Skewed Open Floor Through Girder Bridge Instructions

N-Scale & HO-Scale

Before Starting

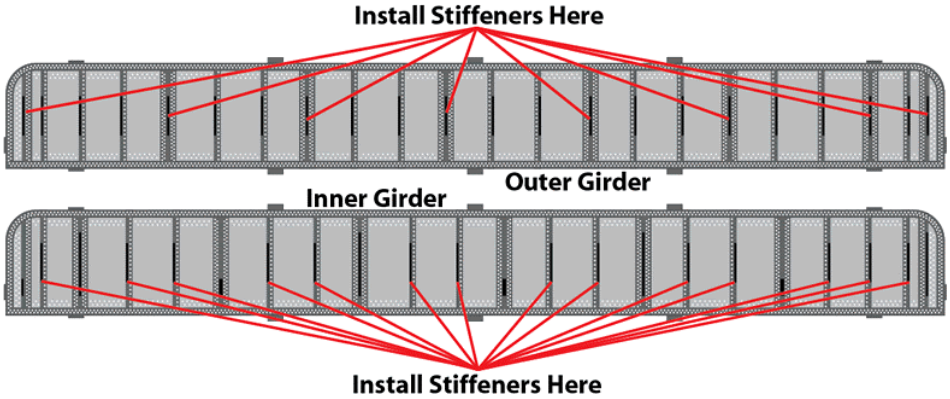
PREPARING BRASS The easiest way to remove the brass parts from the sheet they are produced on, is to use rail nippers. The brass is soft and won't affect their future cutting ability. This will reduce or eliminate the amount of filing to smooth the edge. The next best way is with small sharp diagonal cutters that will fit into the small areas between the part and the sheet holding them. *You should always use a file to remove the balance of the tie. This will ensure a perfect fit.*

GLUING BRASS Instant super glues, Cyanoacrylate, CA for short, are very prominent in model building today. They will work perfectly with brass, and they are instant. We recommend a thick CA glue such as "**Zap-A-Gap**" from Pacer Technology. As I have also been building R/C airplanes for over 33 years, I have many airplanes built entirely with CA glue and I can tell you that the wood will break before the glue joint. So it is great stuff! Besides being almost instant, thick CA glues will help create a small fillet and fill small gaps when applied to the inside of joints. Using a toothpick to apply the CA glue works really well for getting the glue into the interior areas and controlling the amount of glue used.

SOLDERING BRASS Although you can use CA glues to hold the brass parts together, solder is still preferred by some modelers. For soldering you will need a small soldering iron (30-50 watts) with a good tip, some liquid flux (Tix Flux is best), and some electrical solder. Plug the iron in and let it warm up for several minutes. Be sure you've got a place to set it down where the heat won't damage anything. Get a clean rag to keep handy for wiping the tip should you get more solder on than necessary. "Tin" the tip by applying solder to it so that the whole tip has been covered with a thin film of solder. Leave the coil of solder so that some solder is uncoiled and sticking out so you can touch the tip or the iron to it without holding the coil of solder. Join the pieces as follows: position the two pieces to be joined and hold one of them with one hand (the other piece will be resting on the work surface). With the free hand, apply some flux to the area that will be soldered, then pick up the hot iron, hold it on the solder and let the solder flow on the tip, touch the tip to the area where the flux is for just a few seconds while the solder flows off the tip and into the joint. The solder will cool and harden almost as soon as the iron is removed. Use waste pieces of brass to experiment with if you are not familiar with soldering. Remove excess solder with a file, clean the assembly in warm soapy water before painting.

PAINTING BRASS Wash your completed assembly in warm soapy water. If it is really messed up with flux etc. you can clean it with a lacquer thinner first. After the paint is applied it helps to bake it in an oven for a few hours at 150°. This will set the paint to the brass as well as allowing you to paint over parts of it without the first coat dissolving as you spread on the second coat. *Do NOT bake the model if you used CA glue for construction.* One nice thing about painting on brass, if you don't like the paint job you can use paint remover to get rid of it and start again without hurting the brass.

Step #1 – Assembling the Girder Beam



If you are soldering, you will want to add the stiffeners to the Girder Beams first by soldering from the back of either half. If you are using CA glue, you will want to assemble the two halves first and then add the stiffeners. Adding stiffeners after assembling the Girder Beam halves does produce a better layered cap strips.

1) There is an Inner and an Outer Girder Beam. The Inner Girder Beam has four long slots to attach the Floor Beams. The Outer Girder Beam has 22 slots, all the same size. Remove 1ea of the following from the kit sheet; Inner Girder Beam, Outer Girder Beam, Girder Top Cap Strips (GT1, GT2 & GT3), Girder Bottom Cap Strips (GB1, GB2 & GB3). Remove all ties from the brass pieces with a small file..

2) Remove 8 large stiffeners from the kit sheet. Remove any remnants of the ties. Secure the stiffeners to the **Outer** Girder Beam at the following locations. Be absolutely sure the Stiffeners do not extend beyond the top and bottom of Girder. The two end Stiffeners will require a greater amount of trimming because of the end radius.

3) Notice the five tabs on the Girder top and Bottom. The end two are lower in height than the center three. The two end tabs only go through GT1 and partially through GT2. The center three tabs go through GT1, GT2, GT3 and partially through GC1. Place the Inner and Outer Girder Beam together and place all five of the top tabs in the slots of GT1. Do not solder or glue yet. GT1 should over hang the Girder Beam. Temporarily secure GT1 to the Girder Beam using pieces of tape. Place the Girder Beam on the work surface, bottom up. Place all five of the bottom tabs in the slots of GB1. Ensure the Cap Strip is perpendicular to the Beam. Secure the two end tabs to GB1. Do not get any glue or solder on the other tabs. Secure GB1 for the entire length of the Beam.

4) Place the Girder Beam on the work surface, top up. Ensure the top Cap Strip is perpendicular to the Beam. Secure the two end tabs to GT1. Do not get any glue or solder on the other tabs. Secure GT1 for the entire length of the Beam.

5) Secure GT2 and then GT3 to the top of the Girder Beam. Secure GB2 and then GB3 to the bottom of the Girder Beam. Remove two Cap Strips GC1 from the kit sheet. GC1 has rivet detail on one side and three partial slots on the back. Remove all ties from GC1. Secure a GC1 to the top and one to the bottom of the Girder Beam.

6) Bend GT1 around the curvature of the Girder Beam and test fit with the end tab. You will have to do some minor filing on the end tab to get a good flat fit at the tab. Secure the remaining GT1 to the Girder Beam. Repeat for the other Girder Beam end.

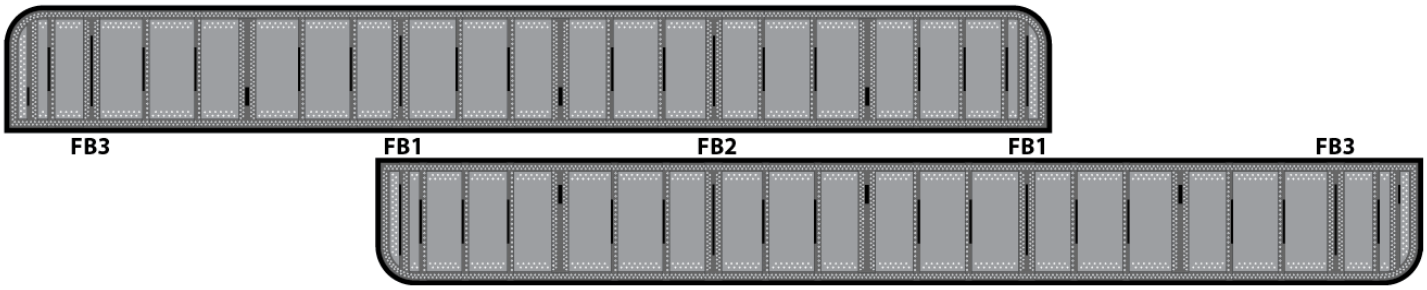
7) Lay the Girder Beam flat on the work surface Inner side up. Remove 14 large stiffeners from the kit sheet. Remove any remnants of the ties. Secure the stiffeners to the Girder Beam. *Do not place anything in the larger slots for the Floor Beams.*

8) Lay the Girder Beam flat on the work surface Outer side up. Remove 13 large stiffeners from the kit sheet. Remove any remnants of the ties. Secure the stiffeners to the Girder Beam directly opposite of the inner stiffeners.

9) Repeat steps 1-8 for the other Girder Beam.

Step #2 – Attaching the Floor Beams

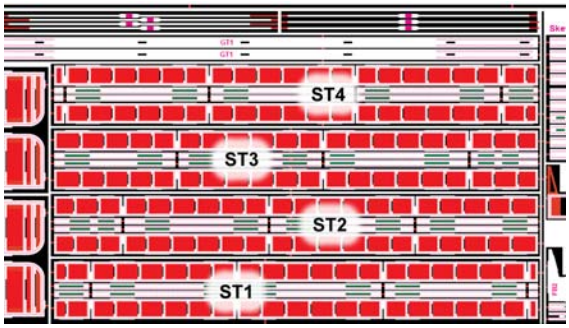
1) Remove two FB1's, two FB3's and one FB2 from the kit sheet. Remove all remnants of the ties. The sides of the Floor Beams have a tab that fits into the slots of the Inner Girder Beam. ***Be sure you view and understand the erection drawing on the last page before starting.*** Notice that one of the knee brace on each of the FB1's are shorter than the other. The short end will be attached first. Layout the girders on the work surface in the following manner.



Begin with a FB1 and secure the short knee brace end to the long slot on the very end of a Girder Beam. Ensure the Floor Beam is perpendicular to the Girder. Secure the other FB1 to the other Girder in the same manner. Secure the longer knee brace end of both FB1's to the opposite girder as indicated in diagram above.

2) Add the Floor Beam FB2 to the assembly at the slot indicated in the diagram above. Add the two FB3's in the slots indicated in the diagram above.

Step #3 – Attaching the Floor Stringers

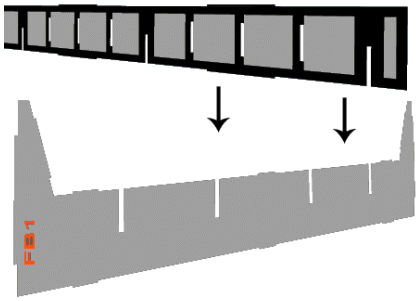


During construction, the builder must make some choices to add or delete some detail parts. This section contains such an optional detail. The Stringers have 128 stiffeners on them that can be omitted if desired. Granted, this is monotonous, but not hard nor difficult. Just time consuming. However, the overall effect they add is incredible and well worth it.

1) The kit contains eight different Stringer halves that require 16 small

Stiffeners per half. Start by removing 16 small Stiffeners from the kit sheet and one Stringer half of ST1. Be sure to remove ALL tie remnants from the Stiffener and Stringer. Test fit each Stiffener to be sure it will not interfere with the application of the Stringer Cap Strips later in the assembly. Use a slot that is not located where a top and bottom Stringer Cap Strip tabs exists for the test fits.

2) Secure each Stiffener to the Stringer half. When finished, set the ST1 Stringer half aside. Repeat for the other half of ST1.



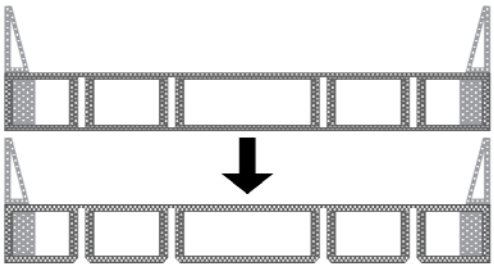
3) The slots in the Stringer and the slots in the Floor Beams allow two Stringer halves placed back to back to fit into the Floor Beam slots. When fully inserted, the Stringer is equidistant from the top and bottom of the Floor Beam. Install Stringer ST1 as shown in the erection drawing, but do not secure until all Stringers are complete.

4) Repeat step 1-3 for ST2, ST3 and ST4. Compare the erection drawings to the model before proceeding.

5) Carefully secure one of the center Stringers (ST2 & ST3) to the Floor Beams. Use minimal solder or CA glue since Detail Overlays will be added next. If there is excessive material, the detail overlay will not lay flat. Repeat for the other center Stringer. Afterwards, secure the two outer Stringers (ST1 & ST4).

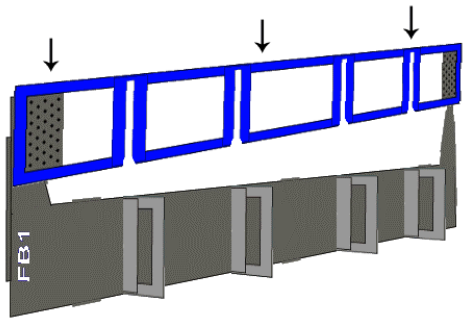
Step #4 – Attaching the Floor Stringer Detail Overlays

This section contains an optional detail that can be omitted if the builder wants to speed-up the assembly. However, the effect that the Detail Overlay adds is impressive. This decision is up to the builder.



1) The Detail Overlay for the proper Floor Beam is located on the kit sheet where the corresponding Floor Beam was. Remove the four overlays for both FB1's. Be sure to remove ALL tie remnants from the Detail Overlay. In the center of each overlay is the Knee Brace Cap Strip that will be applied AFTER all Stringer and Floor Beam Cap Strips are applied. Remove them from the overlay and set aside. The Floor Beam Gusset Cap Strip for FB2 is longer than the one for FB1. Keep them separate.

2) Modify the Detail overlay as shown. The notches at the bottom allow the builder to slip the Overlay down over the Stringers. Notice the chamfers to ensure a smooth installation. The builder can cut these out with an x-acto knife.



3) Slide the Detail Overlay down onto the Stringers. Be sure the Detail Overlay is tight against the Floor Beam and does not extend above nor below the Floor Beam. The Detail Overlay must not interfere with either the top or bottom Cap Strip. Starting at one end, secure the Detail Overlay to the Floor Beam. Continue with the next section between the Stringers until the entire Overlay is secured.

4) Repeat steps 1-3 for the remaining Overlays for FB1's, FB2 and both FB3's.

Step #5 – Attaching the Stringer Cap Strips

1) Each Stringer will require either four or five Cap on the top and on the bottom of the Stringer. Each Cap Strip is located on the kit sheet in the location where it is to be installed on the Stringer. Refer to the diagram of the kit sheet provided in Step #3.

2) Remove each Cap Strips from the kit sheet and remove all remnants of the ties as needed. Do not remove any other cap strip until you are going to install it. That way, you will not get confused as to what Cap Strip goes where. ***You have been warned!*** The Cap Strip has a partial slot in the center of the length. Test fit the Cap Strip on to the Stringer. When satisfied, secure the Cap Strip to the top of the Stringer ends starting with ST1 then ST2, ST3 and finally ST4. It will also be helpful if you always work from left to right or right to left. Either way, just be consistent in your building method.

3) Repeat step 2 for each Stringer. Turn the bridge over and repeat steps 1-2 for the other side.

Step #6 – Attaching the Floor Beam Cap Strips

1) The Floor Beam Cap Strips are different for the top and the bottom. The top Cap Strip have slots at the ends to allow the Cap Strip to allow the Knee Brace to protrude through the Cap Strip. For each Floor Beam, remove a top and bottom Cap Strip from the kit sheet eliminating all tie remnants with a file. Both top and bottom of the Floor Beam have three tabs to align the Cap Strips. Test fit the top Cap Strip. When satisfied, secure the Cap Strip to the Floor Beam. Repeat for the Bottom Cap Strip.

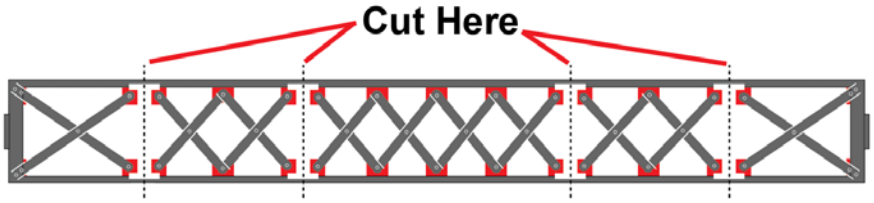
2) Repeat step 1 for each Floor Beam.

3) Earlier, you set aside the Knee Brace Cap Strips. The Cap Strips for FB2 are longer than the ones for FB1. Select one Cap Strip for FB1 (shorter one). The Knee Brace Cap Strips for FB1 will require filing to fit due to the end radius of the Girder. Every Knee Brace has a tab designed in to fit in to the partial slot of the Cap Strip. When satisfied with the fit, secure the Cap Strip to the Knee Brace.

4) Repeat step 3 for each remaining Floor Beam

Step #7 – Installing the Lattice Bracing Between FB1 and FB2

1) Remove both sides of S6 from the kit sheet and remove all remnants of the ties as needed. Test fit both sides together to ensure that the sides line-up. Orientate accordingly so as all edges line up. Secure the two sides together using solder or glue.



2) It is easier to assemble the sides of S6 as a whole, but they need to be installed in sections. Using an X-acto knife, cut S6 into sections as shown.

3) First, fit the tabbed end into the corresponding notch in the Girder between FB1 and FB2. The open X-brace end will go between and over the Cap Strips of Stringer ST1. When fitting the tabbed end of S6 into the Girder and the X-braced end does not line-up with ST1, you may have the S6 section upside down. It does fit, have some patience and perseverance at this step. Do not secure yet.

4) Install the other tabbed end of S6 between the opposite Girder and ST4. Do not secure. When compete, install the remaining S6 sections between the other Stringers.

5) Before securing, align all sections of S6 to ensure a straight line. When satisfied, secure all S6 sections to the Girders and the Stringers.

6) Repeat steps 1-5 for the other S6

Step #8 – Installing the Lattice Bracing at Stringer Ends

Study the image of the Lattice Bracing installed on the last instruction page.

1) Remove both sides of S5 from the kit sheet and remove all remnants of the ties as needed. Test fit both sides together to ensure that the sides line-up. Orientate accordingly so as all edges line up. Secure the two sides together using solder or glue.

2) Fit S5 between the inside of the Girder end and the very end of the Stringer (ST1 or ST4 depending on which side you are working on). Secure S5.

3) Repeat steps 1 & 2 for S4, S3, S2 and S1. Always refer to the erection drawing and the image of the installed lattice bracing during installation.

Step #9 – Installing the Lattice Bracing Between FB1 and Stringer Ends

1) Remove both sides of S7 from the kit sheet and remove all remnants of the ties as needed. Test fit both sides together to ensure that the sides line-up. Orientate accordingly so as all edges line up. Secure the two sides together using solder or glue.

2) It is easier to assemble the sides of S7 as a whole, but they need to be installed in sections. Using an X-acto knife, cut S7 into sections as performed in Step #7. The builder should notice that S7 only extends across three Stringers.

3) First, fit the tabbed end into the corresponding notch in the Girder between FB1 and the Stringer ends. The open X-brace end will go between and over the Cap Strips of Stringer ST1. When fitting the tabbed end of S7 into the Girder and the X-braced end does not line-up with ST1, you may have the S7 section upside down. It does fit, have some patience and perseverance at this step. Do not secure yet.

4) Install the remaining S7 sections between the other Stringers.

5) Before securing, align all sections of S7 to ensure a straight line. When satisfied, secure all S7 sections to the Girders and the Stringers.

6) Repeat steps 1-5 for the other S7.

Step #10 – Installing the Bottom Cross Bracing

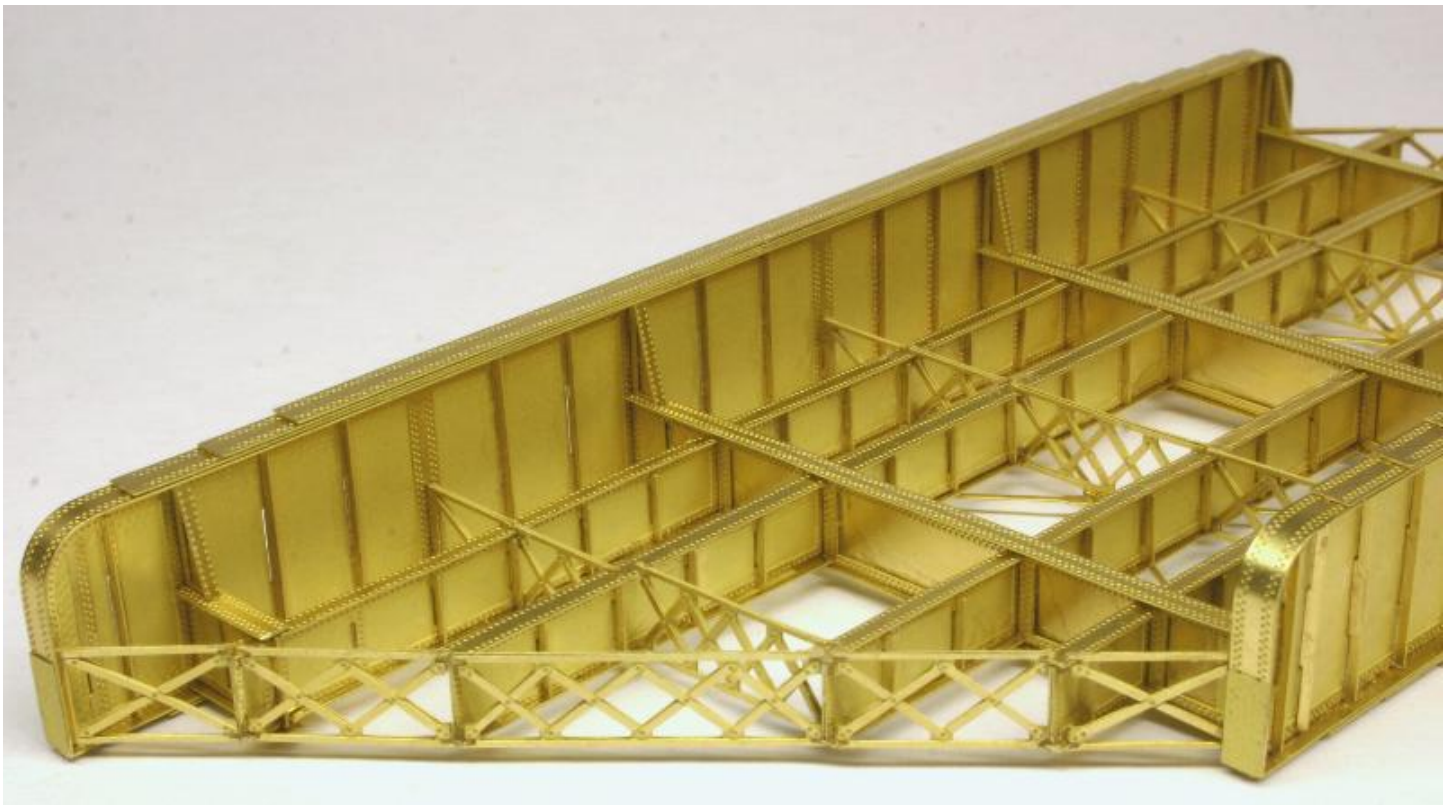
1) Turn the bridge so that the underside is facing up. There are two different Cross Bracing Gussets. The single sided Gussets are to be installed at the corners of FB1. The double sided Gusset is installed on FB2. All Gussets are to be installed on to the bottom Floor Beam Cap Strip and under the bottom Girder Cap Strip. Secure the Gussets per the erection diagram.

2) The Cross Bracing are etched half way through at the center of the Brace. When crossed, the half etch will allow the two Braces to be the thickness of one metal Brace. Secure the Bracing from the single Gussets at the ends to the first double Gusset. Repeat for the other end Bracing.

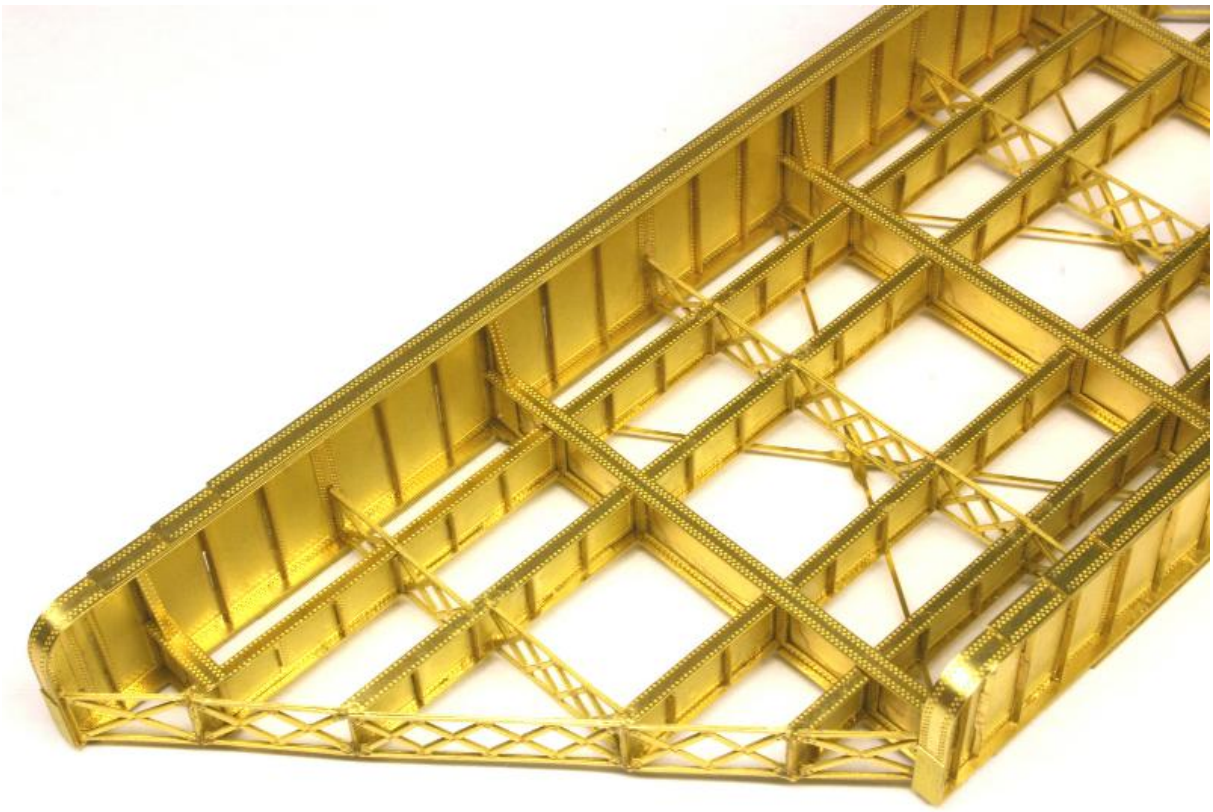
3) Secure the Cross Bracing to the lattice beam at the junction of the two Cross Braces. When finished, add the rivet detail overlay where the two Cross Bracing joins.

4) Secure the center Bracing to the sets of double Gussets.

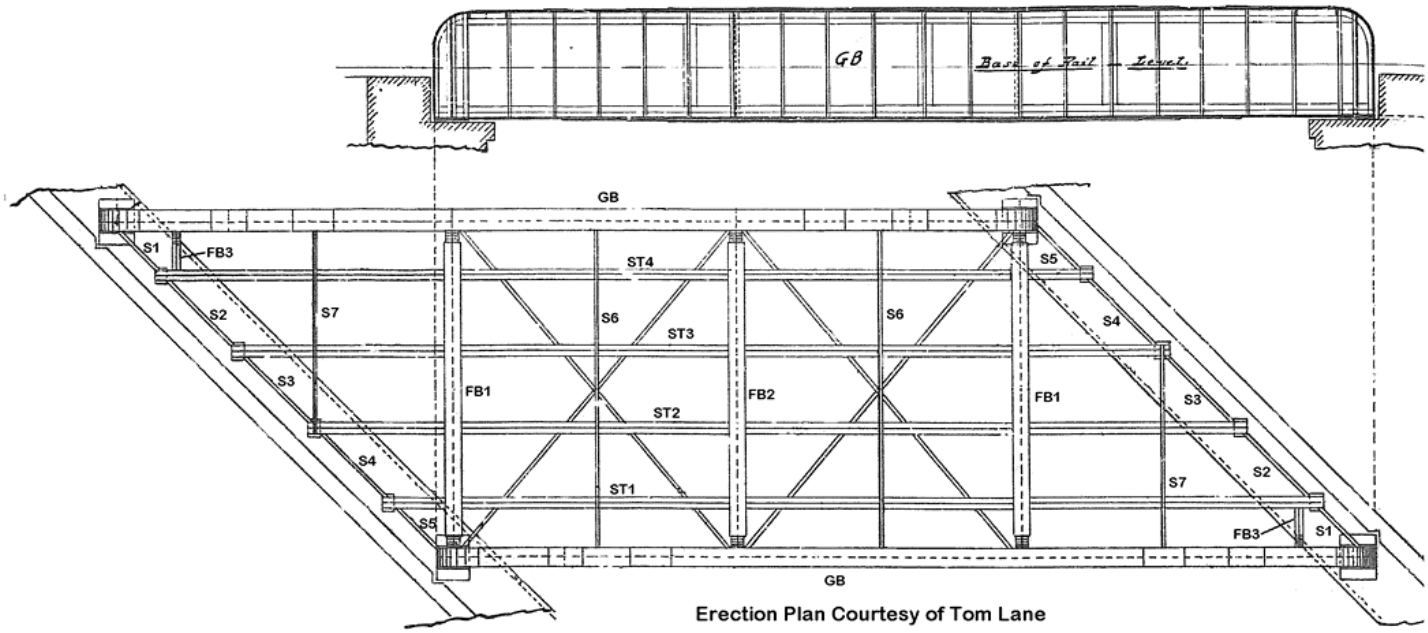
This completes the assembly of the Straight Through Girder Bridge



Detail of Lattice Bracing at Ends of Stringers



Top View of Floor Details



Erection Plan Courtesy of Tom Lane

Enjoy your Girder Bridge

TrainCat Model Sales ♦ 3709 Heron Ridge Lane ♦ Weston, Fl 33331 ♦ sales@traincat2.com