

## KIT NOTES for the Lattice Girder & Columns

These notes generally follow the page order of the files that come with the kit.

As we have mentioned numerous times in the BLOG on our website, [www.clevermodels.net](http://www.clevermodels.net), this kit is being produced in O scale with instructions in the “Please Read This File First” folder on how to produce any other smaller scale, as you print the kit.

This is a really different type of kit. Not like anything you have seen us do before. It is a structure, but not a building. Not a flat, but something that will be useful in many areas of your layout.

This is a simple, but well detailed kit. Some may find the folds for the columns a bit tricky, but we have made it as easy to build as we could. It should take, even an inexperienced paper modeler, only about an evening or two to complete one assembly. Obviously, you will probably be building a bunch of these. The column & girder assembly **IS NOT** intended to be structural, but you will be surprised how much weight it can handle. With square doweling in the columns and thin support inside the base plates, a couple of pounds is quite possible.

Please read these instructions completely before you attempt assembly. Also, be sure to read the “General Modeling Instructions” in the “Please Read This File First” folder. All the information contained about cutting, folding, edge coloring, etc. apply to EVERY piece of this kit. Also, on pages 1 and 2, you will find Isometric and Exploded Isometric Views.

In these instructions, I will use the term “embossing” quite a bit. This is a method used to achieve nice, straight folds in the card. Other manufacturers typically will tell you to “score” the fold lines on the outside (printed side) of the kit pieces. Unfortunately, after you fold the piece, this leaves a white line that must be colored to blend in. Embossing is the method I use to produce a much better result. To emboss a fold line, you use a pointed, but rounded instrument, like an ice pick with the tip SLIGHTLY rounded, on the back (unprinted side) of the card to impress or “emboss” the line. What you are trying to accomplish is to make a depressed line, NOT A CUT. This produces a weakness in the card that allows it to bend right on that line.

Embossing is always done on the “Valley” side of the fold. A “Valley Fold” is one that bends TOWARD you and is usually indicated on the pages with **BLUE fold lines**. A “Mountain Fold” is one that bends AWAY from you and is usually indicated on the pages with **RED fold lines**.

The tools you will need are all mentioned in the “General Modeling Instructions”.

As always, the glue we recommend is the 5-15 second cure time, gap-filling, cyanoacrylate distributed by Bob Smith Industries named “Insta-Cure+”. They have various types depending on viscosity and cure time. This glue comes in the bottle with the **PURPLE** cap.

Please be aware that cyanoacrylate can cause allergic reactions in some people. **ALLWAYS** use it in a **WELL-VENTILLATED** area. Follow all instructions and warnings that come with the glue.

When working with ACC and cardstock models, it is usually a good practice to keep a single sheet of wax paper on top of your workbench. This will prevent your model from becoming glued to your workbench, as ACC glue will creep into any nook and cranny available, by capillary action.

A Clever Models LLC kit requires no additional material, other than cardstock and glue.

Always complete all the necessary embossing of fold lines before you cut out the kit parts. If you are making a “Mountain Fold”, one where the parts fold “away” from you, your fold lines will be embossed on the back (un-printed) side of the sheet. Use your embossing tool (dulled ice pick) to make small prick marks, right on the red fold lines where they extend out from the part. Turn the sheet over, white side up, and connect the marks with the embossed fold line.

## **Building the Columns**

The parts for the Girder & Columns are found on page 3. You need to print this page twice to make all the parts for one assembly.

Take a moment refer to the views on page 2. Both columns are identical and are basically a square tube with a slot in one side that extends down from the top edge. The girder will eventually be glued into these slots.

- Separate the column from the rest of the page, leaving as much blank space around it as possible. Do this for both columns.
- Emboss all of the fold lines.

Note that on the side of the column with two tabs, you only want to emboss the top tab down to its bottom edge, not all the way to the bottom of the part. It won’t ruin anything if you do, but it might be visible in the bottom of the column. You might want to cut out the small wedge-shaped area between the two tabs first, as a guide to know where to stop embossing. Remember, you will be embossing on the back (unprinted) side of the page, so you will not be able to see where to stop.

- Pre-fold both pieces.
- Flatten the pieces back out and do your final cutting.

It is very important that the tabs at the top of the column be inside the tube when it is glued. They tend to remain outside, unless you remember to tuck them in.

Also, any time you make a paper tube, it tends to twist. The longer the tube the worse the twist. These are not very long and the slot in the side helps keep them straight, but you must be careful to hold things straight as the glue sets. Luckily, this is only a second or two with ACC. If you use something like “Tacky” glue, you may want to do something to hold things square for a bit.

- Being sure that the upper tabs are tucked in (It’s a really good idea to make sure they are bent at 90 degrees or even a bit more.), glue the bottom tab of the columns.
- Next, making sure the slot sides remain parallel and as wide as two sheets of cardstock, fold the top of the column closed and glue it.
- Finally, fold and glue the bottom.
- Back on page 3, cut out four pieces of the lattice for the sides of the columns. Don’t forget to color their edges. (Notice there are extras, just in case.)
- Glue them to the front and back of the columns.

- Next emboss the fold line for the concrete footers.
- Cut them out and the base plates.
- Fold the sides of the footers down and glue the corners. The sides should taper in.
- Glue the base plate, centered on top of the footer.

Here's where I got a bit carried away. I wanted to give you a way to make the base bolts and washers stand out and the only practical way with card stock, is with layers. I really don't expect anyone to build these, but they do look pretty good when done well. I use a small hole punch to cut them out. And yes, I have trimmed the bolt heads into hexes, once. (And only once. I typically substitute actual miniature hex bolts.)

- Cut out the bolt heads and washers.
- Glue them together in stacks of three and then glue them to the base plate.
- Aligning carefully, glue the columns to the base plates.

If you are going to put any amount of weight on the girder, I **STRONGLY** suggest that you fill the concrete footers with something solid. I typically cut multiple pieces of cardstock and layer them inside, until I get to the correct height.

## Building the Girder

- On page 3, cut out the girder side piece. It is the one with the X bracing and the tabs on the ends. Be sure to color all of the edges.

Since you will be laminating two pieces that are mirror images of each other, it is a good idea to color a bit of the back of the part all around the edges. I use a dark brown marker. This way, if you don't line everything up precisely, it won't show. Just about 1/64" around all back edges is enough. The parts are very precise and do line up.

- Test fit both pieces, back-to-back, to see how they fit. (I told you they are precise, but I can't control how you cut them out.

For this next step, you want to be very careful that you don't apply too much glue, as it will ooze out from between the pieces and probably, permanently glue the girder to your workbench. When gluing large, flat pieces like this, it is a good practice to work on top of a single piece of wax paper. You should also cover the glued piece with another sheet of wax paper, before you put weight on it to keep it flat while the glue sets.

- Once you see how things fit, apply a tiny bead of glue to the top run of one of the girder sides.
- Aligning carefully, press the two sides together. Let the glue set for a couple of seconds. I suggest a bit of weight to keep things flat.
- Since cardstock is flexible, gently spread the unglued portion of the girder and apply a tiny bead of glue to all of the remaining surfaces and press them back together. Weight this assembly down again and let it set for a few minutes.
- Cut out the two girder frames and the eight riveted rectangular plates that remain on page 3.
- Glue one of the girder frames to the girder.
- Flip the assembly over and add the other girder frame.

- Glue four of the riveted plates to the girder assembly.
- Flip it back over and add the last four plates.

The addition of these layers, not only enhances the 3D look of the piece, but also adds a lot of stiffness.

## Building the Top Beam

The pieces for the top beam are found on page 4.

- Emboss the fold lines for pieces 2 & 5.
- Cut out the 6 pieces on that page.
- Fold the flanges of pieces 2 & 5 90 degrees, so they are “C” channels.
- Place them Back-to-back on your workbench to make sure they are the same height. Adjust if necessary.
- Following the diagram on page 4 and aligning carefully to make sure all edges are flush, glue piece 3 to piece 2, then piece 4, then piece 5.
- Again, aligning carefully, glue piece 6 to the bottom of the assembly and piece 1 to the top.

## Putting it all together

- Take one of the columns and the girder and test fit a girder tab into the column slot. It should go all the way in until it bottoms, and the tops of both pieces should be flush. Also, the pieces should be at 90 degrees to each other. You can adjust the fit by trimming or notching as needed.
- Take this assembly apart again and apply glue to both sides of the girder tab and re-insert while keeping everything aligned.
- Repeat this step with the other column.
- Finally, centering the top beam, glue it to the top of the girder, column assembly. Your girder, column assembly, should look like the view on page 1.

## TA-DA! You're Done!

I strongly suggest that you brush or spray a coat of flat clear on the entire structure.

Just an idea, I have used two of these as supports under the Half Through Girder Bridge, Kit S71, as a roadway bridge and it looks great.

We hope that you enjoyed this kit, and it will inspire you become more creative.

If you need any additional assistance or have any questions, you can always reach us at [www.clevermodels.net/contact](http://www.clevermodels.net/contact).

Also, we are always interested in pictures of your completed builds. You can email them to us as attachments and we will post in the blog. Sorry that we can't post everything, but we will try to show off your hard work.

Thank you.  
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