

# RETAINING WALL CONSTRUCTION

## Regulations for retaining walls in landscaping

Each Council, Shire or Municipality has different regulations. The first step is to check with regulations from your local government Council. For example you may find requirements like

- Over 600mm high requires building approval.
- Between 600-1200mm standard design will be accepted.
- Over 1200mm Engineers design and certificate required.
- Higher than 915mm guard rail is required; 865mm high.

## Measurements and landscape materials required

Choose **materials** to be used:

coppers logs, treated sleepers, hardwood timber, rocks, concrete, crib walls.

**Measure distance** and height of proposed wall to be constructed.

## For example timber sleeper retaining wall:

20m long wall x 1m high (non load bearing) using treated sleepers at approximately 2.4m. Wale length x 200mm wide

### Horizontals (rails)

Divide length into distance:

$$20\text{m} / 2.4\text{m} = 8.33 \text{ (9 lengths laid end to end)}$$

Divide timber width into height:

$$1.0\text{m} / 200\text{mm} = 5$$

therefore 5 rows will be needed for 1m high.

5 x 9 = 45 sleepers

## Uprights

Thicker uprights will be needed for each interval of sleeper ends at the join. 10 uprights will be needed at above ground height of 1m, below ground depth of 600mm

1.0m + 0.6m = 1600mm (1.6m).

Therefore 45 sleeper lengths for rails at 2.4m x 50mm. 10 sleeper lengths for uprights at 2.4m x 75mm.

## Set out

Mark out with string line exact position of wall, with 2 pegs just beyond wall length.

Mark with marking paint or peg first position for upright.

Measure along equal lengths (2.4m) from start of wall and mark each upright position with marking paint.

## Holes

Dig required holes at set intervals allowing for concrete to surround post in hole. Depth varies with walls and loads. At a minimum 1/2 the length of the upright plus minimum 50mm for drainage gravel under upright. The higher the wall the deeper the footing. The greater the load, deeper footing also.

Holes should be 1½ times the width of the upright in width. In sleeper wall cases, the timber will be 200mm wide therefore 300mm wide hole is sufficient.

## Uprights

Set string back in place on pegs

Place drainage material in bottom of holes, then position upright in hole.

Post should be set to string line and angled slightly (1:10 approx) back towards fill side, and level either side.

Back fill with concrete or rammed earth and cement mix and pack every 100mm layer.

Ensure post remains in position while filling hole. When using concrete, stays may be needed for support. Not necessary when mix is rammed solid. To prevent water ponding around post, ensure concrete is angled away from post.

**NOTE:** be sure that enough post is left out of the ground for the cross members (rails) timbers. Excess timber can be cut off the upright later to be level with top rail.

## Position rails

To ensure a level top rail, bottom rail must be carefully positioned and secured level.

Some excavation and filling will be necessary for this. Once bottom rail is in position, secure with spikes or bolts into the upright if necessary.

After first rail set, continue along laying each row at a time and fixing, ensuring level is correct at all times.

Top rail ends must all meet and be flush. A capping may be fitted to neaten job or as a seat.

## Back fill

Before back filling, it must be decided whether the wall will be sealed or not. Geo textile material can be used which allows drainage - also bitumen based sealers and mats can be used to seal wall to stop moisture and plastic sheeting also to stop water and some fill coming through small gaps in wall. Use of specified materials depends upon required finish or purpose and strength of wall.

**NOTE:** when wall is completely sealed from water, there will be added load and pressure to the wall. Footings and depth of posts should be adequate for this load.

Gravel and/or loose drainage material should be placed at the bottom of wall. The agricultural pipe/slotting drain pipe laid the length of the wall with a slope/fall and sometimes wrapped in Geo textile sock to prevent silt blocking drain and back filled with drainage material then backfilled with well drained soil.



Ag pipe should be totally covered with gravel and be connected to storm water outlet or other means of carrying water away from behind wall and surrounding structures. For example, storm water drain, gravel pit, easement, dry creek bed etc