

# Conowingo Models



## GENERAL INSTRUCTIONS HELP

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Directions for Conowingo Models kits will skip around from one sub-assembly to the next. The intent is to keep the model moving forward, helping you complete it in less time. We suggest that you check off each step as you complete it. We're currently reworking instructions on our kits to more compartmentalize instructions and include check boxes for completed areas.

It is best to read through the directions before you begin construction. This is so you understand the process. On occasion, we will explain the hows, whys and important things to note. We explain what worked best for us to construct the kit. You may decide to take a different approach. That's ok.

Many of Conowingo Models kits are unlike any kits you've seen before. In some cases, we use unusual building techniques to make things easier to assemble. In some cases, it's to add detail. We've found that some of the added construction details give you a sense that you're really constructing a building.

Our intent is to provide modelers, beginner to expert, the same challenges.

We generally do not provide detail parts. This is because we want to not only keep the price down for you, but increase creativity with the kits.

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## RECOMMENDED PRODUCTS

Listed below are the products we use. They may or may not be the best, but we have experience with them and they work for us and feel that you would have good luck with them as well. Different people like different products for different reasons. Find what works best for you and stick with it.

**WE DO NOT FORMALLY ENDORSE, NOR ARE WE PAID TO ENDORSE ANY OF THE FOLLOWING PRODUCTS.**

However, we're always open to endorsements.

## 3D PARTS

Thanks to Bernard Hellen of [miniprints.com](http://miniprints.com), we recently came upon the Tamaya Sharp Pointed Side Cutter. This product is great for cutting out 3D printed parts. It works well on other styrene parts as well. It's Tamaya part number 74035. They have an MSRP of \$45.00, but can easily be found for about half of that. Huge hint- Only use them for 3D printed parts. Do NOT use them to cut ANY wire!! Ask us how we know.... A big key with these is that you want them as sharp as you can get them, so don't cut plastics with them.

Also on the 3D parts front- We recommend washing 3D parts in a solution of water with a drop of **Dawn dish**

**detergent.** While we wash parts in both Isopropyl Alcohol and again in water after production, it doesn't clean them up as much as we'd like.

We currently produce some 3D parts, however, those are currently, mostly for production of our kits. We do plan on delving further into this area of the hobby when we have time to work on a few minor issues with the printing process.

Recommended suppliers of 3D parts - [miniprints.com](http://miniprints.com), [Rail-Scale Models](#), [Mine Mount Models](#) and [Mudd Creek Models](#)

## BASE MATERIALS

We strongly recommend using [Gatorfoam](#). Make sure you use the link. There are many like it, but this is what works. We tried using foamboard from a box store. That model spins because the foamboard warped. Gatorfoam doesn't warp. In fairness, Dave does provide us a small supply of Gatorfoam to use for our base material in exchange for mentioning that we use it.

One good tip we've come across and plan on using is to mount each structure on a piece of Gatorfoam so that when it comes time to building the layout, or tearing down and restarting the layout, the structure can be easily removed without damaging it.

## CABOOSE LIGHTING KITS

Conowingo Models offers a caboose lighting kit, which is applicable on Caboose #1 and Caboose #2. Installation for both kits is pretty much the same. However, they require the builder to have a working knowledge on how to install such kits. Instructions are minimal as a result.

1. Plan out the location of the caboose "building"
2. For the truck wiring, choose a place as close to the bolster as you can, but still inside the building. Ours are typically in line with the lateral center of the car, between the trucks.
3. Drill holes in the floor based on that location.
4. Plan on installing the bridge rectifier and resistors in the middle section for Caboose #1. Aft section for Caboose #2. Although unless the doors are modeled open, it doesn't matter in Caboose #2.
5. Select your marker location. On Caboose #1, it's a little bit difficult. It should probably go above the right side of the aft-most side window. If that doesn't look like it would work, try it below the cupola window on the right. For Caboose #2, we recommend centering it aft of the aft-most window, slightly above the top of the window. Neither caboose is real, so the choice is yours. You're not chasing a prototype.
6. Do your wiring before gluing down the building. We'd put the LED in the mid-section of Caboose #1. Aft section for Caboose #2. However, it would be either glued or taped to a wall so that all visible light from it is indirect. Be sure to trim down your wires, so you don't end up with a rats' nest. Include some slack so that the trucks can turn freely. Be careful, if you cut out too much wiring, you'll have to go back and solder some back in. Ask us how we know...

## GLUES

Unless specified otherwise, we recommend using either a wood/hobby glue or a fast-drying CA.

Aileen's Tacky Glue – Slow drying, lots of play time, but it will firm up fairly quickly. Peels off if you need it to, but not 100% of the time. We've had a 16 oz. bottle for several years. There are a few other types if Aileen's, but we haven't tried them yet.

CA – Fast drying. We recommend a medium viscosity CA. Lately we've been using Gorilla Micro Super Glue Precise in gel form. Make sure you use an odorless product.

Testor's Clear Parts Cement – We're still on our original bottle from 2012. It has a lot of the same properties as Aileen's, but it's thin and can get really runny if you're not careful. There are others, such as Canopy glue, but we don't have experience with them yet.

Microscale Industries produces Micro Liquitape. This is a temporary glue that is good for temporarily adhering things such as figures into a scene for photography purposes.

## FURTHER TIPS AND TECHNIQUES

We participate in a live, weekly Zoom show called “New Tracks Modeling”. This program is also available on YouTube, with previously recorded programs being housed on the YouTube channel.

This show has featured some of the great modelers of our time – Howard Zane and Tom Yorke come to mind, along with many talented modelers throughout the world. It also features manufacturers such as Broadway Limited and Kato, showcasing their latest products and answering your questions. All from the comfort of your modeling bench.

Chris also hosts a monthly show called “My Build” where participants can showcase their work.

If you need help with something or would like to share your knowledge, New Tracks Modeling is the place to do it.

To participate, see <https://newtracksmodeling.com/>

## PAINTS/STAINS

With the demise of railroad hobby paint companies, we’re somewhat at a loss of recommendations. For the most part, we’ve been sticking to Apple Barrel and Plaid. They’re cheap, readily available and easy to use/ clean up. I don’t know how well they work with airbrushes. However, acrylic paints will warp wood like it’s their job. You can fight this by bracing and/or painting each surface on both sides.

## ROLLING STOCK WEIGHTS

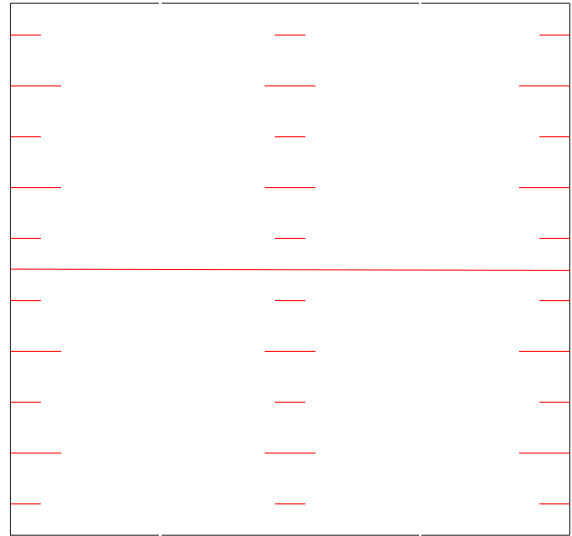
For a while now, we’ve recommended **tungsten putty**. It’s available from Amazon, but can probably be found elsewhere. It works well on the rolling stock. Once you’ve applied the decking, bolsters and queen post(s), fill in the gaps on the main body with tungsten putty. The catch we’ve found is that it should not be applied on the undersides, as it will leak out.

If you have more room to work with, fishing weights, commonly found at your local hardware store are great.

The National Model Railroad Association does have a standard, RP-20, which dictates how much a car should

weigh. While we don’t have a layout to fully vet the effectiveness of weights in cars, it seems that you can generally get away with less.

## ROOF PREPARATION FOR SHINGLES/TARPAPER



**These are general informational instructions on how to shingle or tarpaper a roof.**

If there is no bend in the roof, some of the below instructions do not apply.

1. Take one piece of the chipboard roofing and add guide marks with a pencil as follows and as shown above. Some of our kits already have this. We’re working to get our entire line up to this standard.
2. Ensure the cut line is facing up and that the line runs horizontally across the middle.
3. From the bottom, using a ruler, mark each 1/8-inch or so on both the left and right sides, stopping at the center cut line. It can be more or less than 1/8-inch.
4. Rotate the roof 180’ and repeat, ensuring that both sides are uniform.
5. Mark a middle guide using a ruler. You could go side-to-side if you desire.

## SCENERY ITEMS

Conowingo Models carries Moose Creek Trees in several sizes. We’ve found these trees to be good evergreens.

For bushes, grasses, weeds, we highly recommend

[Martin Welberg Scenery](#) products. [Scenic Express](#) is their US distributor.

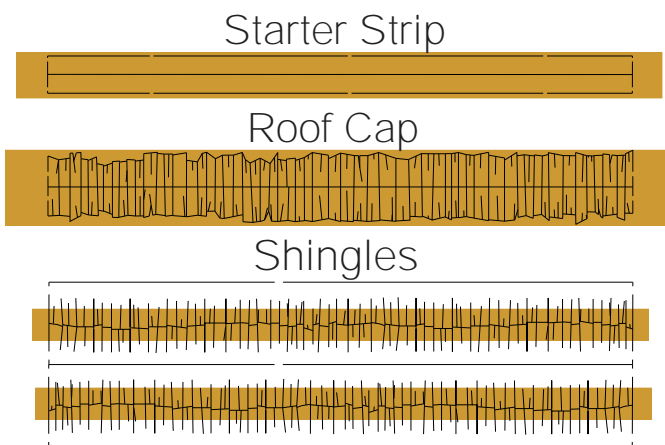
## SHINGLES

There are a number of shingle manufacturers out there. We work with [Rail-Scale Models](#) on a majority of our shingles. We would be remiss if we didn't mention our friends at [Mine Mount Models](#) and [Mudd Creek Models](#), who also produce shingles in multiple scales.

Many hobby shingle manufacturers include a self-adhesive backing on their shingles. This is great material. However, we've found that even with the adhesive backing, it helps to use glue to keep the shingles from slipping.

We recently heard of using a glue stick to glue down roofing. It makes sense in that there are no pesky glue globs to mess up your roofing job. However, we haven't tried it yet. Give it a try and let us know your thoughts.

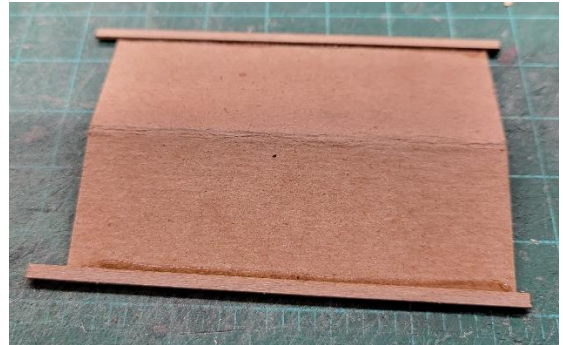
This diagram shows the three different types of shingling materials on a typical wood shingle carrier tray.



1. Locate the carrier tray with the shingles on it. Again, be very careful with the shingles as they are extremely fragile. Don't cut them out yet.
2. We recommend alcohol-based stains (such as Hunterline or Vetro) on this step or you can make a mixture of dark acrylic paint (black and/or brown) and water. You could also use a solution of alcohol and small amounts of india ink. You're looking for a driftwood-like color.
3. Quickly brush on the stain as shown above in tan. We used tan for clarity. It doesn't need to be as precise

as shown above. In fact, the more variation, the better. Ensure you do this for all the shingles, not just those shown above.

4. Add a weight and let dry to prevent warping.



5. Once the shingles are dry, cut the starter strips from the roofing carrier tray and glue down as shown above. (Pilot model did not have the laser-cut center.)
6. Apply the shingles beginning by covering the starter strip and overlapping the bottom.
  - Use the guides from the roof preparation section to judge the levelness of your shingle rows.
  - If the shingle strips break, simply line up the top of the strip and continue.
  - If there is too much slippage from wet glue, you may stop and return when the glue has set.
  - We recommend you add a row of shingles on each side before adding the next row. This helps keep the number of rows even.
  - Repeat for the other side as necessary.
7. When complete, ensure your rows are even at the top and that they do not overlap the laser-cut center.

Allow the roof to dry and cut the excess shingles from the sides. You may choose to add some weight so that the roof dries flat. Not adding weight may allow warping to occur, which, while it's tempting to see the results, probably will detract from the overall appearance of the structure.

## STAINS

As we've said, nothing beats real wood. We recommend staining things that you want to age. The catch is that stains warp wood, so you have to brace everything well and LET IT DRY for a while BEFORE staining. Use weights and clamps to stave off the warping.

While the stain dries in 15 minutes, it takes a good 24 hours to dry to prevent warping.

Hunterline Stains are a favorite of ours and do a fantastic job. <https://hunterline.com/>

However, if you're looking for a more subtle stain, we recommend **Vetero Weathering Solutions** <https://www.besttrains.com/>.

Spray flats – We use either Testors Dullcote or Rust-Oleum Dead Flat to seal models and protect weathering. The Rust-Oleum is typically cheaper, more readily available and available in larger cans.

## TARPAPER ROOFING

We found and adapted a tutorial by Jason Jensen. This tutorial can be found on his YouTube channel in episode 010.

1. Some kits come with pre-cut tarpaper roofing. If this is the case, locate the black construction paper carrier sheet with the cut strips on it. **\*\*\*Do not remove the strips from the carrier sheet yet.**

If the roofing material has not been precut, you can cut your own using a SHARP hobby knife and metal ruler. The tarpaper should be cut to 3/8 inch or 2 3/4 scale feet. We use 3 feet as a standard, because it's easier to work in round numbers.

You could not paint it in order represent a brand-new roof. Even with your structure having a new roof, it won't quite look right.

We recommend very quickly spray painting it with three different shades of grey. You don't want a uniform cover. Half-sprayed splotches are great.

2. It dries pretty quickly. Once the roofing is dry, cut a strip from the carrier sheet.

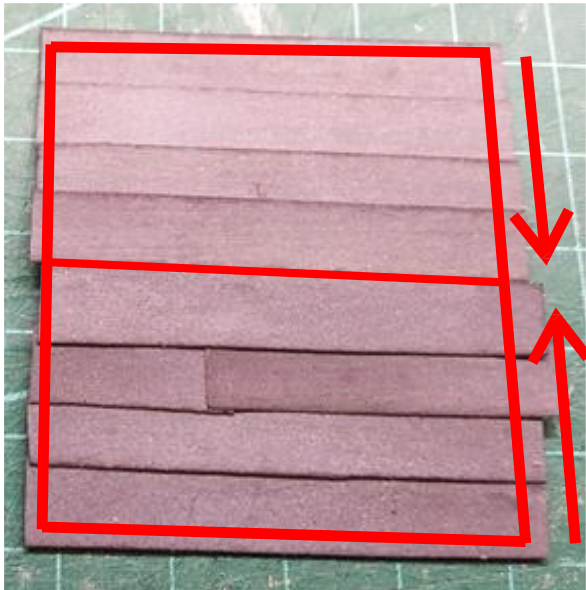
3. Take that strip and line it up along the corner of a scrap piece of 2x4 or an edge of a material you don't mind getting messed up.



4. Take either a 400-grit sanding sponge or sandpaper and gently run it across the construction paper strip. The goal is to blend the paint colors together.
5. If you so desire, you can dig into one of the long edges and sides of the construction paper enough that the black comes through to show roofing damage. It's your model, your call. (Photo shows fully assembled)
6. Repeat steps 3 - 6 until all roofing strips are complete.
7. On one piece of roofing material, scratch up both long edges if you're aging the roof. This will be your roof cap. Hold this piece separate from the rest.



8. We also recommend cutting a few patches. This adds character. We generally use round or rectangular patches. We use a ponce wheel to add nail holes to the outside. It would make sense to make your patches after the weathering has been done (after step 7)
9. Locate one of the chipboard roof pieces you prepared a while ago.



10. With the middle cut edge up, glue the roofing strips down in the following manner;
11. Start by adding a row of tarpaper at the bottom. Use the guides from the roof preparation section. Ensure the scraped black edge is on the down side. You want a slight overlap on the bottom edge and on both sides.
12. If you desire, you can cut a row short and add an overlapping piece. Left to right or right to left doesn't matter. This shows where the tarpaper roll ended and a new one began. You may also want to use a scraped edge on the "new roll" where it overlaps the "old roll". This shows character.
13. We recommend flipping the roof around and doing the bottom row.
14. Allowing for slight overlap, add rows until both halves are covered. Do not cross over the cut line in the middle.
15. Allow the roof to dry and cut the excess from the sides. You may choose to add some weight so that the roof dries flat. Not adding weight may add character, but you might not be happy with the results.
16. If you chose to add the bottom overlap, it may require a little bit of edge cutting and extra glue to get everything tucked into place.

## TOOLS

The late Neil Besougloff, editor of Model Railroader suggested always starting a new project with a brand-new **#11 blade** in your hobby knife. Personally, we have three hobby knives floating around the workshop at any given time. They take turns with the newest blade. The newest blade is always used on the main hobby bench where the finest details are done. The newest blade should be used for cutting parts from their carrier tray, decals. The middle blade floats around the shop and is used for general applications. The third, dull blade is used for trimming castings or applying putty. We feel that this accomplishes just as much, but isn't as wasteful as new blade, new project.

One tool that we extremely highly recommend is the **Ultimation Slicer**. <https://ultimation.ca/> is their website.

We highly recommend using a **metal ruler**. Plastic rulers are extremely easy to cut and will cause errant cuts to whatever you are working on.

## TRUCKS AND COUPLERS

We're a Kadee dealer and offer Kadee trucks with a majority of our rolling stock kits.

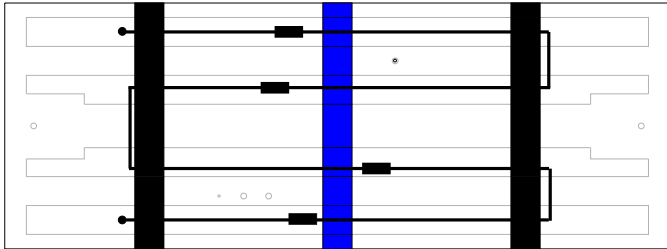
We also offer Kadee 148s with most rolling stock kits. They're the latest in coupling technology and are a modern replacement for the "old faithful" KD#5s.

We also offer several different selections from [LaBelle Woodworking](#) either with or in rolling stock kits. LaBelle currently owns several old lines of cast trucks, including Ye Olde Huff n Puff, Red Ball, etc.

## TRUSS ROD INSTALLATION - THREAD

1. Apply glue to the bottom of the queen post and insert it vertically into its laser-marked position as shown in step 10 of the Wire Truss Rods section.
2. Take the length of thread and tie an overhand knot at one end. (We used three knots and a bit of CA glue at the first bolster because the thread is thin.)
3. Carefully guide the thread through the bolsters, as demonstrated below.
  - As you are threading the bolsters, place a turnbuckle on the thread between each bolster. Random is fine. Do not glue them in place yet.

- You should have one turnbuckle for every span of the truss rods (a total of 4). Knots shown as circles. You will only have one knot at this point.
- The wooden queen post has notches for the thread to pass over. Ensure the thread is in the notches and that the turnbuckles aren't on the queen post.



4. Gently pull the thread to remove sagging. Be careful not to break the queen post or pull the knot through the bolster.
  5. Once taut, add the final knot (or several) as close to the bolster as you can get it.
6. Apply some CA to the thread at the end of the bolster to hold it in place.
- We hung the whole assembly from the workbench with a small clamp while it dries to keep tension on it. It doesn't hurt to add CA to each bolster where the thread carries through.
7. When it's dry, cut the excess thread.

## TRUSS ROD INSTALLATION - WIRE

In the next steps, you'll use two pieces of wire to form the four truss rods. If you decide to cut the two wires into four beforehand, make sure to attach the turnbuckles first. The space between the turnbuckle and the wire is nearly non-existent. As a result, it's nearly impossible to thread if you add the turnbuckle to the cut end. This is true even when working with the pre-cut ends!

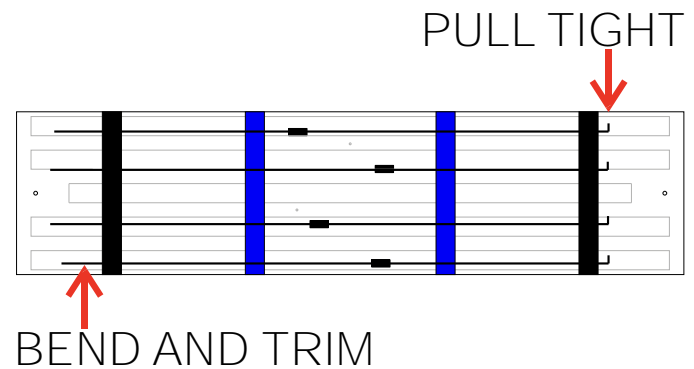
1. Take both pieces of wire and add a small, 90° bend at one end.
2. Feed one wire through one hole in the bolster.

3. Add a turnbuckle to the wire, but don't glue it yet because you will probably need to move the wire back and forth for proper fit.

Keep the turnbuckle between the queen posts.

4. Run the wire across the queen posts and through the corresponding hole on the opposite bolster as shown below.

Orientation of the bent end does not matter. It is merely to hold the wire taut when tightened.



5. Repeat steps 2 through 4 for the second piece of wire.
  6. Pull the excess wires and bend them behind the bolster.
- You want them taut, but not too tight as we've heard some people have had bodies break during the drying process.
7. Apply glue, preferably CA (cyanoacrylate), but you can use your preferred adhesive, to both bolsters around the holes.
  8. Apply a small amount of glue to each turnbuckle. Random placement is fine, as long as they are between the queen posts.
  9. When the glue on the wires is dry, cut the excess
  10. Using the excess wire, repeat steps 1 through 8, so that all four truss rods are threaded.

## TRUSS ROD INSTALLATION - ALTERNATE



Recently, we received some photos from builder Michael Reeser of the underside of one of our rolling stock kits. You will notice that he trimmed the queen post and only used two truss rods. This simple, yet neat change can make life a little easier when it comes to construction and gives a more backwoods look to the model. It also shows placement of the brake system.

Thank you, Michael, for sharing!

## WEATHERING WITH PAINT

As for rust, we use two different products, depending on the look we're going for. **Vallejo rust wash** works well. We only bought one container of it and it does the job. We also found that for a thicker rust, **Apple Barrel Burnt Orange** works well. Using a brush, we did the same applications mentioned above as with the white paint. Occasionally, we might add a dark grey to tint it.

If you have a surface that is dark, such as a cedar roof, that you are looking to sun bleach, we recommend several thin coats of **Hunterline Concrete**.

## WEATHERING WITH STAINS

As an example on weathering, we'll talk about St. Mary's Gate Lighthouse. We try to keep things simple. We started out by washing the braced walls with **Hunterline Driftwood**. Next, we used acrylic paints, (white and off-white mixture) thinned with dirty paintbrush water. Yup. I said it. Dirty paintbrush water darkens and mellows the paint at the same time. You must use water that has mostly black and white paints in it. If you use dirty water where you washed a red-coated brush, for example, it will leave a red tinge, that you do not want. We used sponges to drybrush on the white mixture. If it went on too strong, we drybrushed on more dirty water.

More recently, we tried a technique to age a white building that seemed to work surprisingly well. After

bracing, **VERY LIGHTLY** spray the structure white. You do not want a lot of paint on the structure. When that has dried, add a weathering stain over the top of it. This hits the wood that didn't get the white and ages the white that shows.

## WRAP UP

If there are any parts missing, please e-mail us what you need to complete the kit and we'll send it your way. I'm a one-man shop and I do occasionally miss things. Suggestions for improvement are also welcome.

If you have ideas for items that you would like to see included in this file, or if you have an idea of how to do something better, please drop us an e-mail.

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See the Conowingo Models website  
[www.conowingomodels.com](http://www.conowingomodels.com)

Or our Facebook page  
<https://www.facebook.com/ConowingoModels/>  
for more exciting, funky buildings and rolling stock for  
your model railroad!

Many thanks to Kathy, Jeff Grove, Steve Milley and  
Mark Schreier for their support!