Micro Engineering Company

ASSEMBLY INSTRUCTIONS
HO 50 FT. THRU GIRDER BRIDGE
#75-520, 75-521

Micro Engineering Co.
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GENERAL

One of the most common railroad bridges in use today is the Thru Girder Bridge. This bridge is found in many different sizes and variations throughout the U.S.A.

Variations of the Thru Girder Bridge can be made by modifying this kit or combining it with other Micro Engineering bridge kits. The square girder ends can easily be modified to rounded girder ends as found on many prototype thru girder bridges (see photo and step 1). A "concrete" trough is included in the kit so a ballasted deck bridge rather than an open deck can be built (see step 5). Since this model has square girder ends, any length bridge can be built by placing multiple spans end to end with support piers at each junction. This can be done with additional Thru Girder Bridge kits or by adding a deck girder bridge span to one or both ends which is a common prototype practice. Some of these longer bridge versions are available in complete kits from Micro Engineering as are the Deck Girder Bridge kits.

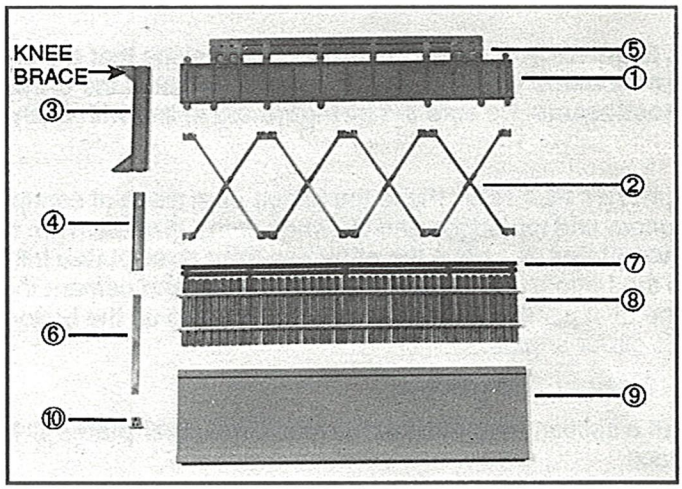
Most parts in this kit are made of injection molded styrene plastic and should be glued with a styrene solvent cement (such as Testors®). The Delrin® bridge track and the white metal bridge shoes should be glued with a rubber based cement (such as Pliobond®, available from Micro Engineering).

Read each instruction step completely before proceeding with that step. Refer to the photos for reference.

Before beginning assembly trim off or file any flash and gate marks from all plastic and white metal parts. File or sand the draft angle off the edges of the **crossbeams** ③ and **stringers** ④. The draft angle on the **girders** ① will be removed later.

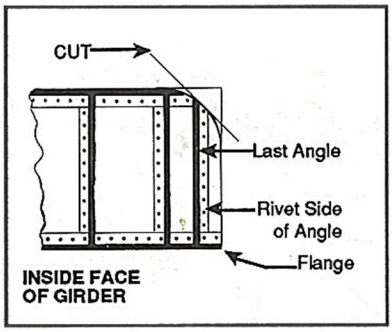
The following parts and the number needed to assemble your kit are listed below and keyed to the photo. Extra parts may be included in you kit that will not be used.

#75-520	#75-521	
2	3	① girders
1	2	② lateral bracing
5	10	③ crossbeams
8	16	④ stringers
4	6	⑤ long rivet plates
4	6	⑥ short rivet plates
2	4	⑦ guard timbers
1	2	⑧ pc. bridge track
1	2	⑨ concrete trough
4	6	⑩ bridge shoes



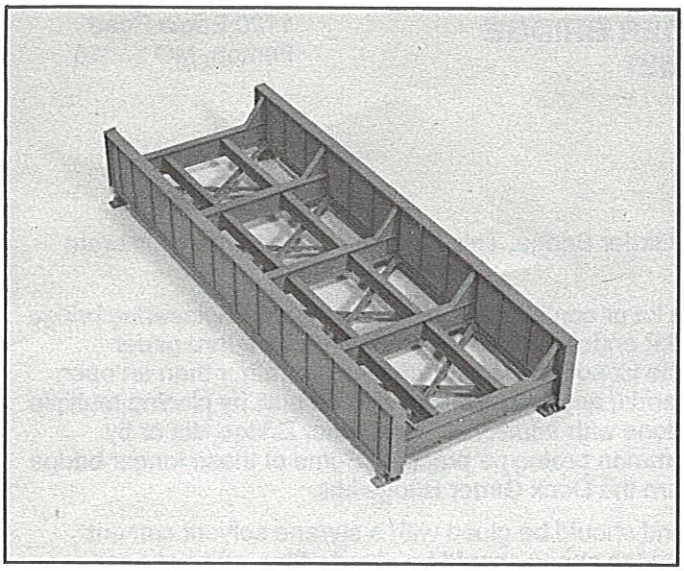
ASSEMBLY - Single Track

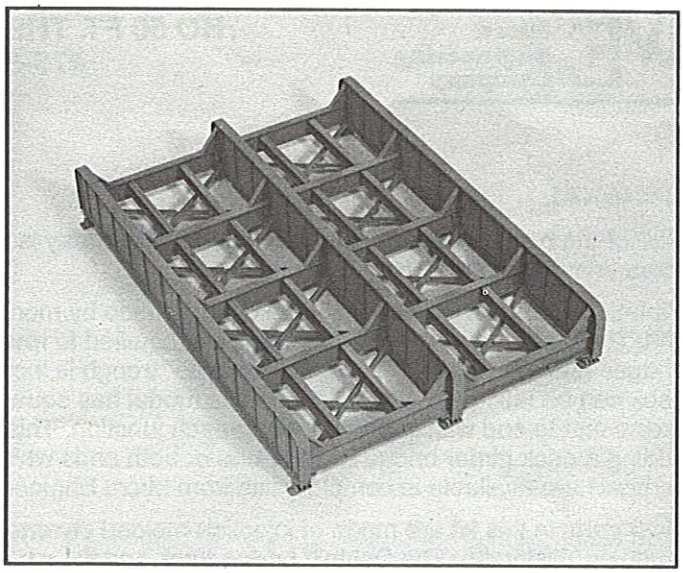
1. GIRDERS There is an inside and outside face to each **girder** ①. The inside face is the face where the rivet side of the last angle is toward the end of the **girder** (see drawing). Orient both **girders** so the inside face is toward the interior of the bridge. In addition, the rivet side of the center angle of each **girder** must be toward the same end. If necessary, turn one of the **girders** upside down (end over end) for correct orientation.



If you want to modify the **girders** to rounded end **girders** (see photos), cut the top corners off the **girders,** with a razor saw, at a 45° angle as shown in the drawing. Then file the corner round to an approximate 5/16 inch radius. Use the drawing as a guide for cutting and filing. Note: If you are building a longer bridge by placing multiple spans end to end, leave the girder ends square where the spans will join one another.

Place a **girder** on edge on your work surface and cement the **lateral bracing** ②, with the rivet detail down, to the bottom flange of the inside face of the **girder.** Cement the other side of the **lateral bracing** to the inside face of the second **girder.** Turn the bridge upside down and check that the plates on the **lateral bracing** are flat against the bottom flange of the **girders.** Adjust and re-cement, if necessary.





2. CROSSBEAMS Starting at the center of the bridge, place the **crossbeams** ③ across the bridge and cement to the top of the plates of the **lateral bracing,** also cementing the knee braces (see parts photo) against the girder face. Position the **crossbeams** so the knee braces are on the smooth side of the girder angles (not the rivet side). Install the **crossbeams** immediately after the **lateral bracing** before the cement has completely set. This makes it easier to square up the bridge.

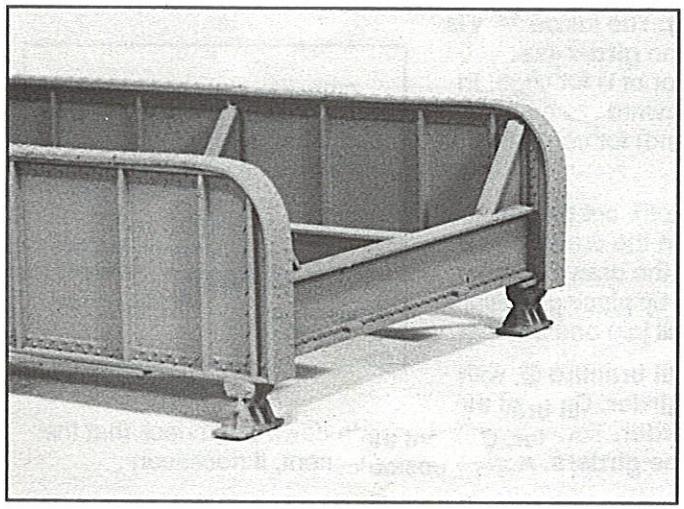
If you are using rounded end girders, trim off the tops of the knee braces on the two end **crossbeams** so the knee braces fit below the top of the rounded ends.

3. STRINGERS Trim off the short extensions that are on one end of the **stringers** ④. Place the **stringers** between the **crossbeams** on the pads at the bottom edge of the **crossbeams.** Cement the **stringers** to the pads and the face of the **crossbeams.** Be sure the **stringers** are in line with each other and are parallel with the **girders.**

4. RIVET PLATES Place the bridge on a piece of sandpaper on a flat surface and sand off the draft angle from the bottom and top edges and the ends of the **girders.** Trim the last section (at the step) off both ends of two of the **long rivet plates** ⑤. Leave the other two **long rivet plates** full length. Center and cement the two full length **long rivet plates** to the bottom edge of each **girder.** Center and cement the shortened **long rivet plates** to the top edge of each **girder.** The rivet plates are easily centered by lining up the bottom rivet plates with the crossbeams and the top rivet plates with the girder angles.

A. Straight End Girders

Cut a section from each of the four **short rivet plates** ⑥ long enough to fit the four ends of the **girders** and cement in place.



Cement the remaining portions of the **short rivet plates** to the four areas on the top edge of the **girders** not covered by the **long rivet plates.** Butt these sections against the ends of the **long rivet plates** and extend over the rivet plates on the girder ends. Trim off the excess length.

B. Rounded End Girders

Cement the **short rivet plates** ⑥ to the four areas on the top edge of the **girders** not covered by the **long rivet plates.** Butt the short rivet plates against the ends of the **long rivet plates** and continue cementing them around the radius and down the ends of the **girders.** The rivet plates can be bent more easily around the radius by applying the solvent cement to their underside which will soften the plastic. Trim off any excess rivet plate that extends below the bottom of the **girder.**

5. PAINTING & FINAL ASSEMBLY Before further assembly, paint and weather the bridge, if desired. Thru girder bridges are most commonly painted a flat black or silver color.

A. Open Deck Bridge

Cut the **guard timbers** ⑦ off the **bridge track** ⑧. To enable the track to sit on the **stringers,** six ties must be removed where they interfere with the **crossbeams.** Start by cutting out the last tie at each end of the track. Then count nine ties in from each end and cut out both 10th ties. Count nine more ties and remove the 10th and 11th ties at the center of the track. This will leave four sections of nine ties. Evenly space the tie sections and individual ties on the rail. Care must be taken when cutting and spacing ties to avoid popping the remaining ties off the rail.

Trim the **guard timbers** to length so they match the overall tie length of the **bridge track** and cement them on each side of the track, to the top of the ties, flush with the tie ends, bolt head detail up.

Center the **bridge track** on the bridge and cement to the **stringers**.

Cement the **bridge shoes** ⑩ to the bottom of the **girders** at each end.

B. Ballasted Deck Bridge

With a ballasted deck bridge, regular track is laid and ballasted through the **concrete trough** ⑨ so the special **bridge track** is not used. Center the **concrete trough** upside down on the bridge and mark the location of the knee braces on the bottom of the trough. With the edge of a large file, file a slot at each mark, through the bottom corner, at approximately the same angle as the knee braces. File the slots until they are deep enough to allow the trough to sit on the **crossbeams.**

Center the **concrete trough** on the bridge and cement to the **crossbeams.**

Cement the **bridge shoes** ⑩ to the bottom of the **girders** at each end.

ASSEMBLY – Double Track

If building the Double Track Thru Girder kit, assemble a single track bridge as described in steps 1-3. Then assemble the second bridge half to the first half in the same way except for the following changes:

The outside face of the center girder will be facing the inside of the second bridge half. As a result, the two end slots on the **lateral bracing** ② will not line up with the last angle at each end of the **girder.** Trim off the outside portion of these slots for a good fit.

The end of the two end **crossbeams** ③ also will not line up with the last angles of the center girder. Just cement these **crossbeams** inside the last angle, in line with the **crossbeams** on the first bridge half.

Continue with steps 4 and 5.