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Table 5K
Maximum backfill heights for wood foundation studs for exterior walls with wood sleeper or concrete slab floors or for crawl space foundations, stud length 3.0 m, three storey, without masonry veneer

(See Clause 9.1 and Table 1.)

Building width, m	Lumber grouping	Lumber grade	Maximum backfill height, mm — Supporting three storeys above foundation, without masonry veneer							
			4.0 kPa ground snow load; 0.2 kPa rain load				2.0 kPa ground snow load; 0.2 kPa rain load			
			38 mm x 140 mm studs		38 mm x 184 mm studs		38 mm x 140 mm studs		38 mm x 184 mm studs	
			406	305	406	305	406	305	406	305
7 m with centre support or 5 m without centre support	Spec 1	SS	1500	1700	2000	2300	1550	1700	2050	2300
		No.2	1200	1500	1700	2000	1250	1550	1700	2000
	Spec 2	SS	1550	1750	2000	2350	1550	1750	2050	2350
		No.2	1200	1450	1600	1850	1250	1500	1650	1900
	Spec 3	SS	N/A	1400	1600	1900	N/A	1450	1650	1900
		No.2	N/A	1200	1350	1600	N/A	1250	1400	1650
10 m with centre support or 8 m without centre support	Spec 1	SS	N/A	1600	1850	2250	N/A	1650	1900	2250
		No.2	N/A	1250	1500	1850	N/A	1350	1550	1900
	Spec 2	SS	N/A	N/A	N/A	2250	N/A	N/A	N/A	2300
		No.2	N/A	N/A	N/A	1800	N/A	N/A	N/A	1800
	Spec 3	SS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		No.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12 m with centre support	Spec 1	SS	N/A	1650	1900	2250	N/A	1700	1950	2300
		No.2	N/A	1300	1550	1900	N/A	1400	1600	1950
	Spec 2	SS	N/A	N/A	N/A	2250	N/A	1750	1950	2300
		No.2	N/A	N/A	N/A	1800	N/A	1350	1550	1850
	Spec 3	SS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1850

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Table 5K (Concluded)

Building width, m	Lumber grouping	Lumber grade	Maximum backfill height, mm — Supporting three storeys above foundation, without masonry veneer							
			4.0 kPa ground snow load; 0.2 kPa rain load				2.0 kPa ground snow load; 0.2 kPa rain load			
			38 mm x 140 mm studs		38 mm x 184 mm studs		38 mm x 140 mm studs		38 mm x 184 mm studs	
			406	305	406	305	406	305	406	305
		No.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1550

Note: *See notes to Table 5A.*

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Table 5L
Maximum backfill heights for wood foundation studs for exterior walls with wood sleeper or concrete slab floors or for crawl space foundations, stud length 3.0 m, three storey, with one or two storey masonry veneer

(See Clause 9.1 and Table 1.)

Building width, m	Lumber grouping	Lumber grade	Maximum backfill height, mm — Supporting three storeys above foundation, with one or two storeys masonry veneer							
			4.0 kPa ground snow load; 0.2 kPa rain load				2.0 kPa ground snow load; 0.2 kPa rain load			
			38 mm x 140 mm studs		38 mm x 184 mm studs		38 mm x 140 mm studs		38 mm x 184 mm studs	
			406	305	406	305	406	305	406	305
7 m with centre support or 5 m without centre support	Spec 1	SS	N/A	1700	1950	2300	1400	1700	1950	2300
		No.2	N/A	1400	1600	1950	1100	1450	1650	1950
	Spec 2	SS	N/A	1750	1950	2300	N/A	1750	2000	2300
		No.2	N/A	1350	1550	1850	N/A	1400	1600	1850
	Spec 3	SS	N/A	N/A	N/A	1850	N/A	N/A	N/A	1850
		No.2	N/A	N/A	N/A	1550	N/A	N/A	N/A	1600
10 m with centre support or 8 m without centre support	Spec 1	SS	N/A	N/A	N/A	2150	N/A	N/A	N/A	2200
		No.2	N/A	N/A	N/A	1800	N/A	N/A	N/A	1850
	Spec 2	SS	N/A	N/A	N/A	2200	N/A	N/A	N/A	2250
		No.2	N/A	N/A	N/A	1750	N/A	N/A	N/A	1750
	Spec 3	SS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		No.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12 m with centre support	Spec 1	SS	N/A	N/A	N/A	2200	N/A	1600	1850	2250
		No.2	N/A	N/A	N/A	1800	N/A	1250	1550	1850
	Spec 2	SS	N/A	N/A	N/A	2000	N/A	N/A	N/A	2250
		No.2	N/A	N/A	N/A	1750	N/A	N/A	N/A	1800

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Table 5L (Concluded)

Building width, m	Lumber grouping	Lumber grade	Maximum backfill height, mm — Supporting three storeys above foundation, with one or two storeys masonry veneer							
			4.0 kPa ground snow load; 0.2 kPa rain load				2.0 kPa ground snow load; 0.2 kPa rain load			
			38 mm x 140 mm studs		38 mm x 184 mm studs		38 mm x 140 mm studs		38 mm x 184 mm studs	
			406	305	406	305	406	305	406	305
	Spec 3	SS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		No.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: *See notes to Table 5A.*

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Table 6
Plywood sheathing requirements
(See Clauses 9.3.1 and 10.3.1.)

	Permissible backfill heights, mm (ft-in)			
Plywood alignment on wall	**Stud spacing, mm (in)**	**Plywood thickness**		
		12.5 mm	**15.5 mm**	**18.5 mm**
Face grain perpendicular to studs	300 (12) 400 (16)	2900 (9-6) 2200 (7-3)	3500 (11-6) 2600 (8-6)	3600 (11-10) 3600 (11-10)
Face grain parallel to studs	300 (12) 400 (16)	2100 (6-11) 1300 (4-3)	2700 (8-10) 2000 (6-7)	3000 (9-10) 2200 (7-3)

Notes:
1) *Backfill height is defined in Clause 3.*
2) *Design assumptions of Clause 4.3 apply.*
3) *Plywood thicknesses shown are for unsanded sheathing grade plywood having at least four plies.*
4) *Four-ply plywood shall be installed with face grain perpendicular to studs.*
5) *Plywood must be manufactured of treatable species and be clearly marked to indicate it is of such a layup (see Clause 5.4).*

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Table 7A
Minimum fastening requirements
(See Clauses 8.2.6, 9.4.1–9.4.3, 10.4.1–10.4.3, 10.7.2.1, 12.2.1.1, 12.2.1.2, 12.3.1.2, 12.3.2, 13.3.1, and 13.7.)

	Construction detail	Minimum length of nails, mm (in)	Minimum number or maximum spacing of fasteners
Foundation wall framing (nails)	Bottom wall plate to wood footing plate	76 (3)	600 mm (24 in) centres
	Bottom wall plate to wall stud (end nail)	76 (3)	2 each stud
	(toe nail)	63 (2-1/2)	3 each stud
	Top wall plate to stud (end nail)		
	– 38 x 140 mm (2 × 6 in) stud	89 (3-1/2)	3 each stud
	– 38 x 184 mm (2 × 8 in) stud	89 (3-1/2)	4 each stud
	Plate to plate nailing for doubled top plates		
	– 38 x 140 mm (2 × 6 in) stud	76 (3)	2 each stud space
	– 38 x 184 mm (2 × 8 in) stud	76 (3)	3 each stud space
	Horizontal wall blocking to wall stud	76 (3)	2 each end of each block
Floor framing (nails)	End wall blocking to floor joists	76 (3)	400 mm (16 in) centres
	Full depth end wall blocking to floor joists (end nail)	76 (3)	2 each end of each block
	Suspended floors—floor joist to ledger and to top plate of interior bearing support (toe nail)	76 (3)	2 per joist
	Ledger strip to wall stud	89 (3-1/2)	3 each stud
Floor attachment to foundation wall (nails and framing straps)	Floor joists and blocking at top of foundation wall to top wall plate (toe nail)		
	– 38 x 140 mm (2 × 6 in) wall plate	89 (3-1/2)	3 per joist or per block
	– 38 x 184 mm (2 × 8 in) wall plate	89 (3-1/2)	4 per joist or per block
	In addition, framing straps are required where backfill height exceeds a) 1500 mm (5 ft) with sleeper or slab floor; or	76 (3)	1 framing strap at every stud, with 3 nails into floor header and 3 nails into inner face of foundation wall stud

(Continued)

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Table 7A (Concluded)

	Construction detail	Minimum length of nails, mm (in)	Minimum number or maximum spacing of fasteners
	b) 2000 mm (6 ft-6 in) with suspended wood floor.		
Wall sheathing and subfloor (nails or staples)	Sheathing to wall framing* and subfloor to floor joists		
	– Nails	51 (2)	150 mm (6 in) centres along edges and 300 mm (12 in) centres along intermediate supports
	– Staples	51 (2)	100 mm (4 in) centres along edges and 200 mm (8 in) centres along intermediate supports
Framing around windows (framing anchors)	In addition to normal nailing requirements, framing anchors are required where backfill height exceeds 1200 mm (4 ft), at sill plate to		
	– cripple studs	51 (2)	1 framing anchor at each point, nailed as required by manufacturer.
	– jack studs	51 (2)	2 framing anchors at each point, nailed as required by manufacturer.
Additional nailing requirements for all high wind and seismic locations	Rim joist, trimmer joist or blocking to sill plate or top wall plate - toe nail	82	150 mm (6 in) on centre
	Bottom wall plate or sole plate to floor joists, rim joists or blocking	82	150 mm (6 in) on centre
High wind locations or where $0.70 < S_a(0.2) \leq 0.90$	Sheathing to wall framing for uniform backfill height	63	150 mm (6 in) centres along panel edges and 300 mm (12 in) centres along intermediate supports
Locations where $0.90 < S_a(0.2) \leq 1.80$	Sheathing to wall framing for uniform backfill height	63	75 mm (3 in) centres along panel edges and 300 mm (12 in) centres along intermediate supports
Locations where $0.70 < S_a(0.2) < 1.80$	Doubled top plate splice connections	76	Refer to Table 7B

** This Table applies for sheathing to wall framing nailing when backfill height is uniform. When backfill height is not uniform, per the Note to Clause 4.3, Tables 8A to 8E shall apply.*

Note: *Nails used in this Table shall have minimum diameters of*

a) *2.84 mm for 51 mm long nails;*
b) *3.25 mm for 63 mm long nails;*
c) *3.66 mm for 76 mm long nails; and*
d) *4.06 mm for 89 mm long nails.*

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Table 7B
Fasteners in doubled top plate splice connections where $0.70 < S_a(0.2) \leq 1.80$

(See Clause 13.3.3 and Table 7A.)

Sa(0.2)	Minimum number of nails on each side of doubled top plate splice				
	No masonry veneer			Masonry veneer on one or two storeys	
	Number of floors supported on foundation*				
	1	2	3	1	2
$0.70 < S_a(0.2) \leq 0.80$	2	5	8	3	8
$0.80 < S_a(0.2) \leq 0.90$	2	5	8	4	8
$0.90 < S_a(0.2) \leq 1.00$	3	6	10	4	10
$1.00 < S_a(0.2) \leq 1.10$	3	7	11	5	11
$1.10 < S_a(0.2) \leq 1.20$	3	7	11	5	12
$1.20 < S_a(0.2) \leq 1.30$	3	8	12	5	12
$1.30 < S_a(0.2) \leq 1.35$	4	8	12	5	13
$1.35 < S_a(0.2) \leq 1.80$	4	8	13	5	13

* *All constructions include support of a roof load in addition to the indicated number of floors.*

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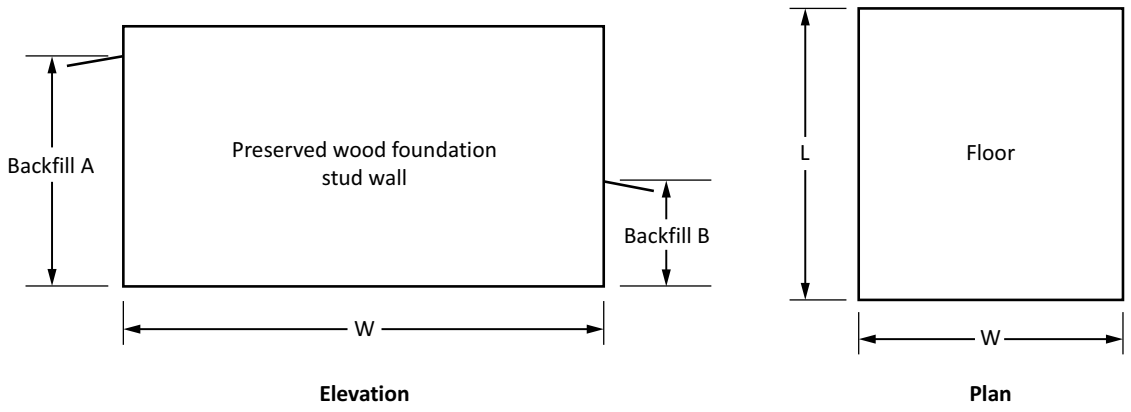
Table 8A
Perimeter nail spacings for differential backfill heights
backfill A = 3 m (10 ft)

(See Clauses 9.4.4 and 10.4.4 and Tables 7A and 8B–8E.)

			Required nail spacing along panel edges, mm (in*)					
			L/W					
Backfill, B, m (ft)	**Min. nail length, mm (in)**	**Min common nail diameter, mm**	**0.4**	**0.6**	**0.8**	**1.0**	**1.2**	**1.6**
≤0.9 (3)	51 (2.0)	2.84 – 3.24	100	75	—	—	—	—
>0.9 (3)	51 (2.0)		100	75	—	—	—	—
>1.8 (6)	51 (2.0)		150	100	75	—	—	—
>2.4 (8)	51 (2.0)		150	150	100	100	75	—
≤0.9 (3)	64 (2.5)	3.25 – 3.90	150	100	75	—	—	—
>0.9 (3)	64 (2.5)		150	100	75	—	—	—
>1.8 (6)	64 (2.5)		150	100	75	75	—	—
>2.1 (7)	64 (2.5)		150	150	100	75	75	—
>2.4 (8)	64 (2.5)		150	150	150	100	100	75



Elevation **Plan**

* *To determine the perimeter nail spacing in inches, substitute for the tabulated values as follows: 6 in for 150 mm, 4 in for 100 mm; and 3 in for 75 mm.*

Notes:

1) *All panel edges are backed with 38 mm (2 in) or wider framing. Sheathing is installed either horizontally or vertically. Space nails at 300 mm (12 in) oc along intermediate framing members.*
2) *Backfill heights and overall foundation dimensions are as defined by the figures shown in Table 8B.*
3) *Openings shall not be permitted in racking walls conforming to Tables 8A to 8E.*
4) *The nail yield strength is at least*
   a) *660 MPa for 2.84 – 3.24 mm diameter nails; and*
   b) *635 MPa for 3.25 – 3.90 mm diameter nails.*

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Table 8B
Perimeter nail spacings for differential backfill heights
backfill A = 2.4 m (8 ft)

(See Clauses 9.4.4 and 10.4.4 and Tables 7A and 8A.)

			Required nail spacing along panel edges, mm (in*)							
			L/W							
Backfill, B m (ft)	**Min. nail length, mm (in)**	**Min nail diameter, mm**	**0.4**	**0.6**	**0.8**	**1**	**1.2**	**1.4**	**1.6**	**2**
≤0.6 (2)	51 (2.0)	2.84 – 3.24	150	100	75	—	—	—	—	—
>0.6 (2)	51 (2.0)		150	100	75	75	—	—	—	—
>0.9 (3)	51 (2.0)		150	100	100	75	—	—	—	—
>1.5 (5)	51 (2.0)		150	150	100	100	75	—	—	—
>1.8 (6)	51 (2.0)		150	150	150	100	100	75	75	—
≤0.6 (2)	64 (2.5)	3.25 – 3.90	150	150	100	75	75	—	—	—
>0.6 (2)	64 (2.5)		150	150	100	75	75	—	—	—
>0.9 (3)	64 (2.5)		150	150	100	100	75	—	—	—
>1.2 (4)	64 (2.5)		150	150	100	100	75	75	—	—
>1.5 (5)	64 (2.5)		150	150	150	100	100	75	75	—
>1.8 (6)	64 (2.5)		150	150	150	150	100	100	100	75

* *Refer to Notes in Table 8A.*

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