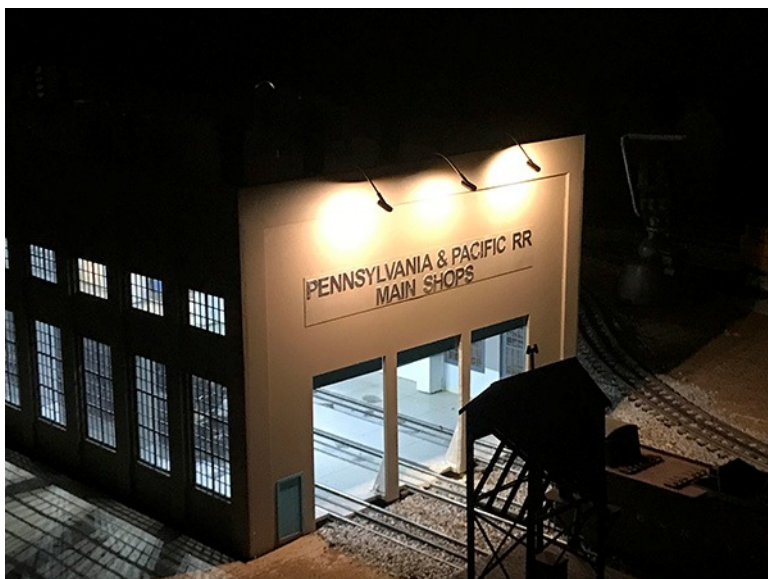
### **Other Details and Lighting:**

I found a drawing of a commercial entry door including crash bars and all associated hardware. My printing attempt failed due to warpage of the thin doors, but they were salvaged by laminating the printed door interior to some sheet styrene.

The main building interior lighting is LED strip lights, connected in four series/parallel circuits.

Each leg is controlled by a CL2N3 LED driver chip. These inexpensive, convenient, micro- circuits take any voltage from 5 to 90 VDC and output 20 milliamps for the LEDs. They eliminate fussing with individual current limiting resistors. The lighting is powered by a 12 VDC, high wattage LED power supply. These light strips come with adhesive backing and are easy to

*A mixture of cool and warm white LEDs illuminate the machine shop. Everything you see was 3D printed.*



*Exterior lighting really highlights the chrome layout name on the engine house.*

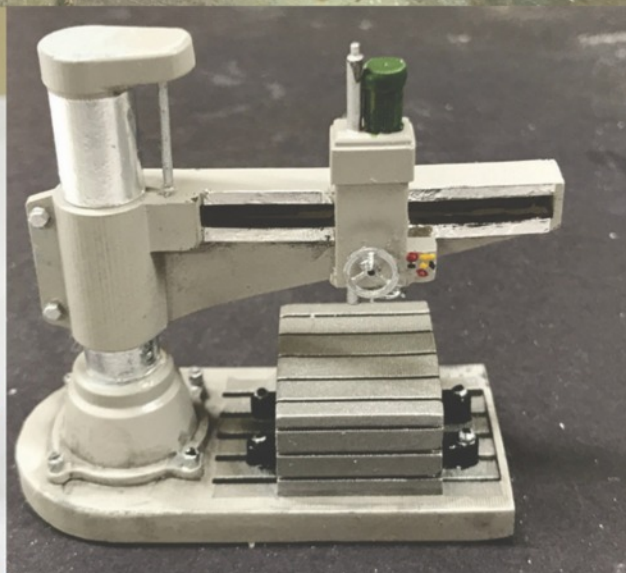
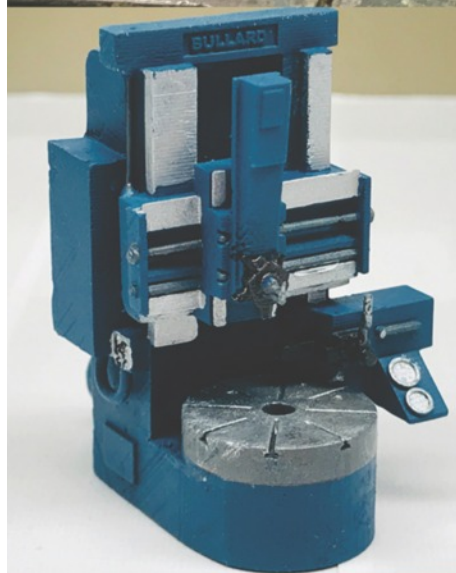
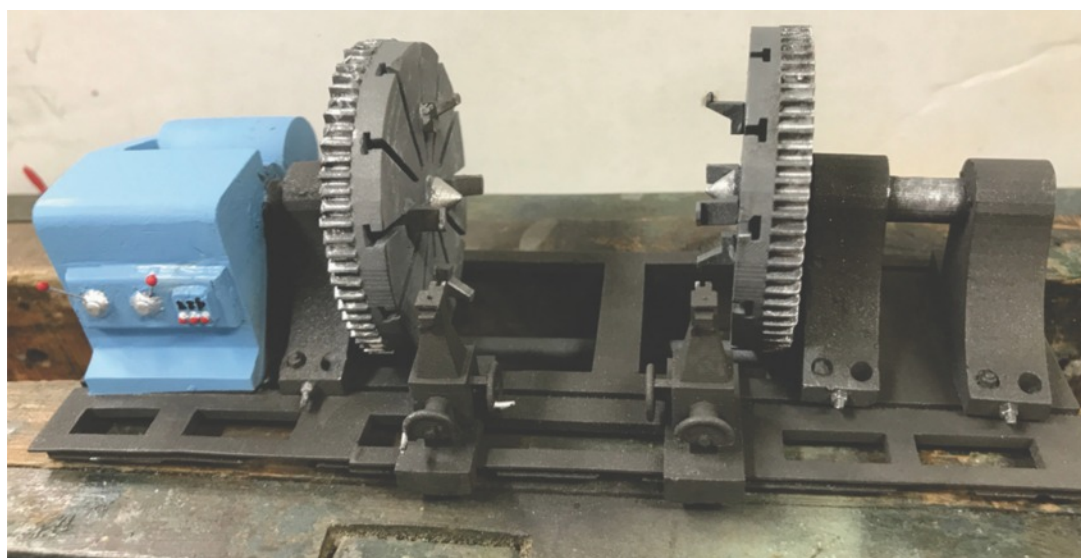
install. Machine shop lighting consists of two LED strips, and a copper-foil series circuit with warm-white, surface mount LEDs. Mixing the LED strips and surface mount LEDs gave a warmer lighting. Again, I used the CL2N3 driver chips to power them.

For exterior lighting, I 3D printed lamp heads and bases from my own design, connected by 1/16" aluminum tubing. Wiring the LEDs with magnet wire facilitated running the wires down the small aluminum tubes.

I had my layout's name — Pennsylvania & Pacific RR—laser cut from adhesive backed laser board. The rough texture of the Rust-Oleum paint concerned me regarding letter adhesion.

Attaching letters directly on the building also made letter alignment trouble-prone. Mounting the lettering on a piece of clear styrene (so I could see the computer drawn layout below) solved that problem. Bare Metal Chrome foil on each letter helped them really stand out. I used contact cement dots to adhere the building-color-painted letter board to the building.

I had to remove the tie-covering strips between the rails you see in some of the images. They interfered with the power pickup from the 3rd rail. Feed wires and other irregularities forced the cover strips above the 3rd rail's height. Hiding the ties would have looked better, but the trains have to be able to move in and out under their own power.



*I 3D printed these machines (Niles wheel lathe, Bullard vertical turret lathe and radial drill) from my designs based on photos.*

My 3D printing prowess was put to the



*I designed and 3D printed three Pennsy-style bumpers to prevent locomotives from exiting the building via the rear wall.*

test producing 1:48 machine tools for the machine shop. Some designs came from SketchUp's 3D Warehouse — with major editing. Others I drew from scratch including a freelance Niles 100" locomotive wheel lathe, large radial drill press and Bullard vertical turret lathe. I printed work tables, storage racks and shelving.

There's still more to do, but with the machine shop's hinged roof I can add things later.

Another 3D printing project were Pennsy-style track bumpers. I was able to print them as a single piece including the nicely detailed nut/bolt/washer detail. They're held to the floor with contact cement strips, but not very secure when hit with an 11 pound locomotive. I may have to do something more substantial.

I added a caged ladder to get to the gantry control deck and one of my 3D printed EMD 567 prime movers. I drew the EMD in SketchUp based on one dimension, its 8.5" bore diameter, and scaled the entire engine based on a single cross-section drawing. I was even able to detail and print the cylinder head detail with an open valve cover. The printer even resolved the injector rack pushrods.

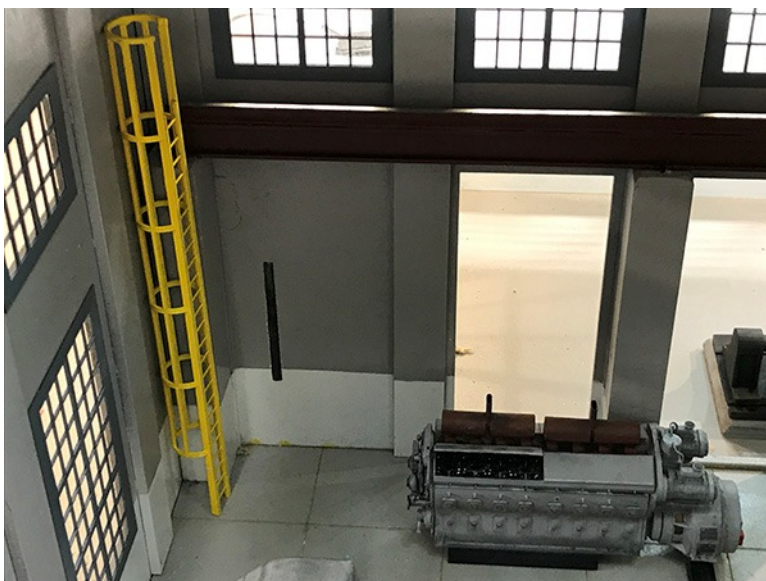
Models of diesel prime movers are hard to find on the O scale market. I also created a Baldwin VO 1500 Turbo, an FM Opposed Piston, and an ALCo 514. These engines adorn the back lot and are now accompanied by a 3D printed heavy-duty fork lift truck which is a topic for another article.

### **The Site:**

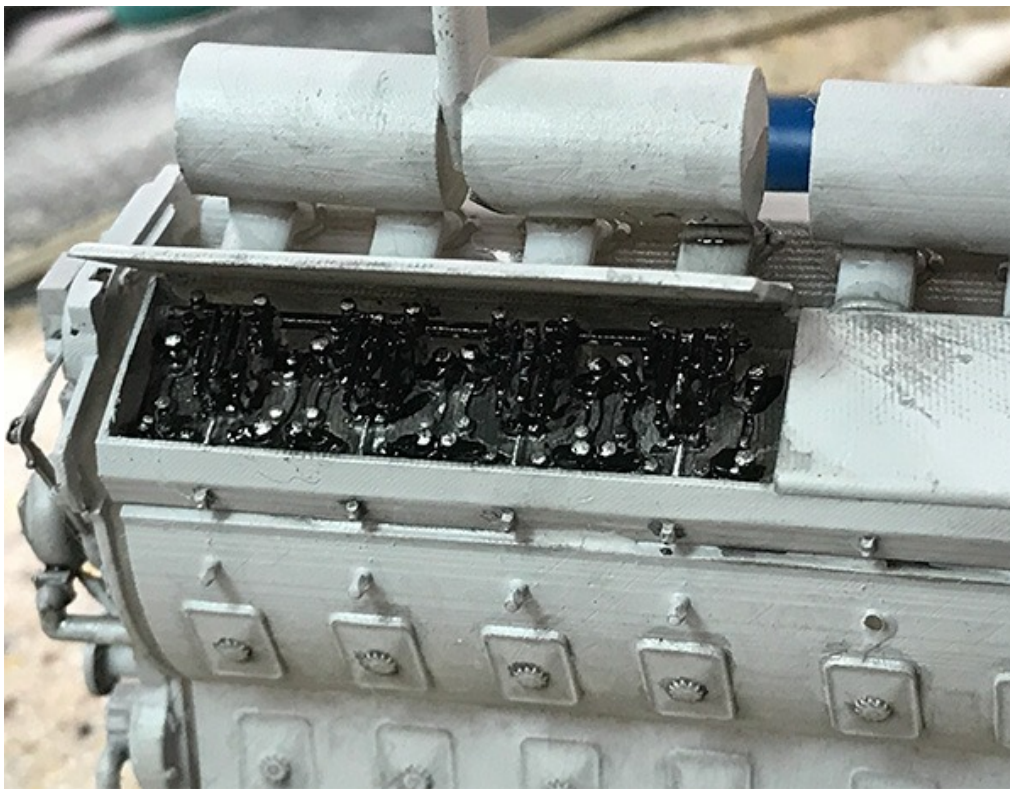
Site landscaping finished the project. Like a real construction site, the wall base had to be backfilled. I protected all the walls with Press-N'-seal food wraps so plaster wouldn't spoil them. The back lot needed remodeling to create more flat space. I used layers of cardboard and Hydrocal-soaked paper towels for the bulk of the job with Scuptamold used to finish it off. After drying for three days, I painted it earth-tone household latex to hold Woodland Scenics fine brown ballast simulating dirt. I then applied various ground covers. Finishing it off was W-S foliage and weeds.

A long chain link fence protects the back lot. I build chain link fences using Dennis Brennan's building jig, 1/16" and 3/32" brass tubing and bridal tulle. It's all soldered together and painted a galvanized steel mixture. It's very convincing.

I use pre-colored, water-based tile grout for the employee parking lot. Tinting is black artists tube acrylic simulating macadam without



*Access ladder to the gantry and an EMD 567 primer mover as more interest in a big building.*



affecting cure time. I roughly painted white over marked-off parking slots. I masked the white with narrow tape and painted the “asphalt” with a dark gray mix of artists acrylics. The building was essentially finished.

What made this project so unique and gratifying was melding conventional modeling with 3D resin printing.

Without the printer the finished product would have been much less interesting to build and view. While it’s a steep learning curve with different skills, I would urge my fellow modelers to think about it. Once mastered, it changes everything we do.



**Baldwin VO 1500 Turbo**



**EMD 567 V16**



**FM Opposed Piston Engine**

*Top: 3D Printer EMD 567 Prime Mover in O scale. 3D printing was able to resolve all of the valve mechanism that I drew in SketchUp.*

*None of these prime movers are available in O scale from anyone, anywhere, so I drew my own and 3D printed them. The FM is an HO print.*

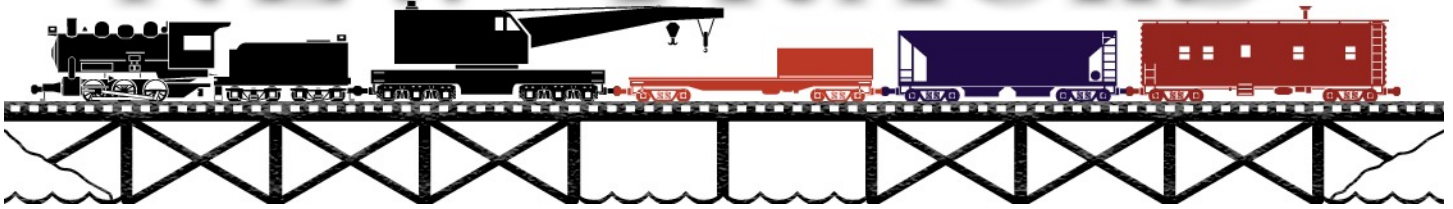


*Exterior landscaping consists of ground cover and a gravel storage lot. More work needs to be done to add realism with weeds and longer grasses growing up in ditches and next to the foundation wall.*



*The left side has the parking lot with a tile grout “asphalt”. Missing is the fascia boards on this inside edge of the layout. It’s coming.*

# NEW TRACKS



**Mentor Definition: A Trusted Counselor or Guide**

**By Contributing Editor Jim Kellow MMR**



## **MODELING WITH MENTORING FROM TALENTED MODEL BUILDERS AND EVEN FROM MODELERS IN OTHER HOBBIES**



Stan Cedarleaf passed on New Year's Eve.

I just found out about the passing of Stan Cedarleaf, a friend, and a great modeler. Stan was a guest on my "New Tracks" Zoom show, and I was able to profile him in one of my "New Tracks" articles. He also personally provided his creativity and skills to help me complete some of my modeling projects. I had just contacted him about a new project and got this message in reply.

"We are responding to inform you that Stan passed away suddenly and unexpectedly on New Year's Eve. Unfortunately, there is no one with the passion, knowledge, skills and abilities to continue his work. Best regards, the Cedarleaf Family."

This is a real loss for me personally, and of course to our hobby. Stan was so nice and easy to work with and his creativity was second to none. My condolences to Stan's family. He will be missed.

### **William K Walthers Inc 2022 College Scholarships**

I recently received this announcement from Walthers. Congratulations to Walthers for developing this program for young Model Railroaders. Good luck to everyone who enters.

*Wm. K. Walthers, Inc. wants to recognize the future of our hobby; the youth and young adults active in model railroading and pursuing a degree in one of the STEAM programs; Science, Technology, Engineering, Arts or Math. Walthers will award two deserving young adults one \$2,500 scholarship each!*

*Application Deadline: July 1, 2022*

*Please contact Karen Formico - [karenf@walthers.com](mailto:karenf@walthers.com) if you have any questions.*

## **“New Tracks” Announcements**

Jim Allen is the new: “New Tracks” Webmaster

I am very honored and pleased that Jim Allen has agreed to become the “New Tracks” website. Jim is an extremely experienced and knowledgeable website developer and brings his dedication to our website. I am looking for some exciting things for our website under Jim’s leadership. I will be profiling Jim in a future article so you can get to know more about him.

Jim is going to need your support and a lot of help, so if you can spare a little time, please contact him at [Jim.Allen@newtracksmodeling.com](mailto:Jim.Allen@newtracksmodeling.com). 2022 is going to be an exciting time for “New Tracks”. Join us and become a part of developing our efforts.

A new start for our Zoom Shows

Thanks to Darryl Jacobs of Inter-Action Hobbies who made us a new video to start our Zoom Shows. [Please click here to see the short video.](#)

Next, we started a new weekly Zoom project on Saturday January 22, 2022 at 1pm Eastern Time.

## **“New Tracks” Scratchbuilding Workshops**

These Saturday Workshops resulted from comments I received from modelers about scratchbuilding and Kris Blackmarr’s interest to develop the project. Many thanks Kris for volunteering to lead this project. This short 1 minute video shows what the Workshops are all about. <https://youtu.be/aKmQxRv1FVg>

The segments are structured like our popular BUILD ALONG segments, on our Wednesday Evening “New Tracks” shows, except these Saturday shows are designed to show modelers how to scratchbuild a scale model. I personally believe that scratchbuilding is one of the most creative parts of model railroading, and I think you will agree if you try it. Here is your opportunity to work with skilled modelers to learn how to do it.

You can learn the steps, skills and techniques involved in scratchbuilding a model in any scale you want. There are no kits to buy, only the needed scratchbuilding supplies so cost is at a minimum. Model plans will be used that you can download on your computer at no cost.

The show’s moderator, Kris Blackmarr, a very talented and artistic modeler, as well as his his guests, will guide you through the complete scratchbuilding process, one small step at a time. After all, that is what mentoring is all about.

If you are a beginner, please join in and experience the thrill of completing a scratchbuilt model and being able to stand back and say “I built that!”.

If you are a more experienced or advanced modeler, please join in and offer your advice and knowledge to less skilled modelers and even get some fresh ideas yourself. The live shows will be recorded on YouTube so you can refer to the information later if needed. I hope you join us and help make this new project a success.

## **New Weekly Show Segment “The Art Of Detail”**

Starting on January 19th, Darryl Jacobs of Interaction Hobbies will be presenting “The Art Of Detail” segment on our “New Tracks” show. These segments are designed to assist modelers in learning new techniques, using new tools and products, for building and adding details to bring their model railroad to a whole new level.

Darryl Jacobs has been a lifelong modeler and “all things miniature” enthusiast. After a career in Aerospace engineering and manufacturing, Darryl and his wife Joanna are now miniaturizing history with their Craftsman structures kits, vehicles, boats and details through their company Interaction Hobbies based in Chase, BC,

Canada. You can contact Darryl at [DarrylJacobs@newtracksmodeling.com](mailto:DarrylJacobs@newtracksmodeling.com) with questions or ideas for him to include in his series.

### **An Inventor Segment June 15, 2022**

Peeyush Garg of the [LocoFi™ Team](#) will be our Featured Modeler /Inventor on my “New Tracks” Zoom show June 15, 2022 at 7pm Eastern Time. He will discuss the new features and capabilities of his LocoFi™ control system. In addition, he will sponsor a random drawing for one viewer of the show to win one of the latest versions of his products. This is a great opportunity to meet and talk with the inventor of LocoFi™ and maybe win one for yourself. One of the significant advantages is you can take your LocoFi™ equipped locomotives and operate on any DC or DCC powered layout without changing a thing.

### **Subscribe to our [New Tracks Modeling Website](#) and [YouTube channel](#)**

“New Tracks” articles and Zoom events introduce modelers to talented experienced modelers who could become your mentor or at least give you guidance to improve your modeling.

We currently have over 1,300 subscribers and hope you will join us.

Please subscribe to our website [newtracksmodeling.com](http://newtracksmodeling.com) and verify your confirmation email to get the latest information about what we are planning on our shows and get the zoom log in link. Also, please subscribe to our [YouTube channel](#), New Tracks Modeling, click the BELL and hit ALL to get notices about all our Live streaming YouTube shows and view our past recorded show videos.

Please also send the zoom and YouTube log in links to your friends so they can also join in the Mentoring and fun of our shows. Thanks in advance for your help and support. Word of mouth is our best way to advertise our shows.

### **Want to Help!! Volunteer to Participate in a Segment of our Show, or Help Produce our Zoom/YouTube Shows.**

We are fortunate to have some new volunteers helping us produce our shows. Chris Smith, Dennis Kamper, Rich Wolfanger, Kris Blackmarr and Jim Allen. Thanks to all of you for your help.

Everyone who watches our shows has a contribution to make. Offer your help in participating or making and producing our Zoom and YouTube shows, or help with our Website. Any amount of time and help you are interested in providing is greatly appreciated.

Our show is a Live Participation show not just a sit and watch show. Keep in mind, mentoring is a two way street. It requires communication between modelers who want to share their knowledge and skills and modelers who want to learn their skills and techniques to improve their modeling. All skill levels are welcome and needed. Contact me at [jimkellow@newtracksmodeling.com](mailto:jimkellow@newtracksmodeling.com) and let's discuss.

### **Share Your Modeling on our monthly “MY BUILD” Sponsored by [The Model Railroad Resource LLC](#)**

As part of our mentoring efforts, “New Tracks” Zoom shows has a monthly feature called MY BUILD sponsored by The Model Railroad Resource LLC, owned by Amy and Dan Dawdy, the publisher of this magazine, and moderated By Chris Course, an excellent modeler and owner of [Conowingo Models](#).

The monthly “New Tracks” MY BUILD segments are the opportunity for viewers to have their work featured. Viewers can show their latest project, discuss their modeling technique, or a new tool they found, or even give a tip they learned that helped their modeling. Modelers can use this opportunity to engage with the New Tracks Modeling community. Join us to see and discuss modeling with these model builders.

Here are the photos and modelers who shared their modeling on our recent My Build on January 19, 2022.



*Greg Cassidy – HO scale markers on the ITLA Intro Brick Building Kit.*



*Bob Farquhar – O-scale build of Banta Modelworks Warehouse with interior.*



*Kris Blackmarr - O-scale build of Sierra West Scale Models Line-side Tool Shed.*



*Mike Warman – HO scale Tobacco barn.*



*Bill Stimson – N-scale Bar Mills kitbash of two kits.*



*Martin Brechbiel – O scale scratchbuild.*



*Tony Dixon – Shared a tarp technique using heavy duty aluminum foil.*

If you want to participate in our next monthly My Build, send your model photos with a brief descriptive caption and your name to Chris Coarse [Chris.Coarse@newtracksmodeling.com](mailto:Chris.Coarse@newtracksmodeling.com). The upcoming MY BUILD segments are scheduled for March 16, 2022 and April 13, 2022. This is the time to plan for which projects you want to show at these events.



*Jeff Jordon – HO-scale scratchbuild from plans and photos of the real building.*

Chris will incorporate your photos into the show. When your photos come up, you will have time to share your experiences and learning from the model with the “New Tracks” community. I believe each of us has unique modeling talents and skills and showing your modeling can be a great motivator for other modelers. Sharing your modeling is a significant part of mentoring. Please participate in these programs designed to help other modelers improve their skills.

### **Learn to Remotely Operate a Switching Layout**

On July 13th, Heath Hurwitz will show us his small, 48" x 10" switching layout puzzle he calls Human City Junction, a variation on John Allen's Timesaver. What makes this layout special is that it can be operated 100% remotely. One viewer will have the opportunity to operate the layout, including coupling and un-coupling the boxcars from the comfort of their own home, controlling the locomotive and turnouts while seeing it all in real time over the Internet.

One day, maybe not too far off, we may all be able to operate layouts of all different scales remotely from all over the world. Having dedicated space for a switching layout will no longer be an obstacle to engage in operating a model railroad layout.

Join us on July 13th to see how it works, and the technology that makes it possible. Then starting on August 10th, and every two weeks thereafter, we will be offering our viewers the chance to operate on the layout with different puzzles at changing difficulty levels. Operators of all skill levels are welcome.

### **Our "Build Along" Modeling Experience gives you a personal mentor. Join in for a great learning experience.**



#### **Kershaw Models**

Starting February 9, Paul Reeves, owner of Kershaw Models, will team up with Martin Breckbiel MMR to build his O scale kit called [Stanzack's Bar](#). This is a laser cut structure with detailed front and rear. Paul says it is an: “Easy build with craftsman results. Comes with adhesive backed shingles for added realism. Footprint is 4-1/2" x 5".”

There is a 20% discount of the kit for Build Along modelers who use the code word “New Tracks” on their order for the kit between January 9, 2022 and Feb 16, 2022.

### Sea Port Model Works

Starting February 23, 2022, Bruce Nickerson, owner of Sea Port Model Works, will start building his kit #H136W, a Waterline kit of a 53’ Coastal Steam Passenger Ferry in HO scale. Bruce is offering a 25% discount off the price of the kit to New Track modelers who want to build the kit along with him.

This specific vessel would have been designed, built, owned, and operated by local families, captains, railroads, or investors, etc. The steamer that we present through this kit is similar to the one we are familiar with called the Sabino or originally called the Tourist. The Sabino is up and running in Mystic, CT at the Maritime Museum. This model is not a model of the Sabino, but similar, and would have been used for very similar purposes. It will carry a lot of passengers, mail, and heavy cargo and attempt to keep schedules. It will make multiple stops at various islands and mainland harbors to deliver and pick up mail, produce, dry goods, livestock, groceries, etc. etc. This kit, with some minor modifications, could be converted to a double decker which would increase passenger capacity.



This kit represents a small steam powered vessel working on the East or West coast, lakes, rivers, or oceans carrying on commerce that was vital to the growth of our nation, from the mid 1800’s to mid 1900’s. There is so much to say about these steam powered vessels that have a distinct parallel with our nation’s history. I strongly recommend that you read up on the subject. Here are a few great books that you might have a hard time putting down:

STEAMBOAT DAYS by Fred Irving Dayton

STEAMBOATS YESTERDAYS (ON CASCO BAY) by Capt. William J Frappier

STEAMBOATS of GLOUCESTER and the NORTH SHORE by John Lester Sutherland

STEAMBOATS COME TRUE by James Thomas Flexner

Bruce was recently on our Zoom show and this “BUILD ALONG” is a result of modelers’ interest in his models during his presentation. If you have not built a ship before, Bruce says don’t worry, it is not much different than building a craftsman structure kit since the hull is a resin one piece part and there is very little rigging to do. I am looking forward to this as it is our first ship building project for the show. Thanks Bruce for your help.



### Hunterline

Starting March 30, 2022, Rick and Maureen Hunter will start building and weathering a Hunterline 50’ Queen Post Covered Bridge. (Railroad Bridge). Kits will be available in Standard or Narrow gauge in N, Nn3, HO, HOn3, S, Sn3, O and On30 scales. This time, they plan to video the segments and pre-send them to whoever will be doing the Build Along with them. Then they will also build the model live on each of the show segments. Join Maureen and Rick from Hunterline, as they take you through, step by step instructions, to build this kit. Skills to learn: read templates and instructions, distressing basswood,

staining and gluing techniques, assembly, NBW installing, applying Hunterline's basswood Roof Shakes and weathering techniques.

This is an intermediate difficulty. Old pros can learn a few things too!

The discounted price Includes the kit, two bottles (8oz) of Hunterline Weathering Mix, a chance to win a \$50.00USD Hunterline Gift Certificate and free shipping to your address.

N/Nn3 - \$100.00US HO/Hon3 - \$118.00US S/Sn3 - \$172.00US O/On30 - \$220.00US

Register and order your kit in your scale and Weather Mix colours by emailing: [rick@hunterline.com](mailto:rick@hunterline.com) or calling 1-866-934-4174. Deadline to order – March 18 to allow time for shipping. We accept Paypal and all major credit cards.

PLEASE DO NOT USE OUR ONLINE STORE TO ORDER. More information about [Hunterline is available on their website](#).

### Wit and Wisdom Models



*Original Painting*



*Original model by John Armstrong.*

Starting April 6, David Vaughn, owner of Wit and Wisdom Models, will team up with Jim Murphy for a Build Along of one of his new John Armstrong inspired kits – the “Nighthawks Cafe”. To many of us, this is an historic model built originally by a truly great model railroader. We are fortunate to have David Vaughn provide a kit for this model.



*Full Size Scene (shown) and Cafe Only Kits available.*

The Nighthawks model comes in two variations (complete/full scene and cafe only) in four different scales (O, S, HO and N).

The full scene contains a row of stores from the original Hopper painting which adds greatly to the authenticity of the scene, as well as the forced perspective street and mirror to add depth. The full scene also includes an apartment to the rear and right of the cafe to add balance.

The kits are computer designed and laser cut. Parts are numbered. The kits come with complete, step by step instructions and background on the painting and model.

The kit is available in N HO S and O scale David is offering a 10% discount off the list price for in stock kits for the Cafe only and Full size kits for our viewers. You must use the code *New Tracks* at the time you order to get the discount. Once the current in stock inventory is gone, or June 30, 2022, the discount will end. I encourage you to buy a kit as soon as possible to ensure you can get one in the scale you want. [Please visit the Wit and Wisdom website](#) for more details about the kit.

### Conowingo Models

Starting May 25, 2022, Chris Course, owner of Conowingo Models, will be building one of his new kits. The kit is called “THE KELLOW STATION”. Chris said since I am a trolley modeler, it will be a trolley

station. What a great honor to have your name on a model kit. Thanks Chris. I can't wait to see it. More details can be found soon on our [New Tracks Modeling website](#).

## Banta Models

Starting June 1, 2022, Bill Banta, owner of Banta Modelworks, will start a "Build Along" of his Banta model On30 Caboose kit.



Laser cut wood caboose conversion. Fits Bachmann 18ft On30 Flat Car. This kit is all laser cut wood and laser board. Includes wire and bending fixtures. Based on a caboose from a logging railroad, it's really a cool looking addition to your fleet. Like all of our kits, it's a fun build backed up by our no questions parts replacement, you break it, missing or lost, the dog eats it, no cost to you.

This is the first On30 scale BUILD ALONG we have done. It is the result of comments I have received asking what is involved in using a HO scale chassis from one manufacturer, in this case, a Bachmann 18' flat car; and using a O Scale body kit from another manufacturer, in this case, the Banta Modelworks Caboose kit, and building an On30 scale model. This may sound complicated, but Bill will show you how easy it is. Here is your chance to find out how On30 narrow gauge models are created and why On30 has become a significant part of O scale modeling. Bill Banta is offering a 20% discount off his Caboose kit to "New Tracks" modelers who BUILD ALONG with him on their orders specifying it is for "NEW TRACKS" May 1, 2022 until June 15, 2022.

## Card Model with Paul Egri and John Thomas Reynolds

Starting July 23, 2022 a Build Along of a Paul Egri created card model by John Thomas Reynolds. The FREE model can be downloaded as of June 15, 2022, in any scale from our website [newtracksmodeling.com](#). There will be a presentation on our June 15, 2022 Zoom meeting about this Build Along. Don't miss this as you will find out how to do the scaling and downloading of the model plus tips to help you get started.

The model on our website is in HO scale so you will need to use the provided scale chart to download it into your preferred scale. If a modeler wants to customize his model with different signage graphics, please contact Paul Egri at [Paul.Egri@newtracksmodeling.com](mailto:Paul.Egri@newtracksmodeling.com) and he will work with you to provide your needed graphics. Again Paul is doing this for FREE. Any questions for John Reynolds about the Build Along should be sent to him at [John.Reynolds@newtracksmodeling.com](mailto:John.Reynolds@newtracksmodeling.com). If you have never built a card model, this is your opportunity to learn from some very talented modelers how it is done.

## More Build Alongs to come

I hope you want to participate in all the "Build Alongs". The modelers and manufacturers, who are making these events possible, are doing them to try to help you improve your skills and have more enjoyment and confidence in your modeling. They are true learning experiences that have helped many modelers. Join us.

This program provides modelers, your own personal mentor on our shows. So if you have been sitting on the sidelines for awhile give model building a try. I believe you will have some fun. It is really great for me to hear the enthusiasm and excitement from first time or previous armchair builders after their participation in these events. Please show your support for these events by your active participation. Thank you.

I am looking for more modelers and manufacturers to be involved in future "Build Alongs" in late 2022. I have several scheduled so far, so if you are interested please let me know. Remember a model builder can select the dates, manufacturer, and specific kit, you want to build. A manufacturer can build his own kit, or I will find

someone to build the kit for them. Contact me at: [jimkellow@newtracksmodeling.com](mailto:jimkellow@newtracksmodeling.com) and let's discuss your interest.

We have several other Modeling Segments on our Zoom shows.

### "Watch Me Build"

These segments are meant for modelers who want to share their modeling efforts and discuss their modeling techniques so others can benefit. These segments can be for one or more shows depending on the details included for the model building presentation.

March 9, 2022 Nathan DeLay will show us some of the HO locomotives, freight and passenger cars he scratchbuilds using Coke cans, including his model of the Duchess of Hamilton which was his first scratchbuilt locomotive. His mentor is Joel Holubec. I am looking forward to this as Coke cans may be my replacement for brass to build some of my models. Here are several photos of his models.



July 6, 2022 Pat Rivard and Paul Hurly will do a segment "Making Coniferous Trees". This will be a 40 minute DIY PowerPoint presentation by Pat and Paul where they will share their easy-to-follow six steps to build realistic foreground and mass planting coniferous trees in O and HO scale. They will show how to use a variety of tree branch materials to recreate species that are seen throughout North America.



You may never have shown your modeling before in public for a variety of reasons. I assure you I think you will enjoy and benefit from participating in these

segments. Email me [jimkellow@newtracksmodeling.com](mailto:jimkellow@newtracksmodeling.com) or if you would like to discuss your idea by telephone you can get my contact off our website.

### "Ask A Modeling Question"

These segments are where viewers can ask modeling questions and get answers from other modelers on the show. It is a forum where viewers can help each other solve specific modeling problems or offer advice on modeling techniques. We have a form on our website you can use to ask your questions. This allows us to schedule the appropriate time for this segment on each show. Or send me an email and I will get you an answer. My email is: [jimkellow@newtracksmodeling.com](mailto:jimkellow@newtracksmodeling.com). Please don't hesitate to ask questions, after all, that is how we learn new things.

### "Remembering Old Kits"

Modelers will be building kits from our distant past that are either no longer manufactured or hardly available. Kits whose names we may have forgotten, but when we hear their name again, it brings back great memories from our youth and remind all of us what modeling used to be like.

The first two segments had Martin Breckbiel, MMR building a Van's Car Shop and a Train Craft kit. If you have an old kit and want to participate, let me know at [jimkellow@newtracksmodeling.com](mailto:jimkellow@newtracksmodeling.com).

### **"Let's Go To The Hobby Shop"**

Meet local hobby shop owners who may become your new best friend. I must admit it has been a very long time since I have been to a hobby shop.

I recently talked with the National Retail Hobby Shop Association and wrote an article for their publication called "A Modelers View" where I talked about the importance of Model Builders and Mentoring to the Hobby Shop Industry and the issues that we both, modelers and hobby shop owners, have in common. It was published in the Association's October Member only Magazine, "Hobby Merchandiser".

It was well received ,and I have already scheduled some of their members on future shows. The first member was Steven Elliott a member of the NRHSA Board of Directors and owner of Fundemonium Hobby Shop on February 9, 2022.

If viewers have a hobby shop that they would like to recommend to be on our show, or you are a hobby shop owner who is interested in being on our show, please let me know. There are not many hobby shops left around the country, and I believe they need to be recognized and supported. So please tell me about your hobby shop at [jimkellow@newtracksmodeling.com](mailto:jimkellow@newtracksmodeling.com) and I will ask them to be on our show.

Now let's meet some modelers.

### **Please meet the APMM Ambassador to India.**

I am honored to be the Ambassador to Model Railroaders for the Association of Professional Model Makers, APMM, because I am convinced that our hobby teaches skills that can prepare modelers for a career as a professional model maker. These hobby skills combined with programs like Walthers Model Railroaders scholarship program can draw younger people to our hobby. The recognition of the skills model railroader hobbyists have which can be a stepping stone to a career in model making is why I want to introduce you to a Professional Model Maker and APMM Ambassador to India.

Sharad was a guest on my January 26, 2022 Zoom Show. If you missed it, please look at my YouTube Channel, New Tracks Modeling, and watch a video of his appearance. Please meet a true entrepreneur and talented model maker Sharad Dahake.

### **Sharad Dahake owner of [Ideal Mockups Pvt Ltd](#)**



I consider myself an accidental model maker, which was a result of my helplessness in getting good hi-fidelity models done in India.

I have worked as an industrial designer in consumer durable industry since 2001 with companies like BPL, Electrolux and LG Electronics. In consumer electronics, the market requires faster design validations of industrial design concepts. While working at LG with the Korean team, I was highly impressed with Korean model makers, who were professional, fast and highly skilled. While practicing industrial design, a feeling of incompleteness emerged within me. It became difficult for me to refine or visualize final design offerings with global competitiveness, in absence of professional model making in India. Our India design team always had to import or get mockups done from Korea, which

took lot of time due to transit time and other logistic issues. Local modelers did not show much interest in improving skills and investments required for CNC machined and worked design mockups. In 2011, I felt saturated with my role as design manager and wanted to try something else in life. Maybe a design studio, design material supplies store or try hands on non-design ventures like opening a beer bar or restaurant. Due to goodwill earned at LG, I thought it would be good to provide a much needed model making service to LG India. I shared my thoughts with seniors and they supported me for starting model making services. LG became the first customer to our model making company called Ideal Mockups. Our company grew from one client to now almost 40 clients by just word of mouth.



*Members working on finishing of model parts inside Ideal Mockups. All members refer CAD data while finishing and assemblies. Most of them are trained technicians like fitters and pattern makers. Initially all were new to this area, but now they all love model making. The main reason they mention is getting variety in assignments and feeling of skillfulness.*

Making appearance models for industrial designers is my core working area. Sometimes, I feel, I should not have left Industrial Design to venture into professional model making. But it has become quite complimentary. Practicing model making from the last 9 years, I feel more skilled and resourceful.

There are many things that modelers need to do in product development. Like sheet metal work, resin casting, rapid prototyping, plating, 2D & 3D printing, electro-mechanical work, robotics, batch production, virtual modeling, etc, just to be competitive enough for supporting product development. As a modeler, I am still a struggler.

#### *History in the hobby.*

My father was coal mine surveyor and mother a social worker in a labor welfare organization. Ours was a lower middle-class family. As my grandfather were blacksmiths and carpenters, I got early introduction to various tools and work skills. I remember making my own toys in clay, wood, plastic, metals, etc. Doing

painting and sketching was just natural. When I was 8 yrs old, I got first recognition in an interschool drawing & painting competition. After high school, I joined an art gallery and learnt oil painting. The process of oil painting on canvas was very immersive, like starting from charcoal sketches to realistic painting & detailing. Apart from this, I had a lot of curiosity in dismantling and assembling of various home products and gadgets. I completed my graduation in electronic engineering.

A turning point in career came when I got a national award for oil painting. I heard about the industrial design profession which was quite unknown at that time. Before industrial design education, I worked as supervisor in furniture workshop which used to make grandfather clocks and relaxers. The same company was also into making injection molded components. I got the opportunity to work with their design team and learn about molding process and plastics properties. I remember making a scaled model (1:10) of a grandfather clock. Since there was no small lathe machine, to turn the wooden pillar for clock, I dismantled a table fan and used the fan motor to turn them. This was made for my design education admission interview.

At design school, I received 2 international awards. During education, model making was taught as a tool to be used for creative expression. I was pretty good at it, but it never came to my mind that I would start my own model making company someday.

#### *How you learned to build.*

Design education was handy to some extent, because it taught workshops skills which were used to explore various product design ideas.



*Concept Air Fryer mockup with inside heater simulation. Mechanism was designed inhouse to explain conceptual locking, unlocking and removing pan from the container, with final finish, fit and feel.*

*The mockup was showcased in South Korea, LG Electronics, Annual Fair for Top management review. Audience was quite surprised to see to high quality and globally competitive model making coming from India for the first time.*

concerned, it was completely grey area. Trial and error were the only options for learning. We spent almost a year training with failures and losses. It was a bliss that I knew nothing about accounting at that time, otherwise I would have been completely disappointed with the numbers. Not just model making, but I was also new to business management. So, the troubles were compounded.

We just focused on quality of our work and addressed all model problems. The losses were like investments. We many times replaced bad models for not losing reputed client. It took almost 2 years to stabilize our deliverables and establish quality parameters.

*What scale and why that scale.*

Our model are mostly 1:1 scale. Models are mostly of consumer durable products and are used for consumer reviews. The concept models are kept alongside actual products to validate design preferences even before product development stages. So, making in actual scale with realistic appearance of final product is primary requirement. We have to make it so realistic so that customer should not be able to differentiate with aesthetics of actual comparable product. We make refrigerators, washing machines or air-conditioner models, all in actual scale.



*Transparent Sumps for hydro analysis. Prototype is made with CNC machining of thick cast acrylic slabs, glued together and finished for full transparency.*

*Client: Kohler, India.*

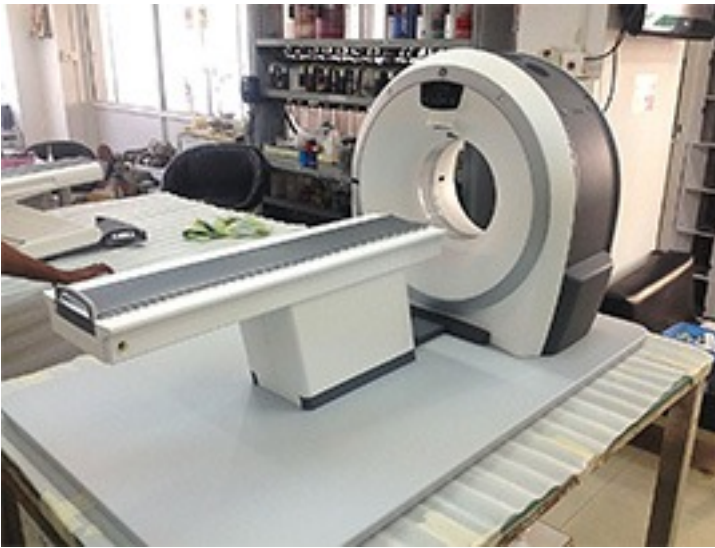
But for professional model making, as we are doing today, we had to learn from scratch. Since a team was required for various responsibilities like CAD, CNC milling and programming, painting and screen printing, we divided ourselves for necessary training. The companies who supplied us with machines, also provided basic operational training. Introductory training for CAD/CAM was given by the software vendor. Job fixing training was given by the CNC manufacturer. Spray painting training was taken from a paint supplier company called Dupont. I was mostly engaged in client briefing, finances and overall quality supervision as I understood though design visualization. Since there were no model makers, we hired technical persons like pattern makers, fitters and painters, and provided some basic model making training in materials like paper and cardboard and graduated them to manage plastics like acrylics and ABS.

*Did you have a mentor or just trial and error?*

We searched for mentors, but we failed to get anyone. As far as appearance mockups were

*What areas will you help other modelers by mentoring.*

I am not very sure about this. We provide some mentoring to design students who want to get exposure about hi-fidelity model making.



*Scaled model of SVCT scanner made for exhibition in Vietnam and global audience. The model had electronic lighting and mechanical translating platform simulation for conceptual explanation of product. Client: GE Medical, India.*



*Exhibition scaled model (1:3.4) for display at a trade show in India. Scale was based on client's requirement of size. Client- LG Electronics India.*

Sometimes I go to design institutes to provide insights and explain the importance of design validation through hi-fidelity mockups.

Due to need of agility in product development, modelers now need to be more creative in using production methodologies and fabrication problem solving. Model making is becoming more complex as concept expressions now require multiple skill sets including interface fabrications which also need software and programming knowledge.

Apart from designers, modelers need to be also creative to resolve manufacturing and fabrication challenges.

We can mentor modelers who are keen to make hi-fidelity mockups used for industrial design within available resources.

*Talk about your company. When and why started, products and services, and future plans.*

Our company, Ideal Mockups, is mainly into fabrication of appearance models used for industrial design evaluations. We started this company in 2011-12 with 5 support members, located at Nagpur. Nagpur, which is my home town and also had the logistic advantage being located at the center of India.

Main objective to start the company was to address the need for hi-fidelity appearance mockups for industrial design in India. Also to tap local skills and generate employment. Apart from appearance mockups, we provide CNC milled plastic prototypes, scaled models for exhibitions and sometimes technical factory models. Whatever is feasible within our resources, we try to make it.

Currently we have 20 people working with us. The space is very small, just around 3000 sq.ft. We plan to

expand our fabrication facilities with 5-axis CNC, SLA, vacuum casting, metal work and a variety of surface treatments, which can happen if we get a larger space. We also look forward to manufacturing custom made products with our inhouse design team in future.

*Talk about modeling in India and your involvement with the APMM as an Ambassador to India.*

Association of Professional Model Makers (APMM) acknowledged us as professional model making company by seeing our work profile and reputed clientele. We have clients from outside India as well.

Model making in India is mostly an unrecognized and unorganized business sector. There is no formal training school for professional model making. People who do model making are small time fabricators and amateur hobbyists. Except industrial design appearance models, I am not aware of other model making businesses like for architecture and museums.

For new product development, many engineering service providers had started using 3D printing for prototyping purposes. They mostly do SLA, SLS, vacuum casting, soft tooling and batch productions. Some of them are quite matured and well established like 3DPD, Imaginarium, Marcopolo, Sphnix, etc. But there are very few for industrial design support, like Aakar Studio. Some industrial design firms like Futuring Design and Desmania also provide appearance models services. Product manufacturing companies have their own model making workshops, but when they need high-fidelity mockups, they try to outsource to get professional quality, which is cheaper than using inhouse overheads. Inhouse model making facilities are utilized for low fidelity models and design explorations.



*Myself & my India colleagues at APMM Conference 2018, Grand Rapids. The conference provided a good outlook of model making, its future and insight.*

I have been associated with APMM since 2018. I was looking for a professional association to establish global benchmarking and competitiveness in our own business.

As an Ambassador to India for APMM, my priority will be maximizing India membership with the association, so that model makers in India get maximum benefits out of it. They can learn new skills and grow the industry. This can help develop our country's competitiveness in area of new product design and development. I would like to welcome any person, who makes models to get involved, considering non-popularity of the profession. It will be challenging to search them and bring all together. They may not be professional model makers, but can be engineers, designers, artists, architects, hobbyists, amateur whoever is in any kind of model making activities. Let the ball start rolling.

Thanks Sharad for your help and interest. You can contact him at [Sharad.Dahake@newtracksmodeling.com](mailto:Sharad.Dahake@newtracksmodeling.com).

Please meet another modeler from India who is a card modeler and has helped me quite a bit.

### **Madhu Gubby**



My name is Madhu Gubby and this is my Model Railroad Journey. I'm from Bengaluru, India. I'm a software or engineer by profession and model railroading is my hobby/passion.

It all started in the year 2011 when I first went to Stuttgart, Germany where I saw an operational model railway layout in a toy shop called Spielwaren Kurtz. Till then I had never heard of such a hobby – model railroading. I bought my first battery operated Inter City Express train by Marklin for 39 Euro and that's how it all began.

I started exploring more on this hobby on the Internet and came across quite a few blogs sites where I saw model railroaders across the world are doing a superb work. This motivated me to take this hobby to the next level and I started building layouts. This hobby is quite expensive for a middle-class salaried person like me. Necessity is the mother of inventions! I

restricted my expenses only to buying trains, human figures and automobiles and decided to build track side structures myself.

I usually work on modelling work late nights and early mornings during the weekends. My toolbox consists of a metal blade, metal and plastic rulers, a couple of forceps, scissors, geometrical instruments, stationaries like a book, pencil and sharpener. I usually draw a sketch and start the actual building work. Here is a pictorial journey of my modelling work so far.



### *First Model*

I bumped into couple of printable scale models on the Internet and built these. I was super impressed with the structures. Still, deep within, it was not THE embossed/contoured structure I was looking for: a free downloadable Engine Shed and a Fuel Station

I saw some of the best layouts which were posted on social media. I short listed some of the track side structures which impressed me and started building them. For example: railway stations, railway platforms, roads for Faller car system, gantry type signal tower, coal loading crane with bunkers, engine shed, dummy catenary masts, telegraph poles, high tension electric poles, radio antenna, trees, crane, trackside ballast, clump foliage, wind mill, LPG tanks, water tank and the list goes on and on.

### *How to scale?*

This is the most important aspect of scratch building I believe. I model in HO scale or 1:87 and I'm still trying to master this art of scaling so that the structures look realistic. Here are some of the methods had invented/adopted

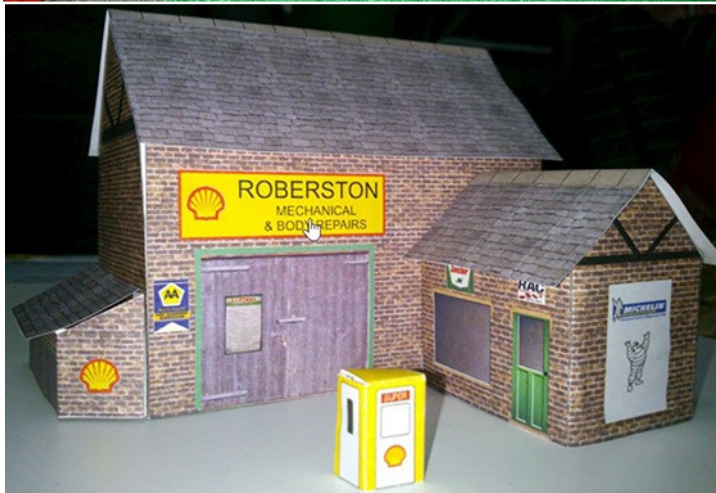
- Get the dimensions from standard kits and convert them to 1:87. I did this by referring to the "User manual/instruction booklet" of the standard railroad structure kits and arrived at HO scale dimensions by

doing simple math. The scale of these kits does not matter. For instance, if there a standard G scale kit, then I take the measurements, multiple them by 22.5. Divide the resultant by 87.

- Get the approximate dimensions of the building using Google maps. You can use the "measure distance" feature of Google maps to arrive at the length and breadth of a structure. For height of the prototype, I usually look at the front view of the building using Internet's image search and arrive at the approximate height w.r.t. any human being standing in front of the structure.
- Third method is total approximation with respect to an HO scale human being. With this approximation, the height of the wall will be approximately 3cm. On similar lines, the windows and doors are also arrived at. The gantry type signal tower and the main station are a couple of structures whose dimension was arrived at using the above approximation.

### *Raw Materials*

When one starts scratch building, the person starts seeing everything around him/her as a potential modelling material. Here are some of my main findings:



- Foam board: These come in 3mm or 5mm and are available in stationary shops. These boards are quite sturdy and can be easily cut with a steel blade. I have built more than 30 structures with this.



*An engine shed with hard foam, mosquito mesh and soft foam as roof. Stapler pins are used as hinges to the doors.*



*A Gazebo with foamboard and toothpick with corrugated craft sheet used as roof.*

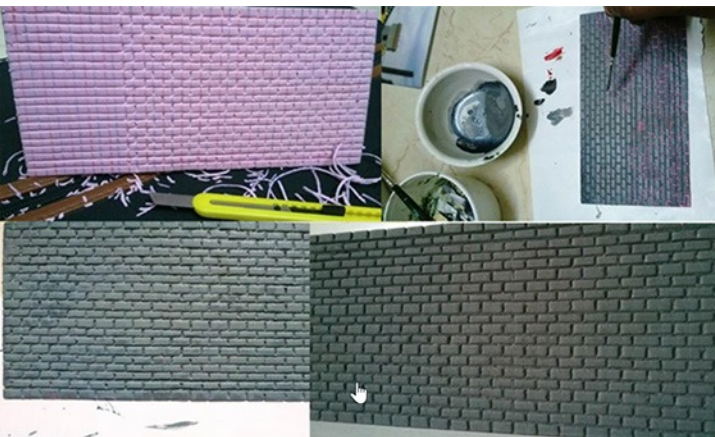


*Inspired by Kibri's Osterburken N scale building, I made this HO scale building. This is the biggest structure I've built so far.*



*Gantry type signal tower.*

- Soft Foam: These have been a great source of material for embossing and highlighting structures like windows, pillar joints, steps and what not. Here are couple of samples I would like to showcase.



*Brick walls.*

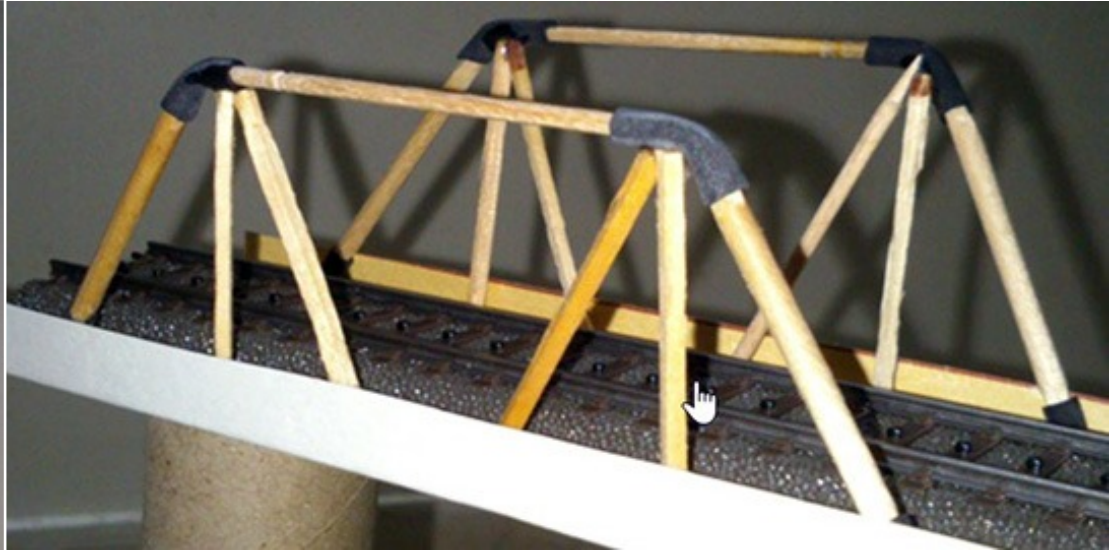


*Chopped soft foam painted with acrylic black as coal loads.*

- Barbecue sticks and toothpicks: These sticks come in different lengths and diameters. With thin metal wire and quick glue, I was able to model some of the trussed structures like a concert stage, ladders.



*A signal tower using metal wire and barbecue sticks.*



*Scotch packaging box with barbecue sticks.*



*LPG storage facility using stapler pins, soft foam and cardboard tube.*

- Stapler Pins: Boy, I do love them or what! Stapler pins come handy in making railings, ladder steps or even arm rests of a parking bench. PVA or quick glue is good enough to make structures with this. Here are some pictures of my creations



*Benches*

- Broken motorized toys: These are a great source of raw materials for animating the structures.

For instance, I've taken out LEDs and light bulbs for lighting structures, gear trains for spinning windmills, and I'm currently working on making an HO figure's hands move using the reciprocatory motion mechanism taken out from one of the toys. Here are some of the materials which I use for modelling:



Gravel  
Crushed foam for clump foliage  
Utensil cleaning sponges for hedges  
Mosquito Mesh  
Cardboard  
Wooden and plastic coffee stirrers  
Board pins  
Straws  
Beads  
Match Sticks  
Transparent Plastic Sheet or OHP sheet for windows and Tennis net  
Lollypop sticks  
Acrylic Paints  
Balsa Wood  
Optic Fiber Cables  
The list goes on....

*My first try with cardboard for a pedestrian bridge.*



*Kids' play area using stapler pins, solder wire, matchsticks etc.*



*Tunnel Portal using cardboard pieces.*



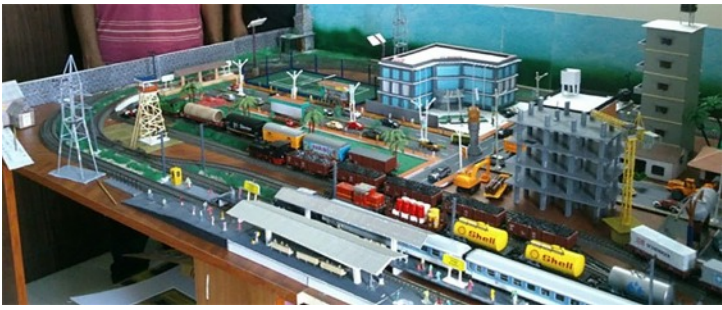
*Scotch packaging box turned into an apartment.*



*OHP or Transparent plastic sheet as tennis court net.*

Now I'm planning to animate the structures like a person moving, lights blinking, doors opening etc. so that they add extra realism to the scenery.

## *My Railroad Projects so far.*



My first layout was an oval with ability to run two trains at a time and sidings for parking additional two trains. The size of this layout was 8 ft by 4 ft. The theme of this layout was a fictitious south Indian city with railway platforms carrying the local cities' name. Trains were all German ☺ All the scenery you see in this picture was scratch built except the trains, streetlights and human figurines



My second layout was an L shaped layout that had two levels. The bottom level was a single track close looped layout with Marklin R1 and the elevated track was made of two dogbones. The new addition to this layout was a Faller car system, a few American buildings purchased from my friend, but yet again German trains.

My Third layout, initially started with three loops, helix and tracks with gradient, I finally settled for a U-shaped shelf layout with the ability to run two trains. This layout had seen the maximum number of newly scratch built structures and two Faller cars running.



Here is my fourth layout and the layout which is currently work in progress. This layout is inspired by a vintage classic foldable Marklin layout made by Fritz Berger. The reason I chose this layout was the enormous play value this plan offers.





<https://www.instagram.com/mgnbahn/>  
<https://www.youtube.com/channel/UCmVJltA8F-QdZm8etsCcjmw>

I don't know if I'm skilled/experienced enough to mentor others. But I can definitely answer questions related to ways of achieving certain end results which I have learnt while model making.

Madhu can be reached at [Madhu.Gubby@newtracksmodeling.com](mailto:Madhu.Gubby@newtracksmodeling.com).

Here are some other modelers who may help your modeling.



### Todd Gamble

I'm am a professional Scenery Artist or Miniature Landscape Artist. I have an Art Degree in Sculpture and Drawing which I already knew how to do both disciplines before college, however, college drove me to build a great body of work and learn by working with others.

As an Artist, I create landscapes for anything miniature, Christmas Window Display, Personal Model Railroads, Historical Museum Exhibits and Displays, War and Fantasy Gaming Terrain, Dollhouse and more. I have worked in all the popular scales from Z to G. Much of the time I work on location which has taken me to almost all the western states and beyond, but my preference is to work from my home and be near my wife and cats and coffee pot.



*Stream on O-scale layout photo by author.*

I have had a fascination with model trains since I was a baby with my first train being a Tootsie Toy metal pull train, later on, I acquired an S-gauge American Flyer Electric Train from my Grandpa, but I was too young to actually play with it much. As I turned 13 or so, I really got into HO-scale model railroading after a friend had given me a huge stack of old *Model Railroader* and *Model Railroad Craftsman Magazines* from the 1960s and 1970s. The passion for the hobby took off from there.

Mostly, I studied from perusing hobby magazines and old Kalmbach books like, "Scenery for Model Railroads" by Bill McClanahan or "HO Railroad that Grows" by Linn H. Westcott

I lived too far away in the mountains to go to any model railroad clubs or visit any hobby shops so printed material was key for knowledge.

I did not have a mentor, just trial and error. I would read *Model Railroader* and *Model Railroad Craftsman Magazines* from the 1960s and 70s someone had given me and try to emulate the same things I saw or read in those articles. My Dad built me a 4x8 plywood table for my model railroading. The space was built over our pump house and below, my

Dad kept all his home project materials and I would experiment with them, fiberglass resin, oil base paints, water based paints, adhesives, sawdust, joint compound, plaster-of-paris, this was my hobby shop. I also lived in the rural mountains and had miles of natural materials I would collect on long walks with my dogs Phoebe and Josh. I'd collect twigs for trees, sticks for logs, moss for foliage, rocks for my creeks and would study the little streams and the way dirt eroded and how things grew so that I could take that information back to my workroom and recreate it. I actually learned a lot from watching my Mom work on her creative projects, as an Artist herself, she taught me how to visualize something in my mind and then to sketch it out and use that as a tentative plan for my projects, super valuable information.



*Wet road O-scale photo by author.*



*Ice plant HO-scale photo by author.*



*Water over dam spillway O-scale photo by author.*



*River scene HO-scale bridge by John Mess. Photo by author.*

Mainly I chose HO by default, it was the most popular scale in all the Christmas catalogs at the time in the late 1970s and early 1980s, such as Sears, JCPenny and Montgomery Wards. Also, I would go to flea marts and swap meets and find goodies that were usually always HO scale, and it was compatible with my Hotwheel and Matchbox vehicle collection. However, my very first electric train was an American Flyer S-gauge handed down from my Grandpa and before that, as a baby, I had a metal Tootsie Toy train that I loved, especially the Orange Boxcar that came with it. For some reason, I imprinted favorably on that orange boxcar.

I would be happy to help others in their scenery endeavors, primarily, I like to help others when they are in a jam and are contemplating scrapping their scenery altogether, because there is one thing I learned, is that everything in scenery can be fixed over. I used to be too much of a perfectionist when I was young and became frustrated so many times, but as I became more comfortable with my skills, I realized mistakes are great lessons and discoveries. Things can always be reworked or covered up with a little creative ingenuity. And I learned, when to walk away from the project and go do something else when things aren't working out as planned, that can make all the difference between the hobby being a source of frustration or a world of magic!

*I asked him how he begins developing a scene?*

Before I begin any project or create a scene, I stare at the space and imagine all sorts of variations that can be made in that space.



*Columnar basalt hand carved O-scale photo by author.*



*Creating a creek HO-scale photo by author.*

I think to myself, what makes sense in this scene, should I put a siding to support a small industry or would a stand of ponderosa pines be more fitting? Once I have decided what I want to do, I make a list of the materials and tools I may need and collect them. Of course there will be things I have not thought of that I will need to gather, but for the most part, I get everything I need in place, then I protect the area around me with a drop cloth for the floor and tape to cover any track work and switches. I may even draw a sketch from various points of view to get a feel for the task I am about to begin. Then I put on some peaceful music, and have a mug of coffee sitting by and I go for it with a passion in my heart.

Thanks Todd. He can be reached at [Todd.Gamble@newtracksmodeling.com](mailto:Todd.Gamble@newtracksmodeling.com).



### **Garland Ward**

My name is Garland Ward, I'm from St. Petersburg, Florida, and I've loved model trains my entire life.

I got my first "real" (NMRA compliant) train set when I was 8 or so. It was an HO scale Life-Like set from Toys R Us. I was lucky to have gotten it just before most American toy stores stopped carrying electric trains around 2005. That set lived a fairly rough life, as you might imagine. It being somewhat low quality to begin with, it succumbed only a few years after I got it. However, it was enough to get me hooked on building and operating models.

Although I loved my HO trains, I always felt the urge to acquire O gauge trains. They just seemed superior to me, especially as a kid, with their large size and robust build quality. However, they were also expensive, and especially with my interest taking place in the post-K-Line and pre-Lionchief years, there was nothing affordable on the new market.

*Photo by Kyla Dreffer-Ward*

Right about that time, I discovered Marx and started collecting them. They were pretty cheap and I liked them, and they were easy to take apart to learn how to maintain and repair them. I soon discovered a trick which enabled me to snatch up any brand of O gauge trains left and right for hardly anything: they were always dirt cheap if they had cosmetic damage. Anyone is willing to change motor brushes and get an engine going again, but fixing an engine with the plastic cab broken clean off is another story. That's when I became interested in repair and restoration of trains. I would take anything, the most rusted out, seized hunk of garbage you can imagine. I'm not a wizard, I was stumped by some of them and couldn't restore them all, but a good number of them I got going again. I soon had a fleet of custom painted, ex-junker O gauge trains.

Later on, my interest turned from restorations to building things from the ground up. I really wanted an interurban trolley, and I decided to build one from scratch, from plans that I would make myself based on pictures from the Internet and little else. I ended up needing a few attempts to get a decent finished product.



*Mow Trolley – A Lionel 60 that I cut the sides out of and added baggage doors to make a MOW trolley. All decals are custom made by me. Photo by author.*



*Combine trolley – scratch built from balsa and styrene, powered by an N20 motor and a rubber band drive. Photo by author.*



*General – A Lionel General with a custom cab I built for it. It's much shorter than the original, and closer to prototype. I also painted it, and mixed a custom blend for the "Russia Iron". Photo by author.*



*Passenger trolley – scratch built from balsa and styrene, power by an a 3 pole open frame motor and gear driven. Photo by author.*

I've built one more since then, for a total of 2 scratch built O gauge interurban trolleys. Both are pictured here; the first one is the red passenger trolley, and the green combine is the newer one. The combine far exceeds the red one in general build quality. It's amazing how much you learn from just giving it a shot. They both have wooden frames and bodies, each with a scratch built drive-train in a commercially available rolling stock truck, and they both run on 2 AA size batteries.

I've had so much help and encouragement through the years that I couldn't possibly choose just one mentor. St. Petersburg has a flourishing model train community, boasting not one, but two major train stores (both of which I've been employed by) and dozens of local shows and swap meets per year. There are also several train and hobby shops within a couple hours driving distance, and many more shows as well. I've learned a lot from just listening to old guys talk, some of whom weren't even talking to me.

However, there is one person who really taught me a lot, and was always interested in what I was doing and happy to give advice and share his thoughts. His name was Tom Goellner, and he operated a test track for all scales at many of the local swap meets around town. He did this for free, just to support the whole community by giving other buyers better confidence in their purchases. I often spent more time talking to him about



*Layout – A look down main street of my 4x5 foot O gauge layout. Photo by author.*

modeling than actually looking around the swap meet, absorbing more information and firsthand experience than all the magazine articles I'd read combined. I recall once bringing my girlfriend to a swap meet, and when we left, she asked if I usually just looked around for twenty minutes and then talked to Tom for three hours. Yeah, pretty much.

Unfortunately, Tom passed away in 2018, and took with him not only an absolute gold mine of information about model trains, but also one of the most caring and devoted personalities in our community. I remember him by still using the techniques he taught me, especially for painting, and by never hesitating to share the valuable information he told to me.

I would help other modelers with anything, from repairs on locomotives to scenery on their layout. The most daunting tasks, like completely pulling and servicing a motor, or creating complicated water effects on your layout, are often actually quite easy once you do it a few times, and a little encouragement goes a long way. I've also worked as a professional train repairman for a number of years at the aforementioned train stores, so I know my way around most brands and scales pretty well.

My experience of model railroading has always involved shows and swap meets and local shops, it's never been something I've done on my own. That sense of community being built into the hobby from the beginning leaves me always wanting to share what I'm working on and talk to other people about their projects. So, I would like to say a big thank you to Mr. Kellow for inviting me to write this. It's publications like these and people like him that really keep the hobby going by keeping the community alive.



You can reach Garland at: [Garland.Ward@newtracksmodeling.com](mailto:Garland.Ward@newtracksmodeling.com). Thanks Garland and good luck on your future modeling.

### **Bruce Hirst**

When I first met Bruce, this is what he told me. After you read this then please read his profile which follows.

My molds may be hard to classify because the blocks aren't to any particular scale. Castles and stone buildings have blocks of all sizes. The size of block depends on what the architect used, the building location and time period. The only way to tell the scale of the building is by the door size, window size and ceiling heights. Therefore, these molds could be used for both scales depending on how large you make the arch openings and I have many sizes of arches on most molds.

To get a good idea of the block size, I suggest that my customers go to the molds page at <http://www.hirstarts.com/molds/molds.html>. At the bottom, there's a quick guide to see exactly what size the blocks are. Just click on the black and white illustration on the left and it will open up a PDF file. Print out this PDF file and it will show what the blocks and arches look like actual size. Customers can lay their figurines next to the plans to see how the block size would work for them.

However, I do have a few molds specifically for 6mm or 1:285 scale. These molds are #370, 371 and 372 and you can see examples of these molds at <https://www.hirstarts.com/cubes/cubes.html>. I also have some sci-fi molds of this same scale at <https://www.hirstarts.com/starfort/starfort.html> which can be used for multiple



scales ranging from 6mm to 28mm figures, and I show examples of both being used on the web page.

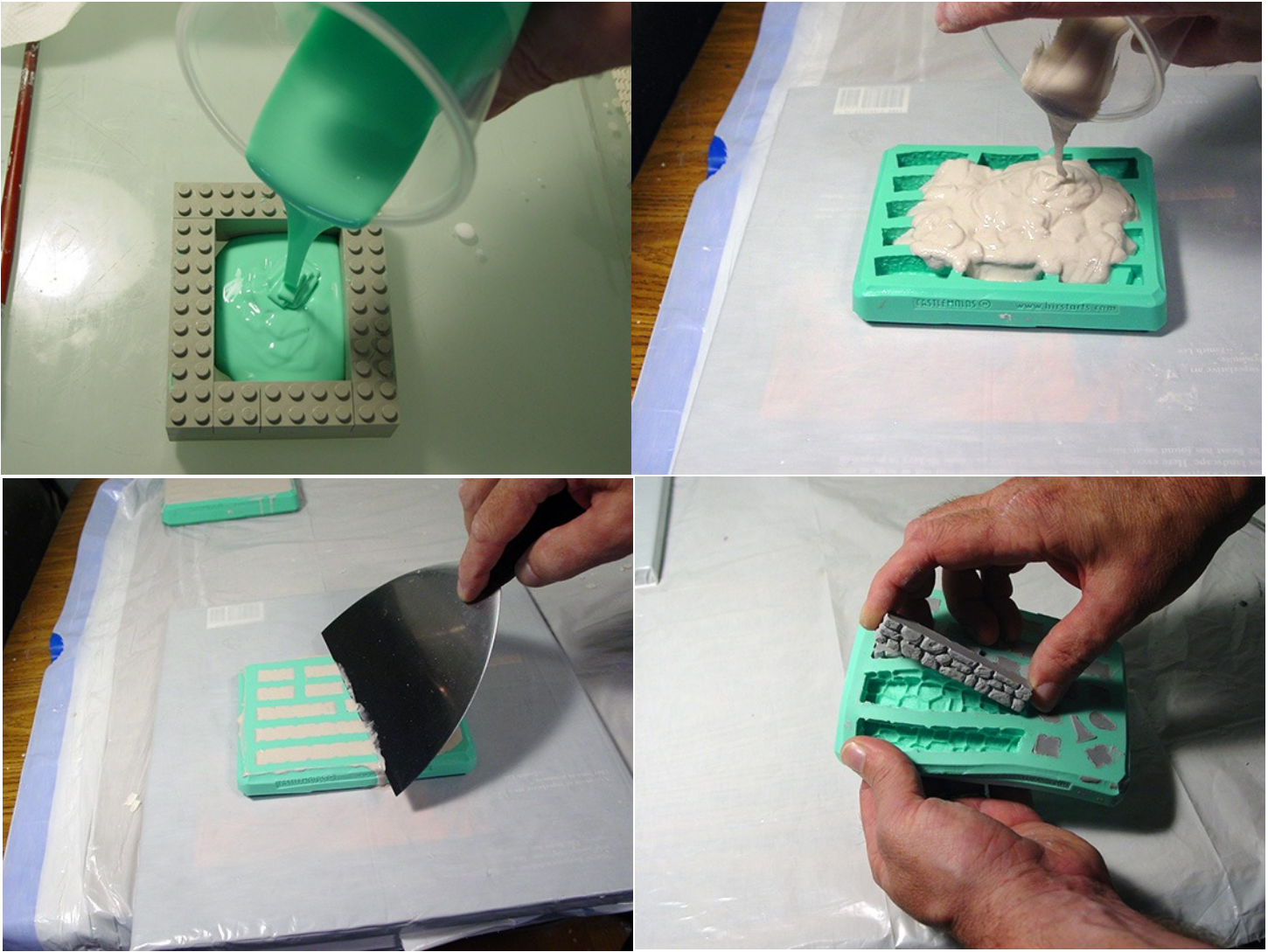
Now please meet Bruce Hirst.

I enjoy sculpting miniature architectural details to make building blocks for small scale buildings and other accessories. I rarely use the computer to do this but instead use tools such as miniature saws, lathes, sanders and other small machining tools to make exact blocks. I also use epoxy putty to sculpt other freeform items such as statues and decorative elements that do not need to be exact.

*History in the hobby. How you learned to build. Did you have a mentor or just trial and error?*

All of my work is trial and error. There are no classes you can take for this sort of thing. It is similar to making miniature models for movie sets. For every new project, I need to figure out from scratch how to create the original sculpture. It's not just a matter of making blocks. One project may require blocks to make a circular tower and the next project could be making steel I-beams for bridges and the next project might be sculpting the texture of grass and stones for floor tiles.





*What scale and why that scale.*

The most common scale I build for is for 28mm figures or Dungeons and Dragons figures. This is because some of my first projects were tabletop scenery and display backgrounds for Warhammer games produced by Games Workshop. I enjoyed painting their miniatures and wanted to make shelf displays for my miniatures, but there was really nothing at the time allowing me to do this. This idea got me started in experimenting with making molds of textures and blocks.

*What areas will you help other modelers by mentoring.*

Most of my help is in the form of building tutorials on my web site and also YouTube videos describing some of the processes used in model building and mold making. The building tutorials show how to make a complete project using the molds from my web site, but they also have many tips on building other items from scratch.

I take all of my own photos, but rarely put myself in the photos. For my tutorials, what is most important in a photo is that it clearly describes how to do a specific step in the building process.

Most photos I use show how large pieces are assembled using smaller and specific blocks. People following my instructions need a clear understanding of which blocks are used.

*Talk about your company, why started, products, future plans.*

Our company is small, just me and my wife Joanne. I plan all of the projects, do all of the sculpting and mold making, write all of the building instructions and take all of the photos. My wife Joanne processes the mold orders, handles all of the packaging and shipping, keeps the books and takes care of all of the paperwork and taxes.

You can reach Bruce at: [Bruce.Hirst@newtracksmodeling.com](mailto:Bruce.Hirst@newtracksmodeling.com). Thanks for sharing your products. It was something new and can certainly be helpful to many modelers.



This next modeler collects 1/50 scale construction equipment that can be used in O Scale railroads even if not precise scale. There is no alternative for some models.

### **Graham Barnewall**

My name is Graham Barnewall from Dublin Ireland. I first started seriously collecting diecast construction models in and around 2002, with a few small purchases of models more on the toy side beforehand. With the advent of more reliable and faster Internet, it gave me access to a world of online stores from all over the world, and a much wider range of models than were available from stores here in Ireland.

I think the addition of construction models to an O gauge layout and vice versa is quite important as there are some very close connections in the real world such as "side boom" or "pipe laying" equipment which is primarily used to recover rail cars and engines in derailments and wrecks. Also in the maintenance of rail roads, "Road rail" excavators are very common in Europe when carrying out re-ballastings or track replacement/maintenance. Also

there is a connection with the massive coal trains and the mining machines which expose the coal and process the coal, and now also with Caterpillar's acquisition of what used to be GM's EMD

The diecast models come 100% made with some having a small few loose parts to be fitted such as mirrors, beacons or antenna due to their fragility in the packaging. I have carried out some custom detailing and repainting of some models in unavailable company liveries or local company liveries. This became a big thing within the hobby with collectors as model manufacturers would only produce what they were licensed to produce and a lot of collectors' favorable company liveries were not available. Then came collectors who took

on custom builds, either heavily modifying a base model to some extremely talented guys who completely scratch built models from the ground up.

I have used some skills I picked up when I was a kid building plastic kit models from Airfix and also from my trade as a toolmaker,

The vast majority of the diecast construction models are produced in 1/50 scale with the next most popular being 1/87 then 1/35. There is a direct connection between 1/87 and OO model railroading which is very common in Europe, 1/35 is mainly agricultural models.

95% of my collection is 1/50 with a small group being 1/48 scale made by a US manufacturer called CCM who are a licensed Caterpillar model maker. They make fine brass models in 1/87, 1/48 and 1/24 and have a high quality 1/48 diecast line up, and the 1/48 scale models tie in 100% with the O scale railroad items.

I think I always had heavy machinery in the back of my head, being exposed to a crane hire company as a young kid and then seeing big road building projects take place very close to my home. Then a new job put me in the middle of heavy equipment from the recycling industry which further added to the urge to start collecting. I thought it was very cool to hold in your hand the exact machine that you operated or repaired or seen in the flesh.

Another part of the hobby was collecting heavy haulage rigs, these would be seen hauling earth moving machines, or abnormal loads etc. This got me interested in O scale railroading. I wanted a big engine to pose as a heavy haulage load being hauled on a girder trailer set up. My first purchase was an Atlas O GP60 in UP colours, it was a dummy unit. When it arrived I was completely blown away by the feel, finish, quality and weight of the engine. I was now extremely curious as to what else was out there, and I wanted a bigger engine and a more modern diesel engine. I stumbled across MTH, not heard of in Europe at the time. Soon after a 2 rail BNSF AC4400cw arrived, I was overjoyed, and it sat on a short length of track for a while before I could not resist any more. I needed to see it move, hear its sounds, engine, bell, horn etc. I got a simple transformer and some more Atlas track and I ran it forwards and backwards over and over. My hunger for more grew, and I bit the bullet and bought the DCS set up and more engines followed. I created a small "carpet dio" (this is common "quick set up dio" done by some collectors in the hobby) featuring the BNSF AC4400cw being lifted from a heavy haulage rig onto its tracks by two telescopic cranes a Liebherr LTM11200 in German hire company "Franz Bracht" colours and a Terex Demag AC500 in Austrian hire company "Felbermayr" colours. I know two European companies would never be seen in real life lifting an American diesel engine, but it didn't bother me. It was all the heavy iron I liked working together.

Here are some links to friends and Facebook friends who collect and sell diecast machines:

- [Butch Diggins who runs a great online store](#)
- [This another great online store who also have a great forum, Chuck is the owner.](#)
- [Anthony Chaput from Canada who collects 1/48 CCM Caterpillar models and has created some excellent custom models.](#)
- [Martin David Williams from the UK who has a fine collection of diecast original and customized.](#)
- [Gaz Evans who is probably the best "attachment" modeller around, making buckets and hydraulic hammers, etc. in 1/50 scale.](#)
- [Ian Webb who runs a fantastic model review website called cranesetc and youtube channel, he has a vast knowledge of the industry.](#)

There are several manufacturers in the industry, catering to all levels and most budgets. At the high end of things are YCC and CCM.

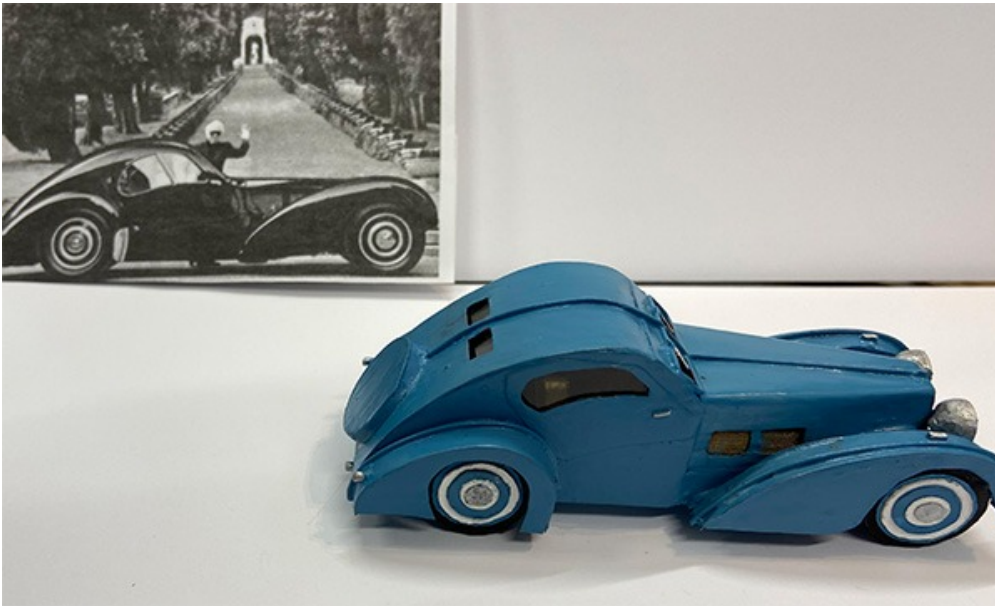
YCC mainly replicates cranes from Liebherr to a very very high standard in 1/50, and their basic models can retail for \$1000 or more.

CCM have an extremely high quality 1/48 line up in brass with prices upwards of \$1000 too. Mainly nowadays only replicating caterpillar equipment, but in the past they have made models of Manitowoc cranes, Link Belt cranes and Bucyrus Erie cranes

Middle of the road are Conrad, NZG, WSI, IMC, Diecast Masters, CCM's diecast replicas and First Gear,

Conrad are German, and I think the only German company still manufacturing in Germany They are very well built models, extremely sturdy, lacking in fine details compared to others, but overall, great models

You can reach Graham at: [Graham.Barnewall@newtracksmodeling.com](mailto:Graham.Barnewall@newtracksmodeling.com). Thanks Graham for your help and information. I learned about manufacturers I had not previously heard about.



The JN&P President got a yellow Dusenberglast year, so now his wife got a blue Bugatti. It is a scratchbuilt brass O scale model.

Next up on my workbench is a 4 wheel Private Business Car for the JN&P President's Grandson.

Well, that is it for this "New Tracks" article. I hope you enjoyed it and learned a little. Please follow my [Facebook page "Jim Kellow MMR"](#) so we can stay in touch between articles.

Also, please subscribe to my website: [NewTracksModeling.com](http://NewTracksModeling.com) to get log in links to my Zoom and live streamed YouTube events. Be sure to please give me your comments, suggestions, and modeling ideas. I so enjoy hearing from you.



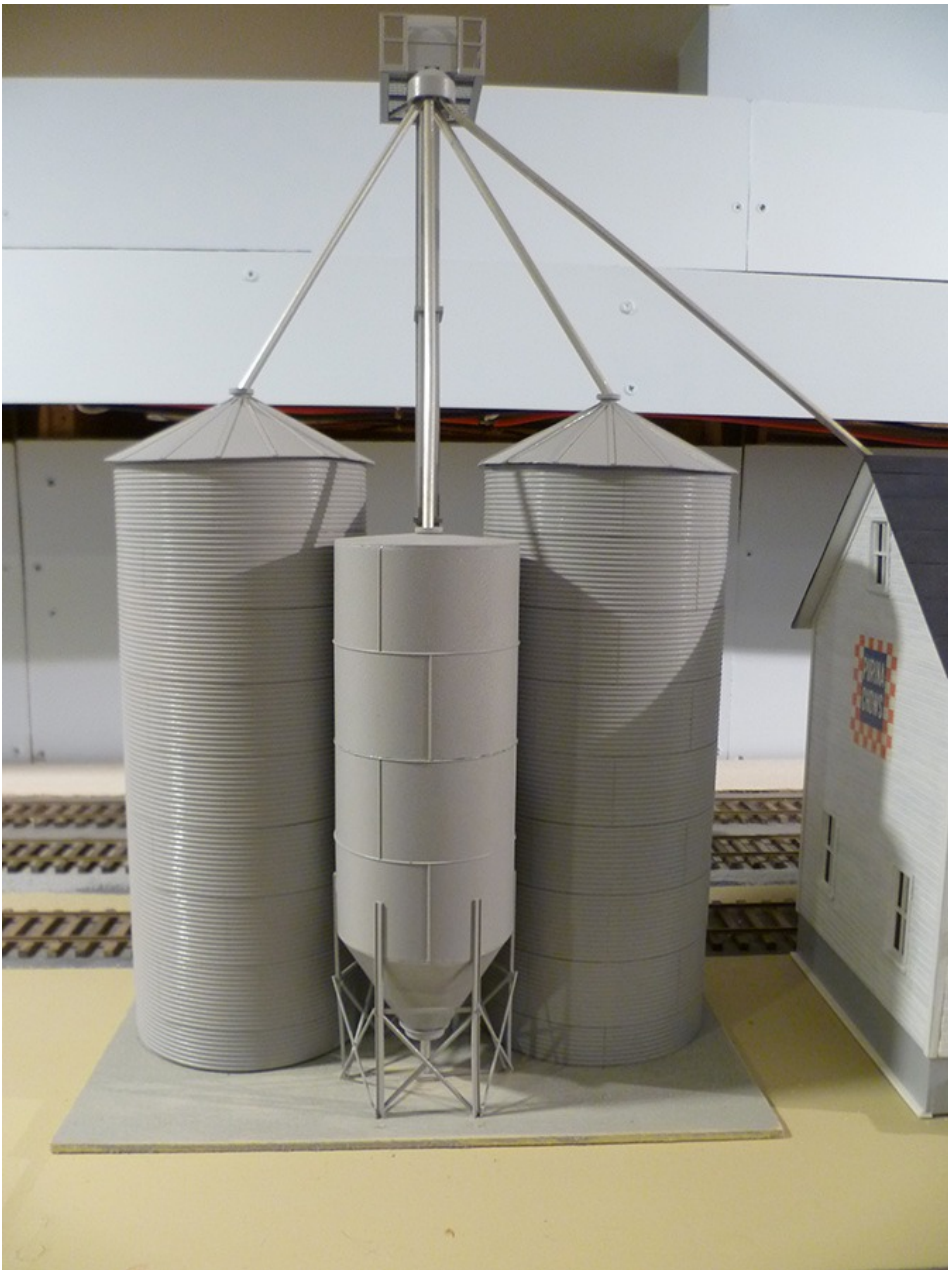
Time for me to return to my workbench. Thank you for reading this far. I really appreciate it. As always, best of modeling to you. It really can be fun!

# WHAT DOING?

What our readers are up to. Have something you want to share, drop me an Email to [daniel@modelrailroadresource.com](mailto:daniel@modelrailroadresource.com)

## A FEED MILL EXTENSION

Article & Photos - Ian Munro



*A close up view of the bins. I still have a minor problem to overcome with the left bin's roof which I intend fixing now that the bin is in its final position. I also intend carrying out some weathering on the small bin.*

I recently undertook a project to add grain storage bins to a feed mill located in one of the towns served by my short line railroad which is being built in New Zealand. My philosophy behind this particular industry from the outset was to have an operation that could justify a regular numbers of covered hoppers moving through as well as the mill having its own switcher. Prior to installing the storage bin complex I felt I had partially achieved this, but always had in the back of my mind to make an attempt at building these along with the associated elevator tower and piping.

Over time, I had accumulated a range of information from photographs of a feed mill in Knoxville, PA taken as far back as 1976 when I first visited my favourite short line, the Wellsville Addison & Galeton, to articles as recently as 2021 with a very interesting article 'Five Grain Elevators in Five Weeks' in the January issue of *Railroad Model Craftsman*. All this information went on to prove, if in fact this was necessary, that no two feed mills are alike. So I had plenty of information to go on, all of which was continually referred to as the project progressed.

Of course, if you are in HO, there are a number of commercial products available which will save you time and let you progress quickly. O scale is an entirely different matter with the only kit available, that I'm aware of, being the Walthers Cornerstone (now Atlas) Sur-Sweet Feeds that forms the basis of the feed mill. I did look at using some of the HO items, for example Rix Products grain bins, but found that the moulded corrugated sheet cladding would look far too small in the larger scale. So it was going to be another scratchbuilding project and one that ended up using quite a lot of bits and pieces I already had, including the PVC piping that formed the substructure of the bins.

The two large bins are made from PVC drainage pipe left over from a project I undertook shortly after we moved into our present home. I only had a hacksaw to cut it so I ended up with uneven ends not suitable for a level structure. On a visit to a local hardware store, I discovered PVC sewerage connectors so I purchased two of these cutting them in half and inserting in the pipe to give me a level top and bottom. As the diameter of the connectors was greater than the pipe, it was necessary to split it to wrap around the connectors with a strip of styrene filling the gap.

My initial plan was to use Builders In Scale corrugated aluminium siding, so placed an order for enough packs to cover all three bins. This is where this project became derailed for a time. I cut this siding into scale sheet sizes and started applying these to the piping. Initially it went well, but this siding is very sensitive and just one or two dents from handling ruins the overall look. Even with the most careful handling it was difficult to avoid such incidents. Time to look at other options. When I took this project up again, I finally decided to use Evergreen corrugated siding. I had already looked at this, but decided against it as being too thick; however, in the end, it has done the job with the final task after application being to mark lines where sheets would join.

The small bin was originally a fuel tank from a Walthers Cornerstone Phoenix Fuel Oil Corp kit from which I removed the moulded on sheet cladding lines to provide a smooth surface for the aluminium cladding. I thought that the siding would be easy to apply due to the smaller diameter – the outcome was worse than the larger bins so a rethink was also needed here. Fortunately, I was able to put together another bin using parts remaining from this kit, but did not reclad it, just leaving the moulded on sheet detail. This is most probably not prototypical, but then no two feed mills are alike.

With the cladding applied, it was time to look at the conical roof of each bin. Fortunately, a member of our informal O Scale group is a retired draughtsman who drew the template for the roofs as well as the conical structure attached to the underside of the small bin. He also came up with curved nail scissors which made cutting out from a thin sheet of Evergreen styrene I had on hand a lot easier. The circular cut out was then pulled into the conical shape and applied to styrene supports that I had already glued into place. To finish off the roofs, I applied ribs cut from thin styrene strip. These are a little oversize, but help hide the supports that were showing through the thin roof material.

The roof on the small bin was left unaltered, and to finish this structure off, I applied bracing you can see in the photos which was a combination of Gale Force 9 plastic shapes and small diameter wire from an old pack of magazine binder wire. This has resulted in quite a firm structure. A pipe was added to the bottom of the bin running into a ground fitting that would run into the mill itself. An idea I got from the photos I had taken of the abovementioned Knoxville mill.

With the bins taken care of, I started on the elevator tower and head. I could not find enough information amongst the various magazine articles I had to give a clear idea of dimensions and how they would fit with O scale. Fortunately I came across the website for Scafco Grain Systems which gave me a range of structures along with all the important dimensions, so it was just the case of selecting the one that would suit my situation. The tower and head are scratchbuilt from Evergreen styrene with the bracing connected to the two legs from Faller plastic shapes. The distributor head is from a Rix Products roof top vent and cyclone pack, while the access ladder and handrails are Plastruct products. The platform around the head is made from a Plano Model Products slotted pattern boxcar roof walk with supports made from Faller plastic shapes. The piping is from K&S aluminium tubing that I left in its natural colour.



*An overall view of the feed mill complex that gives you idea of how the elevators dominated the surrounding buildings. I had to keep in mind that it did not interfere too much with the upper level as well as also allowing for the uncoupling of cars on the adjacent tracks during switching moves.*

Prior to assembling on site, I sprayed everything except the piping with an enamel followed by a matt finish to reduce the gloss. I couldn't get any clear indication of what the correct colour would be even though I had taken photos of these structures on subsequent trips to the US. It really depended on what time of day photos were taken, so in the end, I settled on a rattle can colour I had on hand.

All three bins sit on a base that is secured to the layout and that will eventually be blended into the surrounding scenery. Overall, I'm pleased with how this project turned out as it adds to the character of this industrial complex, a major customer of my short line.

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# ROBERT POOLE'S SOUTHERN PACIFIC

## UPDATE

We looked at Robert Poole's Southern Pacific Coast Line back in the March/April 2020 O Scale Resource. [You can read that here](#). Robert sent us some updated information so let's see what he has been up to.

My modeling efforts this year focused on two unfinished places: Santa Barbara and Moorpark (an older small town between Simi Valley and Camarillo).



The Santa Barbara effort included three projects built entirely from scratch (i.e., draw plans, figure out how to build and using what materials, and then do so). These were the fig tree to the left of the depot, the Bekins warehouse to its right, and the back side of the iconic Southern Pacific roundhouse, down the tracks SE of the depot. For the first two, I had photos Lou and I took about 8 years ago; for the roundhouse, just a single B&W photo in a book on Santa Barbara then and now. All three projects were somewhat intimidating, but they all eventually succeeded.

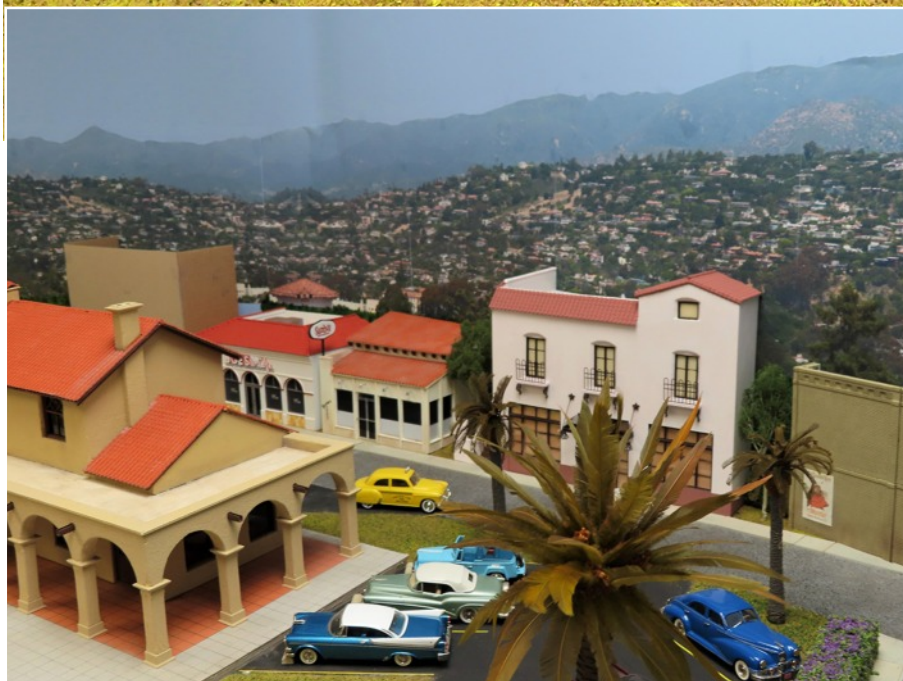
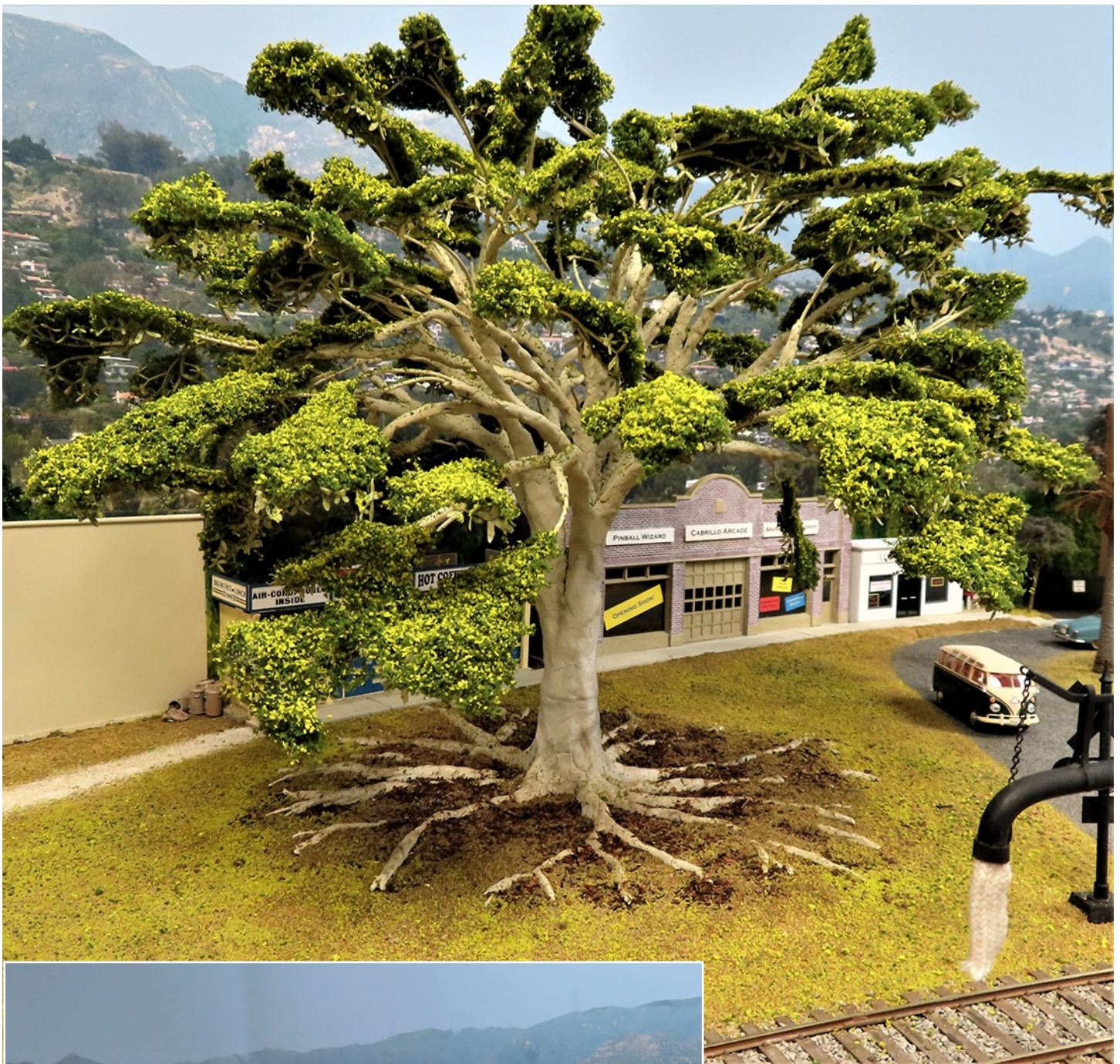
The depot was custom-built for me about a decade ago by cousin Tom Yorke, ex-Disney graphic artist and professional model-builder.

# FIC COAST LINE



For the buildings behind the depot, I called on Tom again, and he produced wonderfully detailed models, again from just a single photo in that Santa Barbara book. The tool & die works is from a kit, consisting of wall modules that could be assembled into about six different configurations. Since I had a very long, narrow space to fill, I build it as a “flat,” and it came out pretty nice.





Prior to this year, Moorpark had only the Southern Pacific depot and a lot of empty space. It took awhile to figure out a few streets to fit into the space traversed by parallel main line track plus turnouts leading to a small locomotive servicing facility just outside of town. Then I laid out the streets and made cardboard mockups of the potential buildings that would fit and be appropriate for a small town in 1956.



The back street is finished, with the buildings in the first photo: three salvaged from my old layout in California and three newly built from kits. The streets and sidewalks went in first, before any structures. The second photo shows the buildings on the portion of Main Street across the tracks from the remainder, still to be developed. Three of the buildings are refurbished ones from the old layout; the Moorpark Hotel is a newly-built kit.



Photos 3 and 4 are buildings on the road approaching Moorpark that becomes Main Street, both built this year from kits. As you can see, the woman who owns the Corvette is in the office having a contretemps with the manager over a bill for the car's recent tune-up, while an attendant checks the oil and tires (remember those days?). And the Texas Tavern is a fun little building modeled after an actual place in Virginia.

In 2022, I will finish Moorpark and move on, most likely to plan and start to develop the industrial area and depot in Oxnard, and possibly to fill in the one empty place in Burbank for a Pacific Electric trolley car barn and electrical substation.





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## **O Scale South 2022**

**February 26<sup>th</sup>, 2022**

Atlanta, GA USA

Cross of Life Lutheran Church,

1000 Hembree Rd, Roswell, GA 30076

7th Annual Atlanta O Scale 2 Rail Meet; Sales Tables, Swap Meet, Modular Layout Display, Layout tour information at the meet. 9am to 2pm Saturday February 26, 2022, \$5 Admission (spouses & children free)/ \$25 per 8ft table includes admission, email or call 770-337-5139 to reserve tables/more info.

Email: [daniel@southernoscalers.com](mailto:daniel@southernoscalers.com)

Web: [www.oscalesouth2021.com](http://www.oscalesouth2021.com)

## **O Scale Invitational 2022**

**March 4 – 6, 2022**

Tequesta, Florida

The 2nd Annual O Scale 2-Rail Meet.

Friday and Saturday 10AM – 6-PM, Sunday 10 AM – Noon at the American Legion located at 775 US-1 North, Tequesta, Florida 33469. Admission is FREE, Tables are \$20 each (tables limited reserve now). American Legion full-service dining room and lounge open to all attendees, modular layout, raffles, swap meet, buy sell or trade. Sponsored by the Southeastern Florida O Scalers. For information and tables for sellers contact Stephen Pariseau (561-222-3908) or e-mail [sdpariseau@gmail.com](mailto:sdpariseau@gmail.com) or Walter Horlacher at [horlacherw@bellsouth.net](mailto:horlacherw@bellsouth.net)

## **O Scale March Meet**

**April 1-3, 2022**

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Website: <http://marchmeet.net/>

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## **Harrisburg All O Scale Meet**

**April 2, 2022**

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## **Strasburg 2 Rail Train Show**

**April 23, 2022**

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Strasburg Train Show: Two-rail swap meet at the Strasburg Fire Co, 203 W. Franklin St, Strasburg, Pennsylvania. 9 am-1 pm. Admission \$5, wives/children/military w. ID free, tables \$25 for first table, additional \$20 per. Great food, modular layout, clinics. Contact John Dunn (609-432-2871) [Click here for info.](#)

## **O Scale West - S West and Narrow Gauge West**

**May 26-28, 2022**

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## **Harrisburg Narrow O Summer Meet**

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## **Strasburg 2 Rail Train Show**

**October 15, 2022**

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Strasburg Train Show: Two-rail swap meet at the Strasburg Fire Co, 203 W. Franklin St, Strasburg, Pennsylvania. 9 am-1 pm. Admission \$5, wives/children/military w. ID free, tables \$25 for first table, additional \$20 per. Great food, modular layout, clinics. Contact John Dunn (609-432-2871) [Click here for info.](#)

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