

Stud substitution



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THERE ARE RULES AROUND SUBSTITUTING STUDS WITH DIFFERENT SIZES. BUT CALLS TO THE BRANZ HELPLINE SUGGEST SOME PEOPLE ARE FINDING THESE CONFUSING.

TABLE 8.2 IN NZS 3604:2011 Timber-framed buildings covers stud selection for various configurations:

- For a single or top storey with light or heavy roofs, use Table 8.2(a).
- For the lower of two storeys, or subfloor walls beneath one storey, use Table 8.2(b).
- For subfloor walls beneath two storeys, use Table 8.2(c).

All the tables give stud sizes and spacings for given stud lengths and wall loaded dimensions.

Notes important

It's important to read the notes at the bottom of the tables (see Figure 1).

				1.6												
	S	ECTION	8 – WA	LLS				1 - 0 - 0 - 0	s - SG	8 (see 8.	5.1.1)					
		able 8.2 -	Studs in	loadbea	ring v	walls fo	r all win	d zone	0-01	Inneth	(height) o	f: (m)				
	,	able on			Stud s				sizes for maximum length (1100				3.0			
NN75 26042011 Timber framed			Loaded		2.4			At maximum stud space			g (mm) of:	At maximum stud spacing (m		00		
NZS 3004:2011 11/10/08/-1/amed		Wind	sion*	At maxin	num st	tud spaci	ng (mm) or: 600	30	D	400	600	300) (mm x r	mm) (mm	x mm)	
rs stud selection for various		zone	of wall	300	am) (m	400 m x mm)	(mm x mm	n) (mm x	mm) (m	m x mm) (mm x mm	finn s no				
ç.			(m)	(mm x i	and to				(width	X thicknes	101			70 14	in x 45	
		(a) Single	or top stor	oy - Light	and he	avy roof	00 x 70	90	x 45	90 x 70	90 x 90	90 x 70 90 x 70	90 ×	70 14	40 x 45	
e or top storey with light or heavy		(a) Singre	2.0	-		90 x 45 90 x 45	90 x 70	90	x 45 x 45	90 x 70 90 x 70	90 x 90	90 x 70	90 >	x 70 9	90 x 90	
Table 8.2(a).		Extra his	gh 4.0 6.0	-		90 x 45	90 x 7	0 90	x 35	90 x 70	90 x 70 90 x 70	90 x 4	5 90	x 70 x 70	90 x 90 90 x 90	
		his	2.0 4.0		-	90 x 45	90 x 7	0 90	0 x 35	90 x 70	90 x 70	90 x 4	5 90	× 70	90 x 70	
er of two storeys, or subfloor walls		Very mis	6.0		-	90 x 35	5 90 ×	45 9 45 9	0 x 35 0 x 35	90 x 45 90 x 45	90 x 7	0 90 x	35 90 35 90	x 70 x 70	90 x 70	
ne storey, use Table 8.2(b).		High	4.0		-	90 x 3 90 x 3	5 90 X	45 9	0 x 35	90 x 45 90 x 35	90 x 4	15 90 ×	35 90	0 x 35 0 x 35	90 x 70 90 x 70	
or walls beneath two storeys use			2.	0	-	90 x 3	35 90 ×	35 35	90 x 35	90 x 35	90 x	45 90 x 45 90 x	35 9	0 x 35	90 x 70 90 x 45	
, waits beneath two storeys, ose		Mediu	m 4.	0.0	-	90 x 3	35 90	35	90 x 35 90 x 35	90 x 3	5 90 x	35 90 x 35 90 x	35 8	90 x 35	90 x 45	
z).			2	.0	-	90 x 90 x	35 90	x 35	90 x 35 90 x 35	90 x 3 90 x 3	5 90 x	35 90	x 35	90 x 35	90 x 45	
give stud sizes and spacings for		Low	e	5.0	-	90 x	45 70	x 45	70 x 45	70 × 4	15 90 1 15 90 1	35 70	x 45	90 x 35	90 x 45 90 x 45	5
		Inter	nal s for	2.0 4.0	-	70 >	45 70	x 45 x 45	70 x 45 70 x 45	70 x	45 90	x 35 70	X 45	4.8		
igths and wall loaded dimensions.		all w	all wind going		-	3	3.6			4.3	2 coacing (r	g (mm) of: At maximum stud spa			icing (mm)	of:
				1	At maximum stud spacing (mm) of: At maximum		mum stuu 40	0	500	300	400	(mm X f	mm)			
ortant					300		400	600 m x mm)	(mm x r	nm) (mm :	k mm) (mr	n x mm) (m	m x mm)	(min x m	10	
<i>internet</i>				(m)	(mm x	mm) (mn	n x miny ter			(width x	thickness)	90 x 45	40 x 90	190 x 9	0 190 x	(90 × 90
to read the notes at the bottom of				2.0	140 >	x 45 14	40 x 45	140 x 90 140 x 90	140 x 140 x	90 140	x 90 1	90 x 45 90 x 45	140 x 90 140 x 90	190 x 9	90 190	x 90
(see Figure 1).		E	ctra	4.0	140 : 140 :	x 45 1 x 45 1	40 x 45	140 x 90	140 7	x 90 14	0 x 90	190 x 45	140 x 90 140 x 90	190 x 190 x	45 190	x 90
				2.0	140	x 45 1	140 x 45 140 x 45	140 x 90	140	x 90 14 x 90 14	0 x 90 10 x 90	190 x 45	140 x 90	190 x	45 190	x 90
		`	lery high	4.0 6.0	140	x 45	140 x 45	140 x 9	5 140	x 45 1	40 x 90	140 x 90 140 x 90	140 x 90	90 140 x	(90 190 x 90 190) x 90) x 91
			lich	2.0 4.0	90	0×90	140 x 45	140 x 4 140 x 4	15 140 15 140) x 45 1	40 x 90	140 x 90	140 x 9	5 140	0 x 90 140 0 x 90 140 0 x 90 140	0 x 9
			High	6.0	90	0 x 90 0 x 70	90 x 70	140 ×	45 90	0×90	140 x 45	140 x 90	140 x 4 140 x 4	x 45 140 x 45 140		IO x 9
			Medium	4.0	9	0 x 70	90 x 70 90 x 70	140 X 140 X	45 91	0 x 90	140 x 45 90 x 90	140 x 45	140 x 4	45 140	x 45 14	40 × 9
				6.0 2.0		90 x 35	90 x 70	90 x 90 x	70 9 70 9	0 x 70	90 x 90	140 x 45 140 x 45	140 x -	45 140	1 x 45 1	40 ×
			Low	4.0 6.0	9	90 x 35 90 x 35	90 x 70	90 x	70 9	90 x 70	90 x 90	140 x 45	140 ×	45 14	0 x 45	140 ×
			Internal	2.0		90 x 35	90 x 70 90 x 70	90 x 1	70	90 x 70 90 x 70	90 x 90 90 x 90	140 x 45	140 ×	45 14	0 x 45	140 X
			walls for all wind	4.0		90 x 35	90 x 70	90 x	10							

or 70 x 45.

NOTE -

- (1) Determine the loaded dimension of the wall at floor level and the loaded dimension of the wall above at roof level and use the greater value in this table.
- 140 x 45 may be substituted for 90 x 90. 90 x 35 may be substituted for 70 x 45.
- Studs 70 mm and 90 mm thick may be replaced with studs of 35 mm and 45 mm thickness respectively, provided they are placed at (3)no more than one half the spacing required for the 70 mm and 90 mm stud they are replacing.
- (4)Studs 70 mm and 90 mm thick may be substituted with built-up members sized in accordance with 8.5.1.2 and nailed together in accordance with 2.4.4.7.

Figure 1

NZS 3604:2011 Table 8.2(a) provided by Standards New Zealand under licence 001112.



Note 1

Note 1 says 'Determine the loaded dimension of the wall at floor level and the loaded dimension of the wall above at roof level and use the greater value in this table.'

This means that, where the stud is supporting a floor that, in turn, supports a wall above and that wall supports a roof, the greatest loaded dimension of the floor or roof is used to select the studs from the table (see Figure 2).

Note 2 often misinterpreted

Note 2 says '140 \times 45 may be substituted for 90 \times 90, 90 \times 35 may be substituted for 70 \times 45'.

This means that, where the tables require a 90 × 90 mm stud, it can be substituted with a 140 × 45 mm stud. The reverse is *not* true – where a 140 × 45 mm stud is required in the tables, it *cannot* be substituted with a 90 × 90 mm stud.

If Table 8.2 requires a given depth of stud, any substitution must be with a greater depth stud. For example, where the table requires:

- a 70 mm deep stud, it can be replaced with a 90 mm stud
- a 90 mm deep stud, it can be replaced with a 140 mm stud
- a 140 mm deep stud, it *cannot* be replaced with a lesser depth stud.

The other example - '90 × 35 may be substituted for 70 × 45' - means that, where a 70 × 45 mm stud is required in the table, it can be substituted for a 90 × 35 mm stud, so a deeper (now 90 mm) but thinner stud (see Figure 3). >

Figure 3

Note 2 – Stud substitution.

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Note 3

Studs of 70 mm thickness may be replaced with 35 mm studs and 90 mm thick studs replaced with 45 mm, provided the spacing is reduced to no more than half of the spacing required for the 70 mm and 90 mm studs they are replacing (see Figure 4).

Note 4

Studs 70 mm and 90 mm thick may be substituted with built-up members sized in accordance with NZS 3604:2011 clause 8.5.1.2 and nailed together in accordance with clause 2.4.4.7 (see Figure 5).



Figure 4

Note 3 permits replacement where stud spacing is halved.



Figure 5

Note 4 permits replacement with studs built up in accordance with NZS 3604:2011 clause 8.5.1.2.