

Making a Garden Bridge



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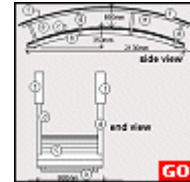
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The only lumber stock sizes used in this project are 100x25 (1x4) and 100x40 (1 1/2"X 4").

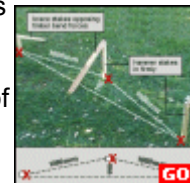
The Plan

- | | |
|--------------------|----------------------------|
| (a) Shoe | (d) Handrail uprights |
| (b) Arch beam | (e) Handrail arch frame |
| (c) Decking boards | (f) Handrail capping board |



Making the template for the arch

To make the arch template, 3 stakes will need to be firmly hammered into the ground and braced opposing the bending force.(see picture). Space the stakes as per the dimensions shown in the accompanying picture.



The arch beams are made by bending and gluing and screwing four lengths of 100x25 (1x4) treated pine together.

When the glue is dry (the next day) this newly made laminated arch beam can be cut down the middle (lengthwise) to create two arch beams for the base of the bridge. (See section "cutting the arch boards") The arch handrail is made the same way, using the same template.

Making the laminated arch beam

Bend a piece of 100x25 (1x4) knot free board, 2400mm (8ft) long, between the arch template pegs. Bend a second board against the first putting a generous amount of glue between the two boards. Repeat this action until four boards are in place forming the arch.

Clamp the boards together and also screw along the arch approx every 300mm (12") with 50mm (2") stainless steel screws on both sides.

Ensure the screws are not put along the center line of the arch beam as this line is to be cut.



Making the laminated handrail arch

Use the same template for the handrail arch as the beam arch (see picture).

Make the laminated handrail arch (on top of the beam arch which is still lying in place until glue has dried) in the same way as the laminated arch beam, but use only two 100x25x2700 (1x4x 9ft) boards and not four.

Be careful not to glue the handrail arch to the beam arch.



Cutting the laminated arch boards

Using a power saw, cut the laminated arch boards in half, along the length of both the beam and the handrail (see picture). This will give you two laminated arch beams and two laminated handrail frames.

Trim the arch beams to the dimensions shown Here [click](#)



Making the sides

Cut a length of 100x40x2400 (1 1/2"x 4") treated pine in half (lengthwise) and make 8 handrail uprights at 600mm (2ft) long.

Bolt the handrail uprights to the arch beams so that 4 uprights are spread evenly along each arch beam and so that each upright is at right angles to the arch beam. Make a timber washer and glue to the inside of the arch beam (see picture).

Drill and nail the handrail arch frames on top of the uprights. Secure each end with metal strap plates.



The bridge frame

Cut 3 spreaders 100x40x540 (1 1/2"x 4"x 21 1/2") and fix between the side frames, one in between the middle of the arch beams and one near each end. Secure with metal strap brace. (see picture).

Nail 3 temporary spacers on top of the handrail arch frame to keep parallel until the decking boards have been nailed on. Nail and glue the shoes to the underside of the arch beams, one at each end.

Nail a temporary brace from shoe to shoe until the decking boards have been nailed on.



The decking and handrail

Nail the decking boards 100x40x680 (1 1/2"x 4"x 27") onto the arch beams with 90mm (3 1/2") flathead galvanized nails. Begin at each end and work towards the middle. The final piece will have to be cut to fit and the deck boards will need to be checked (cut) around the handrail uprights.

Trim the ends of the handrail arch frames (at right angles to the end of the arch beam) and bend fix two handrail capping boards 100x25x3000 (1"x 4"x 10ft) to the top of the handrail arch frames. Secure with glue and m10 (3/8") coach bolts and washers, 4 each side. Countersink the head of the bolts into the capping board.



Eazy az. The finished bridge.



Notes and tips.

The 100x20 (1x4) boards used for making the arches must be premium and knot free. If there are

any deformities in the boards, then they will snap when bending pressure is applied.

Use an exterior type glue.

Materials

MATERIAL	DESCRIPTION	AMOUNT
100x40 (1 1/2"x 4") treated pine	handrail uprights - 4 @ 600 (24") decking - 25 @ 680 (27") spreaders - 3 @ 540 (21 1/2")	22m (73ft)
100x25 (1x4) treated pine (knot free)	arch beam - 4 @ 2400 (8ft) handrail arch frame - 2 @ 2700 (9ft) handrail capping - 2 @ 3000 (10ft) shoe - 2 @ 625 (25")	
Hardware	M10 (3/8") coach/carriage bolts - 8@75mm (3") 8@120mm (5") 50mm stainless steel screws - 50 of Glue to suit metal strap 400x30 (1x 16) - 8 of 75mm (3") galvanized flathead nails - 2kg (4.5 lb)	