

MAC-845S / 845T

Bethgon "Protein" Hopper Top



Thank you purchasing our MAC-845S (Short) or MAC-845T (Tall) "Protein" Hopper Top designed for HO Scale Bethgon aluminum hopper cars. The prototype cars haul a byproduct from the corn syrup production process called wet milled grain. The product is high in nutrients specifically protein and used as an ingredient in Cargill's "Sweet Bran" cattle feed. Unit trains originate in the Midwest and deliver to Cargill facilities at Bovina and Dalhart, TX. Located on BNSF Railway. Railcars are unloaded via rotary dumper just like their original use as coal hoppers so they all still have a rotary end and "Stripe" alignment to properly work.

Our model captures not only the look with a single piece 3D printed top but also the feel and texture of the canvas tarp through custom cut adhesive vinyl decal. Allowing for versatility in modeler fleets, the short and tall lid have the same footprint and are compatible with most HO Scale Bethgon models on the market. Short lids were the original style found on BN hoppers assigned to this service. Later private marked cars and BN refits have received the style hopper top.

This kit will allow you mechanical department to equip and entire fleet in a weekend, enjoy the build.

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STEP 1 – OPENING YOUR KIT

When opening your kit, you will find the following parts:

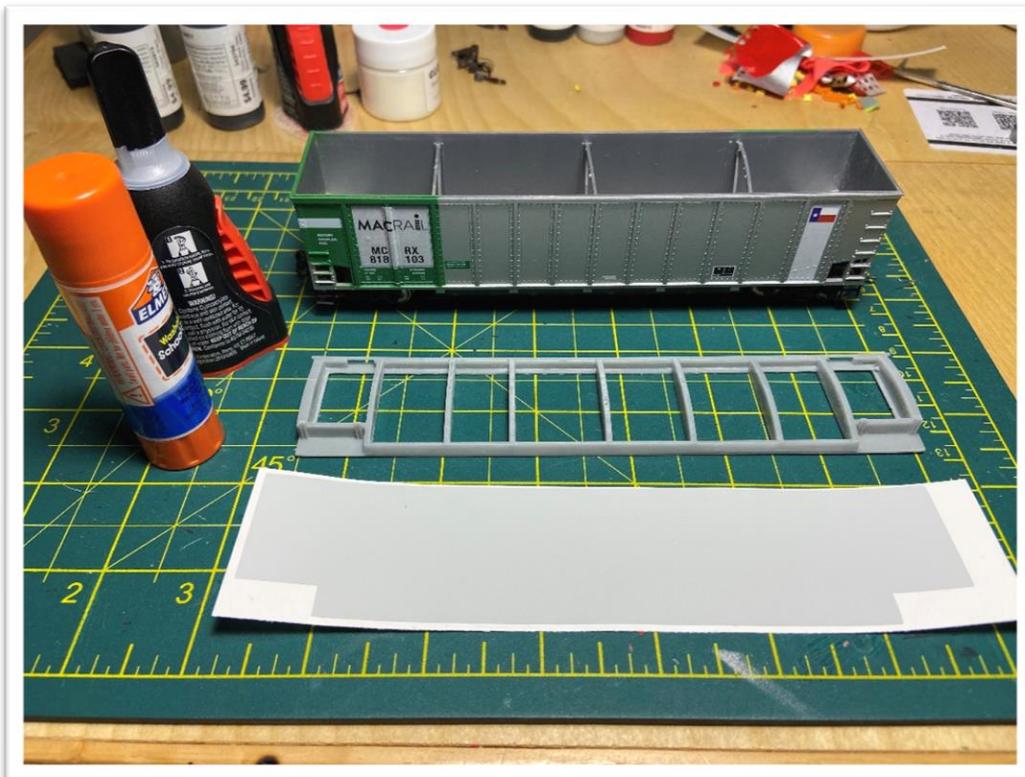
(1) 3D printed hopper top (Painted in aluminum finish)

(1) Gray adhesive vinyl decal

If you are missing anything or mess up something– please send an email to macrailllc@gmail.com

TOOLS FOR INSTALL (Does not include weathering items).

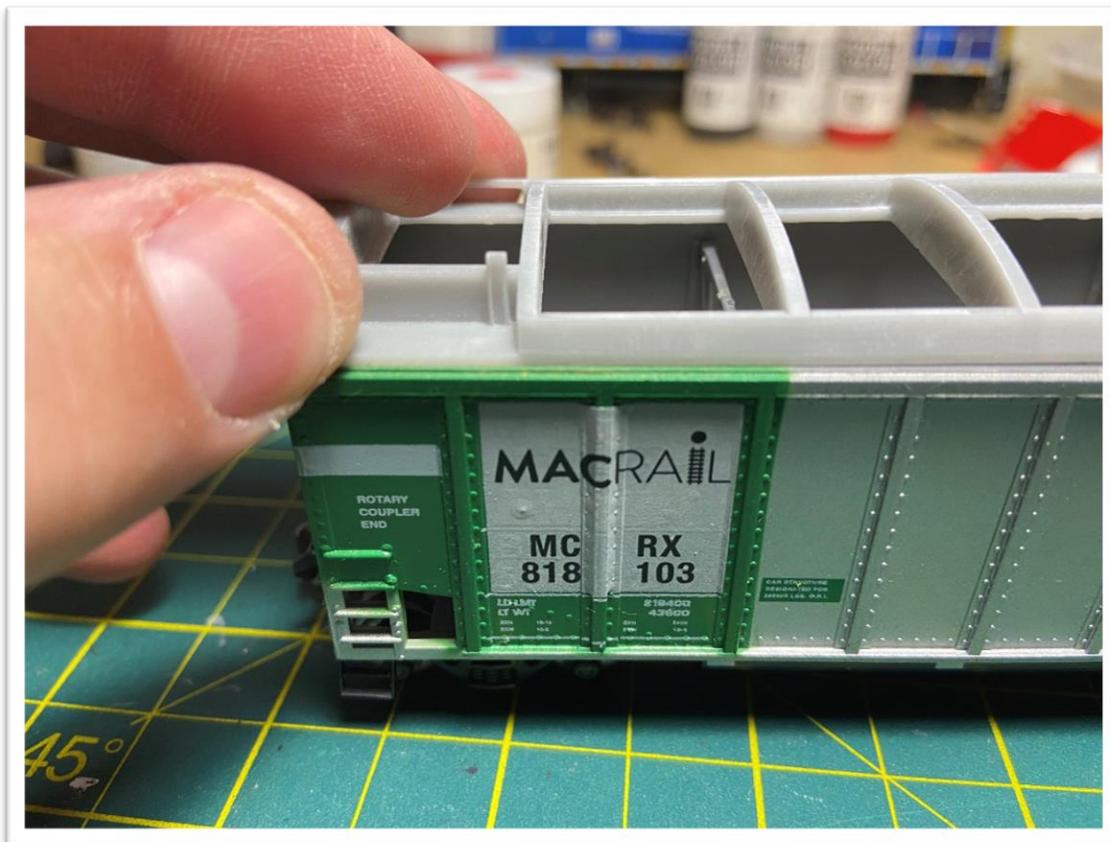
- Safety glasses
- Glue (CA Gel Type & Glue Stick)
- CA Accelerator (Recommended)
- Hobby Knife / Tweezers
- Sand Paper / Mask
- Toothpick



STEP 2 – PREPARE THE RAILCAR / TEST FIT LID

Your first item is verifying the top of the railcar does not have a molded on detail. The LBF cars do not, but cars like Scaletains and Athearn do require you first sand the top of the hopper flat. This will allow for a clean mating surface when you install the lid.

After verifying the railcar is prepared, next lightly sand the bottom of the lid. During the packaging process the lids are sanded to remove a majority of printing supports but before gluing on ensure it is flush and sand accordingly. The lids as is from package will have a bow in them given the lightweight structure. As the lid is glued down to the flat hopper surface this will no longer be an issue.

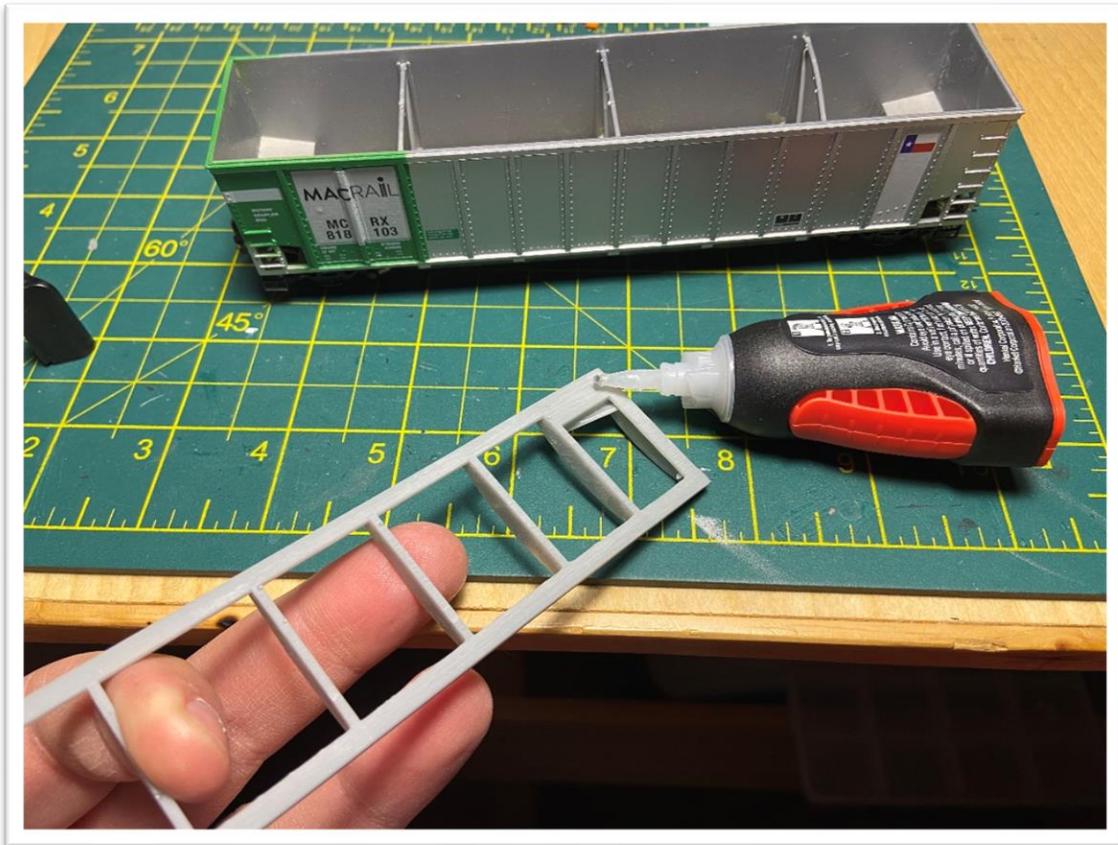


STEP 3 – GLUE ON LID

Satisfied with the dry fit – apply CA on the underside of the lid around the perimeter. I have had good luck with Loctite liquid and gel CA which can be found at Walmart.

Depending on the specific hopper brand you will have to center the lid on car given the fit. Some manufacturers like LBF have a longer body versus Scaletains which has a shorter carbody. Our lid splits the difference to offer the best versatility.

Install the lid from one side to the other ensuring it stays centered on the railcar. Longer cars like LBF will have a slight gap on the end which we will discuss next. I use CA accelerator to help with the curing process to ensure the lid does not pop up until dry.



STEP 4 – MIND THE END GAP

Since this model supports multiple manufacturers, it splits the size difference. On LBF hoppers there will be a slight gap on either end due to the car length. I use Tamiya plastic putty to fill the gap then use a silver sharpie or aluminum colored paint.

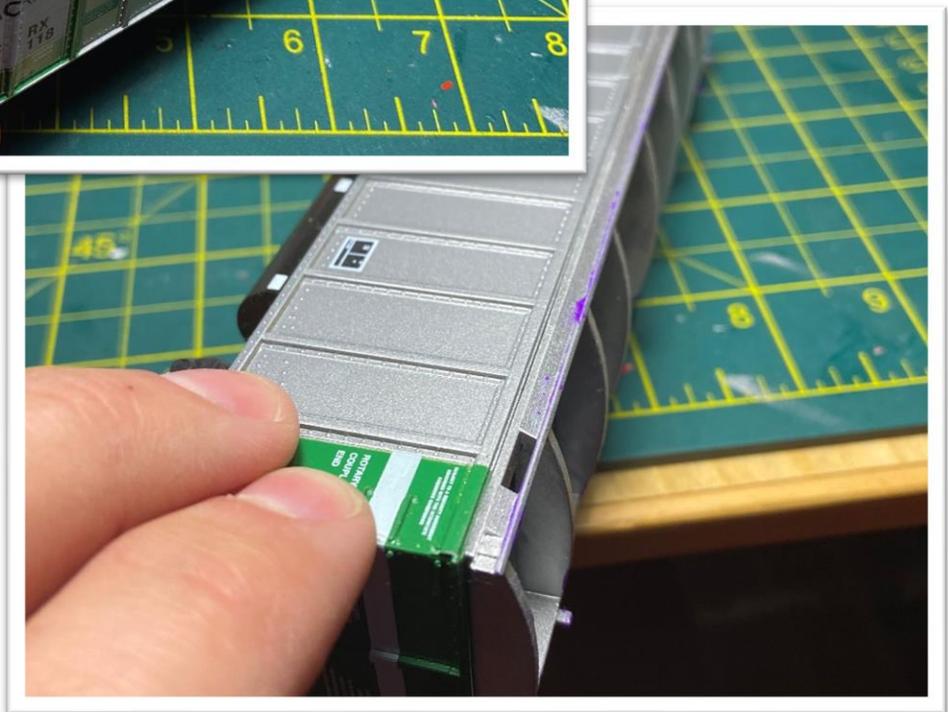
Photos below show left to right (Gap) (Filled with putty) (Painted). Once car is given matte finish and weathered this will blend in and also gives model effect of being welded to the cars like the prototype.



STEP 5 – TARP PRE-INSTALL

After the glue dries on the hopper top / hopper, the next step is a pre-install step for the adhesive vinyl decal. Using a glue stick run it around the perimeter of the hopper top (purple below). The glue helps secured the vinyl on the tighter curves and corners preventing them from curling up.

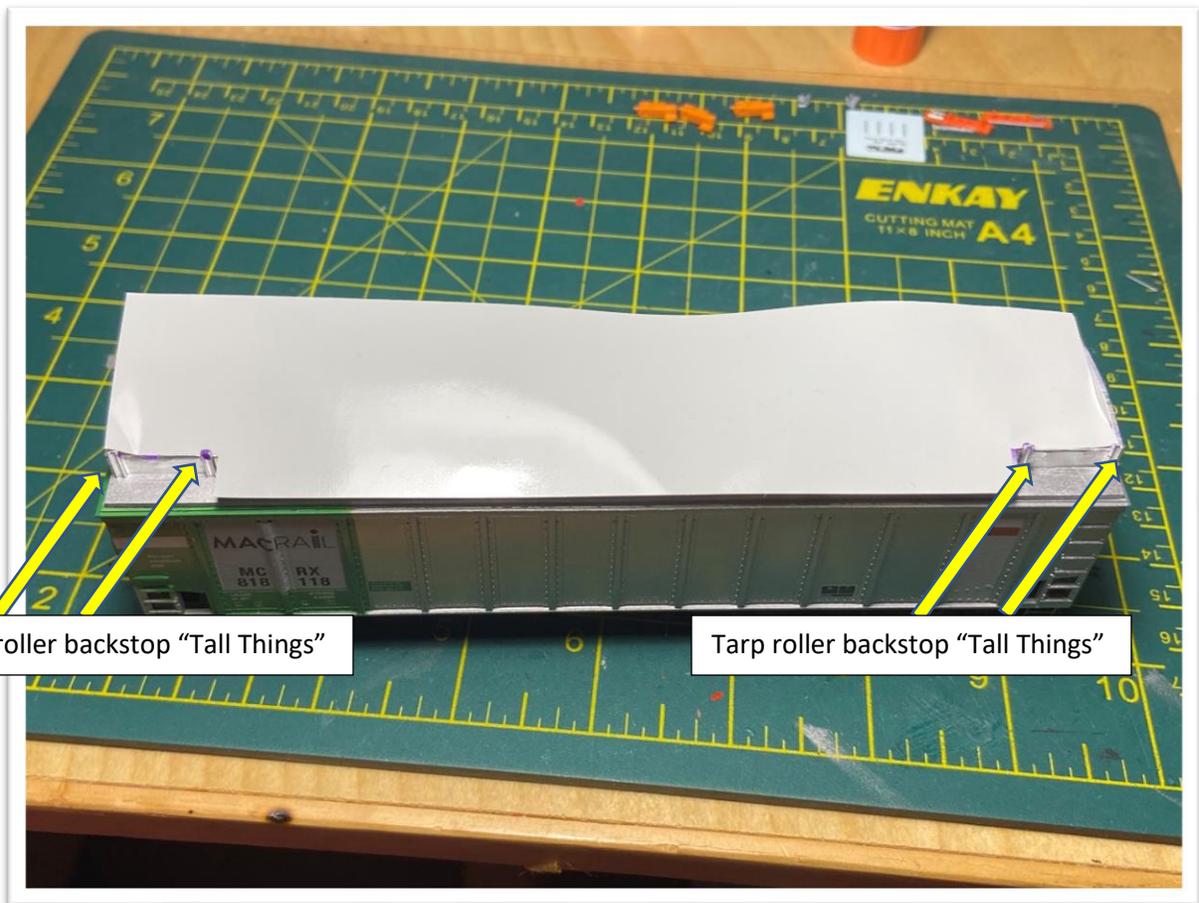
On the side with the “tarp rod” run the glue stick down the rod as the vinyl will tuck under like its mounted to the prototype tarp roller.



STEP 6 – INSTALL “TARP” (INSIDE CORNERS)

Each adhesive decal is specifically designed for either the tall or short lid that it comes with in package. However how they are installed is the same process.

Remove decal from carrying backing paper and line up the decal with the tarp roller back stops that stick up from the hopper top. The end ribs are wider to give some flexibility to adjust the end of the decal. Do not push down on the decal just yet, the corners inside corners to the inside of the back stops need to be correct first.

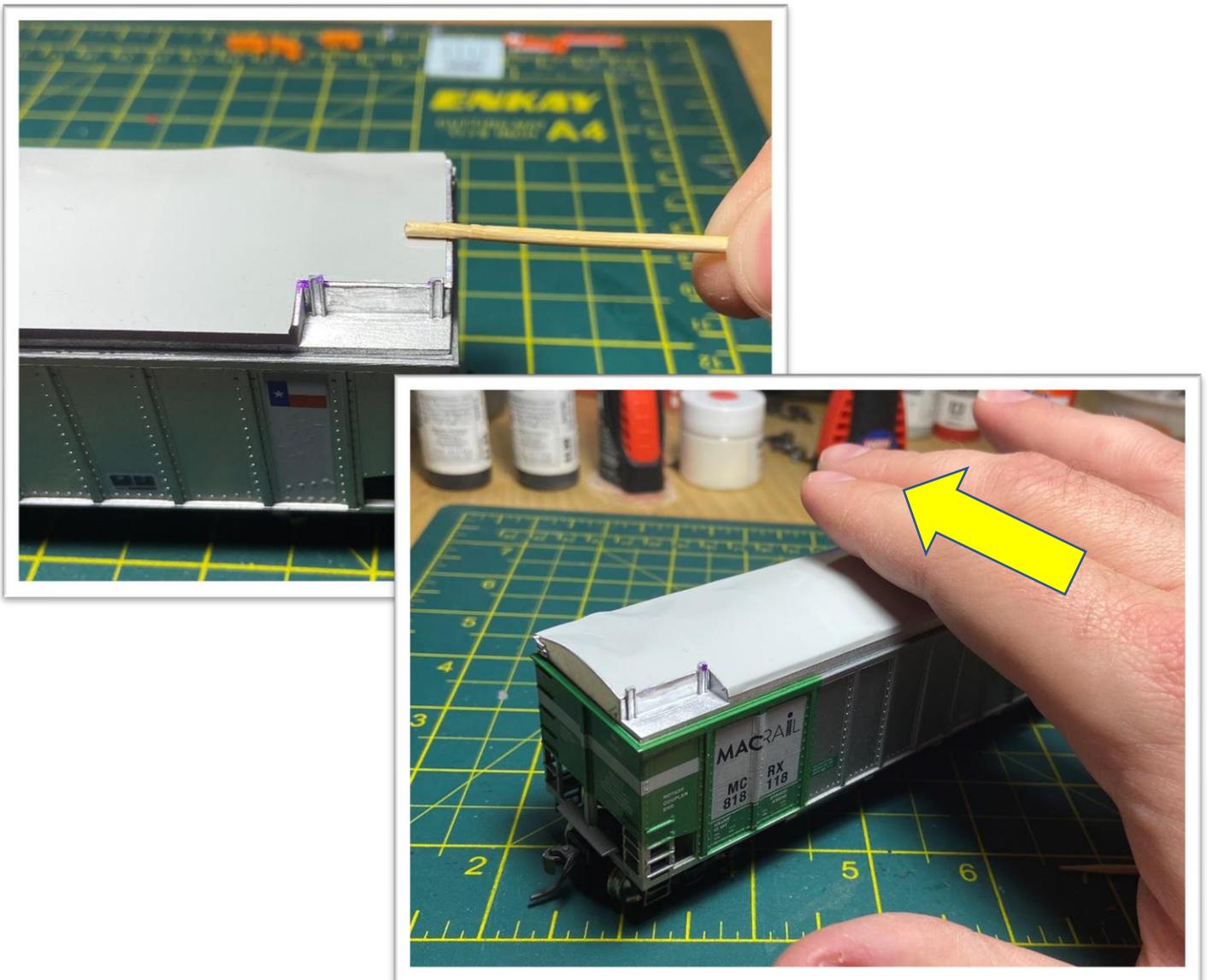


STEP 7 – INSTALL “TARP” (SMOOTHING)

With the decal set on the inside corner use a toothpick to burnish from the tarp roller backstops across the car. Work the straight edge behind the backstops down and out. Use your fingers or toothpick to smooth the decal across the center ribs as well. Take your time on this part, if it was installed in part 6 this part should just be smoothing out the decal and ensuring it adheres to the flat and curved surfaces.

Note: On short style lid, the decal on the notched end of the car will extend down the side and secure onto the railcar itself (Photo on page 1).

The tall style as shown below stops on the lids side.

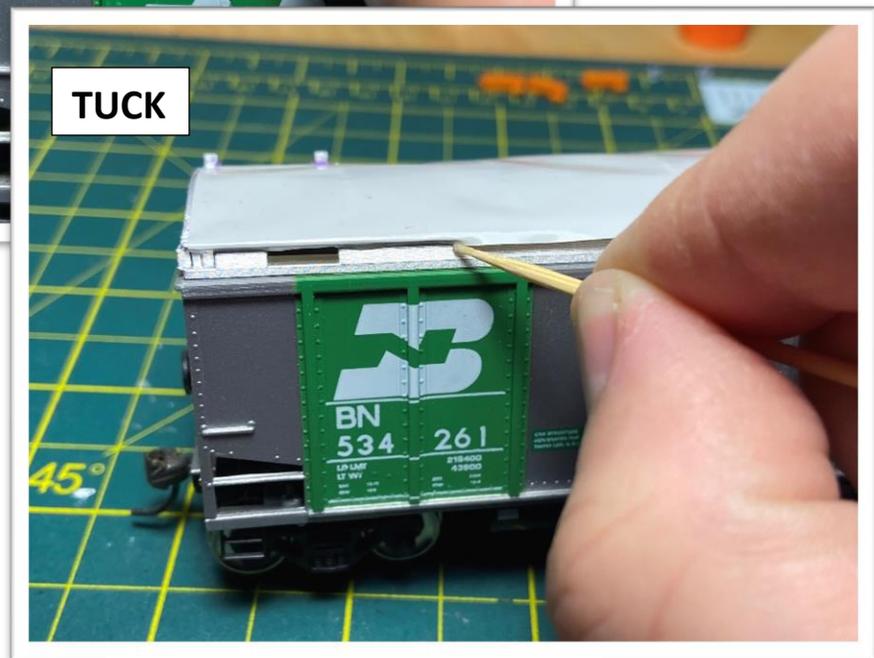
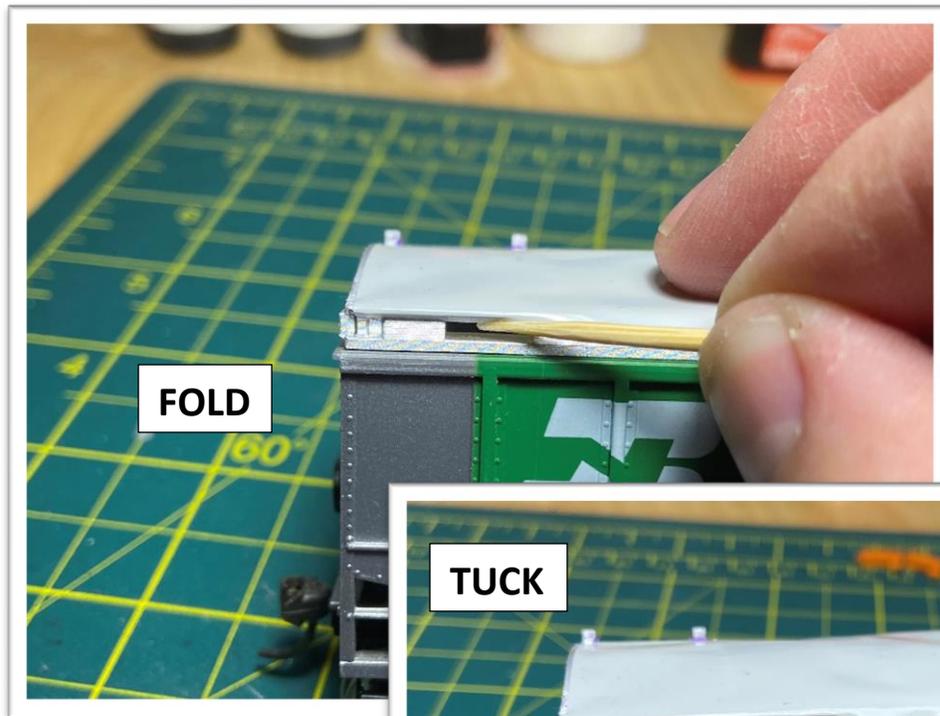


STEP 8 – INSTALL “TARP” (END ROD)

The prototype tarp is pulled across the top of the car via a rod assembly. To provide the effect of the tarp rolling under onto the rod we will do this in two parts.

Part 1 – using the toothpick fold the decal under using the rod to help crease it.

Part 2 – using the toothpick again tuck the now folded decal under the rod. The glue we installed with the glue stick will help provide extra adhesion to help this sharp curve of the decal. You may have to repeat this step until the decal adhesive sets.



STEP 8 – CONTINUED

Photo of final look after decal tucked under rod.



STEP 9 – FINISH

After tarp is installed and in place the railcar can be given a matte finish which will tone down the shiny decal and also help hold its shape. After matte coat dries the lid can be weathered to your specifications to match the prototype. The tarp will have get a texture with “tooth” after the matte finish that looks like the prototypical soft tarp.

Testors Dullcote, Krylon Matte, and Treehouse Matte have been tested on the vinyl without any adverse effects. Results may vary and not guaranteed. Experimenting with weathering these tops, I have found Pan Pastels with soft brushes will highlight the rib detail under the tarp.

Enjoy the distinctive look that your “Protein” hopper fleet will bring on your railroad.

