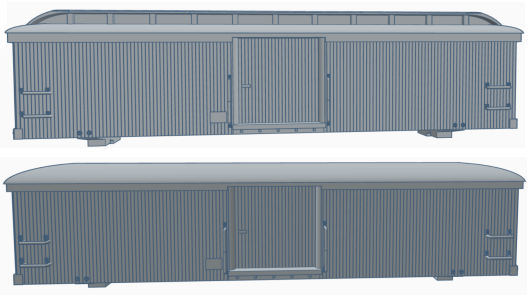


C&LE Traction Freight Cars

3D Printable Models

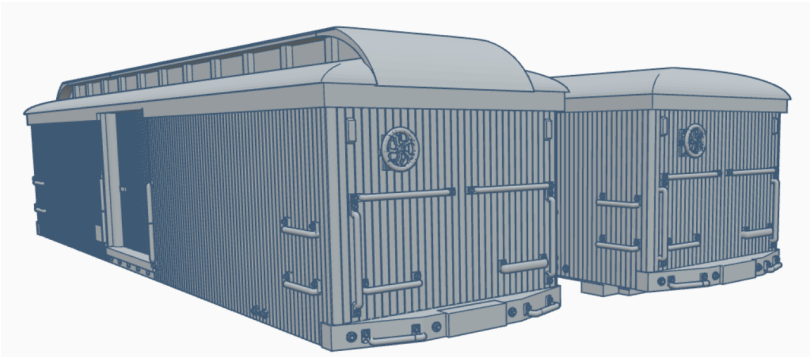
Crafted in 'O' Scale (1:48)

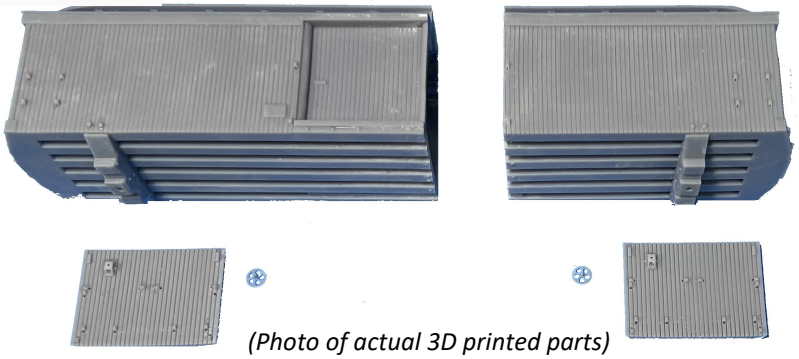
By Gary M. Reighn

August 2022

The files provided will allow you to print and assemble models of Cincinnati and Lake Erie (C&LE) traction freight cars. Two versions of the cars are modeled, one with a railroad roof and one with an arch roof. The models are otherwise identical. The models are provided as both single pieces and pre-cut into multiple pieces to facilitate printing and assembly. These models were designed* and tested in 'O' scale or 1:48 (1/4" to the foot). They may require modification to use in other scales. The models were also designed and tested using a .05mm resolution resin MSLA printer to support the fine details included. Use of other printing technologies may not yield the same results.

The files can be found here: cults3d.com.





(Photo of actual 3D printed parts)

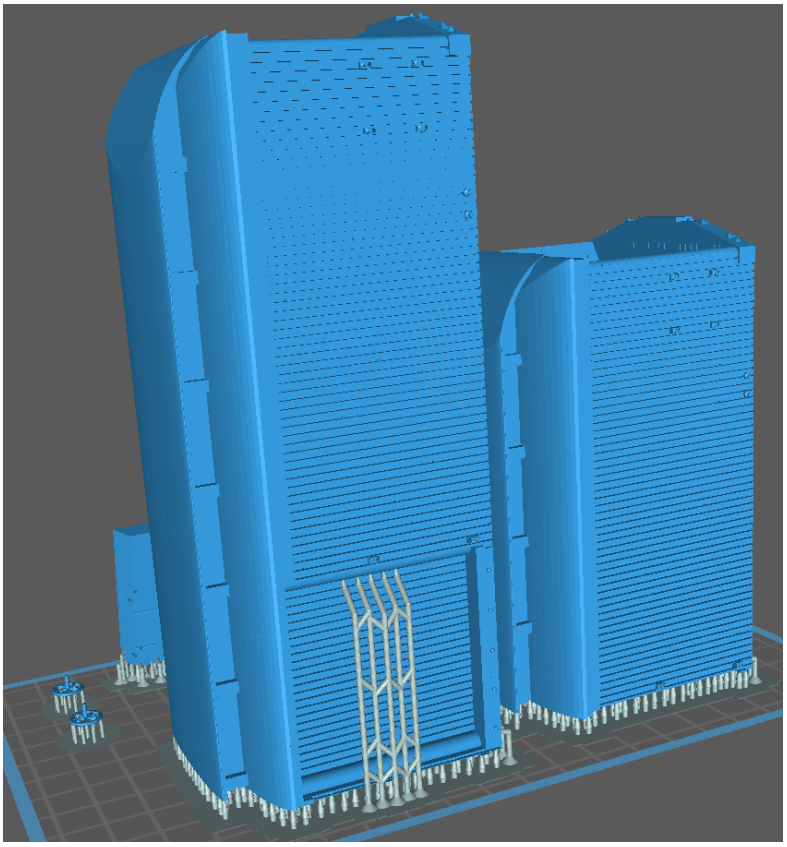
Files for Printing: I have provided a set of files that include a complete one-piece model of each of the two variations. These can be used if you have a very large printer or you prefer to cut them into pieces different from how they are shown here.

In order for me to obtain successful prints on my Elegoo Saturn, it was necessary to cut the body into two parts and to remove the ends. The splits of the body and the ends were designed to minimize the seams where they are joined. Files are provided of the models cut into these printable pieces that will fit an Elegoo Saturn or equivalent MSLA printer. The remaining instructions are based on using these files.

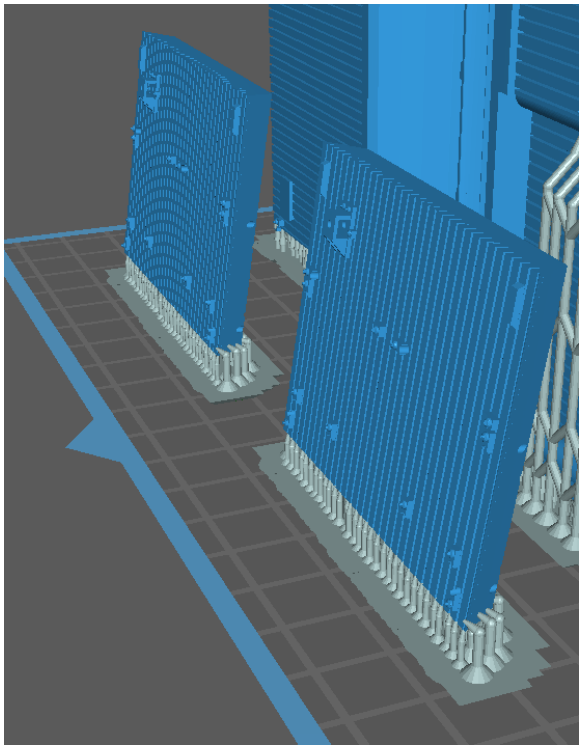
* The final 3D models provided may vary slightly from the picture shown above due to continued testing and refinement.

Printing Notes: For printing the parts, it is assumed you are an experienced MSAL operator. Below is the arrangement I used to successfully print these on my Elegoo Saturn printer. Other printers may require different setup.

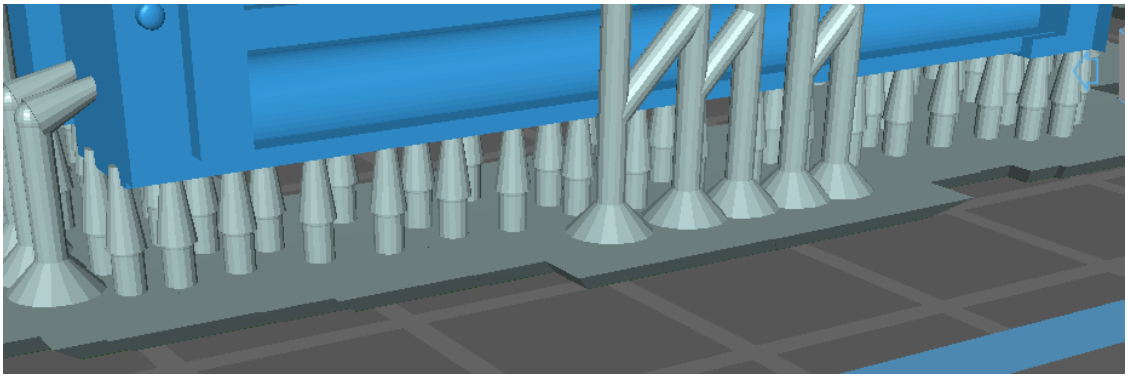
I recommend you print the two body halves with the middle section facing down and raised about 5mm. The ends with the bumpers should be facing up. I do not recommend orienting them directly on the build plate as any “elephant foot” that occurs could make them difficult to align properly when joined.



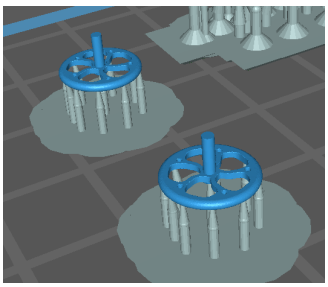
The two end pieces can be printed angled back slightly to minimize supports needed.



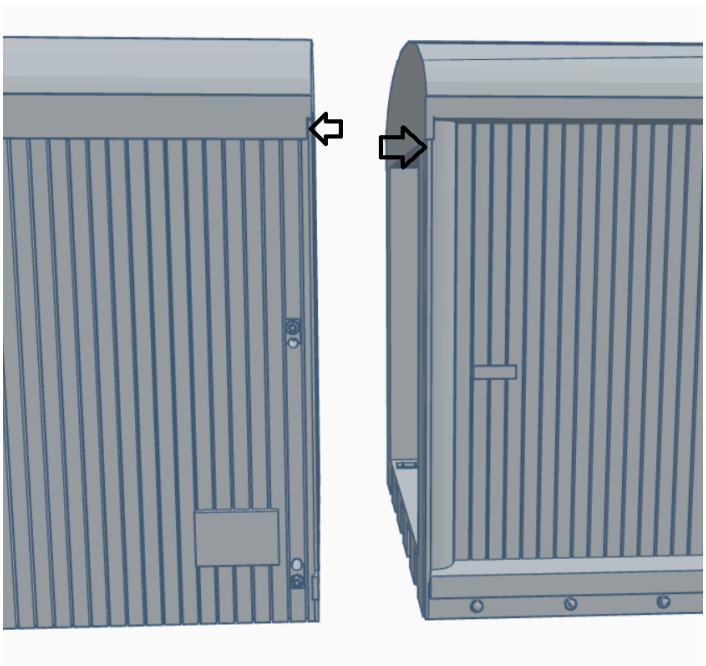
Use a lot of supports around the perimeter of the two body pieces to ensure they come out as flat as possible to aid in connecting the two halves together. Additional material was provided so they can be sanded flat without losing any of the model. See the next page for more details.

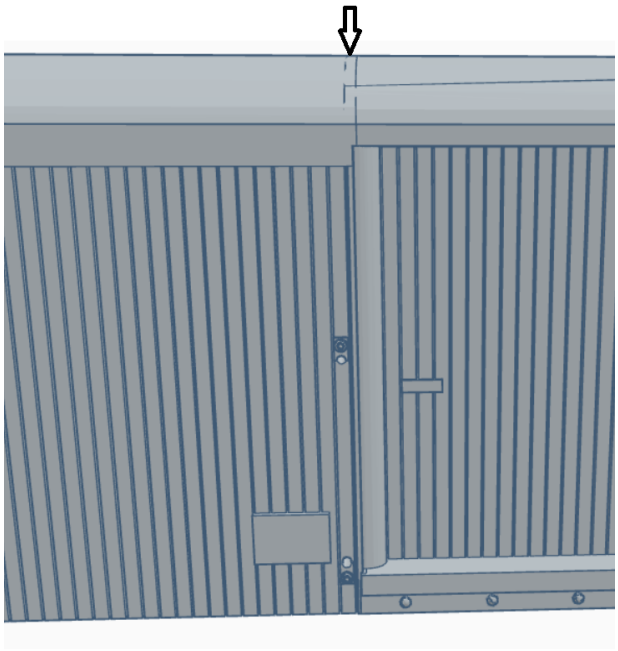


The brake wheels are best printed face down as shown here.

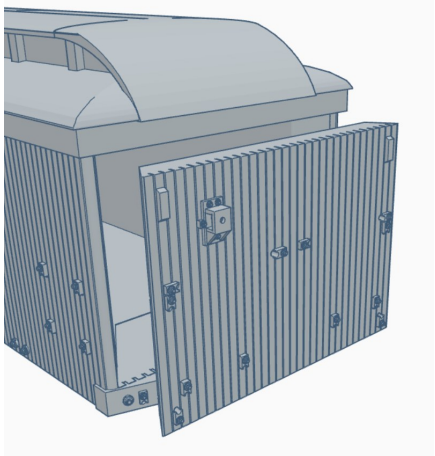


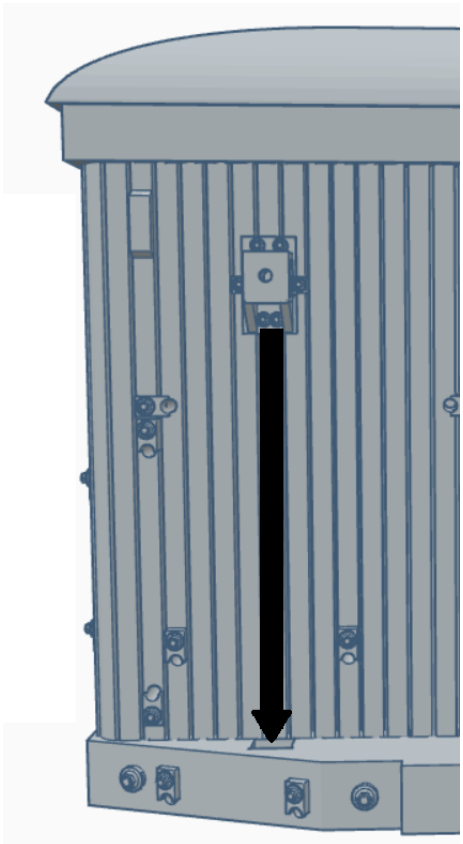
Assembly: The two body pieces were split with a small amount of extra length between them. This is so you can sand them flat without losing some of the body where they are joined. The arrows in the photo on the left show where the extra material is. The photo on the right shows the overlap visible in the CAD drawing when the two halves are correctly joined. Both ends should be sanded flat to eliminate the extra material thus forming a perfect connection as shown in the photo on the right. I recommend using a cyanoacrylate (CA aka "super glue") to join the parts together.



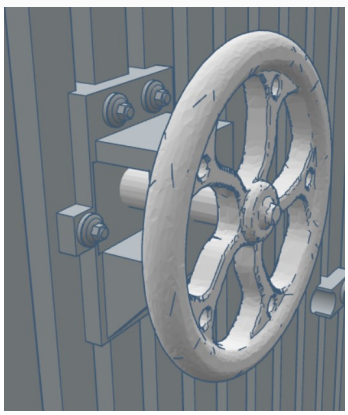


The end pieces are designed to be slightly larger so they can be sanded for a seamless fit. Make sure the mount for the brake wheel is at the top and is over the open slot on the bumper for the brake chain to hang through as shown by the arrow. Only one end has the brake wheel mount and opening in the bumper.

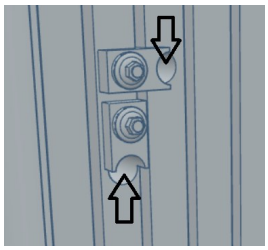


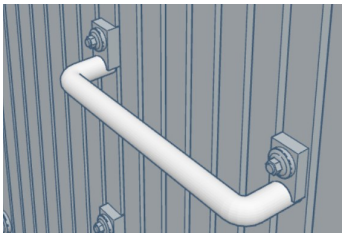


The brake wheel is installed in the hole on the mount. They may need to be drilled out to make a good fit.



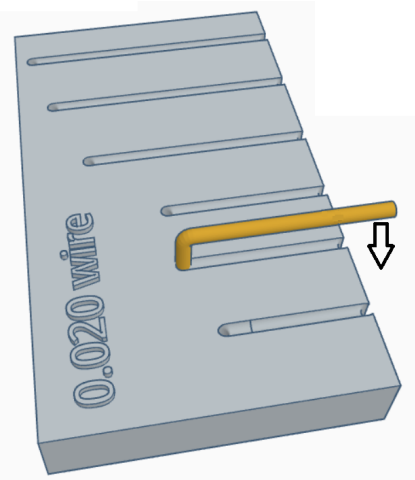
The model includes pre-formed holes for the handrails. The holes are located adjacent to the bolt castings on the model.

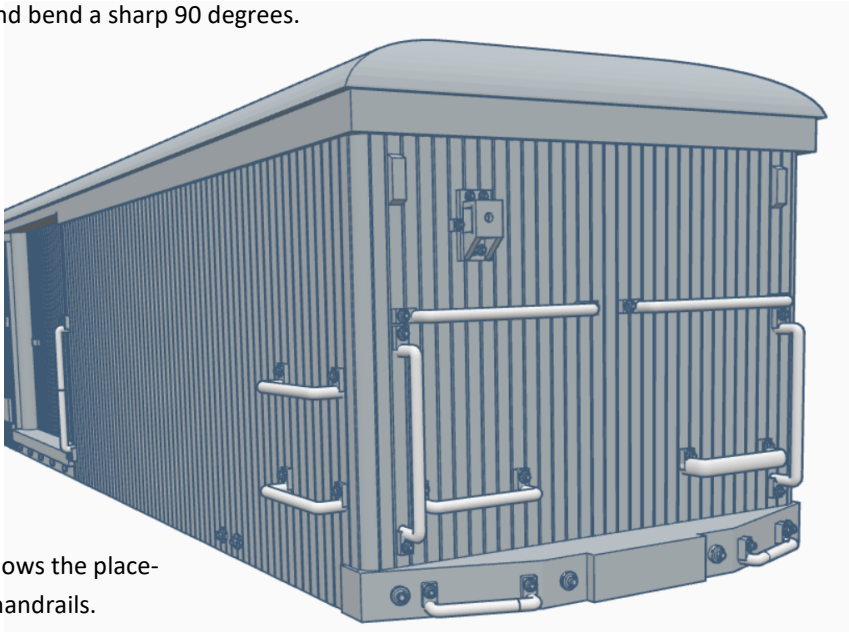




The holes may have to be drilled out in case they were filled with resin during the printing process. They should accept a .020 sized brass rod which is bent into a 'U' shape as shown here.

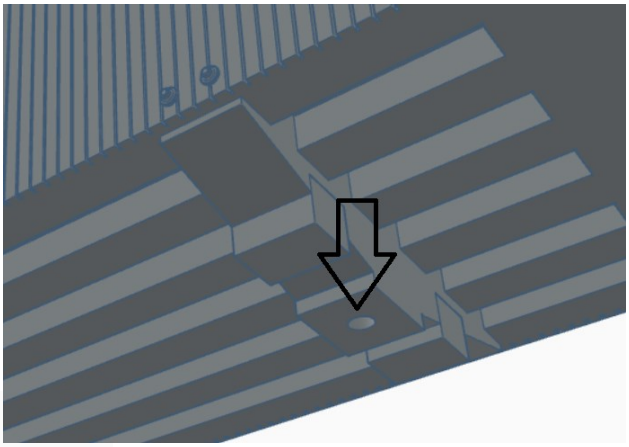
To make it easier I've included a wire bending jig. Form a right angle bend with a piece of .020 brass wire and insert it into the desired jig as shown below. Then bend the wire down into the groove on the other side. Use pliers to make the second bend a sharp 90 degrees.



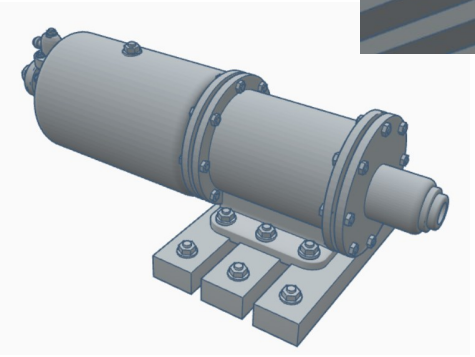


This photo shows the placement of the handrails.

The body comes with truck bolsters already installed underneath. They can be sanded or modified as desired to suit the particular trucks you plan to use. Use a drill/tap to size the hole for your particular sized mounting screws.

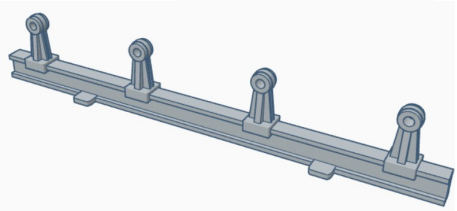


A model of a K Type brake cylinder is provided to detail the underbody. It is mounted in the center of the underframe between the two middle beams. See photo on next page.

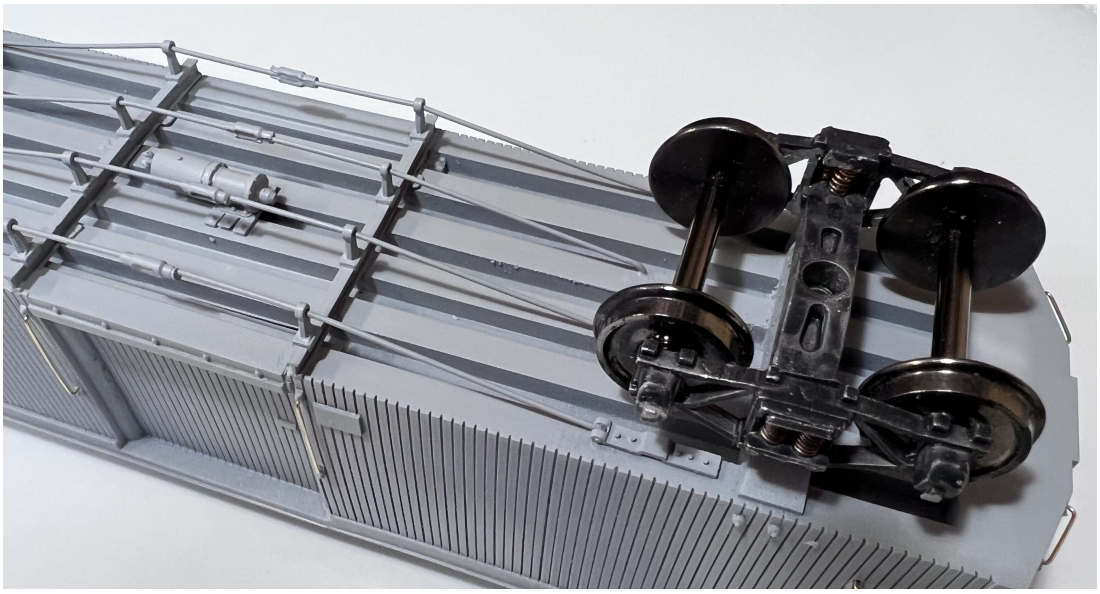


To complete the model you will need some extra parts/material.

1) .020 brass rod for grab irons as mentioned previously.
2) Stirrup steps (4) 
3) Archbar trucks (non-roller bearing) are typical for this era car.
4) Queenposts, turnbuckles and .032 brass rod for the truss rods. (Print files for the truss rod end mounts and queenposts are provided. If the queenposts are too delicate, you can have them printed in metal by a 3D printing company like Shapeways.)
5) Couplers and coupler mounts of your choice.
6) Chain for the brake wheel.
7) Decals of your choice



The photo below shows the prototype model with its completed underbody. Additional brake details can be added if desired.



Finishing: As with any model there is an unlimited number of options for finishing. I recommend a fine surface primer (e.g. Tamiya Fine Surface Primer) be used to avoid masking the details. Refer to prototype photos for the details, color and decal placement.

I hope you have enjoyed building your model!