CONSTRUCTION LOG

SMALL INDUSTRIAL "CRITTER" LOCOMOTIVE

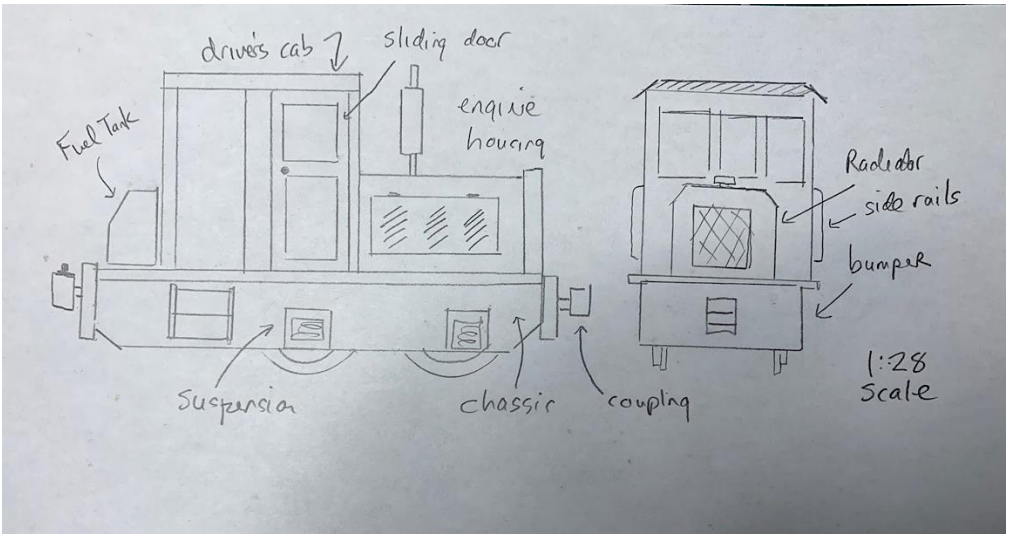
(Built from Scratch)

CARL ASPLER, AUGUST 2025

This model is a representation of the smaller locomotives, sometimes known as "Critters" that were common from the 1920s until the 1960s around various industrial areas where they would be used for transporting goods and materials across shorter distances. They were often seen at steel plants, shipyards, mining and forestry operations. These diesel locomotives were built in many shapes and sizes, and could typically range from 300 hp to 1000 hp.

For further information about these locomotives you may want to check out:

https://www.trains.com/trn/train-basics/abcs-of-railroading/critters-in-the-enginehouse/



My model will be on a smaller version of the locomotive. Above is my initial sketch of the plan. The inspiration came from an excellent model featured in iModeler.com built by Mike Maynard in 2013 .

Many of these locomotives had the wheels hidden behind the chassis skirts. I liked this because my wheels would not be perfect. I would make them from metal washers, which on close examination would not look very genuine. But since most of the wheels would be hidden, no one would be the wiser! (More about the wheels later on). The model will have a wooden cab with sliding doors. I have done sliding doors before but most of the time I leave them in a permanent open or partly open position since moving them tends to be finicky.

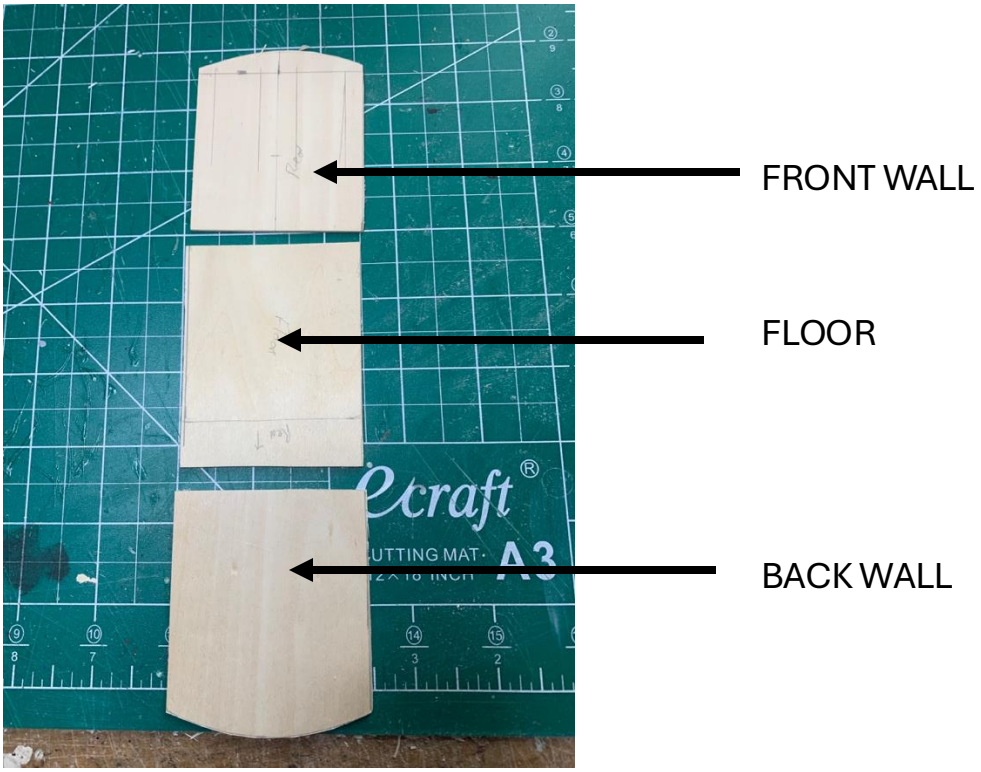
I hope to make the entire model from either bits and pieces left over from other projects or from items available from around the house. This model would be in approximately 1:28 scale.

CONSTRUCTION OF THE CAB

I started with the cab. I believe this ids a good place to start because once the cab is complete it will be easier to figure out the size of the platform it will sit on and calculate the scale of all the other parts.

I decided to have a curved roof, so I used a compass to scribe the edges, and used a sharp craft knife to cut out the back wall (left). For the walls I used 1/16" sheet wood (or approx. 1.62 mm). Most of the flat wood sheets that I have are made in Imperial measurements. My preference is to work in metric.

I did the same for the front wall, this time marking the cutouts for the windows. I also cut out a piece for the floor. Once I know the dimensions of the floor, it will be easier to calculate the width of the side walls.



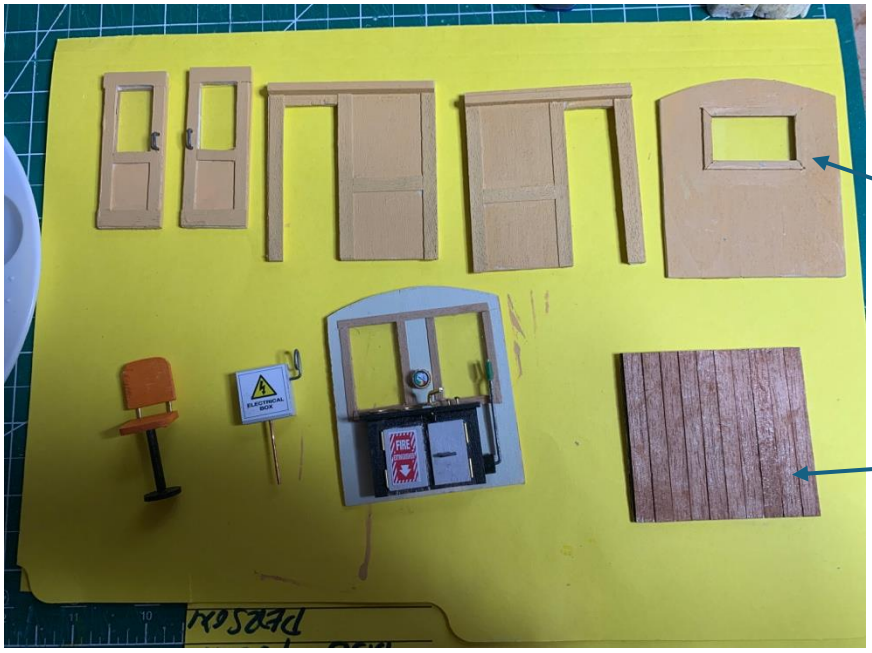
I cut out the windows, using a craft knife. It's always been a bit of hit and miss doing these small cutouts, and sometimes the cuts are not totally precise. However since I will be added frames around the windows, I will be able to mask out some of the imperfections.

I did the same with the doors, and using the cutout as the base for each door, I added some trim around the edges. I also used microscope slide glass for the windows.

Cutting microscope slide glass is not too complicated if you use a glass cutting knife and a straight edge.

The advantage to glass over clear plastic (which most of the kit model manufacturers supply) is that glass is easy cleaned of glue and other smudges.

I made the glass to fit exactly in the openings, and added the frames afterwards to hold the glass in place and to hide any gaps between the glass and the sides of the opening.



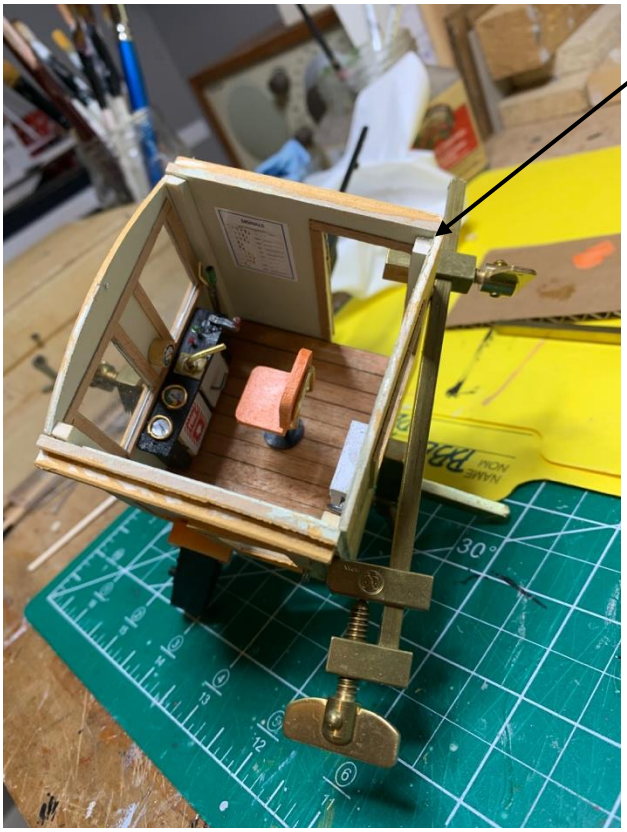
Strips to hold glass and form the window frames

Flooring 1 x4 mm strips. I painted the floor black before adding the planks. By keeping the planks a tiny bit apart, it gives the effect of visible edges

Here you can see the finished parts of the cab. I added some 1 x 4mm wood strips to the floor, and stained them a mahogany colour. You can see the frames (.5 x 3 mm strips) which I added around the windows – both as a decorative feature and to hold the window glass in place. I also added some 1 x 4 strips as reinforcements for the walls.

I painted the inside walls a parchment colour (in the photo above, only the front wall is shown from the inside). Also added some of the driver's controls. A small box with gauges and various signs as well as an "electric box" and the driver's seat. I printed out my own decals for the gauges and signs (easily found on Google images).

Here is a closer look at the inside of the cab. Using some small brass wire (1mm) I created small circles to glue around the decals to give the impression of a raised gauge. A 1.5 mm brass wire was shaped to create a handle for the throttle. I also built the seat from 2 pieces of scrap wood and 1.5 mm brass as the seat supports. I also glued a 4 mm x 4mm post at each corner to add additional gluing surface and stability.



Once the inside walls were painted and the various controls, chair and wall charts were in place, it was time to glue everything together. It's not easy to add or change things inside the cab once the walls are up.

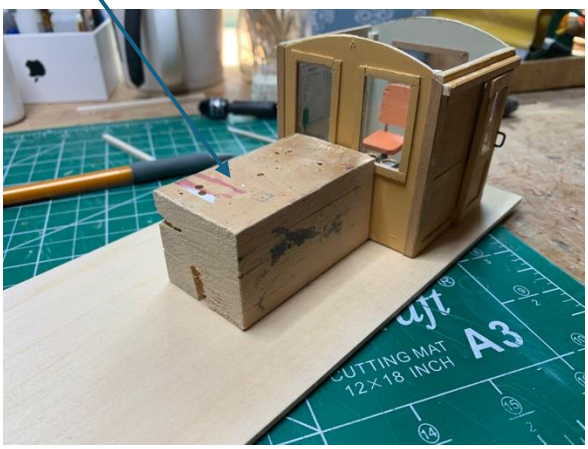
This step requires precision. If any of the walls are out or edges uneven – even by 1 mm, it can make everything else wonky. Before gluing you need to dry-fit everything and hold it in place to see if any adjustments – trimming, sanding, etc..- are needed. In my case the floor was about 1.5 mm too short from front to back, so I had to trim a bit of excess off the walls to make things fit snugly.

I have some brass clamps that I use for holding the parts in place while the glue dries. As for which glues to use, I apply PVA (white glue) for all the wooden parts, and CA (superglue) for metal.

In the end I just glued the sliding doors in place, one in the open position and the other in the closed position. I would have had to build a channel for the doors to allow them to move, and decided against it for reasons I previously explained.

Once the glue had dried I painted the outside in Naples Yellow. I originally was going to have 3 windows at the front, but decided to simplify things with just 2.

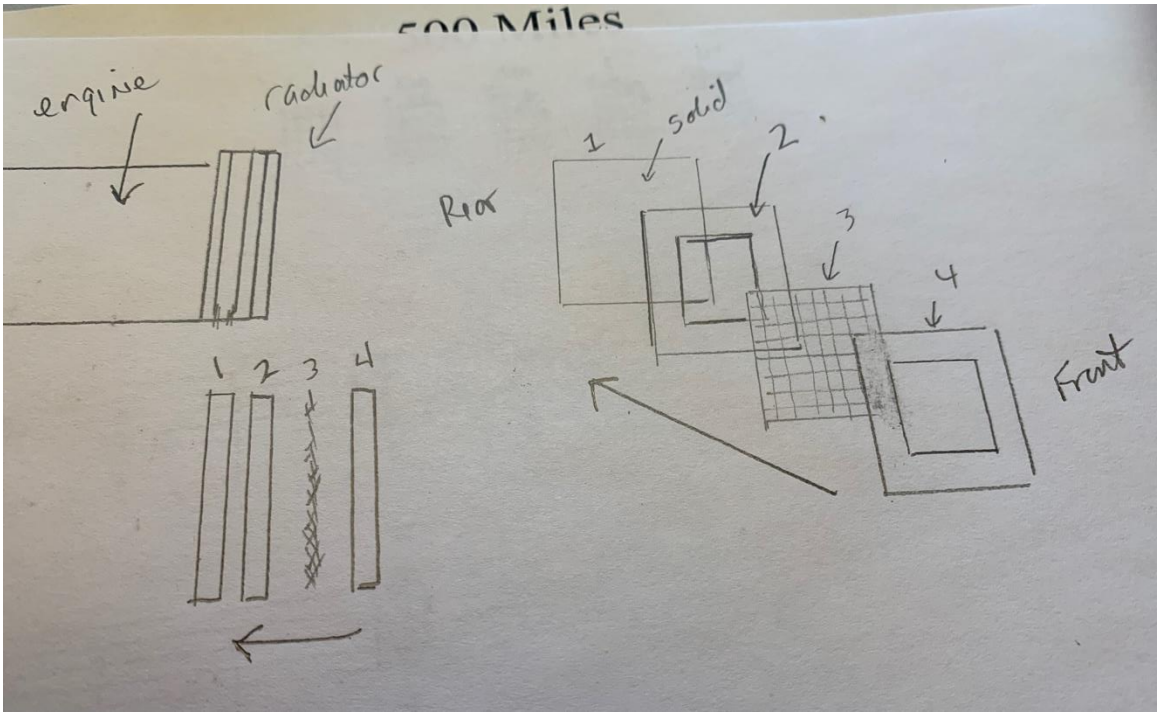
With the cab basically complete, it was now time to measure out the platform and start planning the engine housing. The platform was 3/32" sheet wood and I found a old piece of 2" x 2" pine that would form the engine housing.



RADIATOR

Now to build the radiator. I had some fine plastic screening and cut out 3 pieces of wood from scrap, with openings on two of them.

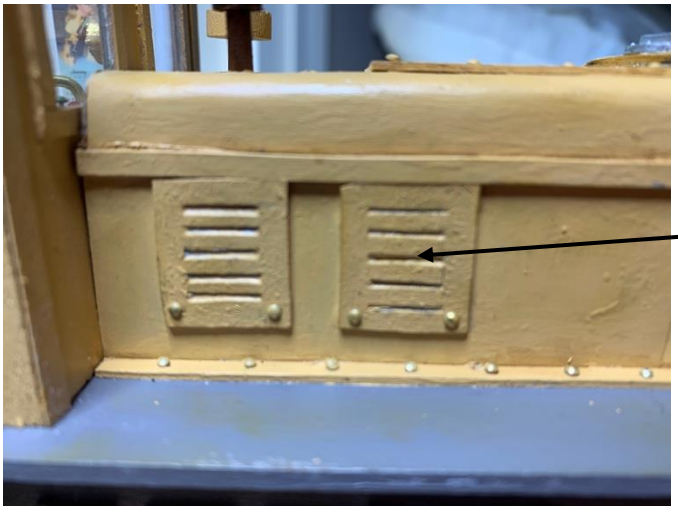
I created a sandwich of the pieces since I wanted the front of the radiator to show an open space behind it. The illustration below shows more clearly what I did to create the radiator openings and housing. On the left you can see the various pieces that would form the "sandwich".



The photos above shows the completed radiator assembly. I added a grille made from 1.5 mm brass wire. This was not my best work since they are not all exact in width.

the top edges of the engine housing were bevelled to give it a curved appearance.

A thin layer of styrene (0.0125”) was glued over the wood core. The wood had too many blemishes and dents and the styrene would give it a much smoother surface.

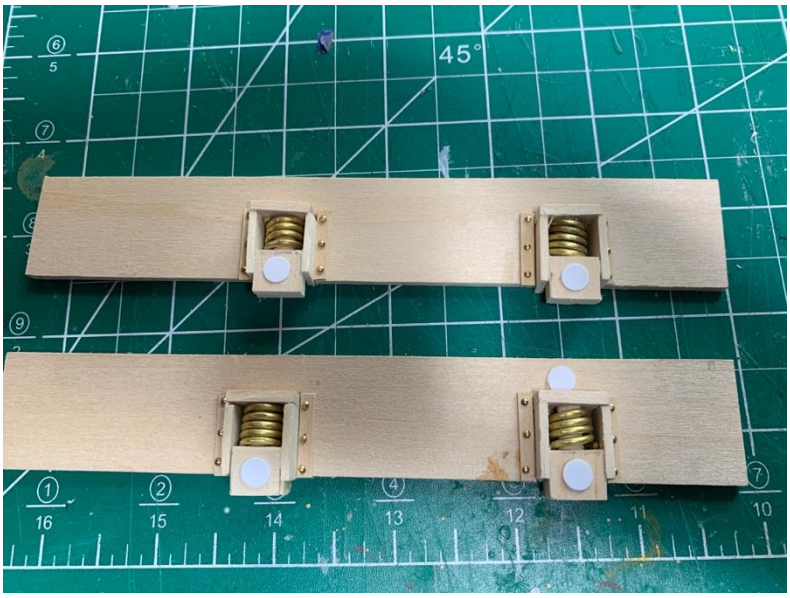


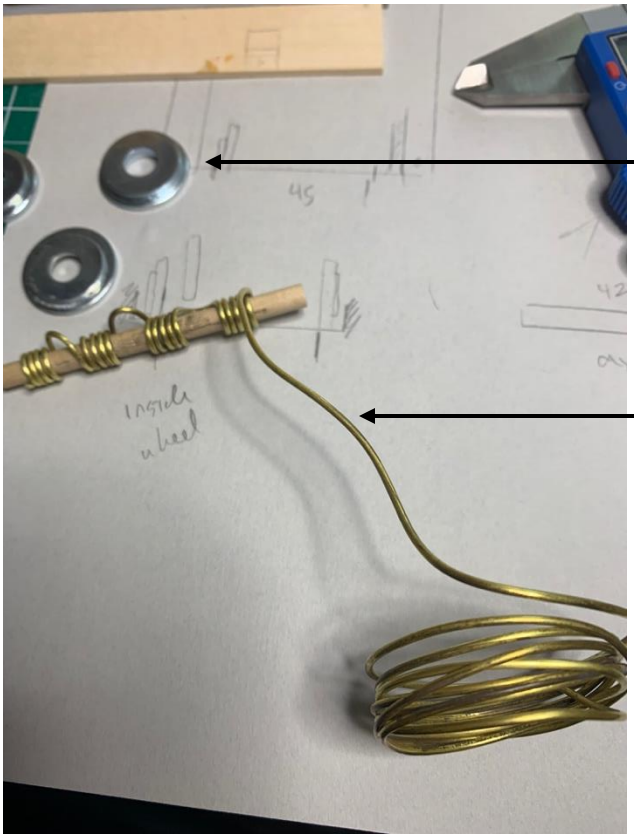
I then added a number of vents. This were very thin wood pieces 1/32” thick. I did my best with a square sided mini chisel to carve out the vents. They look OK from a distance but as you can see from the closeup at left, I could have done a more precise job. A few more wood strips along the side and painted to match the cab.

The final step was gluing the cab and engine housing to each other and the platform which was previously painted a dark grey colour (but looks blue in the photos).

CHASSIS

Now it was time to build the chassis. I used 2 pieces of 3/32” wood to form the ”skirt” that would hold the suspension and the wheels. I cut two gaps in the wood and made a frame that would hold the springs made by coiling 1.5mm brass wire around a dowel (see bottom photo), cutting them to size and gluing them inside the spaces. I added another piece of wood at the bottom and glued a small piece of styrene cut from a hole puncher to simulate where the axles would attach.





On the far left of this photo you can see two of the wheels. These were made by gluing 2 metal washers, one of slightly smaller diameter than the other.

1.5 mm brass wire

WHEELS

The next couple of steps involved building and assembling the various bits and pieces. This included gluing the wheels to the back of the undercarriage. Yes, I glued them – no axles!! Let me explain. This will be a static model. It will be a display piece sitting on a shelf, not running on a track. All my other models have been static, but I have built them with axles and rotating wheels. And yes, they can move, but the most I have ever moved them was a few inches or so to demonstrate the mechanism of the pistons, arms and levers of the steam engines.

This model does not show the underlying mechanics. The wheels are camouflaged behind the skirt. Of course It would have been quite different if this was to be moving on tracks. But it is not, so with apologies to the model aficionados and rivet-counters, the wheels are glued!

BUMPERS

Painting the bumpers in black and yellow caution signage. This was quite a challenge for me and required a bit of experimentation to get it right. I painted the first layer in yellow, covering the entire surface. Then I used masking tape to isolate the area I would be painting in black. But no matter how hard I pressed on the masking tape there was leakage.

I finally ordered some brand-new green masking tape (better adhesion than maybe what I was using), but I also painted the yellow surface with a matt varnish – several coats. This time the stripes came out a lot cleaner. I believe that the varnish sealed the surface and prevented any absorption or bleeding of the paint. Once painted in both colours I added another coat of varnish and then cut out the pieces.

Next came the fuel tank. I opted for a cylindrical tank, since I had a lot of wooden dowels that would be suitable. One feature of the tank was making a fuel loading cap that would be attached by a chain. I had some very fine chain left over from another project. The photos show the various parts before assembly and after.

I built the exhaust pipe from 6 mm wooden dowel and 3 mm copper tube. Painted with smoke colour.

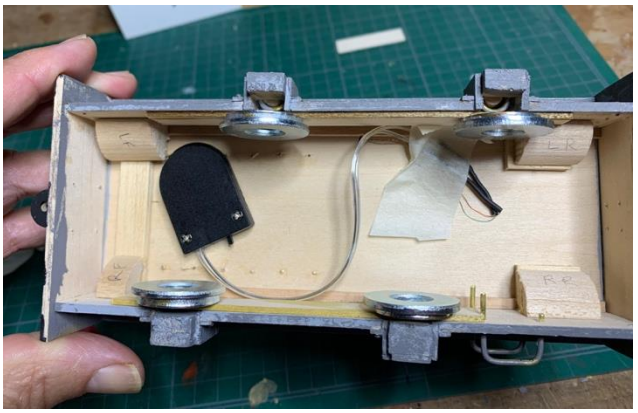
I wanted to include a horn, but figured it might be too hard to actually make one so I gave up on the idea. But then I realized that the plastic glue pipettes, used for glue bottles, could be a solution. By trimming it, it can take the shape I need for a horn. Gluing a small wooden plug to the end could make it work. See photo below.

WEATHERING CONSIDERATIONS

I considered weathering the model – adding dirt, corrosion, rust that would give the impression of long and hard service. But most of the real-life weathered examples tended to be broken down or abandoned to the elements. There were lots of photos showing locomotives in good condition. So, I decided to make my model look a little dirty, more scuffed than rusty. To apply this effect I used a light application of Panel Line Colour (Tamiya) and some orange rust.

LIGHTING

I used 1 3 volt battery holder/switch and a 3 volt micro LED to provide illumination inside the cab. The mattery holder is located on the underside of the model.



ALIGNMENT OF WHEELS

You might have noticed from the photo of the chassis on page 7 that both left and right sides are identical. Only after making these did I realize what a colossal mistake that was. One of the sides should have been "back-to-front" . If you look at the final photos of the model – next pages, you will understand what I mean.

So, since I didn't correct the mistake, you can see from the photo above right that the wheels on either side are not in alignment!! This became just another argument for not mounting them on axles, since I would have had to have 4 of of them, one for each wheel.

Big Lesson: The left and right sides of a model may not be identical. They face different directions. So before assuming that they can be identical, have a close look first.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