

### Introduction

Timber sleepers or round poles and logs can be used to create effective and relatively inexpensive garden edges, steps and walls to terrace sloping sites.

This data sheet contains Timber Queensland's recommendations for the construction of timber garden walls up to 1 metre high. For retaining walls greater than 1 metre high refer to Technical Data Sheet 9.

### Building Approval and Certification

Local authorities generally do not require building approval or engineer certification for retaining walls up to 1 metre high. Walls (irrespective of height) closer than 1.5 metres to a building, and retaining walls greater than 1 metre high will generally require building approval and certification by an engineer.

### Ground Conditions

The sizes and other recommendations in this data sheet assume that posts are embedded into firm natural ground (e.g. stiff clay, shale or dense sand), with a maximum ground slope of 1 in 6. Special design may be required for steeper slopes and poor subgrade soil conditions such as uncompacted fill.

### Materials

There is no Australian Standard or other grading requirement for landscaping timber. The quality of sawn "sleepers" and round logs can vary greatly between different suppliers.

Timber sold for landscaping is likely to contain natural characteristics such as knots, gum veins, heart, insect damage, want, wane etc., and there could be some bow, cupping, twisting etc. Where a higher than normal appearance or performance is required, timber should be selected with limitations on the size and number of these characteristics.

Note: Structurally graded timber (e.g. F14 hardwood and F7 treated pine) will have prescribed limits for natural characteristics and will generally be higher quality than 'landscaping' timbers.

Softwood logs and sleepers shall be preservative treated to hazard level H4 or better.

Hardwood shall be durability Class 1 or 2. Hardwood containing sapwood shall be preservative treated to H4 or better.

### Retaining Walls (up to 1 m high)

Timber retaining walls up to one metre high can be constructed as shown in Figure 1.

Member sizes and post embedment depths shall be as outlined in Tables 1 and 2 for preservative treated softwood and hardwood, respectively.

Walls exceeding 400 mm high should have a 1 : 10 batter as shown.

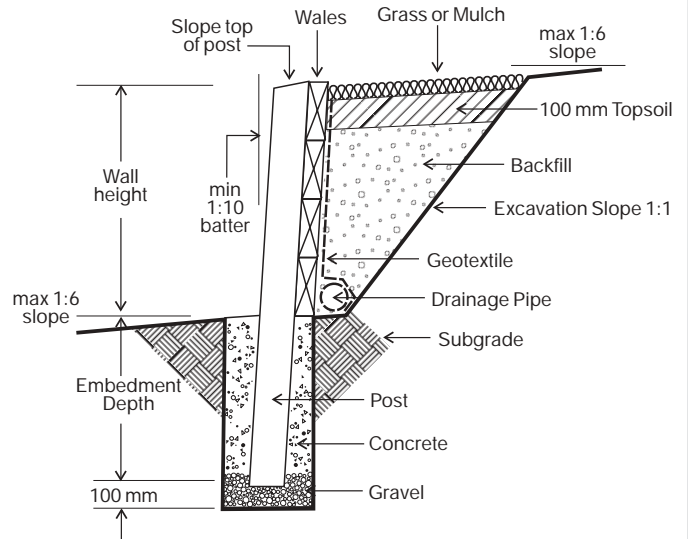


Figure 1 - Typical Retaining Wall Construction

Note: The batter allows for the wall to have some lateral movement and still appear stable.

Post holes shall have a 100 mm layer of coarse gravel installed prior to placing posts and backfilling with concrete.

Note: 'No-fines' concrete is recommended for hardwood posts.

Walls up to 400 mm high may have concealed posts, with wales fixed to the outside of posts with hot dipped galvanised batten screws, coach screws or bolts. Walls above 400 mm shall have wales behind posts. Typical methods of positioning posts at ends and corners are shown on Figure 2.

Note: Wales may require temporary fixing to posts with wire ties, skew nails or batten screws.

The top of posts shall be cut with a slight slope to shed water and shall be sealed with a preservative emulsion.

Drainage shall be provided behind walls exceeding 400 mm high to prevent additional loads due to the build up of ground water. A slotted polyethylene drainage pipe shall be provided at the base of the wall, discharging to a suitable outlet. To prevent backfill material from flowing through gaps in the wall and to assist in drainage, geotextile should be placed to the inside face of wales and between the drainage pipe and the backfill.

Backfill shall be a free flowing material such as ashes, sand or gravel – not clay. Backfill shall be installed no sooner than three days after concreting posts.

## Garden Edges

Single sleepers and rounds can be used to form garden edges.

Garden edges can be self supporting or may require restraining at corners and ends.

Typical corner and end restraints are shown in Figure 3. Alternatively, posts can be positioned as shown on Figure 2.

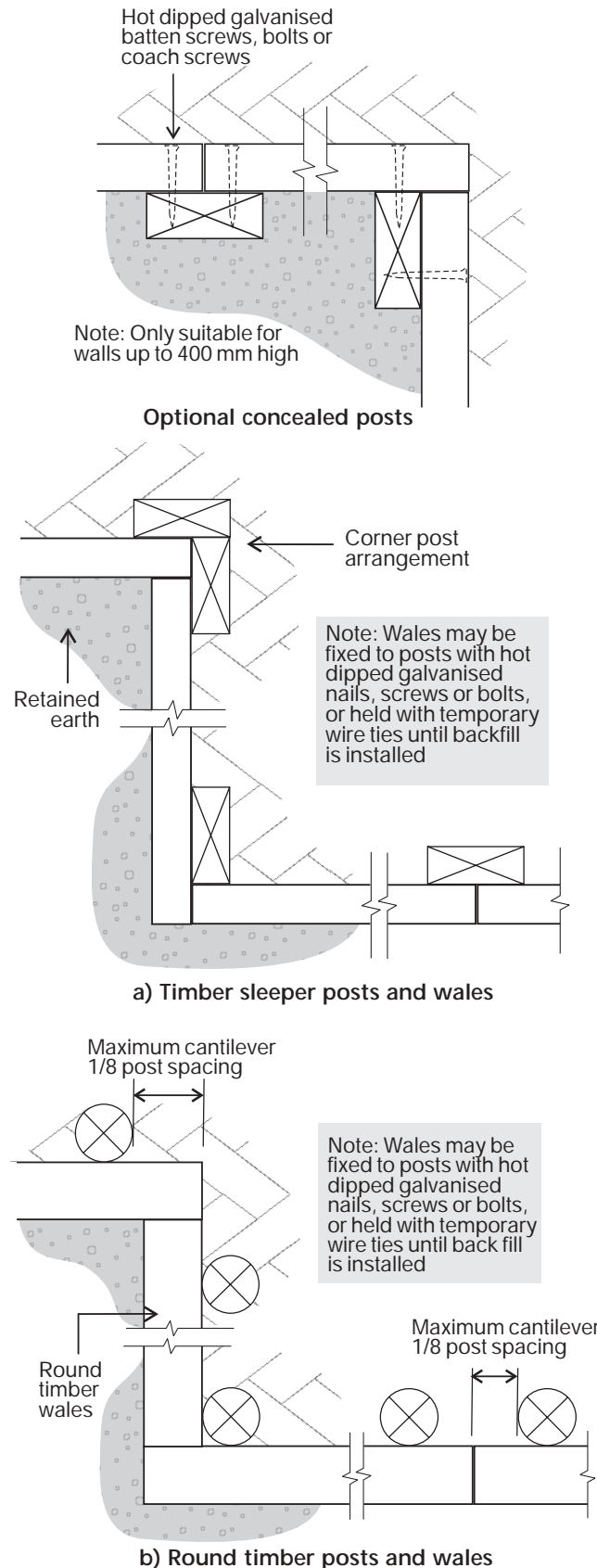


Figure 2 - Positioning Posts at Ends and Corners

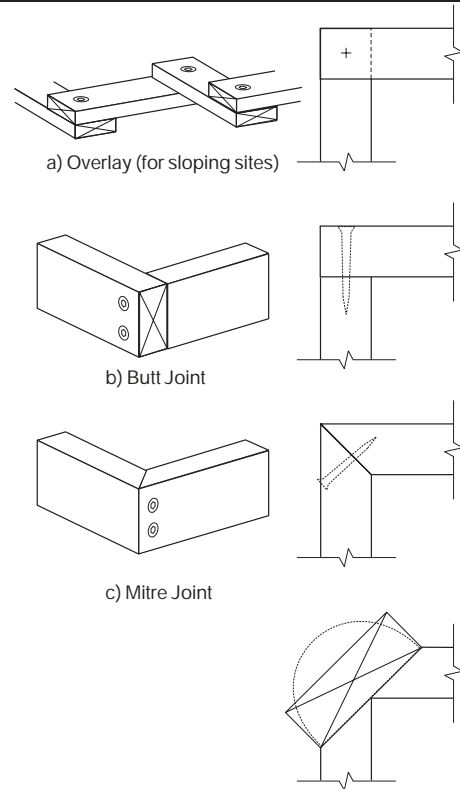


Figure 3 - Typical Methods of Restraining Garden Edges

## Steps

Single sleepers can be used to form steps or to terrace gently sloping ground.

Ends can be restrained by one of the methods shown in Figures 2 or 3. Alternatively, end restraint can be achieved by fixing to retaining walls as shown on Figure 4.

Tread options include bricks, pavers, gravel, compacted earth, or timber sleepers 'on flat'.

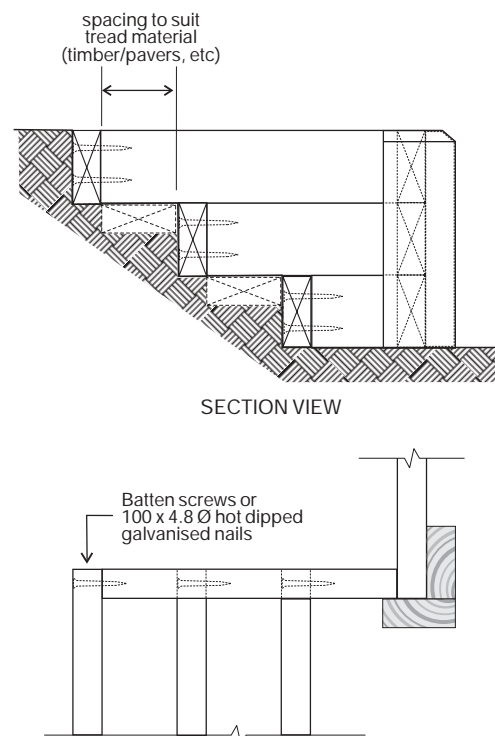
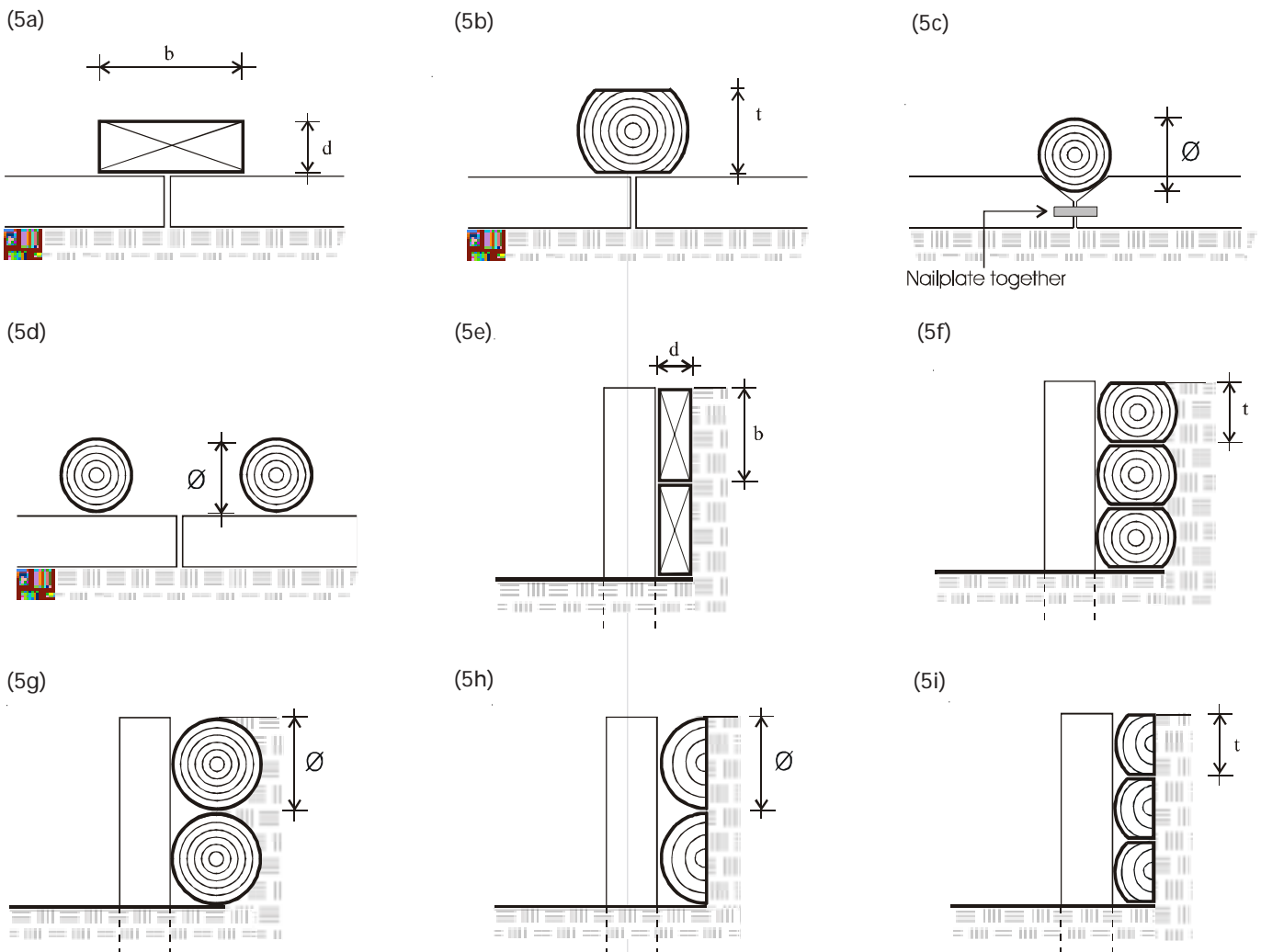


Figure 4 - Typical Sleeper Steps

**Table 1 Preservative Treated Softwood**

| Member                | Refer Figure | Post Spacing<br>Wall Height | 1200      |          |          |          | 1500     |          |          |          | 2400      |           |         |         |
|-----------------------|--------------|-----------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|---------|---------|
|                       |              |                             | 400       | 600      | 800      | 1000     | 400      | 600      | 800      | 1000     | 400       | 600       | 800     | 1000    |
| Sleeper Posts         | 5a           | Size (b x d)                | 150 x 150 | 150 x 75 | 200 x 75 | N/A      | 150 x 50 | 150 x 75 | 200 x 75 | N/A      | 200 x 100 | 200 x 100 | N/A     | N/A     |
|                       |              | Hole Dia.                   | 300       | 300      | 450      | N/A      | 300      | 330      | 450      | N/A      | 300       | 450       | N/A     | N/A     |
|                       |              | Depth                       | 400       | 600      | 600      | N/A      | 400      | 600      | 650      | N/A      | 400       | 600       | N/A     | N/A     |
| Slab Post             | 5b           | Thickness (t)               | 90        | 90       | 90       | 125      | 90       | 90       | 90       | 125      | 100       | 100       | 125     | 2 X 125 |
|                       |              | Hole Dia.                   | 300       | 300      | 300      | 300      | 300      | 300      | 300      | 300      | 300       | 300       | 300     | 450     |
|                       |              | Depth                       | 400       | 600      | 600      | 750      | 400      | 600      | 650      | 750      | 400       | 600       | 900     | 950     |
| Single Round Posts    | 5c           | Post Dia. (Ø)               | 100       | 125      | 150      | 180      | 100      | 125      | 175      | 200      | 100       | 150       | 200     | 225     |
|                       |              | Hole Dia.                   | 300       | 300      | 300      | 300      | 300      | 300      | 300      | 450      | 300       | 300       | 450     | 450     |
|                       |              | Depth                       | 400       | 600      | 800      | 1000     | 400      | 600      | 800      | 1000     | 600       | 800       | 1000    | 1400    |
| Double Round Posts    | 5d           | Post Dia. (Ø)               | 100       | 100      | 125      | 150      | 100      | 100      | 150      | 175      | 100       | 125       | 175     | 200     |
|                       |              | Hole Dia.                   | 300       | 300      | 300      | 300      | 300      | 300      | 300      | 450      | 300       | 300       | 450     | 450     |
|                       |              | Depth                       | 400       | 600      | 800      | 1000     | 400      | 600      | 800      | 1200     | 600       | 800       | 100     | 1400    |
| Sleeper Wales         | 5e           | Size (b x d)                | 150 x 50  | 150 x 50 | 200 x 50 | 200 x 50 | 150 x 50 | 150 x 50 | 200 x 50 | 200 x 75 | 200x100   | 200x100   | 200x100 | 200x100 |
| Slab Wales            | 5f           | Thickness (t)               | 90        | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90        | 100       | 100     | 125     |
| Round Wales           | 5g           | Dia. (Ø)                    | 75        | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 100       | 100       | 100     | 100     |
| Split Wales (½ round) | 5h           | Dia. (Ø)                    | 75        | 75       | 100      | 125      | 75       | 100      | 125      | N/A      | N/A       | N/A       | N/A     | N/A     |
| Winged Split Wales    | 5i           | Thickness (t)               | 100       | 100      | 100      | 100      | 100      | 100      | 100      | 100      | N/A       | N/A       | N/A     | N/A     |

**Figure 5 - Post/Wale Arrangements**



**Table 2 Hardwood** (refer Figures 5a & 5e)

| Member | Wall Height  | 400               | 600      | 800      | 1000     |
|--------|--------------|-------------------|----------|----------|----------|
|        |              | Post Spacing 1200 |          |          |          |
| Posts  | Size (b x d) | 200 x 50          | 200 x 75 | 200 x 75 | 200 x100 |
|        | Hole Dia.    | 300               | 300      | 300      | 300      |
|        | Depth        | 400               | 600      | 800      | 1000     |
| Wales  | Size (b x d) | 200 x 50          | 200 x 50 | 200 x 50 | 200 x 50 |
| Posts  | Wall Height  | Post Spacing 1500 |          |          |          |
|        |              | Size (b x d)      | 200 x 50 | 200 x 75 | 200 x 75 |
| Posts  | Hole Dia.    | 300               | 300      | 300      | 300      |
|        | Depth        | 400               | 600      | 800      | 1200     |
|        | Wales        | Size (b x d)      | 200 x 50 | 200 x 50 | 200 x 50 |
| Posts  | Wall Height  | Post Spacing 2400 |          |          |          |
|        |              | Size (b x d)      | 200 x 50 | 200 x 75 | 200 x 75 |
| Posts  | Hole Dia.    | 300               | 300      | 300      | 300      |
|        | Depth        | 600               | 800      | 1000     | 1400     |
|        | Wales        | Size (b x d)      | 200 x 50 | 200 x 50 | 200 x 50 |

### Safe Working

Working with timber produces dust particles. Protection of the eyes, nose and mouth when sanding, sawing and planing is highly recommended. Refer to tool manufacturers for safe working recommendations for particular items of equipment.

### Disposal of Offcuts and Waste

As with all treated timber, do not burn offcuts or sawdust. Preservative treated offcuts and sawdust should be disposed of by approved local authority methods.



**Timber Queensland Limited**  
 ACN 092 686 756 • ABN 50 092 686 756  
 500 Brunswick Street, Fortitude Valley  
 Brisbane Queensland 4006  
 PO Box 2014, Fortitude Valley BC Qld 4006

**Phone: (07) 3254 1989**

Fax: (07) 3254 1964

Website: [www.timberqueensland.com.au](http://www.timberqueensland.com.au)

Email: [admin@timberqueensland.com.au](mailto:admin@timberqueensland.com.au)

Whilst every effort is made to ensure the accuracy of advice given, Timber Queensland Limited cannot accept liability for loss or damage arising from the use of the information supplied.