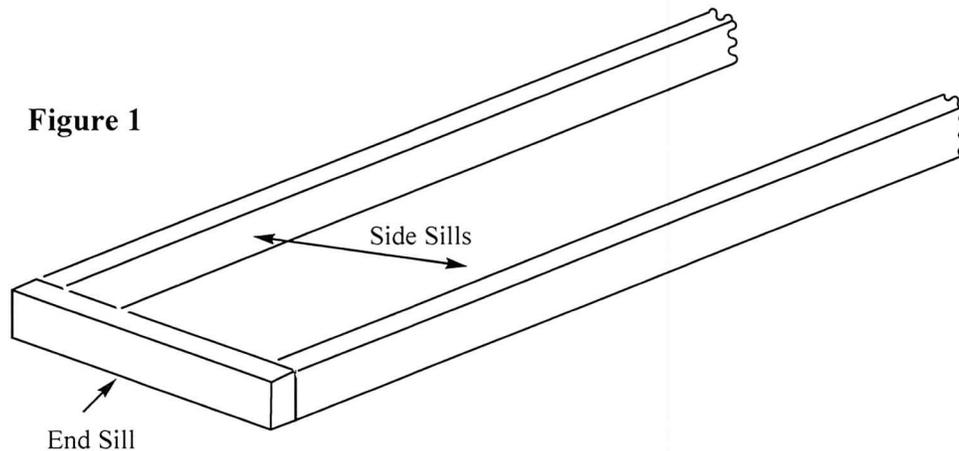


A Generic Truss-rod Flatcar

Step 1

Open everything up and sort out the wood parts; leave the smaller bag o parts alone for now. There are several small bits in there that you really do not want to lose, drop on the floor, or have fly off into space. Reading the instructions is recommended.

Construction begins with building a box which serves as the perimeter frame of the flat car. You need to find the two end sills and the two side sills for building a box (Fig 1). There are four boards of which two are the side sills



Make sure that these paired pieces are exactly the same in length, and if not, sand them to match! Also, make sure that the interior beams also match the length of the side sills. And, one part of this is to not worry about the length being exactly 38"; your car can be shorter, longer, narrower, whichever you decide. You cannot make it longer! One of the fundamental objectives of this kit is to be able take a pile of sticks and come up with a credible, generic, truss-rod era flatcar that then can serve as the base for any number of other types of cars.

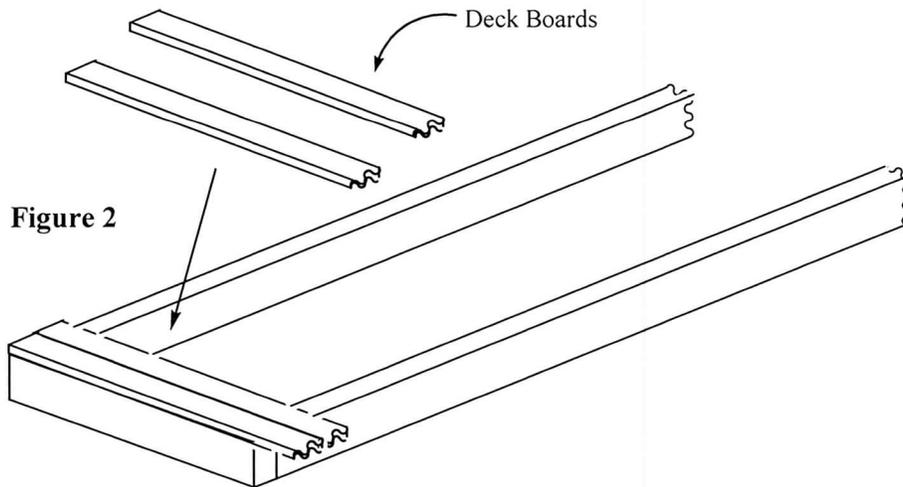
If you feel creative, you could assemble these parts using simple or complicated lap joints, but that is not always practical so we'll make do with a butt joint. The use of Walther's Goo is recommended for this step since wood glues and ACC are notoriously weak for this kind of joint. A small dab of Goo on the ends of the side sills with a bit of CA on the end sills will serve to assemble the frame and allow you to adjust it at your leisure to get square. I trust my eyes, but you can verify square using a small machinist or carpenters square or by measuring the

diagonals; these should be equal in length. This Goo step is to just set up the frame for the next step – putting on the decking. Don't worry about putting the other 4 beams in just yet; these go in much easier after the decking is in place!

Step 2

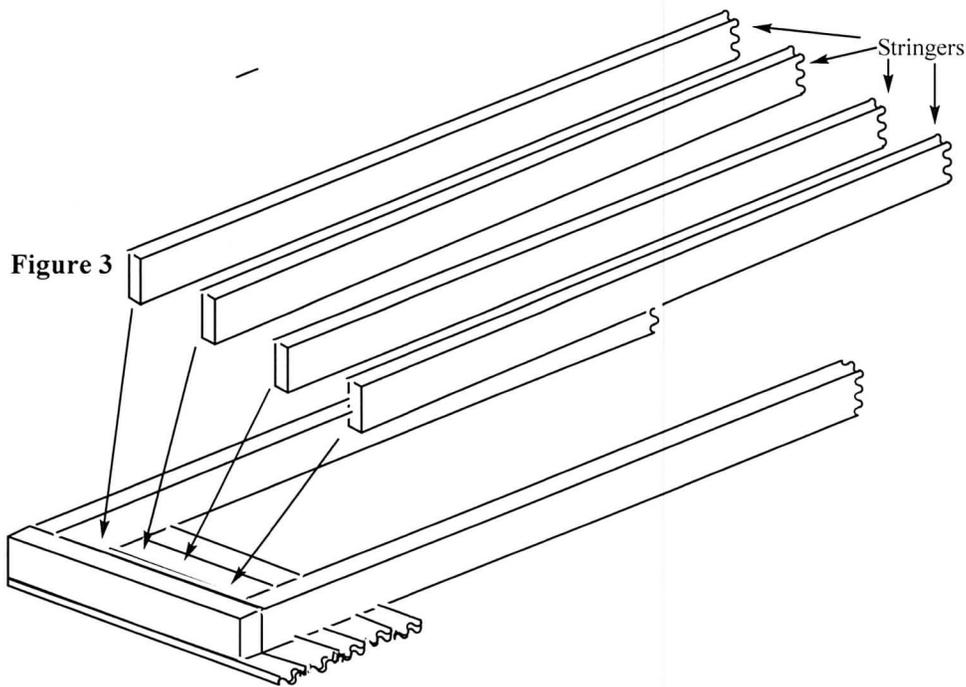
Scribed sheet is really too neat and tidy looking. And, unless you use two sheets back-to-back you don't get the visual effect of boards from the underside, for those that do look under their cars. We'll use individual boards that are O scale 3" x 14". There are ~35 deck boards supplied. These are cut close to, but a bit roughly. You can trim or sand the excess later. One caution about wood, you can trim it later, but it's hard to lengthen it if you've cut it too short.

Now, pick out ~4-6 deck boards and after laying down a bead of CA on the top of the end sill and about the distance of what would be ~4-6 deck boards down the side sills, and glue down ~4-6 deck boards (Fig. 2). Do this at each end and be careful not to disturb your nice square frame! Press these boards down firmly and try to not glue yourself to the car. With these two operations completed your car frame is set and locked into square, and you can insert the interior stringers.



Step 3

Flip over this assembly and now you can drop in your four interior stringers (Fig. 3).



These can be spaced equidistant or not, but should be symmetric. Depending of the car and type of truck bolster, their placement can vary both in spacing and in size. **One trick here is to place the two larger stringers as the interior pair located such that they align with the screw holes for Kadee coupler pockets.** That puts the other two slightly smaller stringers centered in the remaining space. Make sure they all fit with minimal friction; you don't want to force them in or bow these into place. Sand and test fit until they fit, but again, don't sand too enthusiastically, reversing the process does not work very well.

A bead of CA on the surface of the stringers towards the underside of the decking that you did at each end locks each stringer into place. Now flip your assembly back over, run beads of CA down the tops of the side sills and the interior stringers and glue down the rest of your deck boards.

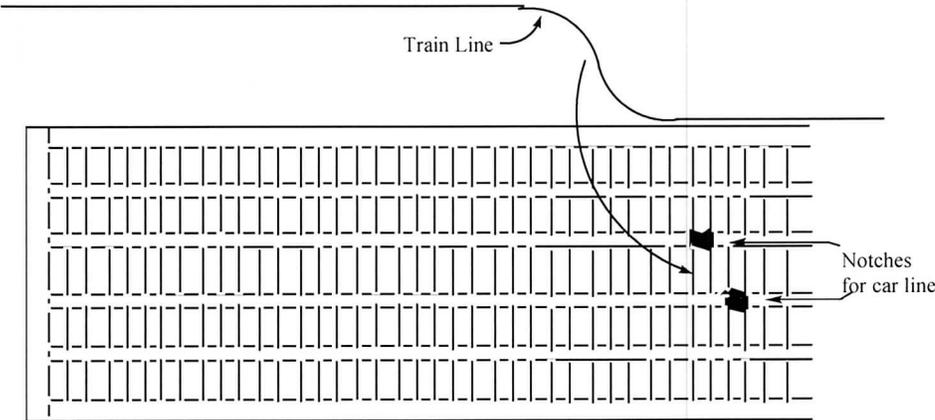
As you get close to meeting the two ends of deck boards that you are laying from each end, start planning those boards that you want to use to finish the remaining open section in advance. You do not want to end up with an awkward gap, but rather with a space close in width to a board that can be “massaged” or sanded into place. After this step is completed and the glue is set, you can trim the deck boards flush with the side sills or trim them to suit your personal design.

Step 4

Let’s get into some of the underbody parts and details. Flip the assembly over again.

Optional: If you want to put a train line in, now would be the time. Form this from 0.028” or 0.033” wire with an “S” curve and place into some notches cut with a sharp knife

Figure 4

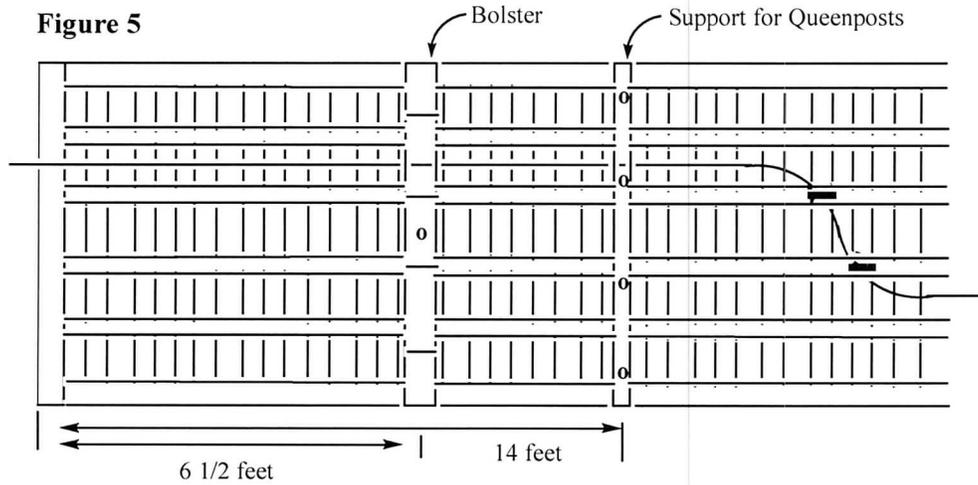


into the center 2 stringers (Fig. 4). If desired, addition of a glad hand to the end this wire dresses up the end of the car nicely. A dab of Goo in those notches holds this wire in place.

To really anchor this in place, you need to put in the body bolsters where the trucks will be mounted. There are a host of commercial choices in brass, plastic, and even wood, and what is supplied here are resin castings that I have drilled and tapped for 4/40 screws to mount trucks. However, if you manage to locate some old white metal or bronze castings the added weight is a great addition.

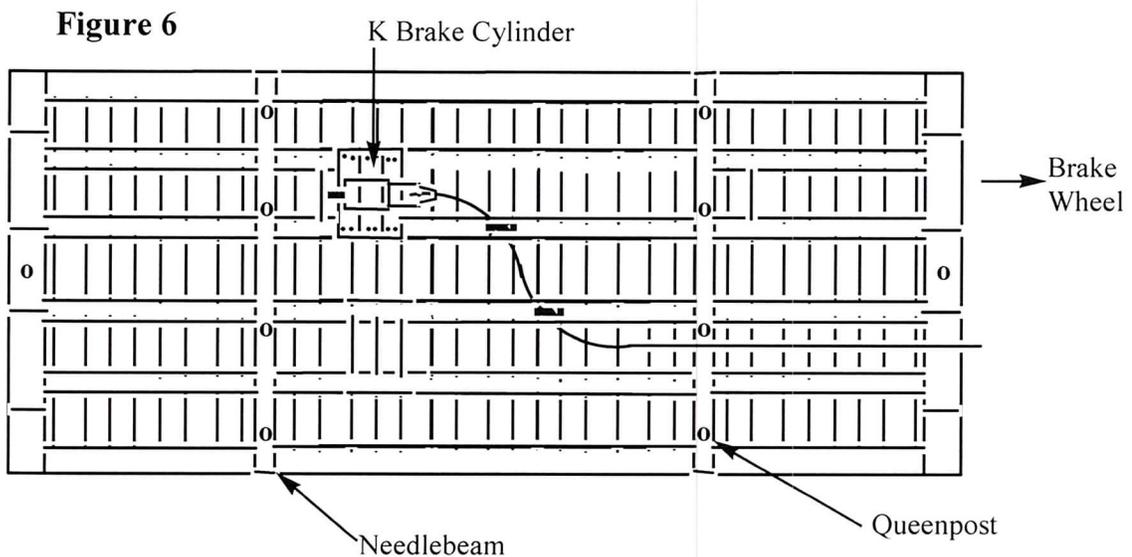
The bolsters straddle the entire underbody resting on the side sills and the support beams in between centered 6 ½’ in from end of the car (Fig. 5). Secure these with some Goo on the

four wood points of contact, place in position, remove, add some CA to the contact points, and replace.



While on this side of the car you can address placement of the remaining structural parts, some details, and the brake system. The 2 cross-member needlebeams that the queen posts will be mounted on can be set into place. Glue these down with CA 14 feet in from the end of the car (Fig. 5).

A more modern car would have a set of AB brake system castings. But, being an older truss rod car, there's just a single K brake casting here. The K brake casting goes roughly where it is located in Figure 6. Take some leftover decking boards and fashion a mounting platform 3-4



boards wide for the K brake casting (Fig. 6) straddling 2 of the stringers and secure them with CA.

Think ahead at this point about where the truss rods and turnbuckles need to run through this maze you're creating so that you leave four pathways. After the glue is dry, if you like, you can dress up these boards with some nut-bolt-washer (nbw) castings from Grandt Line.

Mount the K brake casting (may take a bit of sanding to clear flash). While these can be drilled out for 0.022 brass wire to make plumbing for a brake system that can be tied to the train line, that's another option that you can exercise. A dab of Goo on the wood and a bit of CA on the base plate of the casting will secure this part.

Step 5

Since you've been thinking about where you are going to put those truss rods, let's get those installed now. Drill holes in the needle beam cross member to mount the queen posts (Fig. 6). The queen posts are Grandt Line parts and the "bolt" off the sprue can be accommodated by a drilled hole in the needlebeam to secure it in place. Drill 4 holes with a pin vise (or a hand drill or drill press) in each cross member, carefully cut each queen post from the sprue at an angle using a sharp knife or sprue cutter. A bit of CA on the bolt and application of **gentle pressure** with that angle cut and each queen post will drop right in. Make sure you have these aligned correctly so that the truss rod running from end to end will rest correctly on the queen post. Now that these are mounted, you can drill holes in the ends of the end sills for the nbw's that are to represent the ends of the truss rods. These are from Grandt Line (#16 or #81) and there are several styles to choose from and usually require a #58 drill. I like to use the ones with a nice big round or square washer that shows nicely after painting. You can drill these holes with a pin vise again, or as I do, with a hand drill. You need 4 in each end to correspond with the 4 pairs of queen posts and these should be aligned in a straight line. **But, before you put these in, let's address those pesky truss rods and the turnbuckles.**

There are two (and probably a lot more...) options that can be used. In this version of this kit, these are made out of #0 surgical silk that is installed as one continuous piece of thread that is trimmed later. Here's how to do that:

1st, thread one end of the silk from the inside of the underbody out through one of the end sill holes that you drilled. Secure that end of the thread with one of those nbw's for the end by inserting it into the same hole with a little ACC from the outside anchoring the end of the thread.

2nd, **thread a turnbuckle casting** onto the silk and “tightly” pass the other end of the silk thread under the car bolster and up over the needlebeams (**Leave the silk off of the queen posts until the ACC has secured the ends.**), under the bolster at the other end of the car and then out through the corresponding opposite end hole. Anchor the silk thread at the other end with an nbw inserted from the outside with a little ACC. **Remember to add a turnbuckle casting with every passage of the silk through the car body!!!**

3rd, pass the end of the silk thread through the next end sill hole, thread a turnbuckle casting onto the silk and “tightly” pass the other end of the silk thread under the car bolster and up over the needlebeams), under the bolster at the other end of the car and then out through the corresponding opposite end hole. Anchor the silk thread at the other end with an nbw inserted from the outside with a little ACC.

4th, repeat this action two more times until you have all 4 truss rods with turnbuckles install, and the ends anchored with the larger nbw's. You should have just enough thread to do this operation.

Once the glue is set, you can lift the silk thread up onto the corresponding set of queen posts after all 4 truss rods are installed making sure that you place the turnbuckles in the center between the queenposts. These can be secured with a dab of ACC.

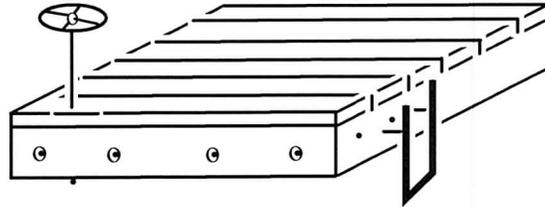
The other option here is to replace the thread with brass wire from Detail Assoc. and use brass turnbuckles, and brass queenposts, and solder it all together. Fun!

Step 6

Now, you're almost finished. Just add the stirrup steps and the brake wheel with ratchet & pawl assembly. The Grandt Line stirrup steps at each corner are applied by first drilling #72 holes that correspond with the bolts on these castings followed by glue with a drop of CA on each bolt with a discrete amount on the surface towards the car side sill (Fig. 7). The brake wheel casting assembly can be delicate.

Carefully ream out the center of the brake wheel with a #72 drill and glue to the supplied short

Figure 7



length of brass wire (trim to a reasonable length...) so that the end is nearly flush with the top of the wheel. Similarly, ream out the hole in the ratchet & pawl gear. Very, very carefully, with a sharp knife, free the wheel from the casting sprue (if there is one). Similarly free the ratchet & pawl casting and thread this on the brake shaft and set this aside. To simplify mounting the brake wheel, just drill a #72 hole in the deck close to the end as in Figure 7, and secure with a drop of CA. Secure all with either CA or Goo with the brake wheel at a reasonable height.

Final options include grab irons (make your own from brass wire or use some from Precision Scale) and stake pockets (included!) to dress up that otherwise naked car side. To add weight, build a load for your flat car! Arch bar trucks would be appropriate and the plastic Athearn trucks are fine, but you can replace the wheel sets with metal wheels for smooth rolling and weight for a lowered center of gravity. Finally, add some Kadee couplers. If you placed the inner two stringer for this, you can mount a coupler box directly using 3/8" #0 wood screws. If not, you'll have to add a block from the scrap box between the 2 center stringers to mount the coupler box. Check for height and you'll either add a washer or sand the bolster. Some paint, stains, weathering, and lettering if desired and you'll have a pretty good truss rod flat car that gets you started in scratch building in wood!