# 24-Foot Ore Car

HO/HOn3 Scale


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**Thank you for purchasing this kit!**

The enclosed ore car is fictional but based on some real-world information.

Supplied are the basic directions. Please visit conowingomodels.com and go to the Instructions tab for the latest revision of the instructions and additional tips, such as recommendations for glues, tools, techniques and paint.

These instructions skip around in an attempt to keep you building and complete the model faster. Also see conowingomodels.com and

One thing that is vital to this kit is to keep everything as straight and flat as possible. When you glue the walls together, ensure they are even. Sand any blemishes flat.

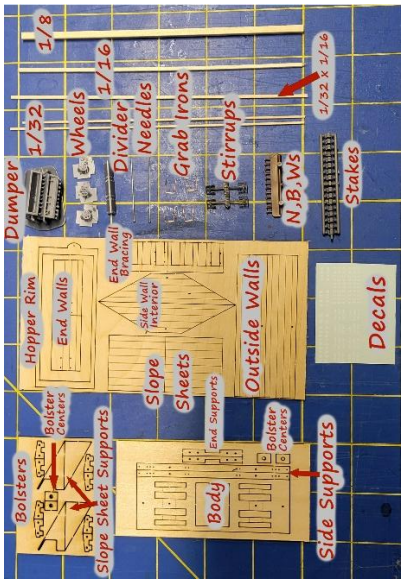
We recommend using a magnetic gluing jig for several steps. They can be found at hobby specialty supply stores. Alternatively, you can use 3-2-1 blocks or other methods of keeping parts square while they are drying.

**We do not recommend staining the parts of this kit with an alcohol-based stain before construction.** The walls are thin and will warp very easily. Provided the glue is good and dry, there shouldn't be any issues staining it after construction has been completed.

## INDEX



## PARTS DIAGRAM



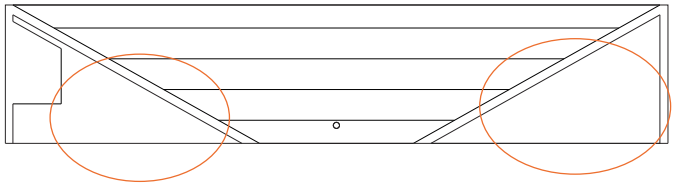
## WEIGHTS

1. Plan out where you'll want to add weights. The NMRA, in RP-20 (essentially) states that the 24-footer should weigh 2.75 ounces when completed. The pilot model weighs 1.0 ounce with Kadee trucks and couplers installed.

   We suggest adding a permanent load weight. Failure to add weight will result in a very uncooperative car that doesn't stay on the tracks.

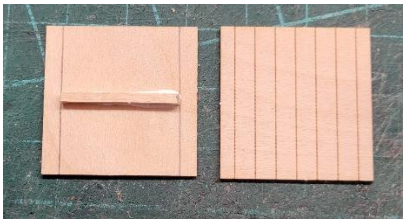
   Luckily with this car, there are a few options on where to add weights.

   The first is to fill the hopper with weights and add an ore load.



The other option is to add weights on both ends under the slope sheets as shown above, circled in orange. You should weight both ends equally. This way, the car tracks straight.

## SLOPE SHEET BRACING



1. Locate and cut out the two pieces of the slope sheet.

   The slope sheets will be installed with the scribe going vertically.

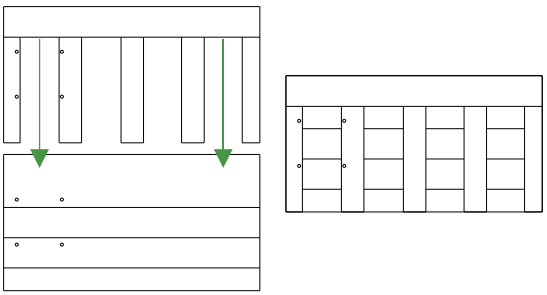
2. Flip the slope sheets over and measure in 1/8-inch from each side. Mark it with a pencil.

3. Cut the piece of 1/8-inch stripwood so it fits inside the marks made in the step above.

   Do this for both pieces.

4. Glue the 1/8-inch stripwood into place on both pieces. It doesn't have to be perfectly centered, but it does need to be inside the lines.

## END WALL CONSTRUCTION



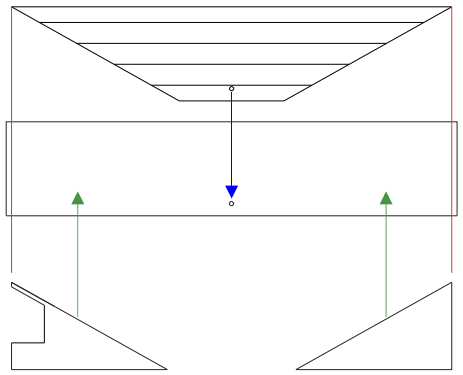
1. Poke out the holes for the grab irons in the end walls and end wall bracing. The laser cuts the holes out, but doesn't always clean out the holes.

2. Glue the end wall and end wall bracing together, ensuring the top, sides and holes for the grab irons match up.

3. Repeat the above two steps for the opposite end.

4. Add weights to ensure both ends dry flat.

## SIDE WALL CONSTRUCTION



1. Locate the side walls and side wall interior pieces. The outside wall, shown above in the middle (without scribe) will be scribed on the other side.

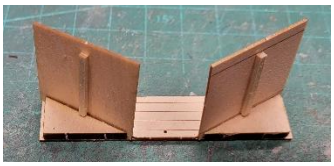
2. On both pieces poke out the hole for the dump control wheel. The laser cuts the holes out, but doesn't always clean out the holes.

3. Glue the outside wall and side wall interior pieces together, ensuring the top, sides and holes for the dump control wheel match up.

   Ensure the side wall interior piece is centered, with equal distance on each side.

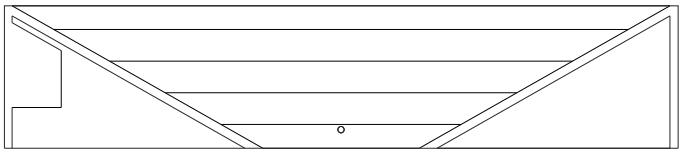
   You may choose to measure the distance between the edge, the slope sheet supports and the side wall interior. This space measures .035 inches on the CAD program. (Shown above in red)

   Make sure that the two scribed sides do not face each other!



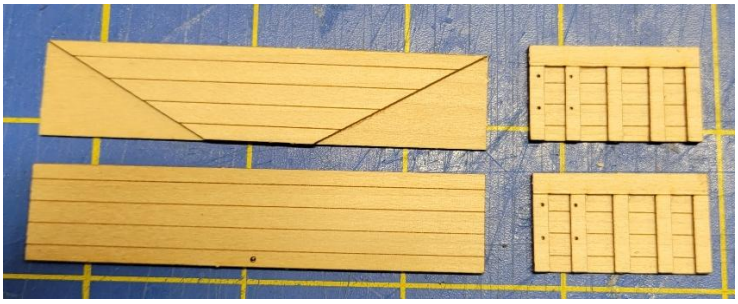
4. Ensuring there is adequate room to fit the slope sheets, glue the slope sheet supports into place.

Since we built the final pilot model, we redesigned the left side slope sheet support. The redesigned piece is designed to accommodate the grab irons so you don't need to drill them out.



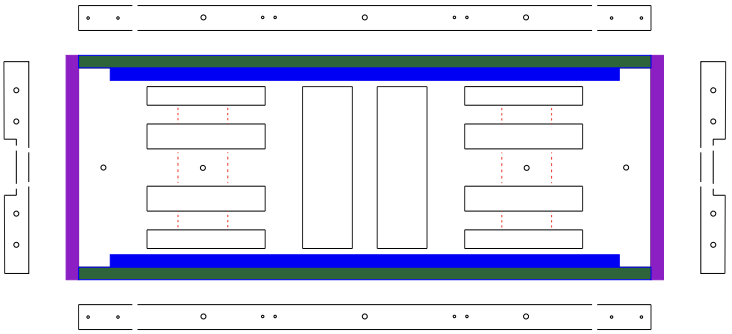
5. Repeat for the other side.

6. Add weights to ensure both ends dry flat.



All four walls shown. Only one inside and one outside walls shown for clarity. This is an early pilot model that lacks the extra space on either side.

## BODY ASSEMBLY



Use the above diagram to construct the body. We recommend using a magnetic gluing jig.

1. Place one side support (green) against the side of the jig.

2. Cut the piece of 1/16 x 1/16 stripwood in half.

3. Place one end support (purple) against the side of the jig at a 90° angle from the side support. The side support tucks inside the end support.

4. Apply some glue to the edges of the body.

5. Place the body into the jig so that the dished lines shown above are on the topside. You are constructing the body upside down.

6. Push the three pieces together, keeping some pressure so that the body doesn't come apart.

7. Glue a piece of 1/16 stripwood (blue) into place against the side support. This provides support so the body won't warp.

8. Add the second end support (purple) as shown above.

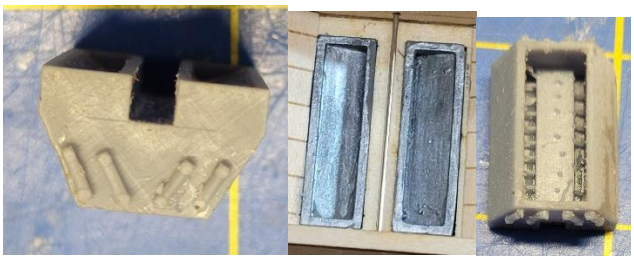
9. Add the second side support (green) as shown above.

10. Add the remaining 1/16 stripwood (blue) into place as shown above.

11. Apply magnetic weights or 3-2-1 blocks to keep all pieces upright and at a 90° angle.

12. Let dry.

## DETAIL PARTS PREP

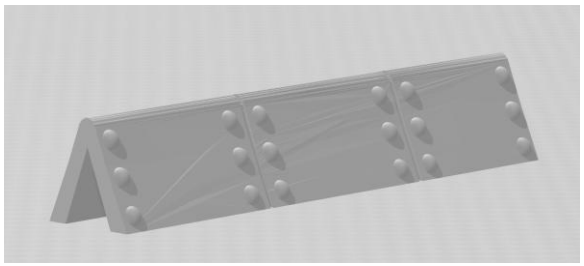


1. Trim the dumper to remove the build supports.

   Make sure you leave the actuators for the doors in place. (Photo above, left) They are on both sides of the dumper and look an aweful lot like the build supports.

   There are a bunch of supports on the underside that probably won't come out. That's ok- they won't be visible on the end product.

2. We painted ours black on the out/underside and silver on the inside. Silver (as in raw metal) may be appropriate for the whole piece.



3. Remove the build supports from the divider as well.

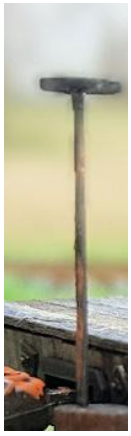
4. Paint the divider silver.

5. Remove the wheels from their supports.

6. Paint the wheels, stirrups, stake pockets and NBWs (nut, bolt, washers) black.

   The grabirons and needles can be painted black, but chances are it will wear off during installation. We recommend leaving them unpainted until you do your finishing touches.

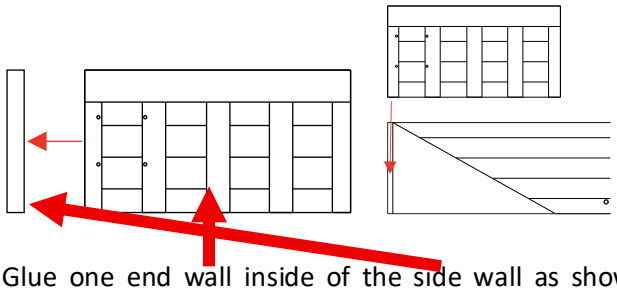
7. Cut the heads off the pins. We left one with the head and it didn't look right.



8. Glue a wheel to each of the top of the cut pins. (Shown here affixed to the flat car.)

## HOPPER ASSEMBLY

We recommend using a magnetic gluing jig for this step.



1. Glue one end wall inside of the side wall as shown above. (1/8-inch bracing for the slope sheets not shown)

The flat side of the side wall needs to face out.

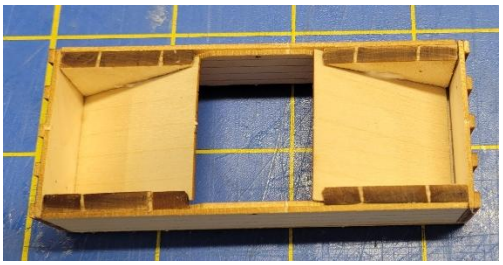
The flat side of the end wall needs to face in.

The hole for the dump control wheel on the sidewall should be on the lower part of the wall.

2. Repeat for the other side.

3. Let dry.

4. Again using the jig, glue together the two halves of the assembled hopper walls so that the end walls go inside the side walls as they did in step 1.



Ensure the walls fit evenly and squarely.

5. Glue into place/Insert the slope sheets as shown above.

6. Glue the hopper rim into place, ensuring it sits level and even as shown above.

7. Let dry.

## HOPPER INSTALLATION

If you're a person that likes to skip around in the instructions, one thing we've found building the pilot models for this kit is that **adding the bolsters before installing the hopper is not a good idea**.

1. Make sure that the bottom of the hopper is good and flat. If it isn't, it won't sit properly. Sanding will help ensure proper fit.

2. If you've elected to add weights under the slope sheets, now is the time to add it.

3. Cut four lengths of 1/32 x 1/16 stripwood to fit across the width of the car body as shown above.

4. Glue two of the above lengths of stripwood into place on each end of the car. This helps center the hopper.

5. Glue the hopper into place, ensuring it sits level and even on all sides.

   You may choose/need to add weights or clamps to fit the sides.

## STAKE CONSTRUCTION

1. Using your car as a guide, measure and cut eight lengths of 1/8 x 1/8 stripwood. The length on the CAD program was .7 inches. You may prefer something different.

2. Cut out and glue the stake pockets to the bottoms of the cut pieces of 1/32 x 1/32.

# DETAILS

1. Glue the dumper into position. It will be a snug fit and installs from the bottom, up.

2. Take one of the two pins and thread it through both sides as shown above. This will be the dump control wheel.

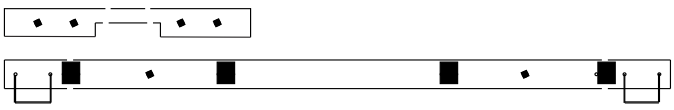
3. Measure and cut the pin to your liking. For reference, ours is 1.33 inches long.

   Keep in mind that there will be a wheel on the opposite end.

4. Install the pin back through the holes.

5. Glue the last remaining wheel into place. The hole visible below is only on the pilot model.

6. Glue the divider into place over the top of the dumper. It will fit over the pin you just installed. It too will be snug to position.



7. Install the NBWs and stake pockets as shown above.

   The stake pockets are the larger rectangles, the NBWs are the smaller, offset squares.

   We included the stirrups on this diagram, but we recommend holding off until everything else is complete before adding them as they tend to fall off.

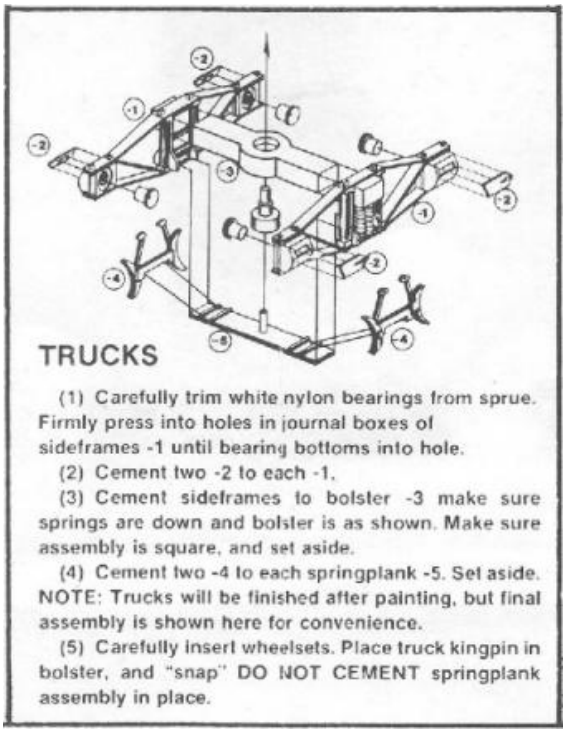
8. Trim one of the needles to fit the location of the brake wheel as shown above. For reference, ours is .8 inches long.

9. Glue the brake wheel into place as shown above.

10. Glue the grab irons into place on both ends.

    To keep them even, we recommend temporarily running some scrap stripwood through from the top to hold the grab irons in place.

# TICHY TRUCK ASSEMBLY INSTRUCTIONS



TRUCKS

(1) Carefully trim white nylon bearings from sprue. Firmly press into holes in journal boxes of sideframes -1 until bearing bottoms into hole.

(2) Cement two -2 to each -1.

(3) Cement sideframes to bolster -3 make sure springs are down and bolster is as shown. Make sure assembly is square, and set aside.

(4) Cement two -4 to each springplank -5. Set aside. NOTE: Trucks will be finished after painting, but final assembly is shown here for convenience.

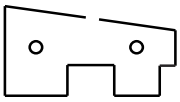
(5) Carefully insert wheelsets. Place truck kingpin in bolster, and "snap" DO NOT CEMENT springplank assembly in place.

(Courtesy Tichy Train Group)

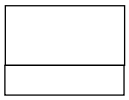
## BOLSTER INSTALLATION

We redesigned the bolsters for this kit, so for those that have built our kits in the past, it will look familiar, but not exactly the same.

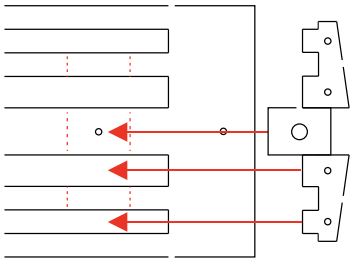
There are holes for running the truss rods, but they are not used on this kit. In our research, we found where it appeared that some ore cars had truss rods, but we decided that they'd needlessly complicate the kit. Besides, the ore would probably damage the truss rods when dumped, which makes no sense.

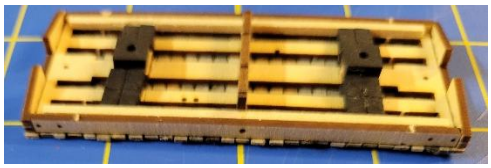


1. Carefully cut the angled bolster pieces out and glue them together in pairs. You will end up with four pairs.




2. Glue together the smaller bolster center pieces, using one thick and one thin piece for each. You will end up with two pieces.





3. Once dry, glue the bolsters into place (shown above in black). The side pieces of the bolsters are notched to fit the under decking of the car. Ensure you use one of each thickness on the bolster center pieces.

4. Assemble the coupler boxes and couplers per the instructions.

5. Install the couplers.

6. Install the trucks at this time using the screws and insulating fiber washers (some kits). For those unfamiliar, the washers go between the truck and bolster to smoothen truck movement.

   Tichy Arch Bar trucks (some kits) can now have the spring planks installed. Despite the instructions, I've found that a dab of CA helps keep the spring planks in place. If the screws don't hold, add a drop or two of CA into the holes and try again.

7. Install the stirrups.

## FINISHING

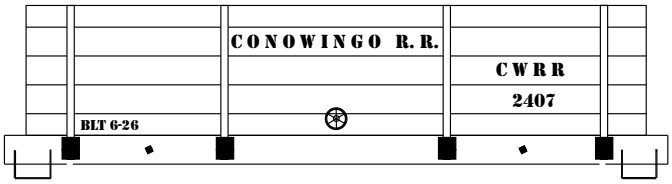
1. If you wish to give your ore car a beaten, weathered look, we recommend using a hobby knife or dental pick to scrape the sides horizontally.

   One thing that looks good, but we recommend you be careful not to overdo is to widen the scribes. If you overdo it, you'll poke a hole in the side. Perhaps this is the look you're going for, but not one we recommend.

2. If you wish to add a load, we found the following YouTube video that provides a good how-to. https://www.youtube.com/watch?v=qQBLJzLYygo

3. We recommend you stain your ore car at this point. We used a combination of Driftwood and Blue Grey.

   Alternatively, you could paint the car.




4. When your stains/paints are thoroughly dry, you can apply the supplied decals or you can use your own.

5. Paint the shaft for the brake wheel and do any paint touch-up and weathering that may be needed.

Please share your completed photos on
https://www.facebook.com/ConowingoModels/

See Conowingomodels.com for more unique model railroad products.

If there are any parts missing, please e-mail us conowingomodels@yahoo.com and we'll get those parts headed your way. We strive for a perfect kit, but mistakes do happen. We apologize if this happens.

Many thanks to my family, Steve Milley, Jeff Grove and Mark Schreier for their help! Additional thanks to Don Tichy for all the parts and diagrams!

Like the design? Want to see this car developed into other things? Please drop us an e-mail and/ or visit the Facebook page to see the latest development with it.

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