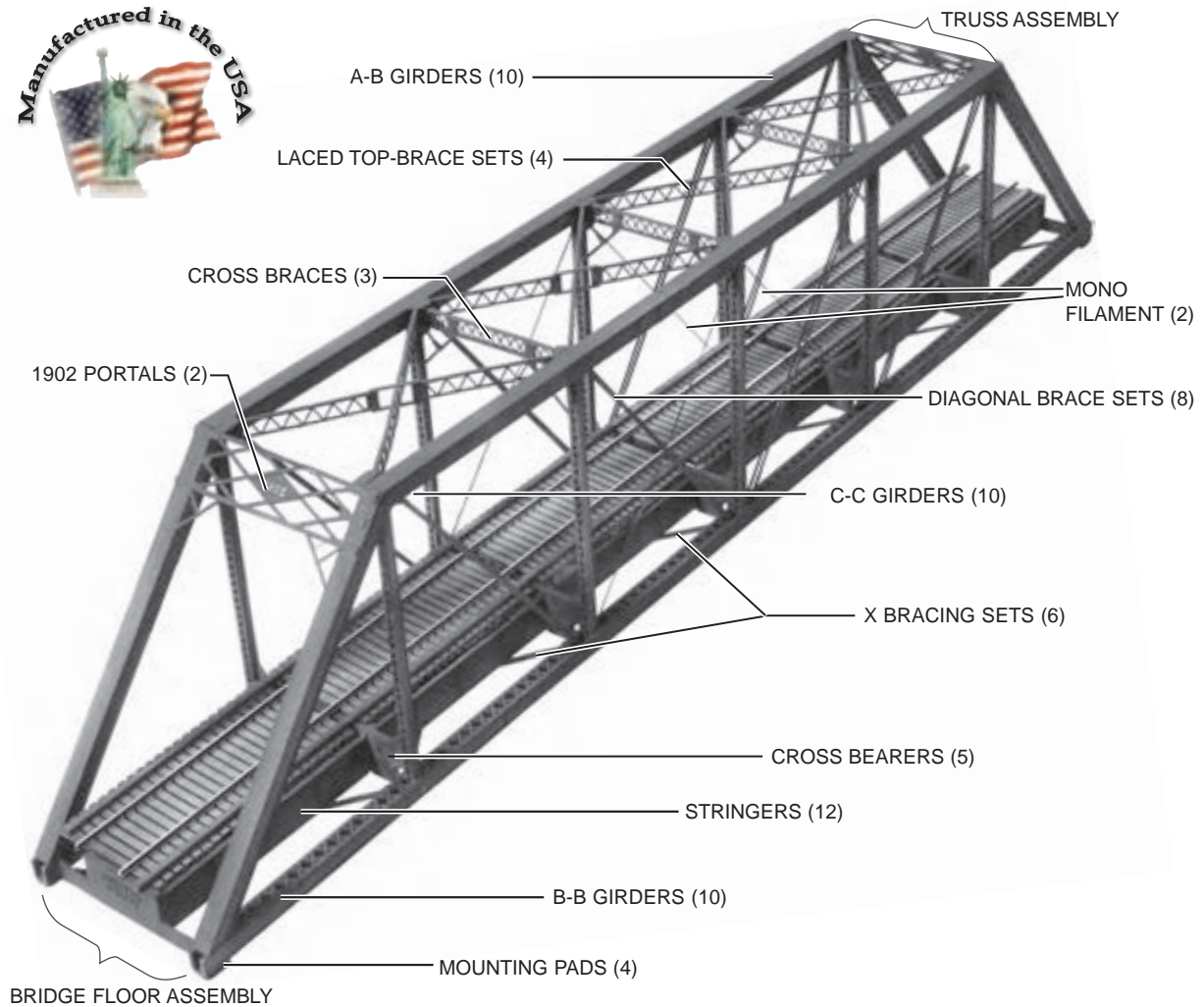


CENTRAL VALLEY 1905 & 1906 TRUSS BRIDGE WITH 24" STANDARD GIRDERS



CONGRATULATIONS!

You have just acquired the finest steel structure kit ever produced for HO Scale. When completed, your model will be comparable to the best of contest models - and you don't even have to be a riveter!

As with all plastic kits "flash" will sometimes appear on part edges. The "flash" should be cut or scraped from parts before removing from sprues if possible. Delicate parts should be cut, not broken, from sprues. A liquid styrene modeler's cement is recommended. Follow the cement makers' instructions. The Truss Bridge Kit is molded from a typical grade of impact styrene common to all popular hobby kits on the market. The components of this kit can be combined with any other kit components or modelers styrene stock for custom or scratch building projects.

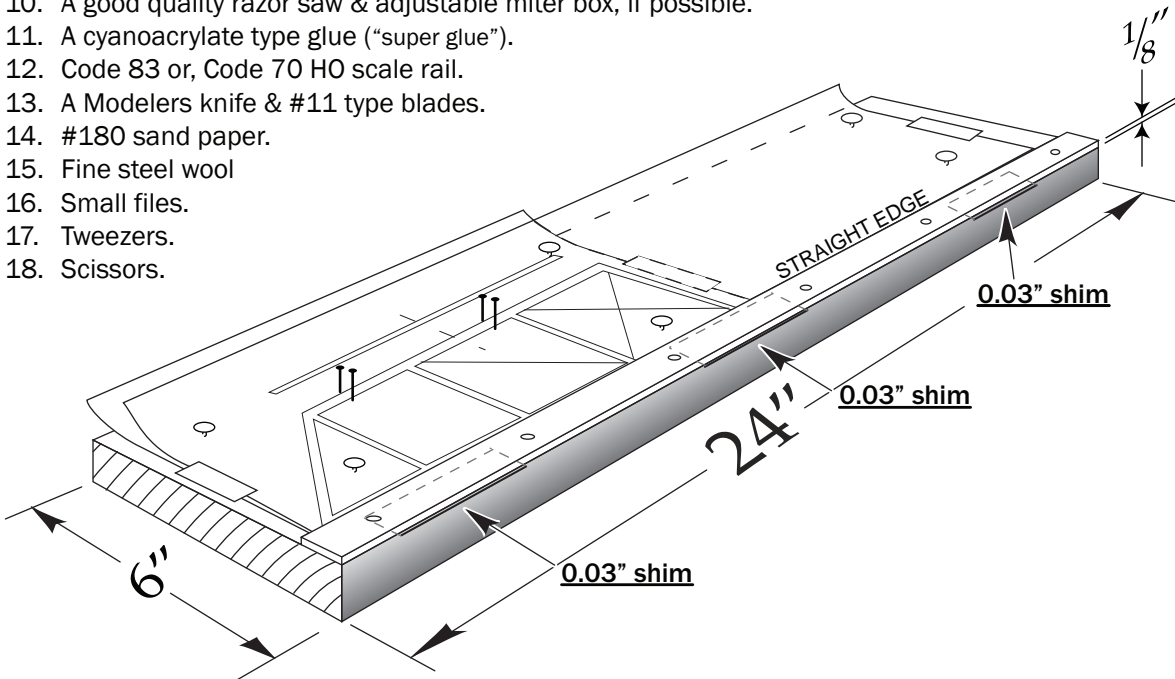
The tools and materials listed are ones you probably own or are already familiar with. This kit was designed for the simplest construction techniques. However, it is not recommended for assembly by or used by young children. Adult modeling tools and skills are required for assembly and the finished model is not able to withstand the handling or usage that children would give it.

Central Valley assumes no responsibility, implied or otherwise, for any injury from or damages from the use of or construction of the model, nor any guarantee of performance of the model in its finished, or unfinished state in any application, we do guarantee to the extent of replacement of, any defective part or component.

Furthermore, if you should have a problem or "goof" during the assembly, write to us for the parts you need and we will replace them free of charge, plus postage and handling. We want you to complete the model!

TOOLS AND MATERIALS - RECOMMENDED

1. A wood block cut true and square to measure $\frac{1}{2}$ " X 2.25" X 2" (12.7mm X 57.2mm X 50.8mm).
2. A flat ended / "drift" punch $\frac{1}{8}$ " (3.18mm) diameter, for securing rail to the tie sections.
3. Some blocks cut true and square to measure 1" X 2" X 3" (25.4mm X 50.8mm X 76.2mm).
4. Some cardboard or wood shims measuring about 0.03" (0.75mm) in thickness.
5. Some small spring clamps -- at least eight or a dozen for girder assembly.
6. A workbench or table that can have a straightedge "C" clamped to it.
7. Model paint and painting tools you are accustomed to working with.
8. A straight edge measuring a minimum of 24" (609.6mm) in length.
9. Styrene cement or professional grade styrene solvents & brush.
10. A good quality razor saw & adjustable miter box, if possible.
11. A cyanoacrylate type glue ("super glue").
12. Code 83 or, Code 70 HO scale rail.
13. A Modelers knife & #11 type blades.
14. #180 sand paper.
15. Fine steel wool
16. Small files.
17. Tweezers.
18. Scissors.



OPTIONAL WORK BOARD WITH "STRAIGHT EDGE"

Either on a workbench or using a "work board" the straight edge is recommended to be shimmed to allow the box girder lip / flange to fit under. The truss diagram can be positioned under the shims making sure the dashed line is parallel and true with the straight edge. An over-lay of "waxed" paper prevents inadvertent adhesion of assemblies to paper. With a "work board" Straight pins, brads, and small weights can be used to assist in alignment and holding of various parts.

We at Central Valley Model works encourage you to read this entire instruction book before you start any of the following assembly steps. During the reading of this instruction book, we understand that there may be some grammatical, spelling, & punctuation errors; we would like you to please ignore them.

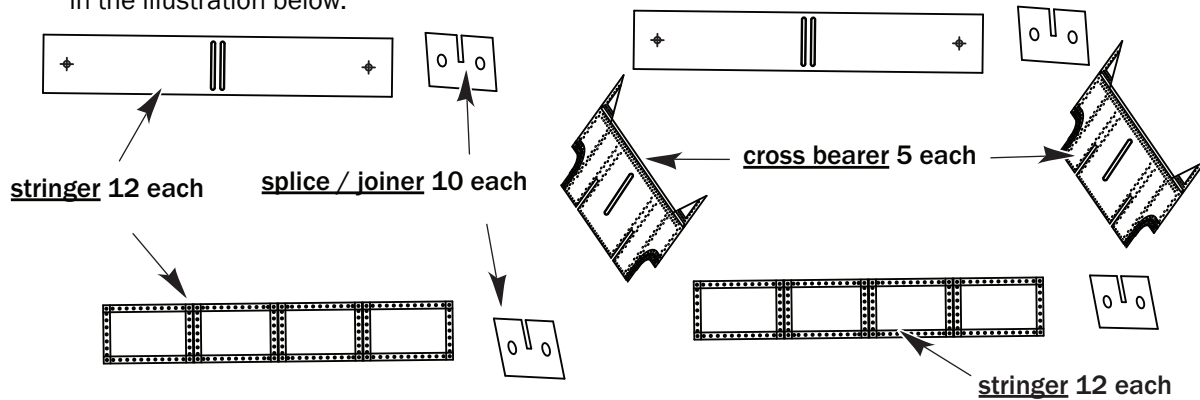
In the forthcoming "Floor Assembly", we suggest you to use a flat surface. Your bridge will only be as straight & flat as the surfaces the kit is assembled too. A few of the good flat working surfaces we recommend include;

- A) A kitchen or restaurant cutting board measuring no less than 12" X 24" (30.5cm X 61cm).
- B) A table saw table / top measuring no less than 12" X 24" (30.5cm X 61cm).
- C) A pane of glass measuring no less than 12" X 24" X $\frac{1}{4}$ " (30.5cm X 61cm X 6mm).
- D) A section of granite counter top or granite tool room surface plate measuring no less than 12" X 24" (30.5cm X 61cm).

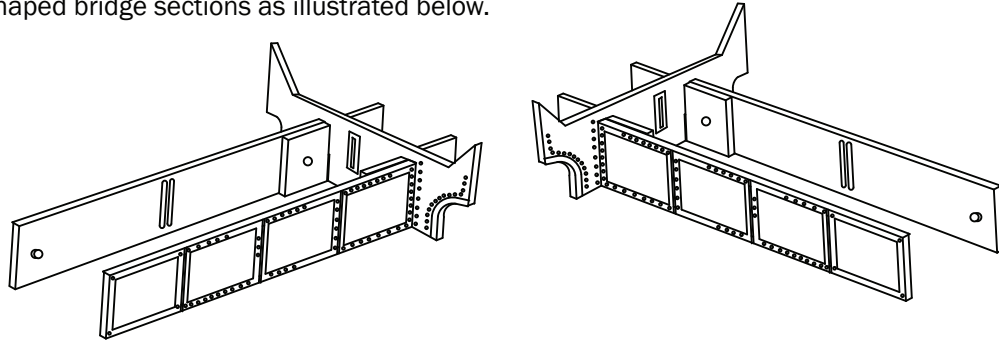
FLOOR ASSEMBLY

1) Floor Assembly

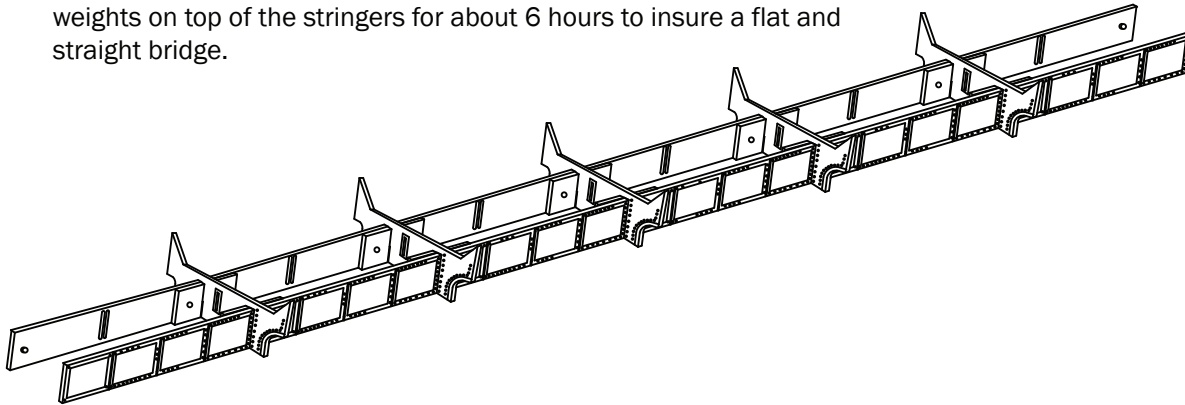
a) Using a smooth flat surface arrange all the components of the floor assembly in order as outlined in the illustration below.



b) Snap the splice joiners inside the cross bearers and locate the lugs on the stringers to the holes in the splice joiners. Using a 1 inch wide block, square the crossbearer, then press it downward to insure the bottom surface is flat, and glue the joiners to the stringers and crossbearers creating 5 "U" shaped bridge sections as illustrated below.

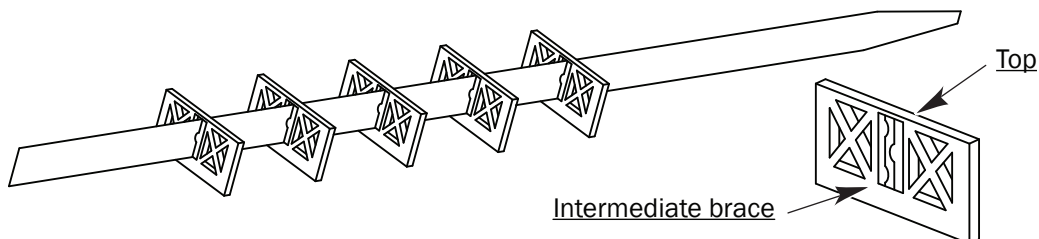


c) Using a 1 inch wide block for squaring, link and glue all 5 sections together. Make sure as you glue these that the **stringers & crossbearers** are **seated flat** to the working surface. Then attach and glue the 2 remaining stringers. Go over all the glue joints one final time and apply weights on top of the stringers for about 6 hours to insure a flat and straight bridge.



2) Steel Strips

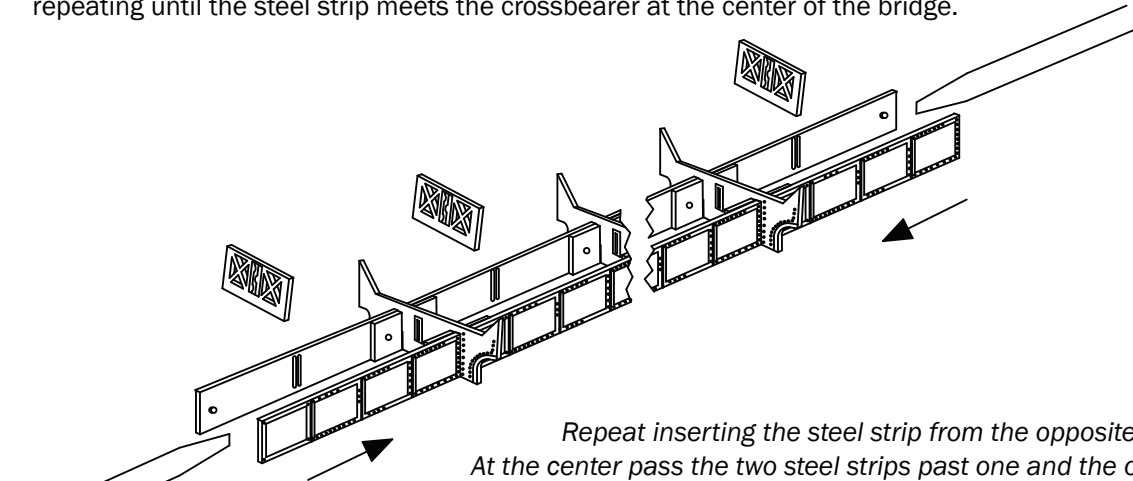
a) Modify the steel strip on one end with a grinder or file, to have a taper like the drawing below. Slide the steel strip through all the intermediate brace's and make any necessary adjustments needed so they slide freely over the steel strip.



FLOOR ASSEMBLY

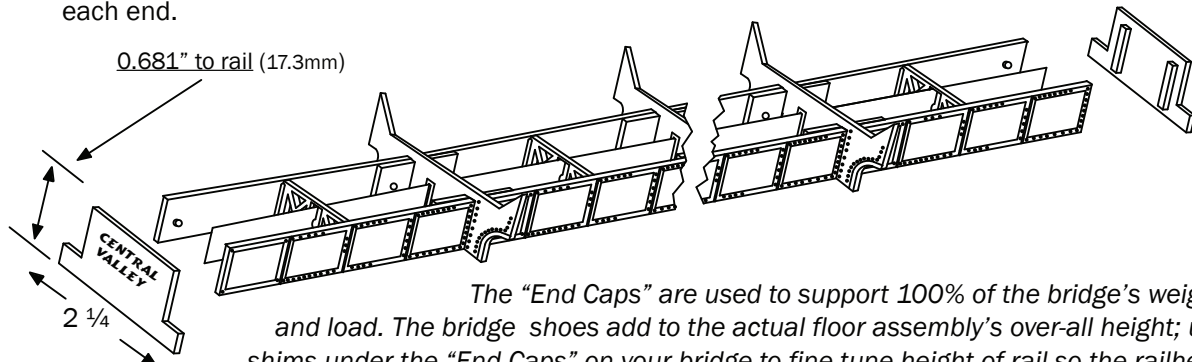
3) Intermediate Braces & End Caps

a) Test fit the intermediate brace's to insure the stringers look straight and make any adjustments if needed. Slide the steel strip through one intermediate brace and then through the crossbearer repeating until the steel strip meets the crossbearer at the center of the bridge.



Repeat inserting the steel strip from the opposite end. At the center pass the two steel strips past one and the other overlapping as they pass through the crossbearer. (Opening of the slot at the center cross bearer may be required), Make sure the intermediate brace's have the thick section at the bottom. Snap the brace's in-between the locating ribs on the stringers and inspect that the stringers do not bow in or out. If all looks well glue the intermediate brace's into their locating ribs on the stringers.

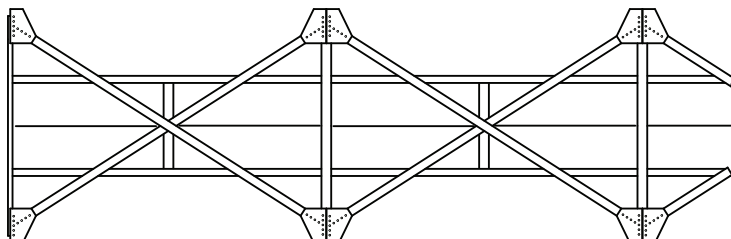
b) Modify and glue on the end caps. For this bridge to work with the 24" standard girders, the width of the end cap needs to be 2 1/4". To maintain symmetry, this is best accomplished by cutting 0.05" off each end.



The "End Caps" are used to support 100% of the bridge's weight and load. The bridge shoes add to the actual floor assembly's over-all height; use shims under the "End Caps" on your bridge to fine-tune height of rail so the railhead perfectly blends with the adjoining track work at each end. This kit when properly assembled will support up to 18 pounds. Having an inch or two of rail extend beyond the ends of the bridge will result in the most reliable operation.

4) "X" Bracing

a) Using the truss diagram template, tack glue the "X" brace's together making 6 pre-assemblies. Then starting in the center of the bridge floor assembly tack the members with liquid tape or a very light amount of glue. Then glue each one to align with its mating part gluing each one to the cross bearer. Align and final glue the gusseted ends over the crossbearer's. **NOTE:** Do not pull the main floor assembly out of shape here.



The floor section should be gone over with some steel wool and a fine wire brush (stainless steel) and painted at this time.

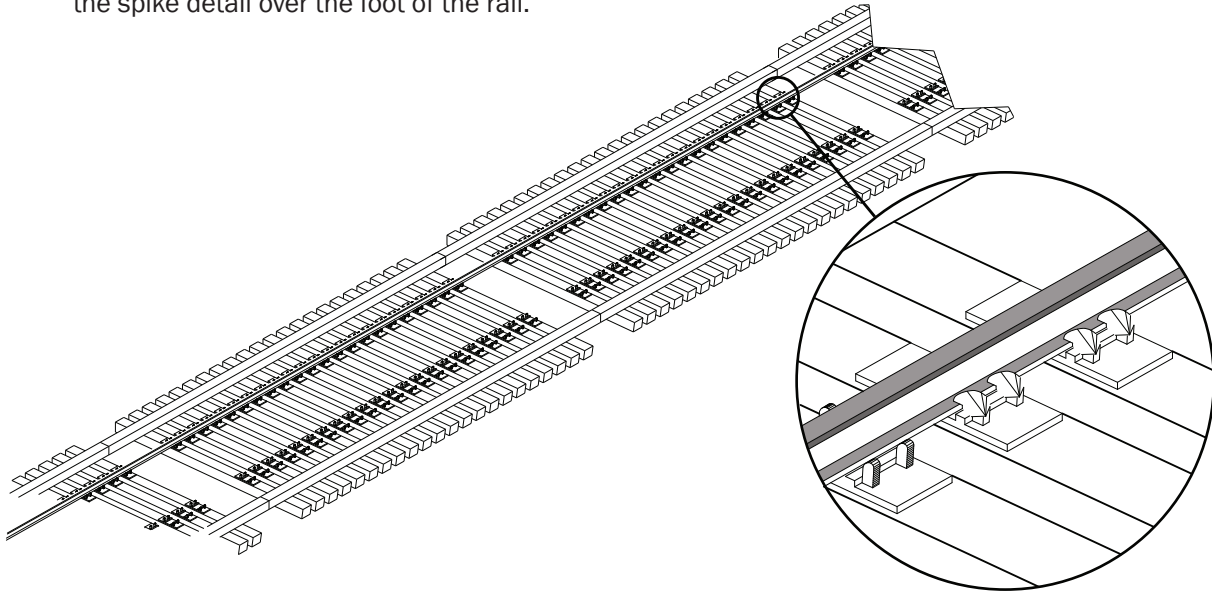
THIS COMPLETES THE FLOOR SECTION

BRIDGE TIES & RAIL

Optional: Paint and weather rail, tie plates, & ties before moving on to the bridge tie/rail assembly.

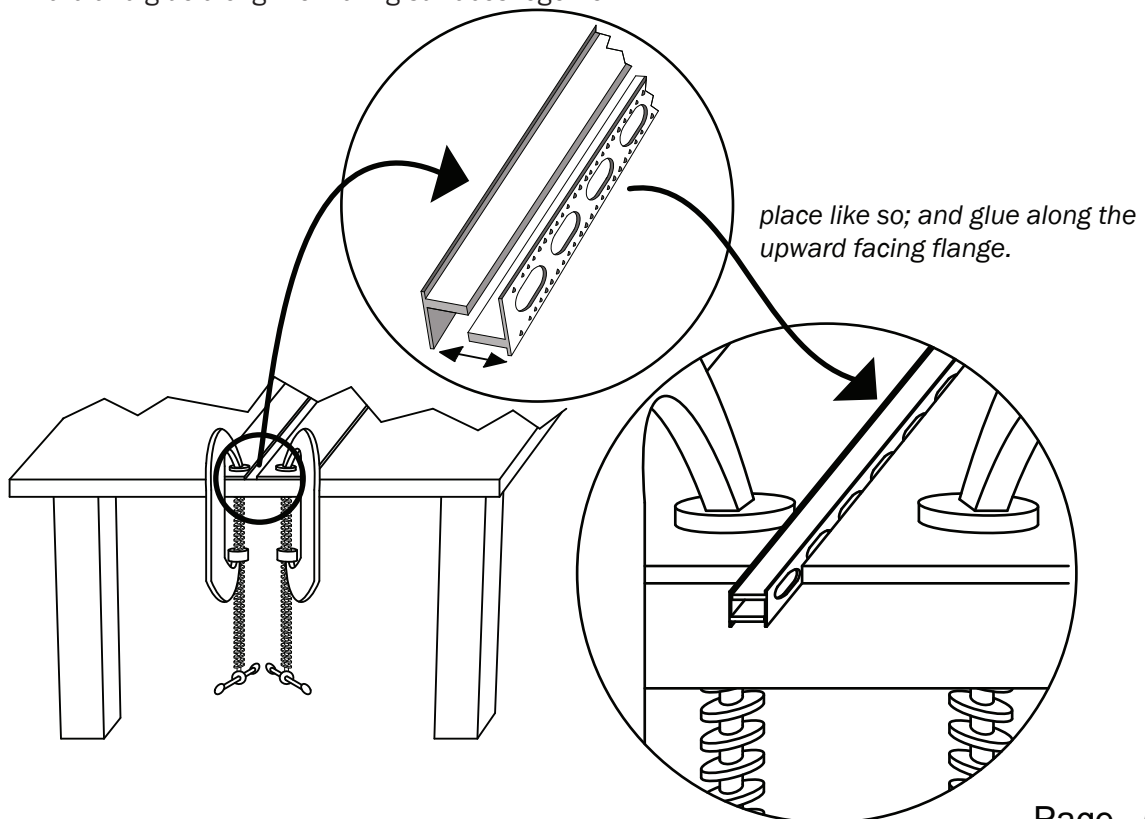
1) Bridge Ties & Rail

- a) Cut two lengths of rail to about 23 inches in length.
- b) Straighten the rail if necessary.
- c) Rotate & arrange the tie sections until the timbers and tie lengths are aligned.
- d) Test fit a section of rail inside the locating ribs on the tie plates and double check the over all tie alignment.
- e) Then, start in the center of the rail length, using a flat punch or #2 nail set, gently smear & press the spike detail over the foot of the rail.



BOX GIRDERS

Box girder assemblies should be assembled so that a small overlapping flange occurs along both sides. A fixture can be fashioned by clamping two parallel straight edges set to the height of a completed girder assembly. Then by arranging two girder halves side - by - side, (flange edges down) hold the girder flat downward and glue along the mating surfaces together.



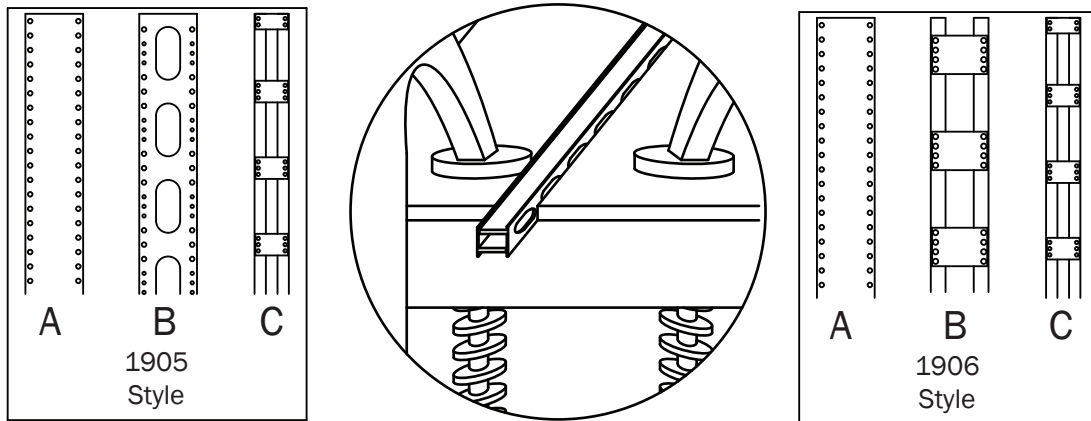
BOX GIRDERS

1) Box Girder assembly

- a) Cement all ten (10) type "A" (solid) girder members to ten (10) of the type "B" (punch plate / gusseted) girder members. This will create ten (10) box girders with the type "A" (solid) surfaces opposite the type "B" (punch plate / gusseted) surface. ("A-B" Box Girders).
- b) Cement all remaining type "B" (punch plate / gusseted) girder members to each other creating ten (10) box girders with the punched / gusseted detail on two opposite sides ("B-B" Box Girders).

The ("B-B") & ("C-C") girder assemblies should be arranged so when viewed through the detailed side, the detail & rivets should appear to be aligned directly across from each other.

- c) Cement all type "C" girder members to each other forming 10 type ("C-C" Box Girders) with the gussets on opposite sides.



Set all box girders aside to dry.

When dry, polish sides with fine steel wool or a fine wire brush to eliminate any defects caused from cementing.

2) Box Girder Cutting

Be careful when cutting the girders to ensure you have matched sets. Personally I arrange the girders and switch them around until I am happy with how well the flanges line up, and then number them marking the side which is to face out when completed before I cut.

- a) Using a straightedge and the Truss Diagram mark and match all the ("A-B") & ("B-B") girders at their splice locations as illustrated on the diagram.
- b) After verifying the cutting locations proceed to cut all the ("B-B") girders at their splice locations as illustrated on the truss diagram.
- c) After verifying the cutting locations and adjusting cut lines for rivet detail, proceed to cut all the ("A-B") girders at their splice locations as illustrated on the truss diagram making 4 matched sets with 2 matched center links.
- d) Using the Truss Diagram as a guide cut all the ("C-C") girders to length so they are long enough to fit inside both the ("A-B") & ("B-B") girders. Then proceed to remove a short segment of the flange so the ("C-C") girders fit inside the ("A-B") & ("B-B") girders with a slight amount of friction / drag.

TRUSS ASSEMBLY

1) Truss Bottom chord Assembly

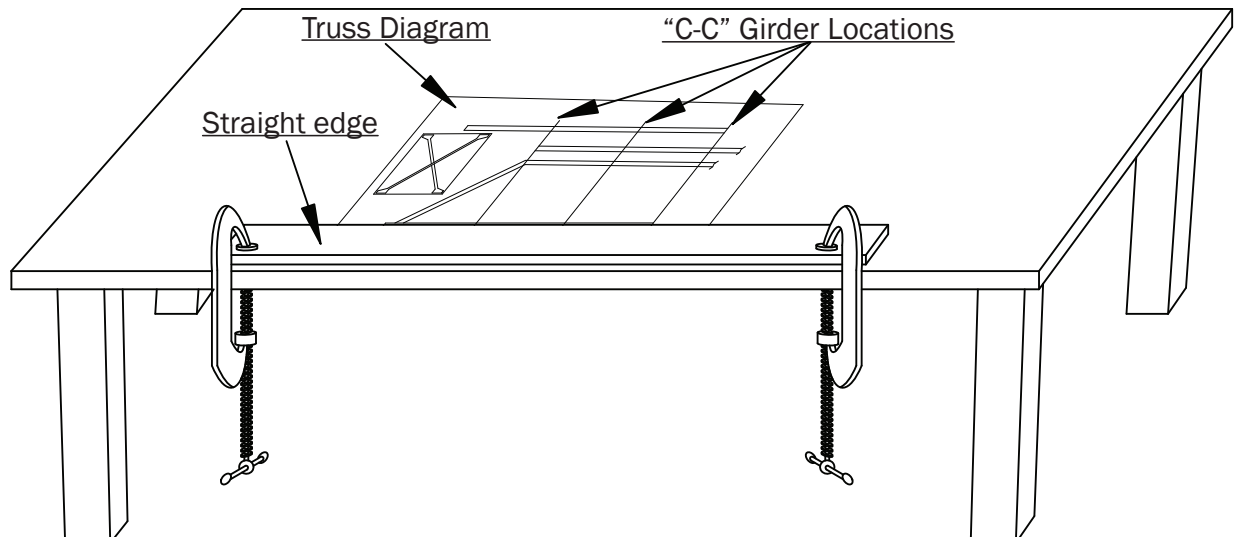
- a) Using the short gussets with no bolt / washer detail, splice the ("B-B") box girders end to end creating 4 matched sets as the one on the diagram. Apply these gussets to **both** sides of the splice line.
- b) Using the long gussets which have bolt detail, splice the ends matched to the center line of the truss creating 2 matched lengths about 21 inches in length. Apply these gussets to **both** sides of the splice line with the bolt detail centered with the ("C-C") girder printed on the diagram.
- c) Align the two long ("B-B") girder chords oriented with the detail and rivets to the Truss Diagram and mark where the 10 ("C-C") girders will intersect. Remove or modify the proper segments shown to accept the ("C-C") girders and the diagonal braces which will be installed on Step 5-"b" of the truss assembly on page 10.

2) Truss Angled & Top chord Assembly

- a) Using the angled gussets, position on the Truss Diagram with a spare girder as a spacer off the straight edge, splice the ("A-B") box girders with the angles matched to the diagram creating 4 matched angle sets exactly as the diagram. Apply these gussets to **both** sides of the angled splice line.
- b) Align the each ("A-B") girder chords oriented with the detail and rivets to the Truss Diagram and mark where the 10 ("C-C") girders will intersect. Remove or modify the proper segments shown to accept the ("C-C") girders and the diagonal braces which will be installed on Step 5-"b" of the truss assembly on page 10.
- c) Using the short gussets with no bolt / washer detail and the straightedge splice the 2 remaining (short) ("A-B") box girders end to end. Apply these gussets to both sides of the splice line.

In this next step it is very important to match and test fit the ("C-C" Box Girders) exactly to the diagram. Take your time and check each ("C-C") girder as it is glued making sure it is straight and square to the truss diagram. Modifications at the top of the 2 ("C-C") girders where they meet the angled ("A-B") girders may be required to complete the truss sections.

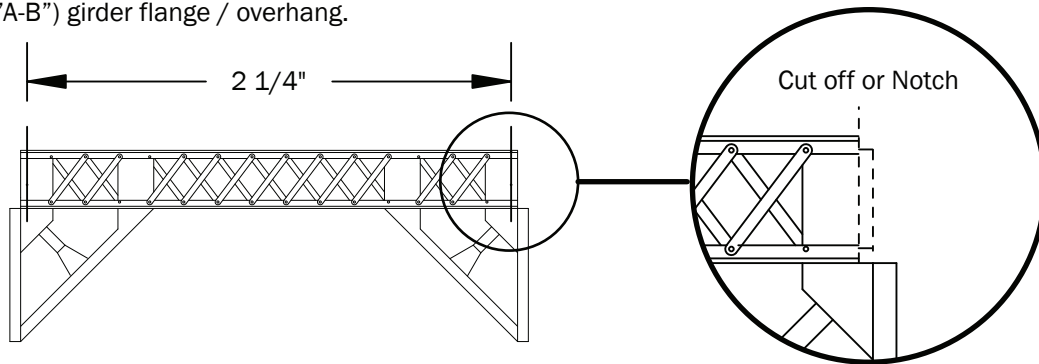
- d) Fit all the ("C-C") girders into the bottom ("B-B") chord using the Truss Diagram as a guide. Then fit the top ("A-B") girder assembly over the pre-fitted ("C-C") girders when both truss sides line up and match close enough, proceed to glue the ("C-C") girders in place checking each one over the Truss Diagram to insure accuracy and cemetery from Truss-to-Truss.



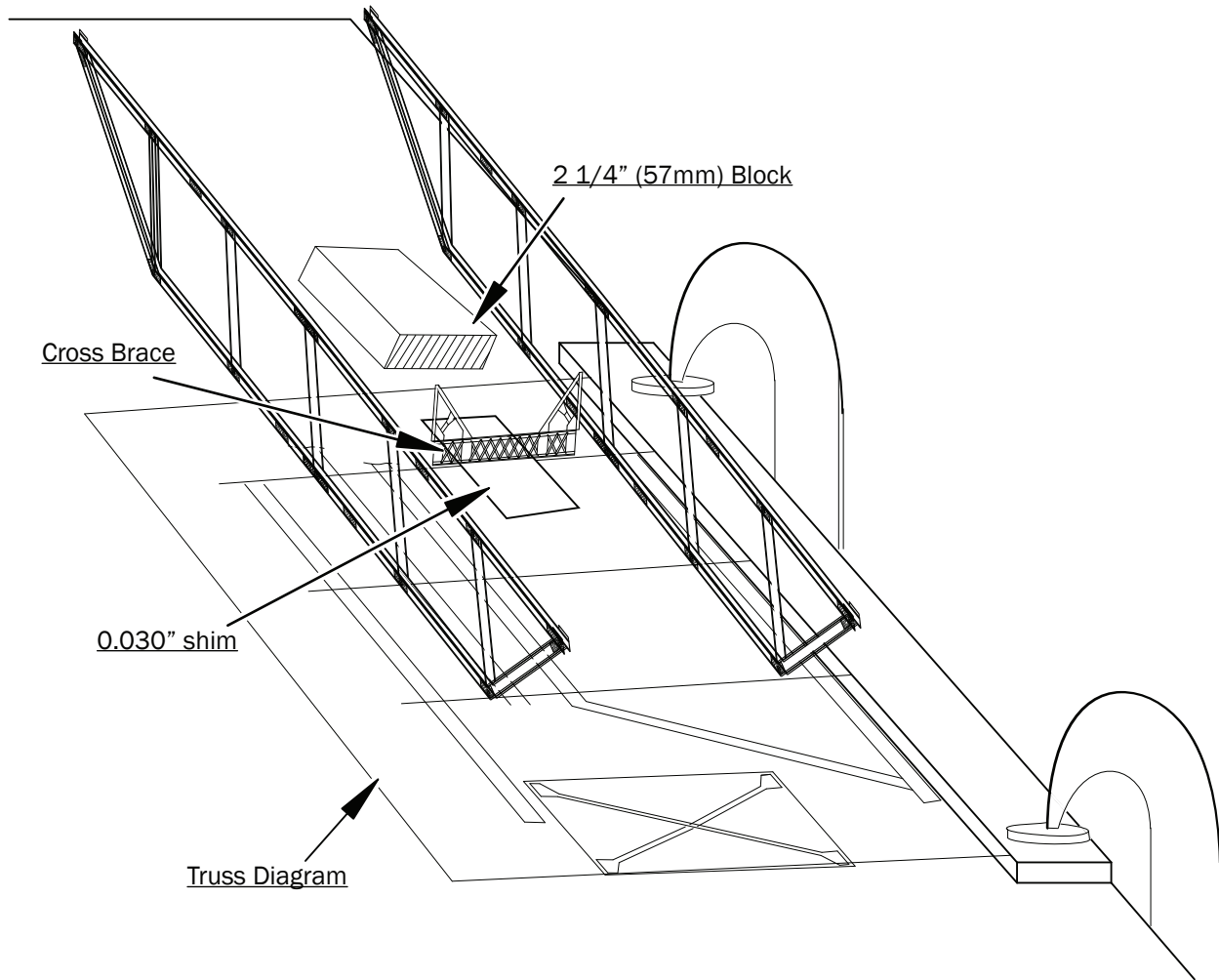
TRUSS ASSEMBLY

3) Truss Assembly

- a) Modify the three cross braces by cutting away about 0.05" (1.3mm) from each end to allow for the ("A-B") girder flange / overhang.



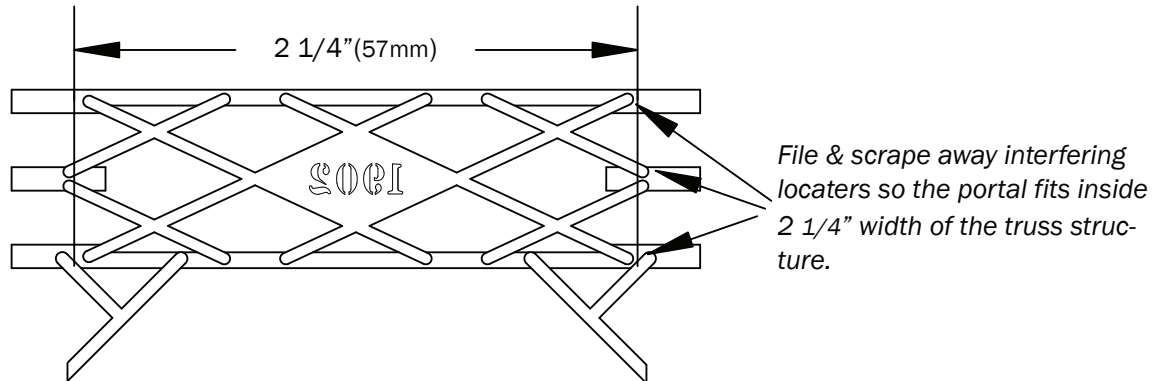
- b) Situate and align the two truss sections on top of the truss diagram. Using a shim about 0.03" (0.75mm) on the work surface & the truss diagram trap the center cross brace in place aligned exactly over the lines on the diagram & between the ("C-C") girders. Use a wood block about $2 \frac{1}{4}$ " (57mm) to keep the truss sections square with the cross brace and proceed to glue the cross brace to the ("C-C") girder.



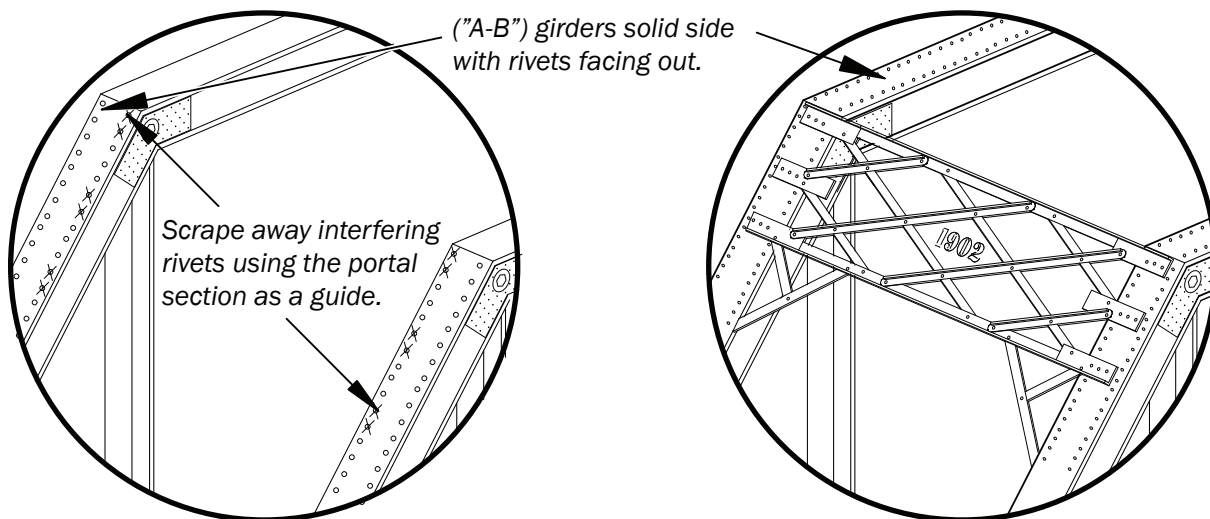
TRUSS ASSEMBLY

4) Truss Assembly Portals

- a) From the back side modify the two portals' by shaving away about 0.05" (1.3mm) from the locaters under each end to allow for the ("A-B") girder flange / overhang.

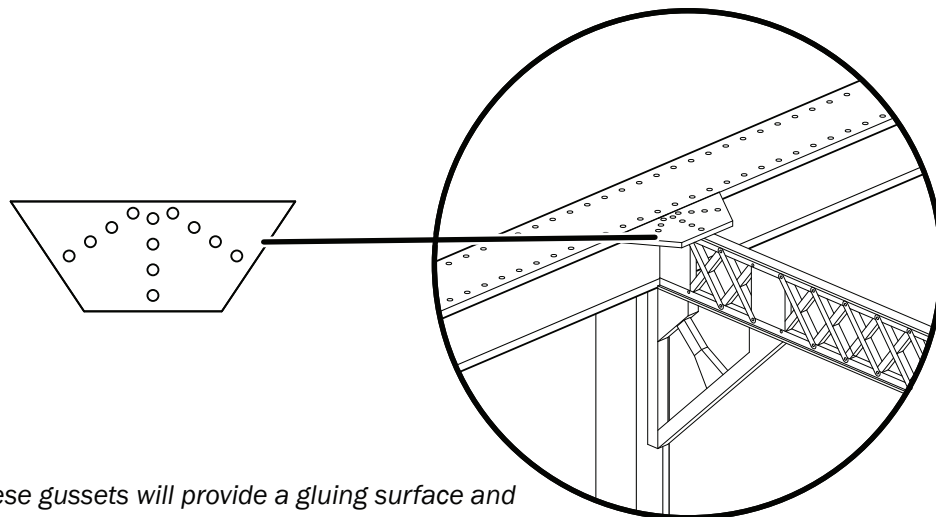


- b) Remove or shave off the interfering rivet detail as required on the face of the angled ("A-B") girders.



5) Top Gussets

- a) Glue the the 6 top gussets centered over each cross brace.

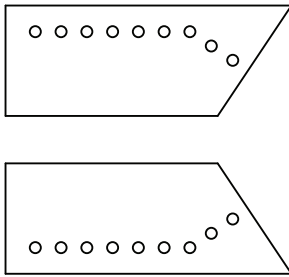


These gussets will provide a gluing surface and hide the ends of the "Top-Brace sets".

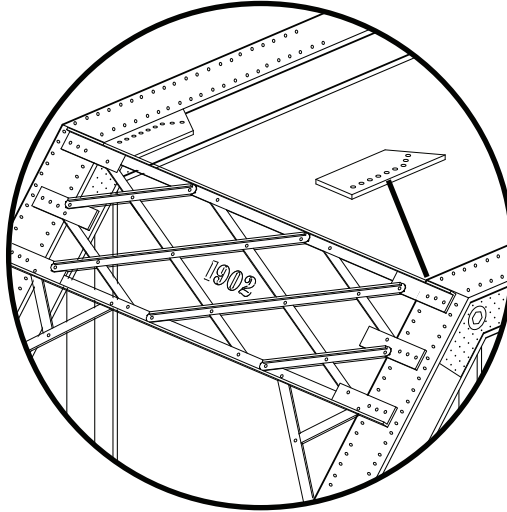
TRUSS ASSEMBLY

5) Top Gussets

- b) Glue the 4 top corner gussets along the edge of the portal and the flange of the top girder chords.

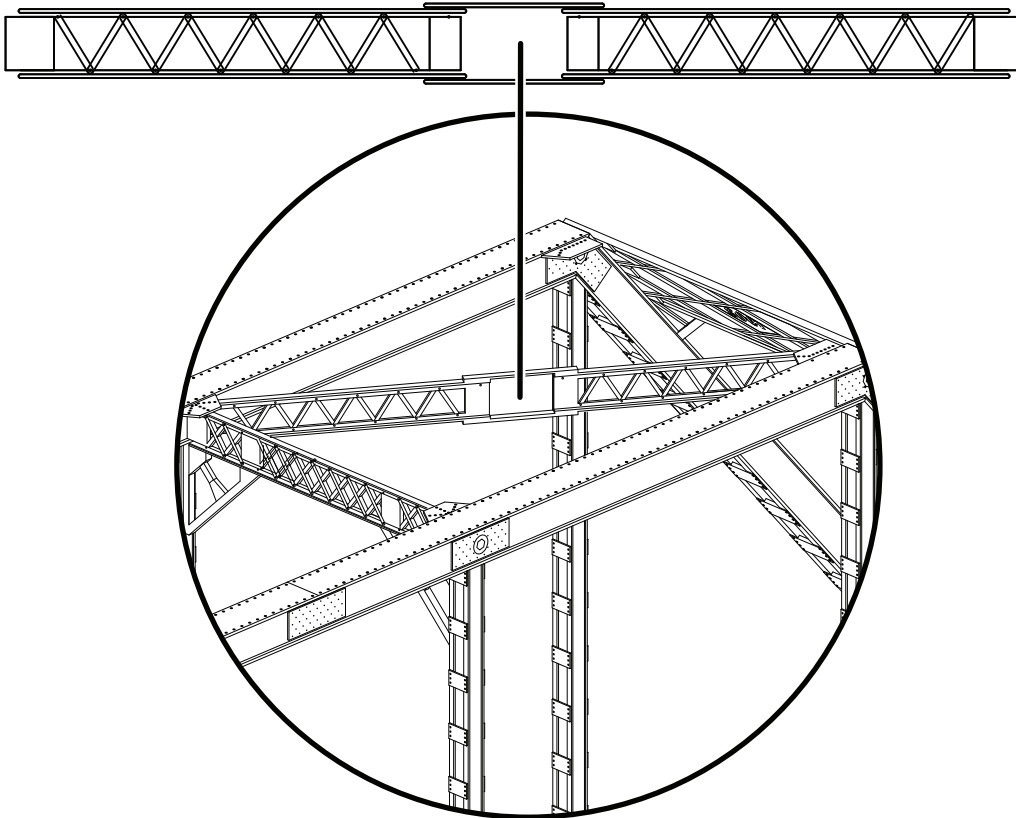


The top brace sets glue at the ends under these gussets.



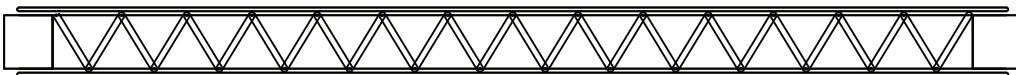
6) Top Brace Sets

- a) Fit and glue 2 of the four outer top brace sets in place at the far ends of the bridge structure.



- b) Trim each end equally about 1/16" (1.6mm) & fit the remaining 2 outer top brace sets in place in the two remaining center sections, and glue them into place.

- c) Fit the remaining 4 inter top brace sets in place, and glue them into place.



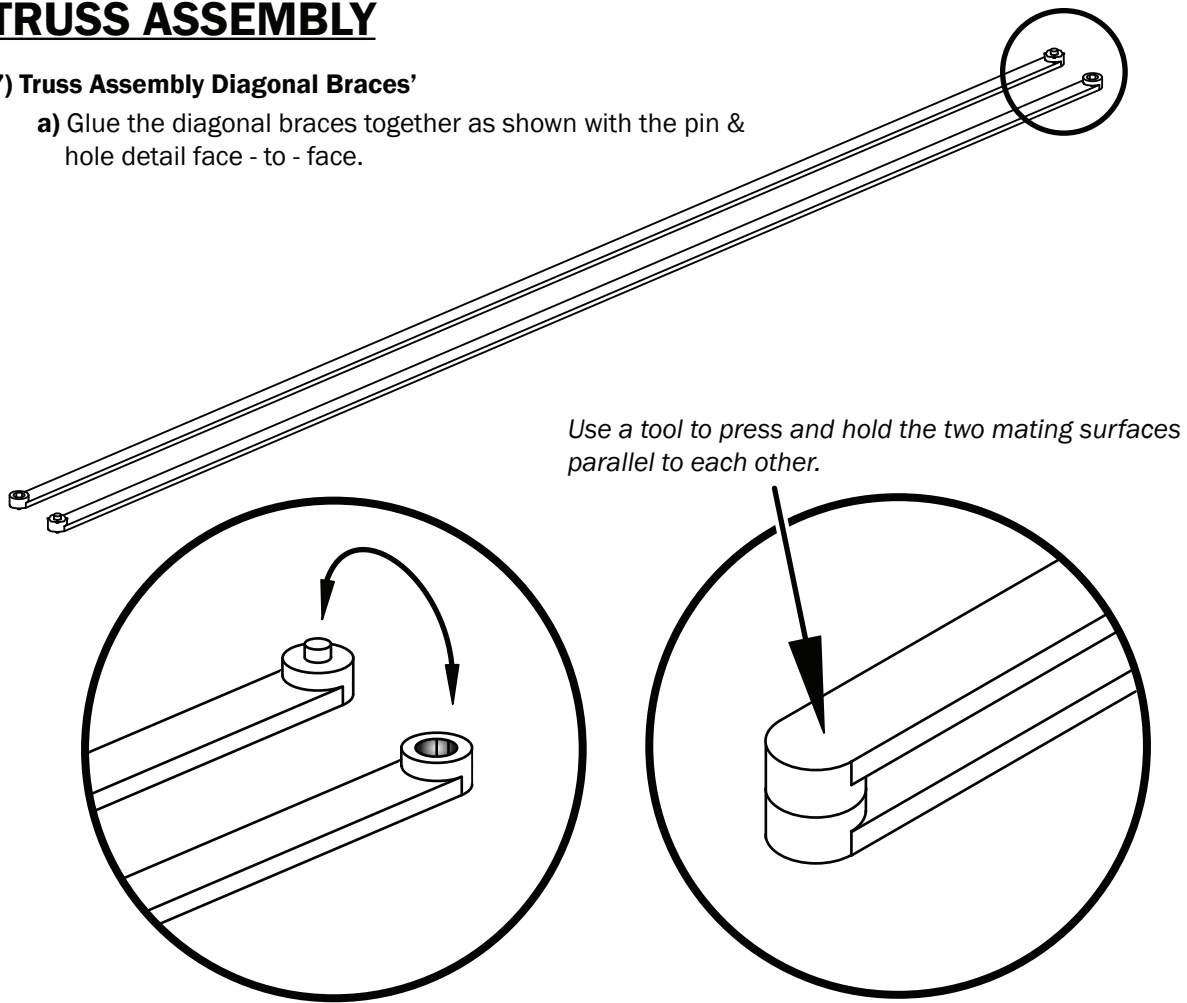
Hint: (Install flat to reduce amount of bending and then rotate to an up-right position.)

The brace's that fit inside will require the same amount of trimming as the first group.

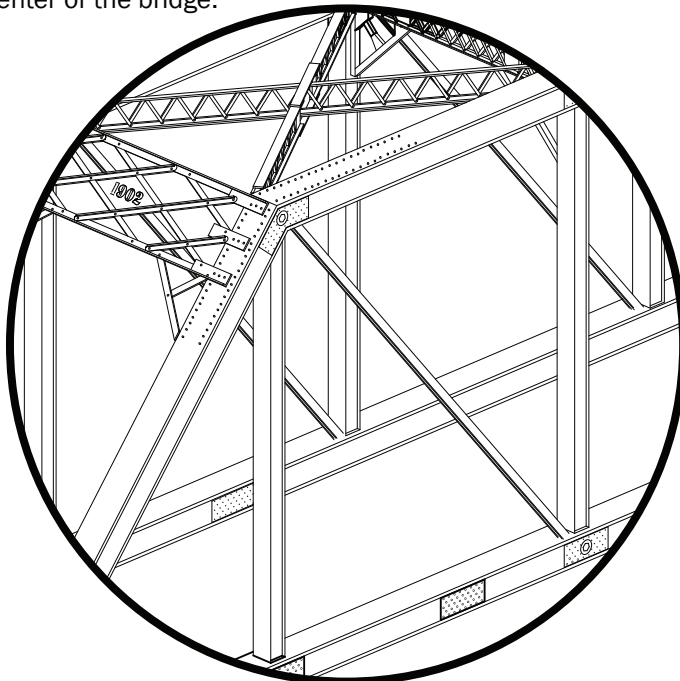
TRUSS ASSEMBLY

7) Truss Assembly Diagonal Braces'

- a) Glue the diagonal braces together as shown with the pin & hole detail face - to - face.



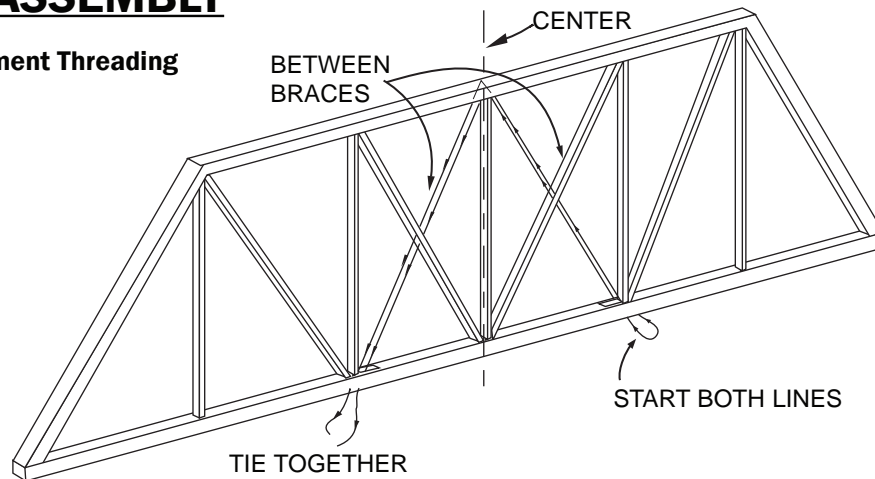
- b) Insert the diagonal brace assemblies into the cut away segments created at Step 1-"c" & Step 2-"b" of the truss assembly on page 7 so that the diagonals run at an angle pointing down toward the center of the bridge.



Use a file to modify the length of the diagonal braces until they do not bow, then you can glue one end to hold in place leaving the opposite end loose for temperature changes.

TRUSS ASSEMBLY

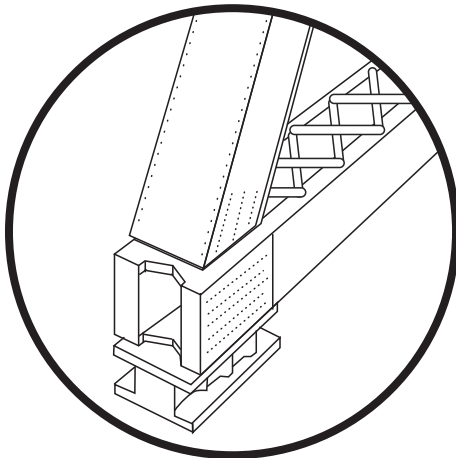
8) Mono-Filament Threading



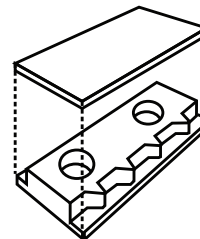
Thread and tie mono-filament "tie rods" per diagram. Please note Mono-Filament is not included.

1. Loop and tying should be around lace crossings directly beneath the C-C verticals to insure clearance for the diagonal braces.
2. Use very light tension on mono-filament when tying knot. Even slight excessive tensioning will distort the truss.
3. After tying knot, secure it by heating screw driver blade and "mashing". This procedure will also relieve some residual unwanted tension in the mono-filament.

9) Truss Assembly Bridge shoes



Cement top and bottom parts of mounting pads four (4) sets together and cement assemblies to bottoms of four (4) lower main girder corners. These should rest on the abutments when the truss assembly is placed over the floor assembly.



FINISHING UP!

The prototype bridge, today is a dull, weathered, black beast with considerable rust staining in. The choice of color and aging is up to you, but is recommended that the model be painted with spray equipment or spray cans. Brushing techniques for rust spots and weathering would be used.

The final result of your effort should stand out as a new "high" point in accessory structures. Until this kit was produced, only a tiny handful of "masterpiece" steel bridge models existed that would compare to the model you have just completed. It should be a showpiece on any layout - now think how easily you can build the second span!

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FOR MORE INFORMATION, GO TO:

<http://www.cvmw.com/video-instructions.htm>