

CONTENTS

NATIONAL CONSTRUCTION CODE AUSTRALIA (NCC).....	2
NCC Volume 2	2
▪ Stair Tread Riser and Going Dimensions	2
▪ Stairways And Ramps	2
▪ Barriers To Prevent Falls	2
▪ Construction Of Barriers To Prevent Falls	3
AS1428.1 Design For Access And Mobility	4
Part 1: General Requirements For Access—New Building Work.....	4
▪ Ramps	4
▪ Threshold ramps	4
▪ Step ramps	5
AS2870-2011 RESIDENTIAL SLABS & FOOTINGS	6
Soil Type Classifications	6
▪ Site Classification Based On Soil Reactivity	6
▪ Reinforcement	6
AS1684.4 (2010) TIMBER FRAMING MANUAL.....	7
Interpreting Australian Standard Span Tables:	7
Span Tables And Associated Timbers	8
AS 1684.2 N1/N2 SUPPLEMENT 2—2010 RESIDENTIAL TIMBER-FRAMED CONSTRUCTION	8
Seasoned Softwood—Stress Grade F7 (Treated Pine)	8
Span tables for decking.....	8

NATIONAL CONSTRUCTION CODE AUSTRALIA (NCC)

NCC Volume 2

▪ **Stair Tread Riser and Going Dimensions (3.9.1.4)**

Figure 3.9.1.2
STAIR RISER AND GOING DIMENSIONS (mm)

STAIR TYPE	RISER (R)		GOING (G)		SLOPE RELATIONSHIP (2R+G)	
	(see Figure below)		(see Figure below)			
	Max	Min	Max	Min	Max	Min
Stairs (other than spiral)	190	115	355	240	700	550
Spiral	220	140	370	210	680	590

125 mm sphere must not pass through treads

▪ **Stairways And Ramps (2.5.1)**

So that people can move safely to and within a building—

- (a) walking surfaces must have safe gradients; and
- (b) any stairway or ramp must—
 - (i) have suitable handrails where necessary to assist and provide stability to people using the stairway or ramp; and
 - (ii) have suitable landings to avoid undue fatigue of users; and
 - (iii) be suitable for safe passage in relation to the nature, volume and frequency of likely usage; and
 - (iv) have slip-resistant walking surfaces on ramps, and on stairway treads or near the edge of the nosing.

Note: Stairway/landing access requirements (Including minimum dimensions) and maximum ramp gradients must adhere to **AS1428 Design for access and mobility**.

▪ **Barriers To Prevent Falls (3.9.2.2)**

- (a) A continuous barrier must be provided along the side of—
 - (i) any roof to which general access is provided; and
 - (ii) any stairway or ramp; and
 - (iii) a floor, corridor, hallway, balcony, deck, verandah, mezzanine, access bridge or the like; and
 - (iv) any delineated path of access to a building, if the trafficable surface is 1 m or more above the surface beneath (see **Figure 3.9.2.3**).
- (b) The requirements of (a) do not apply to—
 - (i) areas referred to in **3.9.1.2(b)**; or
 - (ii) a retaining wall unless the retaining wall forms part of, or is directly associated with a delineated path of access to a building from the road, or a delineated path of access between buildings; or
 - (iii) a barrier provided to an openable window covered by **3.9.2.5**.

▪ **Construction Of Barriers To Prevent Falls** (3.9.2.3)

(a) The height of a barrier *required* by **3.9.2.2** must be in accordance with the following:

(i) The height must not be less than 865 mm above the nosings of the stair treads or the floor of a ramp.

(ii) The height must not be less than—

(A) 1 m above the floor of any access path, balcony, *landing* or the like (see **Figure 3.9.2.1**); or

(B) 865 mm above the floor of a *landing* to a stair or ramp where the barrier is provided along the inside edge of the *landing* and does not exceed a length of 500 mm.

(b) A transition zone may be incorporated where the barrier height changes from 865 mm on the stair *flight* or ramp to 1 m at the *landing* (see **Figure 3.9.2.2**).

(c) Openings in barriers (including decorative balustrades) must be constructed so that they do not permit a 125 mm sphere to pass through it and for stairs, the opening is measured above the nosing line of the stair treads.

(d) A barrier, except a window serving as a barrier, must be designed to take loading forces in accordance with AS/NZS 1170.1.

AS1428.1 Design For Access And Mobility
Part 1: General Requirements For Access—New Building Work

▪ **Ramps (10.3)**

Ramps shall comply with the following:

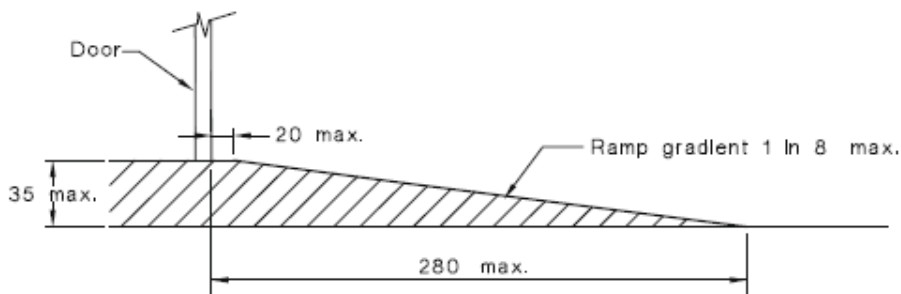
- (a) The maximum gradient of a ramp exceeding 1900 mm in length shall be 1 in 14.
- (b) The gradient of a ramp shall be constant throughout its length with a maximum allowable tolerance of 3% provided no section of the ramp is steeper than 1 in 14.
- (c) Ramps shall be provided with landings, as specified in Clause 10.8, at the bottom and at the top of the ramp and at intervals not exceeding the following:
 - (i) For ramp gradients of 1 in 14, at intervals not greater than 9 m.
 - (ii) For ramp gradients steeper than 1 in 20, at intervals not greater than 15 m.
 - (iii) For ramp gradients between 1 in 14 and steeper than 1 in 20, at intervals that shall be obtained by linear interpolation.

▪ **Threshold ramps (10.5)**

Threshold ramps at doorways on a continuous path of travel shall have—

- (a) a maximum rise of 35 mm;
- (b) a maximum length of 280 mm;
- (c) a maximum gradient of 1:8; and
- (d) be located within 20 mm of the door leaf which it serves, as shown in Figure 21.

The edges of the threshold ramp shall be tapered or splayed at a minimum of 45° where the ramp does not abut a wall.



DIMENSIONS IN MILLIMETRES

FIGURE 21 THRESHOLD RAMP

▪ **Step ramps (10.6)**

General (10.6.1)

Step ramps shall have—

- (a) a maximum rise of 190 mm;
- (b) a length not greater than 1900 mm; and
- (c) a gradient not steeper than 1 in 10.

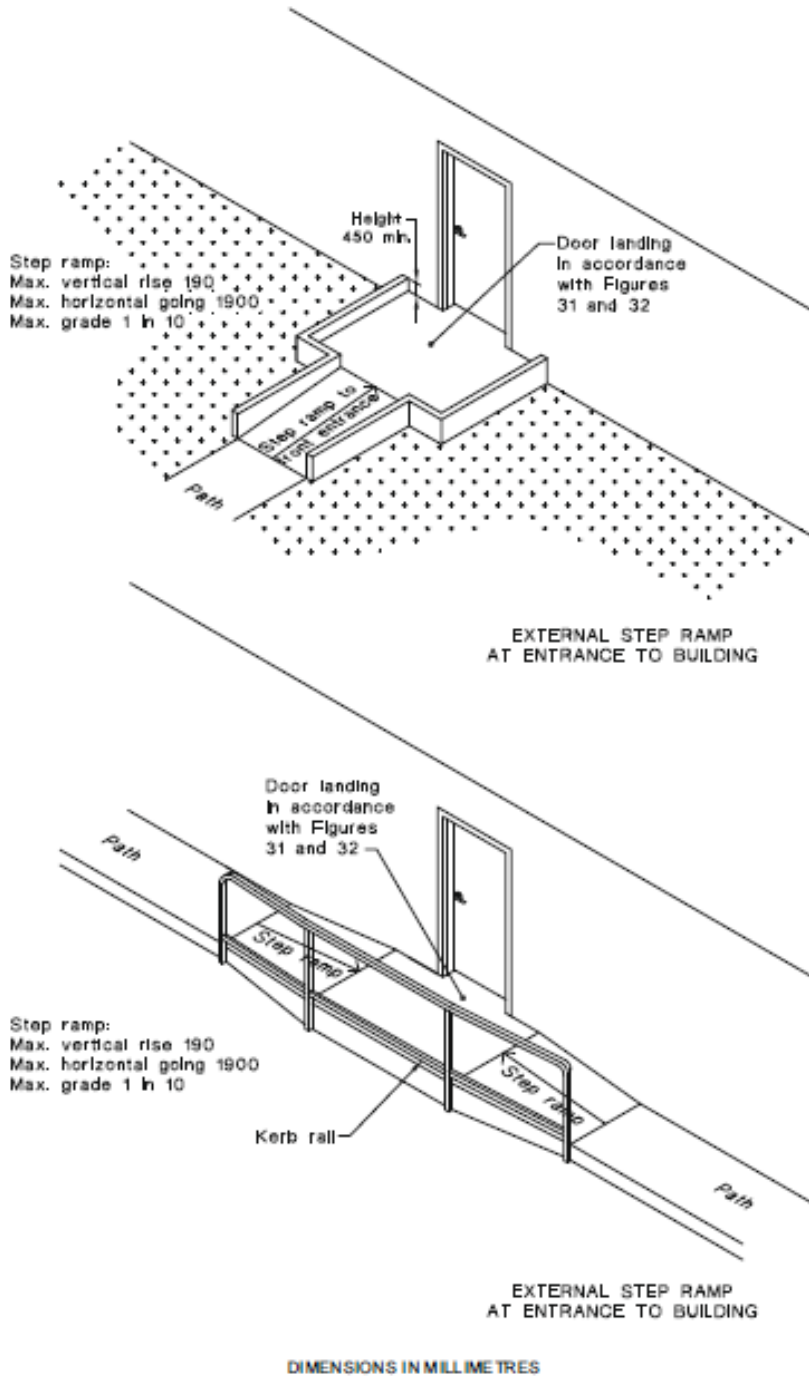


FIGURE 22(B) EXTERNAL STEP RAMPS AT ENTRANCE TO BUILDING

AS2870-2011 RESIDENTIAL SLABS & FOOTINGS

Soil Type Classifications

As per AS2870-2011 there are various soil classes according to the site foundation composition (See table 2.1 below)

- **Site Classification Based On Soil Reactivity**
(AS2870-2011 Residential Slabs & Footings - Section 2.12)

TABLE 2.1
CLASSIFICATION BASED ON SITE REACTIVITY

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes

Note: Class P sites (Not listed above) is classified for areas that have a soft or unstable foundations such as soft clay or silt or loose sands, landslip, mine subsidence, collapsing soils and soils subject to erosion, reactive sites subject to abnormal moisture conditions and sites that cannot be classified in accordance with table 2.1 (Above)

- **Pads And Stumps** (Residential Slabs & Footings - Section 3.6.3)
The size and thickness of pads for stumps or piers shall be selected using AS 1684. Sizes for larger loads shall be selected in accordance with Appendix E.
- **Concrete Grade** (Residential Slabs & Footings - Section 5.3.1)
The grade of concrete shall generally be N20 with slump of 100 mm in accordance with AS 1379, with 20 mm maximum nominal aggregate size, or as specified in Clauses 5.5, or as specified by the designer.
- **Reinforcement** (Residential Slabs & Footings - Section 5.3.2)
Reinforcement in rafts and slabs shall be placed in accordance with the following:
(a) Minimum concrete cover for the reinforcement shall be 40 mm to unprotected ground, 40 mm to external exposure, 30 mm to a membrane in contact with the ground, and 20 mm to an internal surface.

AS1684.4 (2010) TIMBER FRAMING MANUAL

Decking Board Span and Fixing Requirements (AS1684.4 Timber Framing Manual)

The maximum allowable spacing of joists for timber decking shall be in accordance with Table 5.4. Specifications given in Tables 5.4 and 5.5 are applicable to decking boards of nominal width up to 100 mm.

NOTE: Spacing of decking boards should allow for possible shrinkage and/or expansion in service. Decking-board fixing requirements for decking up to 22 mm thickness shall be in accordance with Table 5.5.

**TABLE 5.4
DECKING BOARDS**

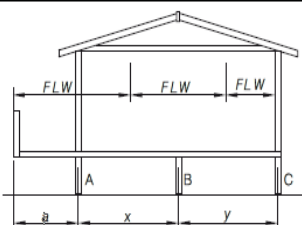
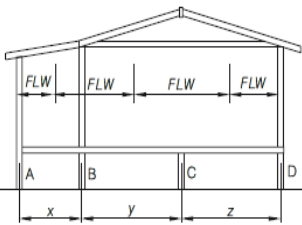
Decking	Minimum grade	Thickness mm	Maximum joist spacing mm
Hardwood	Standard grade (AS 2796.1)	19	500
Cypress	Grade 1 (AS 1810)	19	400
		21	450

- **Note:** Any size not listed in above tables, the span/joist spacing would be required to be approved by the relevant Building Surveyor and or Structural Engineer.

Interpreting Australian Standard Span Tables:

- **N1/N2** - Wind Speed relates to areas which are generally Non-Cyclonic such as Victoria (See table 1.1 -AS1684.2).
- **Seasoned** relates to timbers which are dried to a moisture content generally between 15-18%.
- **Unseasoned** relates to timbers which have a moisture content above 18% and are generally referred to as fresh sawn or "green" timber.
- **Single Span** - This term refers to a timber member that is supported at or near both ends with no immediate supports.
- **Continuous Span** - This term refers to timber members that are supported at or near both ends and at one or more intermediate points such that no span is greater than twice another.
- **Floor Load Width** - (AS1684.2: 2.6.2)

Floor load width (FLW) is the contributory width of floor, measured horizontally, that imparts floor load to a supporting member. FLW shall be used as an input to Span Tables in the Supplements for all bearers and lower storey wall-framing members. The FLW input is illustrated in Figures 2.10 (Single storey) and 2.11 (Two storey).

Type of construction	Location	Floor load width (FLW)
(a) Cantilevered balcony 	Bearer A	$FLW = \frac{x}{2} + a$
	Bearer B	$FLW = \frac{x+y}{2}$
	Bearer C	$FLW = \frac{y}{2}$
(b) Supported balcony 	Bearer A	$FLW = \frac{x}{2}$
	Bearer B	$FLW = \frac{x+y}{2}$
	Bearer C	$FLW = \frac{y+z}{2}$
	Bearer D	$FLW = \frac{z}{2}$

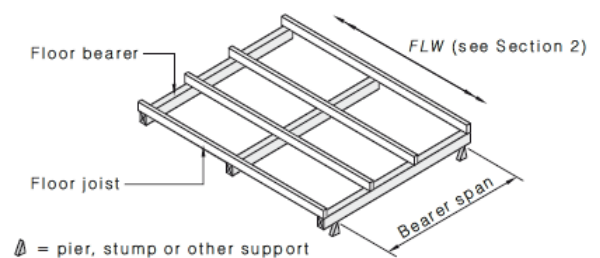


FIGURE 2.10 FLOOR LOAD WIDTH (FLW)—SINGLE- OR UPPER-STOREY CONSTRUCTION

Span Tables And Associated Timbers

- **Treated Pine** seasoned (Pinus Radiata) - AS 1684.2 N1/N2 Supplement 2-2010
(Stress grade seasoned softwood F7)
- **Cypress Pine, White** unseasoned (Callitris Glaucophylla) - AS 1684.2 N1/N2 Supplement 11-2010
(Stress grade unseasoned softwood F7)
- **Messmate/Vic Ash** Mixed species (not limited to) seasoned - AS 1684.2 N1/N2 Supplement 8-2010
(Stress grade seasoned hardwood F17)
- **Spotted Gum, Ironbark, Blackbutt** seasoned - AS 1684.2 N1/N2 Supplement 9-2010
(Stress grade seasoned F27)

AS 1684.2 N1/N2 SUPPLEMENT 2—2010 RESIDENTIAL TIMBER-FRAMED CONSTRUCTION

Seasoned Softwood—Stress Grade F7 (Treated Pine) Span tables for decking

Joist Spacing 450 mm

70x35	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
70x45	NS	NS	NS	NS	1100	NS	NS	NS	NS	NS	NS	NS	1100	NS	NS	NS	NS
90x35	1000	NS	NS	NS	1500	1300	1000	NS	1000	NS	NS	NS	1500	1000	NS	NS	NS
90x45	1400	1300	1000	NS	1700	1700	1400	1000	1400	1000	NS	NS	1700	1600	NS	NS	NS

Joist Spacing 600 mm

70x35	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
70x45	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
90x35	NS	NS	NS	NS	1200	1000	NS	NS	NS	NS	NS	NS	1200	NS	NS	NS	NS
90x45	1100	1000	NS	NS	1500	1500	1000	NS	1100	1000	NS	NS	1500	1100	NS	NS	NS

NOTES:

- i) Maximum floor joist spans supporting roof loads are based on the support of a maximum total sheet roof, framing and ceiling mass of 40 kg/m², maximum total tile roof, framing and ceiling mass of 90 kg/m² and a maximum flooring mass of 40 kg/m².
- ii) A Roof Load Width of "0" shall be used for floor joist not supporting roof loads.
- iii) The sizes given in this table are not suitable where heavy point loads, except those allowed by Clause 4.3.2.4, are supported within the joist span.
- iv) For the lower storey of two storey construction, floor joists shall not support roof or upper floor loads within their span.
- v) Where the ends of joist do not support roof loads, the joist may cantilever 25% of the allowable single span for size used, except that the cantilever shall not exceed 50% of the actual backspan.
- vi) Joists crippled over supports shall be considered as single span joists. Refer Clause 2.7.5.4.
- vii) Where joist size D/B > 4 restraint may be required. Refer Clause 4.2.2.3.
- viii) For design parameters refer to Figure 4.9.