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Footings and Piers

A foundation is the structure upon which a building sits that is engineered to transfer loads from the weight from the structure above to the ground. This structure on the soil is the footing and the soil under the footing is the foundation. The footing must be designed to spread the structures load over the soil foundation material and is the type of footing or pier is designed by a structural engineer after considering the existing ground type, often a geotechnical engineer has advised this. Footings are designed with consideration to the following and will vary depending upon many factors, some are listed below.

- Weight of structure above.
- Wall construction type and height, reinforced concrete walls will span further than brick walls sometimes eliminating footings and bear solely upon piers.

- Soil type.
- Slope of the land and proximity to other factors such as boundaries, adjoining properties.
- Building Code of Australia and relevant Australian Standards such as AS2870-2011.

There are five main types of footings:

Strip Footings

A Strip Footing is a relatively small strip of concrete placed into a trench and reinforced with steel. The footing supports the load of the exterior walls and any interior wall that is load bearing or supports a slab such as for a bathroom. Strip footings can be used for both traditional timber and concrete floors. They are one of the most common footings used in Australia.

Concrete Pad Footings

A concrete pad footing is the simplest and cost-effective footing used for the vertical support and the transfer of building loads to the ground. These footings are "isolated" i.e. there is no connection between them. They are also reinforced.

Holes are dug into the ground and fitted with a reinforcement cage then filed in with a concrete mix to ground level as determined by an engineer. Concrete pad footings are used to support light weight timber-framed houses.

Pole Construction (Post and Concrete)

For this type of footing a hole is dug into the ground. A pole is then placed into the hole and ready mixed concrete is back filled around the pole. Pole construction footings are one of

the least expensive footings types especially when constructing a pier/footing on sloping land but engineer's details will be required for the builder and certifying authorities.

Raft slabs / Stiffened raft slab

A raft slab is reinforced concrete slab that is strengthened with integral concrete beams in both directions.

Usually used as the foundation for new houses and extensions, raft slabs in Australia are probably the most common of all slabs.

The internal strengthening beams (internal strips running in both directions parallel to the perimeter beams). The beams around the outside are call edge beams.

Concrete piers

These are round holes generally bored into the ground by an excavator to a minimum depth unless rock or similar are struck, it's not uncommon for engineers to specify that these must be drilled into certain ground types depending on the area as ultimately each structure is different, i.e. single level or multi-level.

General

It's not uncommon to see a combination of strip footings along with piers, nor is it unusual to have a waffle pod slab used on top of both systems due, to the soil type, ultimately each site is different and an engineer may choose a waffle pod of a more conventional raft slab with no piers or footings at all.

Reinforcement is generally placed to all bored piers.

Reinforcement is always installed to footings and slabs in accordance to AS2870-2011 and the Building Code of Australia as a minimum however each engineer will design every slab based on site conditions.

Ultimately an engineer will design the footings and piers based on the site conditions however whilst this is their primary duty they will also consider cost effective alternatives when suitable.

Disclaimer:

The information above has been sourced from both Australian Standards and The Building Code of Australia along with other publications, the information above may not be complete however is up to date at the time of publishing however TR Building Solutions recommend engaging a professional who deals with pools, at this stage TR Building Solutions do not offer this service but provide the contact details of relevant persons. This is general information only and we recommend you contact TR Building Solutions or your local building professional such as a Structural Engineer prior to relying on any advice above. A free copy of the current Building Code of Australia can be found by clicking this link and registering.

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