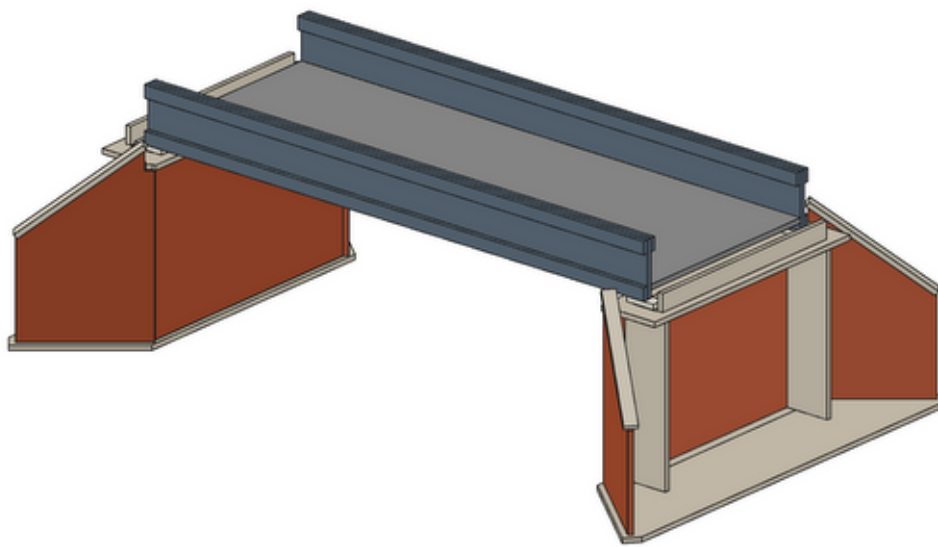




Single-track girder bridge

Assembly instructions

SP3D-TT-GB01 · TT120 (1:120) · plain plate girders · 1 mm MDF · instructions v1.0



41 laser-cut parts on two 1 mm MDF sheets (201 × 141 mm and 197 × 90 mm), including two rib spacer jig bars. A half-through riveted plate girder span, 112 mm long with a 40 mm wide deck and six cross ribs underneath, on two brick abutments with 40° splayed wingwalls that rise above the bearing shelf. 100 mm between the abutments' front edges, 35 mm (13'-9" at 1:120) from road level to the underside of the girders. The abutments are open-backed, to be buried in an embankment.

Build time: about an hour of building, plus drying. Two abutments (steps 1 to 7), then the span (steps 8 to 10), then put it together (step 11).

Hobby model kit, not a toy. Contains small parts and requires sharp tools. Not suitable for children under 14.

Dry-fit first, then glue.

Orange parts are the ones you add in that step, shown going in (left) and fitted in place (right). Grey parts are already built.



Before you start

Tools, materials and how the parts come out of the sheet

You'll need

- A glue suitable for MDF (PVA, wood glue or a laser-cut kit glue), and a cocktail stick for the small parts
- A sharp craft knife
- A cutting mat

Helpful extras *not required, but we find these help*

- A No. 11 blade in the knife, for clean cuts through the holding tabs
- Fine tweezers, for the bed stones and cross ribs
- Small clamps, clothes pegs or masking tape, to hold strips while they dry
- A sanding stick (180-240 grit), for the holding-tab nubs
- A small square, to check the abutments are square

Getting the parts out

Every part is held in the sheet by a few tiny holding tabs, 0.35 mm gaps left in the cut line. Almost all of them are on edges that end up hidden or glued: wall bottoms and tops, plate backs, girder and flange bottoms, coping undersides.

CUT, DON'T PUSH. Slice through each holding tab with the knife from the top face, cutting on the tab and not into the part. Pushing parts out tears the MDF and can snap the thin strips (the cross ribs are only 1.5 mm wide, the flanges 2.5 mm).

Then sand the little nub left by each holding tab flush, using 180-240 grit on a flat stick, so the parts sit flat and square. The joint tabs (the big 8 mm and 5 mm tabs) are cut for a light push fit, so leave them alone unless one is tight.

Good to know

- The ENGRAVED face (the side that was up on the laser, with the brick, rivets, joint lines and score marks) is always the show face. Build with it facing out.
- Parts that are the same share one label. '4 × R' means four identical parts, all engraved R, and any one fits any R position. Only the wingwalls come as a left (WL) and a right (WR).
- Both abutments are identical. Each abutment step is for one abutment, so do it twice.
- The deck is the one exception: it goes in engraved side DOWN, because its lines are for the ribs underneath (step 9).
- Dry-fit before you glue. If a tab is tight, one light stroke of sandpaper on its faces is enough. Don't force it, because MDF splits.
- Use glue sparingly. MDF soaks it up, and squeeze-out spoils the engraved brick.

TIP

Labels are engraved on the waste next to each part, so pencil the label on the back of each part (or sort them into a labelled tray) as you free them.



Parts map

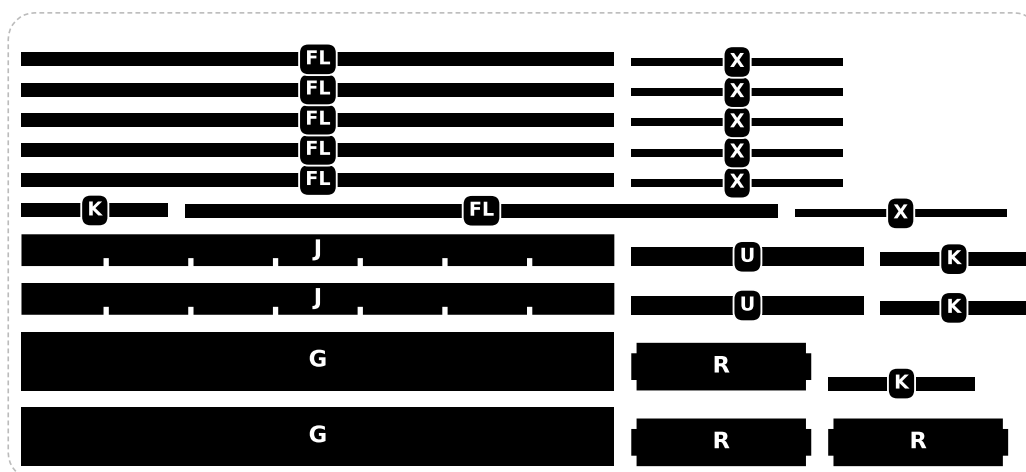
To find each part by its label. Reduced, not to scale.

NOT TO SCALE · for identifying parts only · not a cutting template

Sheet 1 of 2: abutments, deck, bed stones (16 parts)



Sheet 2 of 2: girders, flanges, cross ribs, jig bars, ribs, copings, strips (25 parts)



NOT TO SCALE

B base plate · A brick face · R brace rib · WL / WR wingwall left / right · P shelf plate · K coping ·
S bed stone · U ballast end strip · G girder web · FL flange strip · D deck · X cross rib ·
J rib spacer jig bar (a tool, not part of the model)

NOTE

Parts are shown as solid shapes, engraved side up, in the same places as on your sheets. The real labels are small engraved letters on the waste next to each part. Some part types are split across both sheets (R): any part with the same label fits.



Parts list

41 parts, 14 part types, 1 mm MDF

Label	Part	Qty	Size mm	Sheet	Step
B	Base plate	2	86.1 × 21.1	1	1
A	Abutment face (brick)	2	50.3 × 34.0	1	1
R	Brace rib	4	34.0 × 9.0	1 + 2	2
WL	Wingwall, LEFT (brick)	2	36.8 × 24.0	1	5
WR	Wingwall, RIGHT (brick)	2	36.8 × 24.0	1	5
P	Bearing shelf plate (stone front)	2	53.9 × 12.0	1	3
K	Wingwall coping	4	27.7 × 2.6	2	6
S	Bed stone	4	6.0 × 2.6	1	7
U	Ballast end strip	2	43.9 × 3.5	2	7
G	Girder web (riveted)	2	112.0 × 11.1	2	8
D	Deck	1	112.0 × 42.0	1	8
X	Cross rib	6	40.0 × 1.5	2	9
FL	Flange strip	6	112.0 × 2.5	2	10
J	Rib spacer jig bar (tool)	2	112.0 × 6.0	2	9

Total 41 parts. Each abutment uses 1 × B, A, P, U, 2 × R, S, K and one each of WL and WR.

Wingwalls: looking at the brick face from the road, WL goes on the LEFT and WR on the RIGHT (step 5).

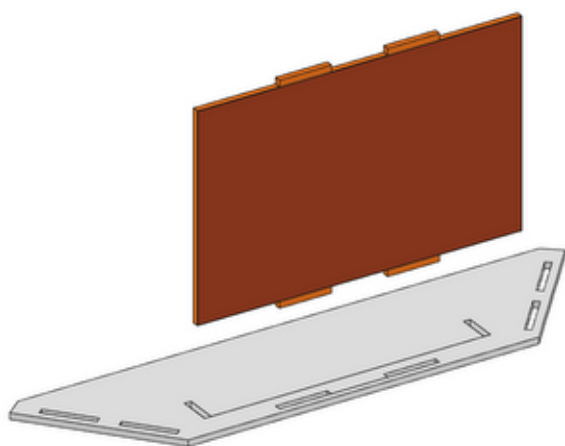
The span uses 2 × G, 1 × D, 6 × X and 6 × FL. The 2 × J jig bars are a tool for step 9 and are not glued in.



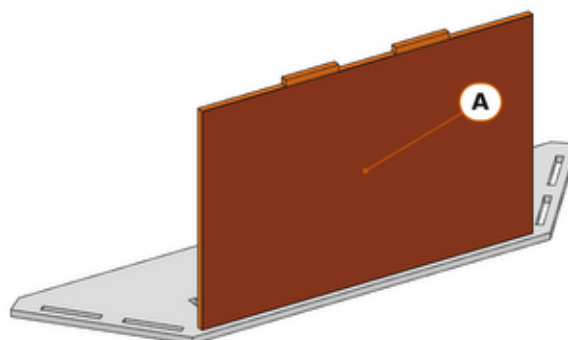
Step 1

Abutment 1: brick face into the base plate

GOES IN LIKE THIS



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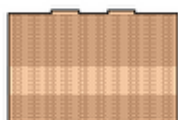


FIND THESE PARTS (engraved side up)

2 × B



2 × A



You're building two identical abutments. Each step is for ONE abutment, so do everything twice. Only one is drawn.

Steps 1 to 3 dry-fit the first five parts (B, A, two R and P). You glue those five in step 4, and the wingwalls go on in step 5, once the glue has cured.

Lay base plate B engraved side up. The FRONT is the long straight edge with two 8 mm slots just inside it. Push the two bottom tabs of brick face A into those slots, brick facing forward.

CHECK

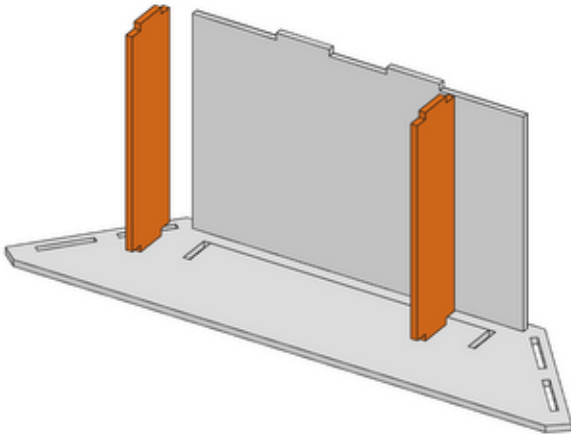
The two small L-shaped score marks behind the face are for the optional stiffener described in step 4. You can ignore them.



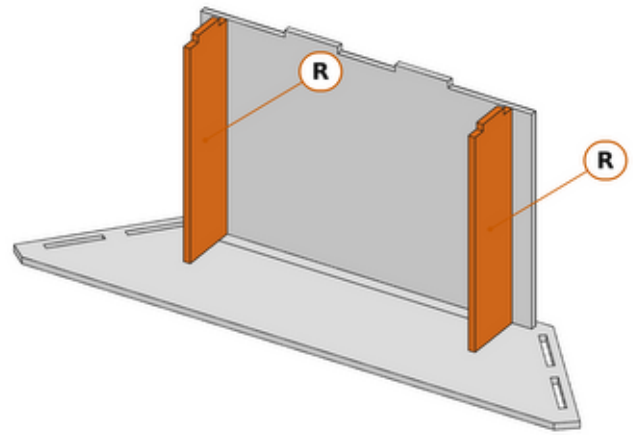
Step 2

Abutment 2: brace ribs

GOES IN LIKE THIS

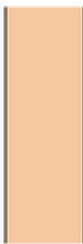


FITTED IN PLACE



FIND THESE PARTS (engraved side up)

4 × R



Seen from the back. Each abutment takes 2 × R. Stand them in the short front-to-back slots near the ends of B, with the 5 mm bottom tab right down and the front edge against the back of A.

Still no glue. The ribs just hold A upright for now.

CHECK

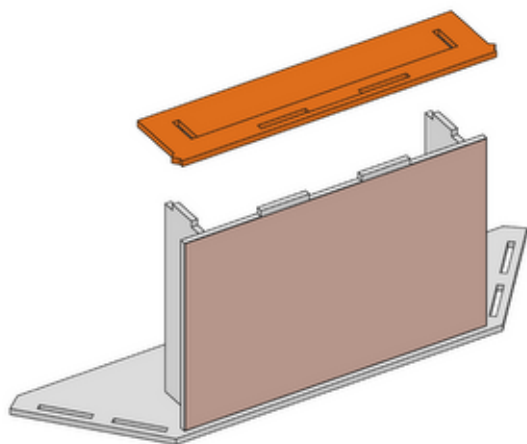
The ribs are all the same, so any R fits either side.



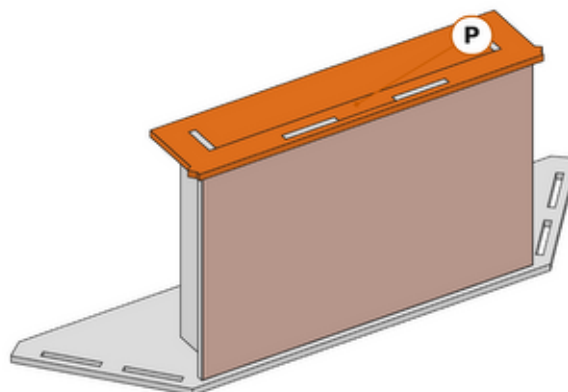
Step 3

Abutment 3: shelf plate

GOES IN LIKE THIS



FITTED IN PLACE



FIND THESE PARTS (engraved side up)

2 x P



Lower shelf plate P onto the top, engraved side up, so the two top tabs of A and the tops of the ribs go into its four slots. The edge with the stone joint lines goes to the FRONT.

The two small pointed ends at the front corners stick out past the ends of A for now. They drop into the steps on the wingwalls in step 5.

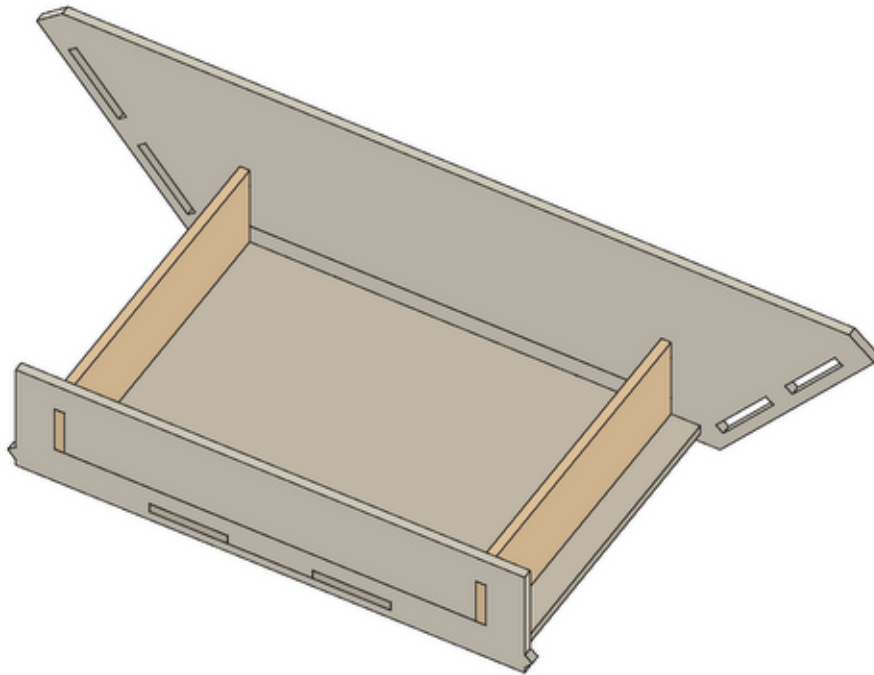
CHECK

Press P down flat all over and check that every tab sits flush with its top. If one stands proud, ease that tab with one light stroke of sandpaper rather than forcing it.



Step 4

Abutment 4: glue the first five parts and let them cure



Lay the five dry-fitted parts down on the brick face on a flat surface, open back facing up, as drawn. You're looking into it, with the ribs (tan) standing up and B and P forming the long sides.

Check that A sits square to B and P (use a square). Run a thin bead of glue into every inside joint from the open back: A to B, A to P, and the ribs to A, B and P.

Leave it flat until the glue has cured before you go on. The wingwalls go on afterwards (step 5). Don't try to dry-fit the wingwalls with everything else first: there aren't enough hands to hold all seven parts and it just falls apart.

SUGGESTION

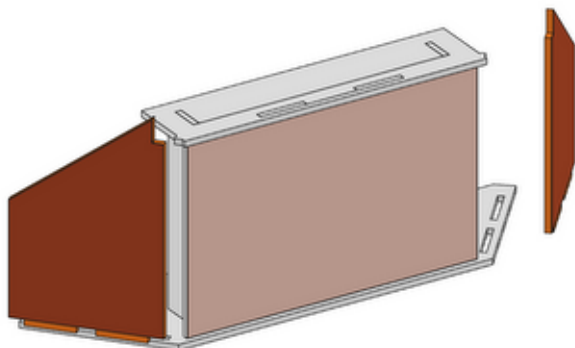
OPTIONAL, NOT SUPPLIED: for extra stiffness you can glue a piece of 3 mm MDF, ply or thick card behind each brick face, between the ribs, on the L-shaped score marks. Cut 2 pieces 41.5×31.8 mm (one per abutment). They slide in from the open back once the glue has cured. The bridge doesn't need them.



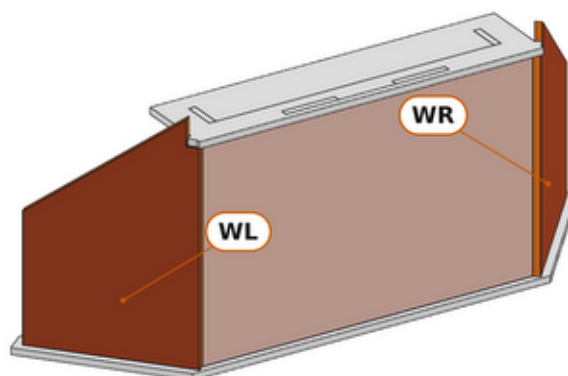
Step 5

Abutment 5: slip on the wingwalls

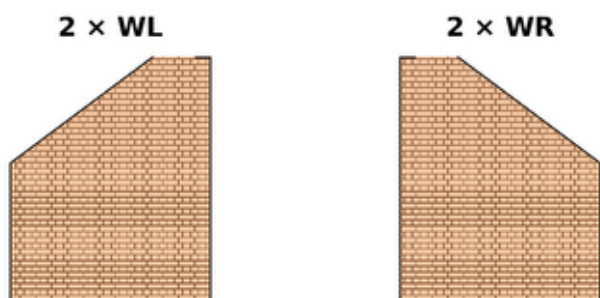
GOES IN LIKE THIS



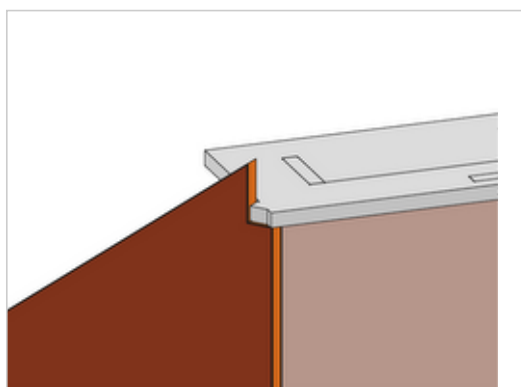
FITTED IN PLACE



FIND THESE PARTS (engraved side up)



CLOSE-UP: END OF P IN THE STEP



Looking at the brick face from the road, WL goes on the LEFT and WR on the RIGHT. Brick faces OUT, and the tall end goes against the end of the face.

Slip each wingwall in from the side: tuck the small step at the top of its tall end under the pointed end of P, then press the two bottom tabs down into the angled slots at that side of B. The pointed end of P finishes flush with the brick, so the stone edge carries round the corner.

Glue each wingwall to B and to the end of A, and check the angle by eye against the slots. The wingwalls stand about 2.8 mm above the shelf.

CHECK

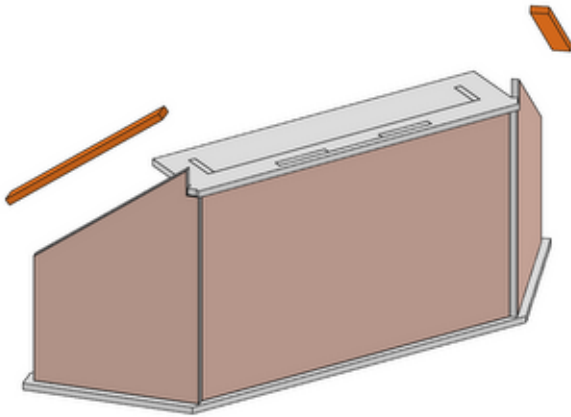
If the letters ever confuse you, use the rule: brick out, tall end to the face, step at the top. Each wingwall only fits one way round.



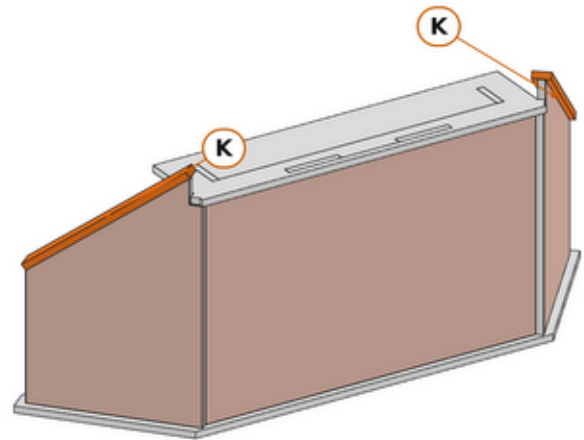
Step 6

Abutment 6: wingwall copings

GOES IN LIKE THIS



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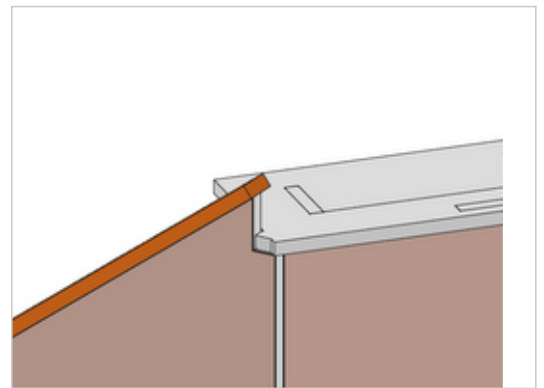


FIND THESE PARTS (engraved side up)

4 × K



CLOSE-UP: TOP END OF K



Each abutment takes 2 × K, one on the sloping top of each wingwall, joint lines up. Any K fits either side.

K is cut to exact length with square ends. Line its top end up with the top end of the wall, and its bottom end will come out level with the bottom end. Centre it, with about 0.8 mm overhang each side of the wall.

CHECK

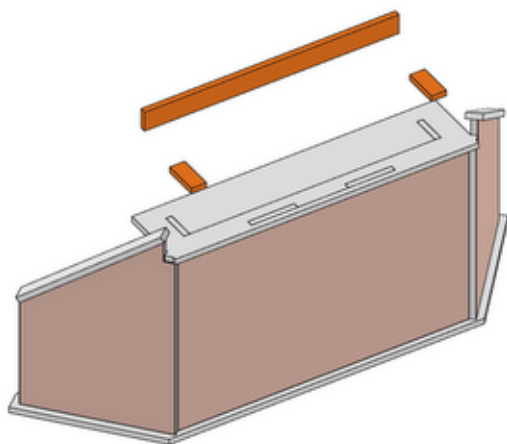
No trimming or angle-cutting is needed. A dot of glue every few mm is plenty.



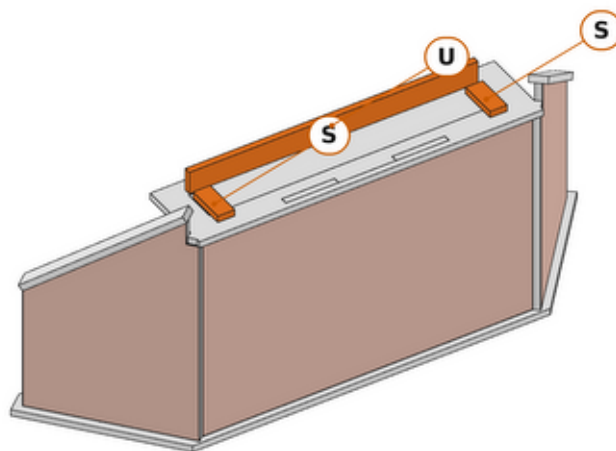
Step 7

Abutment 7: bed stones and ballast strip

GOES IN LIKE THIS



FITTED IN PLACE



FIND THESE PARTS (engraved side up)

4 × S

2 × U



Each abutment takes 2 × S and 1 × U. Glue each bed stone S flat between a pair of the short score lines on P, long side running front to back, just behind the stone band. The girders rest on these.

Stand ballast end strip U on its long edge across P, tight behind the bed stones and centred, with the joint lines facing forward. Its top finishes level with the top of the deck.

CHECK

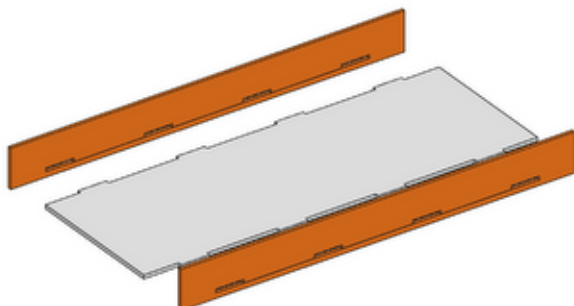
The bed stones are the smallest parts, so use tweezers and a cocktail stick of glue. The outside edge of each stone lines up with the outside of the girder, so nothing sticks out sideways.



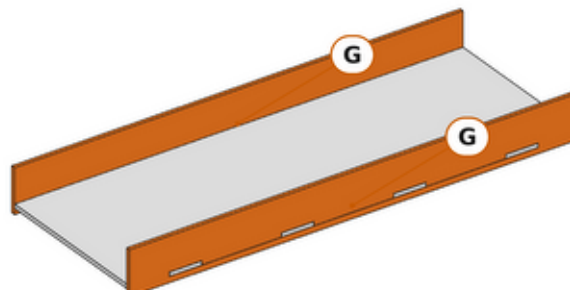
Step 8

Span: deck into the girder webs

GOES IN LIKE THIS



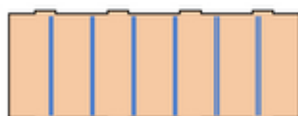
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FIND THESE PARTS (engraved side up)

2 × G

1 × D



You need 2 × G and 1 × D. Deck D goes in ENGRAVED SIDE DOWN: the six pairs of engraved lines go underneath, where the cross ribs fit in the next step. The top gets ballasted, so it doesn't show. D is the same either way round end to end.

Push the four tabs along each long edge through the four slots near the bottom of a G. The rivet side of each G faces OUT. The tab ends finish flush with the outside of each web.

CHECK

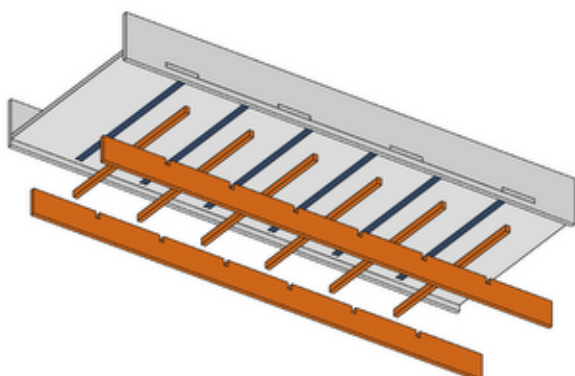
Glue along the inside of each web-to-deck joint on the top, and sight along the span to check it isn't twisted.



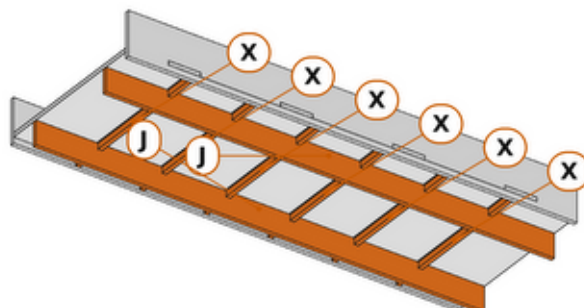
Step 9

Span: cross ribs, using the engraved lines and the jig bars

GOES IN LIKE THIS



FITTED IN PLACE



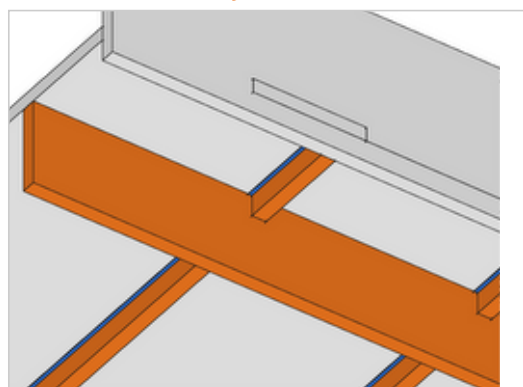
FIND THESE PARTS (engraved side up)

6 × X

2 × J



CLOSE-UP: RIB IN A JIG SLOT



Turn the span upside down so the engraved lines face you. Each pair of lines marks where one rib goes. The kit has 6 × X ribs, 16 mm apart (a 15 mm gap between ribs), 40 mm long so they fit between the webs.

Run a thin bead of glue between each pair of lines, keeping it to the middle. Stand an X on its 1.5 mm edge on each pair, ends against the webs.

Then lower the two jig bars J over the ribs, one near each web, slots down. Their ends line up with the ends of the deck. The six slots hold every rib upright and at the right spacing. Lift the jig bars off after about ten minutes, before the glue sets hard.

CHECK

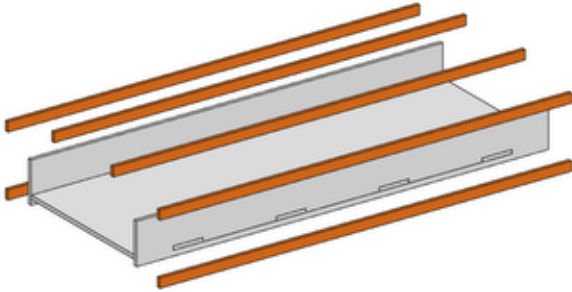
J is a tool, not part of the model. If a rib won't drop into a slot, nudge it onto its lines with tweezers. Keep the glue away from the jig slots so the bars lift off cleanly. You can keep them for your next kit.



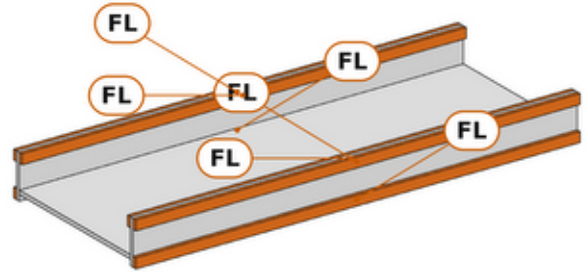
Step 10

Span: flanges

GOES IN LIKE THIS



FITTED IN PLACE



FIND THESE PARTS (engraved side up)

6 × FL



With the jig bars lifted off, turn the span the right way up. All 6 × FL are the same, 112 mm long with a rivet row. Each girder takes three, rivet side showing and ends flush with the web ends:

- one on the OUTSIDE of the web, flush with its bottom edge (this covers the deck tab ends)
- one on the OUTSIDE, flush with the top edge
- one on the INSIDE (the track side), flush with the top edge

CHECK

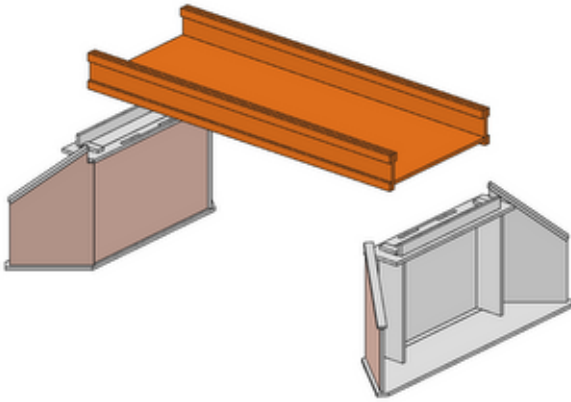
There's no inside bottom flange, because the deck is there. Hold the strips with pegs or masking tape while they dry.



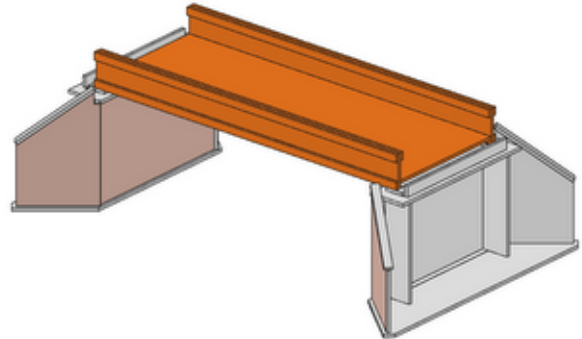
Step 11

Set the span on the abutments

GOES IN LIKE THIS



FITTED IN PLACE



Stand the abutments facing each other with the front edges of their base plates 100 mm apart (102 mm between the brick faces), square to each other and in line.

Lower the span on so each girder rests on its pair of bed stones. The girder ends land about two-thirds of the way across the stones.

Glue the span down, or leave it loose so it lifts off for painting and track laying.

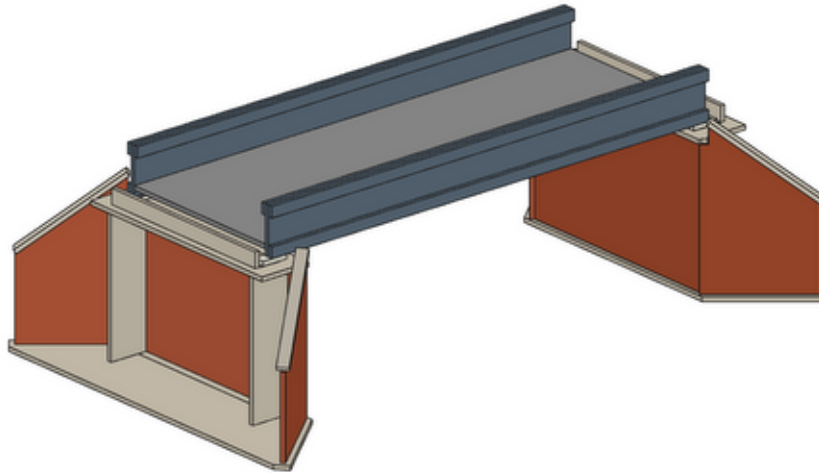
CHECK

The abutments are open at the back, so bed them into the embankment. The wingwalls stand above the shelf, so the bank can come up to track level behind the abutment and fall away over the copings.



Finishing

Painting, weathering and fitting to the layout



- Seal first. MDF edges drink paint and go furry. Brush thinned PVA or sanding sealer on the cut edges, let it dry and rub down lightly. Prime with a spray primer (solvent primers swell MDF least).
- Brick: base coat in brick red, pick out odd bricks lighter and darker, then work a mortar colour into the engraved joints and wipe it off the faces with a damp sponge once touch-dry.
- Stone (copings, the stone front of the shelf plate, bed stones, ballast strip): buff or light grey, dry-brushed lighter, with a dark wash in the joints.
- Girders: a railway steel colour (black, dark grey or a regional bridge colour). Dry-brush the rivet rows lightly so they catch the light. Add rust streaks below the bearings and dirt along the bottom flanges.
- Paint the span off the abutments if you left it loose. Finish everything with matt varnish.
- Track: lay it on the deck, centred between the girders (20 mm from each web to the track centre), and ballast up to the ballast end strips.
- Scenery: build the embankment up behind each abutment and between the wingwalls, to about track level, and let it fall away over the wingwall copings. The open back disappears under it.

TIP

Test every paint on an offcut from the sheet first. Keep the coats thin and even on both faces of a part so it doesn't bow.