



Countryside Service

# Bridges

Countryside Service Design Standards (2013)

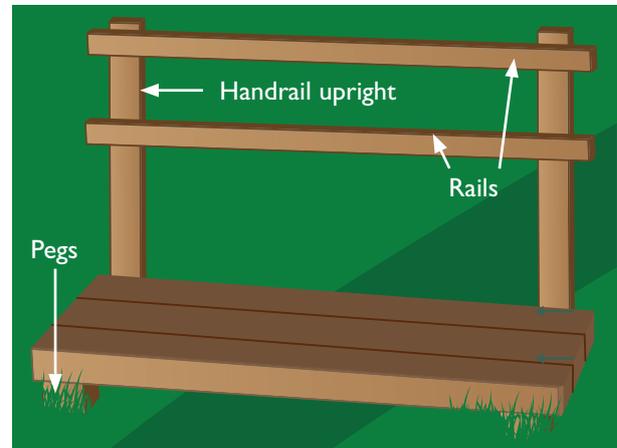
**Bridge and abutment design is the area of path work which requires most specialist knowledge. Therefore, with the exception of sleeper bridges across ditches, advice must be sought from County Council officers prior to any design being agreed. There are no legal requirements for bridges, so these designs draw on best practice.**

## Responsibilities

Bridges are generally the responsibility of the County Council; however some bridges are owned by the landowner (contact us to find out if unsure).

## Ditch crossings (sleeper bridges)

- Sleeper bridges are simple, robust bridges used to cross ditches and other very small watercourses.
- These bridges are only suitable for paths in a rural setting which are used by walkers (and dogs/ pushchairs/manual wheelchairs) only, eg footpaths.
- The design given here is suitable for ditches of up to 1.5m depth and 3m width (= 4m overall bridge length including the length which is resting on the banks), where both banks are more or less level.
- Bridges should be a minimum of 1 metre wide; unless there is a strong reason preventing this 1.2m wide is preferred as it enables use by manual wheelchairs and wider pushchairs.
- Handrails should be provided on one side as shown, the top of the lower rail should be set at 600mm above the sleeper surface and the upper rail at 1100mm. If the drop under the crossing is more than 700mm, a second handrail should be considered.
- As the surface grain is in the same direction as the walker, sleeper bridges can become slippery; heavyweight mesh or an alternative non-slip treatment may be used (see 'For all Projects' guide).
- Dig into each bank to provide firm, level ground a little way back from the edge of the bank, at sufficient depth to accommodate the bearer and the sleepers on top, so that the top surface of the sleepers are level with the ground.
- Use two corrosion-resistant screws at each end of each sleeper to secure them to the bearer; and smaller screws to secure the rails to the uprights.



## Sleeper bridge components:

3-6 x sleepers at least 1m longer than width of ditch x 255mm x 125mm (often sold as 2.6m lengths, but longer sleepers are available)

1 x sleeper (cut in two) for the bearer at either bank

2-4 x handrail uprights 100mm x 100mm x 1.8m

2 x rails 50mm x 100mm x length of bridge

2 x Wooden pegs (for non-hand rail side)

Corrosion-resistant screws

Non-slip treatment

## Timber Single Span Footbridge up to 6m

- The design below is to bridge wider or deeper watercourses than the sleeper bridge, or in a more urban setting, up to a maximum of 6m span from abutment to abutment.
- These bridges are only suitable for paths which are used by walkers (and dogs/pushchairs/ manual wheelchairs) only, eg footpaths.
- The useable width of the bridge (between the handrails) should be at least 1.2m.
- Handrails should be provided on both sides as shown, the top of the lower rail set at 600mm above the deck and the upper rail 1100mm above the deck.
- Toe boards (small rails along the edge of the deck) should be provided with a 30 mm gap to the deck of the bridge to avoid debris collecting.

This guidance is suitable for most situations in Hampshire; for further advice email [countryside@hants.gov.uk](mailto:countryside@hants.gov.uk) or call 0845 603 5636



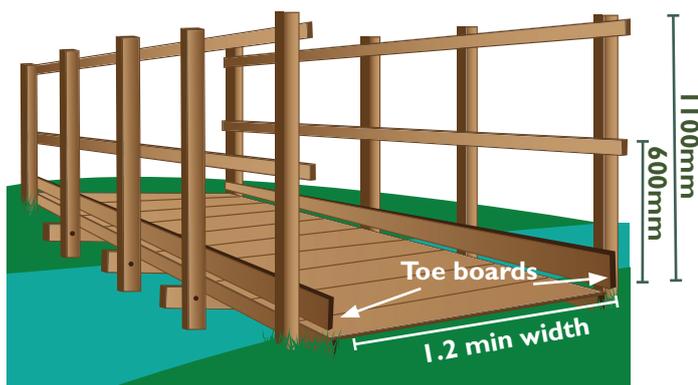
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- Often the natural surface will suffice; in some cases an anti-slip treatment or grooved boards may need to be used.
- Use corrosion-resistant screws or bolts to secure all parts.
- For cross beams and handrail uprights, 12mm diameter bolts and 50mm square washes should be used.
- When fixing handrails, toe boards and the deck, use screws and pre-drill to avoid splitting the wood.
- Leave a small (max 12mm) gap between deck boards, to allow for air to circulate around the timber, expansion in warm weather and to shed water and falling leaves.

**There are two options for abutments and advice should be sought on the most appropriate:**

- timber bearers as described for sleeper bridges
- concrete abutments, which should be a minimum of 600mm deep x 1.4m parallel to bank x 480mm perpendicular to bank, reducing to 300mm at surface (dig into bank and line with wooden boards before pouring concrete)
- The choice will depend on soil type and stability of the banks, and in some cases other options will be needed.



### Components for 6m timber footbridge:

- 3 x Main Beams 300mm x 100mm x 6m,
- 10 x handrail uprights 100mm x 100mm x 1.5m (centres spaced at 1.5m intervals)
- 3 x cross beams 100mm x 100mm x 1.8m
- 4 x Handrails 100mm x 50mm x 6m
- 30 x Deck boards 1.2m x 200mm x 50mm
- 2 x toe boards 100mm x 50mm x 6m
- Corrosion-resistant screws and bolts

## Timber & Steel Single Span Multi-user bridge up to 10m span

- These bridges are suitable for paths which are used by cyclists and horse-riders as well as walkers eg bridleways, and also for footbridges which are 6-10m span.
- Galvanised steel is used for the main beams, giving the extra strength necessary for a bridge used by ridden horses and for spans over 6m. All other timber dimensions are the same as for the 6m bridge above but adjusted for length.
- The useable width of the bridge (between the handrails) should be at least 1.5m if cyclists and/ or ridden horses are using it; 1.2m minimum for footbridges.
- Handrails should be provided on both sides as shown, to 1.8m height if ridden horses use the bridge; the top of the lower rail should be set at 600mm above the deck.
- Toe boards (small rails along the edge of the deck under the handrails) should be provided with a 30mm gap to the deck of the bridge to avoid collecting debris.
- Often the natural surface will suffice; in some cases an anti-slip treatment or grooved boards may need to be used.
- Use corrosion-resistant screws or bolts to secure all parts (see 6m bridge).
- Leave a small (max 12mm) gap between deck boards –see footbridge for details.
- Advice should be sought on abutments, depending on soil type and banks stability. In most instances, abutments should be concrete, a minimum of 1.5m deep x width of bridge + 200mm x 800mm perpendicular to bank, reducing to 300mm at surface (dig hole as before and line with wooden boards before pouring concrete). Smaller abutments may be possible for multi-user bridges of less than 6m span.
- Some companies produce kit bridges which meet these specifications.



## Bridges over 10m and multi span bridges

These should be professionally designed to meet site requirements.