

# A Guide To Footings & Foundations

**Design Extracts for Decks, Pergolas and Fencing.**

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## **A Guide To Footings And Foundations**

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## Definitions

### Foundations:

'Foundations' refers to the natural ground and its structure such as sand, clay, rock or mixed materials.

### Footings:

'Footings' is the term used to describe the designed and built portion of the sub structure. This can be constructed of brick, concrete or other purposely designed materials. For larger structures footings may require a structural engineers plan including council inspections and approval during the course of the project. For projects of this scale a Development Application should be lodged with your local building approval body.

## Design Principles

### Pergolas, decks and garden structures

The object of footings for timber pergolas, decks and other garden structures is to transfer the load of the structure directly to the foundations. The footings should be adequately designed to support the weight of the load, and the strength of the foundation material. For this reason the same load may require different footings depending on the foundation material.

'Pad' or 'Mass' concrete footings refer to a cubic concrete footing without reinforcement steel. The footing size will vary depending on the strength of the foundation material.

### Retaining Walls

Retaining wall footings need to be designed to counter the lateral force exerted on the wall by the soil it is retaining. For this reason, the footing and wall should be designed as one piece in an 'L' shape. *see illustration*

The footing should contain reinforcement steel and starter bars. The starter bars should protrude out of the concrete at spacings roughly 1m or equal to the holes in the blocks.

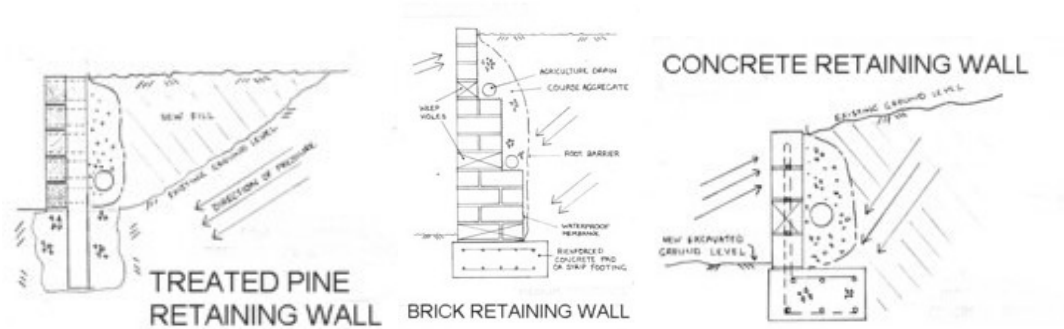
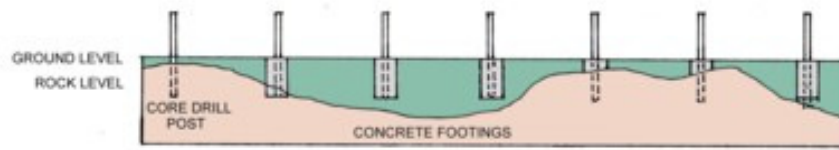
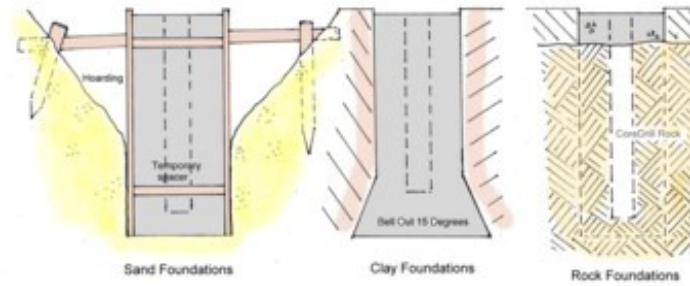
The bottom of the 'L' is to sit under the load to pull the wall against the lateral forces.

### Strip Footings

are not only to support the structure but also to combat lateral forces. Th

Foundation Material	Bulking
Sand	1m <sup>3</sup> = 1m <sup>3</sup>
Rock	1m <sup>3</sup> = 1.5m <sup>3</sup>
Clay	1 m <sup>3</sup> = 2.5m <sup>3</sup>

Footing Design	Suitability
Pad (mass concrete)	Fencing, Decks, Pergolas, Carports, Garden Structures...
Strip Footings (reinforced concrete)	Retaining Walls, Masonry Fencing, Housing and Small Buildings...
Pier & Beam (reinforced concrete)	For larger structures, double brick, concrete, design and build to Engineers Details.



**Notes;**

1. This table is extracted from AS 1684 - 2006 - Residential Timber Framed Construction Standards and assumes the building practice contained within that standard.
2. Roof load is calculated at zero, ie; no roof or wall loads are taken into account. Assumes a maximum floor mass of 40 kg/m<sup>2</sup>.
3. Joists crippled over supports shall be calculated as single spans.
4. NS = not suitable

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**Important notice;**

This guide has been assembled by All Day Fencing. Successful design and construction depends on numerous factors outside the scope of this publication. While all care has been taken in the assembly of this information, All Day Fencing accepts no responsibility, liability loss or damage resulting from work performed based on information contained in this publication/guide whether as a result of All Day Fencing negligence or otherwise.

# Tool Guide

*A Guide to The Right Tool For Every Job*

Stage	Suggested Tools
<b>Demolition</b>	<p>Handtools; Sledge Hammer, Lump Hammer, Claw Hammer, Handsaw, Pinchbar, Crowbar, Screwdrivers.</p> <p>Power Tools; Demolition Hammer, Demolition saw, Jackhammer, Chainsaw, Circular Saw.</p>
<b>Excavation</b>	<p>Handtools; Trenching spade, Long handle wide mouth shovel, Long handle shovel, Mattick, Crowbar, Post hole digger, Wheelbarrow.</p> <p>Power Tools; Diesel post hole digger, Jackhammer, Core drill, Hammer drill.</p>
<b>Concreting</b>	<p>Handtools; Wide mouth shovel, short handle shovel, wheelbarrow, straight edge, timber float, timber trowel, steel trowel, broom, bucket, hose.</p> <p>Power Tools; Concrete pump, vibrator, power screed</p>
<b>Carpentry</b>	<p>Handtools; Square, pencil, saw, bevel, spirit level, claw hammer, punch, screwdrivers, shifting spanner, wood chisels, builder line, clamps, sandpaper</p> <p>Power Tools; Circular saw, jig saw, drill, hammer drill, router, orbital sander, belt sander, electric planer</p>
<b>Brickwork</b>	<p>Handtools; Brick trowel, lump hammer, bolster, plugging chisel, spirit level, profiles, bricklayers line</p> <p>Power Tools; Cement mixer, angle grinder, brick saw</p>
<b>Steelwork</b>	<p>Handtools; Clamps, file, ball pen hammer, vice, boltcutters, pipe bender, hacksaw</p> <p>Power Tools; Angle grinder, drill, cut off saw, welder</p>
<b>Glazing/Plastering</b>	<p>Handtools; Claw hammer, wood chisel, broad knife, steel trowel, putty knife, sanding block</p> <p>Power Tools; Orbital sanding</p>

# Safety First

Symbol	Definition
Boots Earmuffs Safety Glasses Hardhat Hoarding Safety Fencing	Steel Cap Boots are Required Earmuffs are Required Safety Glasses must be worn  Hoarding should be erected
Signage	