

FLOATING DECK AND LANDING BUILDING GUIDELINES

For decks that use deck blocks and not full foundations

Criteria For Using Deck Block Foundation

1. Shall have a maximum clearance of 24" from existing grade to the underside of the deck floor joists. [9.12.2.2.(7)(c)]
2. Shall not exceed 592ft² in deck area [9.12.2.2.(7)(b)]
3. Does not support any roof structure [9.12.2.2.(7)(d)]
4. Is not attached to another structure [9.12.2.2.(7)(e)]
5. If attached to another structure, it needs to be demonstrated that differential movement will not adversely affect the performance of the structure that it is attached to. [9.12.2.2.(7)(e)] This demonstration will need to be by way of stamped letter from a Licensed Professional Engineer in the Province of Ontario.

Floor Joist Requirements

1. Floor joists must meet requirements of Table A-1 of the 2012 Ontario Building Code. (Quick reference chart at the bottom of this document)
2. Floor joist must have a minimum of one row of blocking as per Table A-1 and the chart below.
3. Floor joist **MUST** be minimum 2x8 joists if the deck is greater than 24" to walking surface.
4. Maximum cantilever of a floor joist is 24"
5. If using hangers for joists the hangers need to have proper fasteners (no deck screws) proper fasteners are normally SD Screws, 10dx nails and 10d nails and proper 3" nails in all shear holes of the hanger (ask supplier to show you where the shear holes are).

Beam Requirements

1. Maximum beam cantilever past its support at any time one joist space.
2. All built up beams must be a minimum of a 3ply beam [9.23.4.2.(3)] [Table A-8].
3. Built up beams must be constructed as per requirements of [9.23.8.3].
4. Beams (other than sandwich beams) must provide full bearing on 6x6 posts and be securely fastened to the post below the beam.
5. Sandwich Beams require a minimum of 2 – 1/2" diameter galvanized carriage bolts at each post with washers on the thread side.
6. Sandwich Beams must have solid blocking at each beam end to resist twisting.
7. Sandwich Beams are permitted as long as the spans are compliant with the span table below.
8. Beams that are built up are to meet requirements of the beam splicing as per the 2012 OBC. (see below)

Span (achieved by adding ½ of the span of the joists on each side of a beam) * Cantilever joist on the other side of beam need whole cantilever considered not just half.	2x6 Sandwich Beam (clear span of beam between supports)	2x8 Sandwich Beam (clear span of beam between supports)	2x10 Sandwich Beam (clear span of beam between supports)	2x12 Sandwich Beam (clear span of beam between supports)
8ft	5'9"	7'1"	8'7"	10'0"
10ft	5'2"	6'4"	7'9"	8'11"
12ft	4'9"	5'9"	7'0"	8'2"

Foundation and Post Requirements

1. 4x4 posts are permitted only with sandwich beams on decks that are 24" or less from grade.
2. All built up 3 ply beams must be on a minimum of a 6x6 post and secured to the post.
3. Deck Block foundations should be placed on compacted granular with organic soil removed, a patio stone can also help disperse the load of the deck.

Stair Requirements

1. Stairs to be minimum width of 2'10" [9.8.2.1.(3)]
2. Stairs to have a flat landing area at bottom of and top of stairs which is at minimum the width of the stair and protrudes a minimum of 3'0" from the last step edge [TBL 9.8.6.3]
3. Stairs to have a minimum rise (distance from top of step to top of next step) of 5" [TBL 9.8.4.1]
4. Stairs to have a maximum rise (distance from top of step to top of next step) of 7 ⁷/₈" [TBL 9.8.4.1]
5. Stairs to have a minimum run (horizontal surface of stringer used to support tread) of 8 ¹/₄" [TBL 9.8.4.1]
6. Stairs to have a maximum run (horizontal surface of stringer used to support tread) of 14" [TBL 9.8.4.1]
7. Stairs to have a minimum tread depth (tread is the physical surface of step) of 9 ¹/₄" [TBL 9.8.4.1]
8. Stairs to have a maximum tread depth (tread is the physical surface of step) of 14" [TBL 9.8.4.1]
9. Nosing (distance of tread past the support of the string run shall not exceed 1" [9.8.4.2.(2)]
10. If using 5/4 decking then stringers must be maximum 16" o/c spacing [Suggested maximum]
11. If using minimum 1 ¹/₂" thick stair material stringers must be maximum 24" o/c spacing [Suggested Maximum]
12. Stairs require a handrail when exceeding 3 risers (including the riser from the step from the ground to the first stair tread)
13. Stair Stringers to be minimum 2x10 dimensional lumber

Guard Requirements (If Applicable)

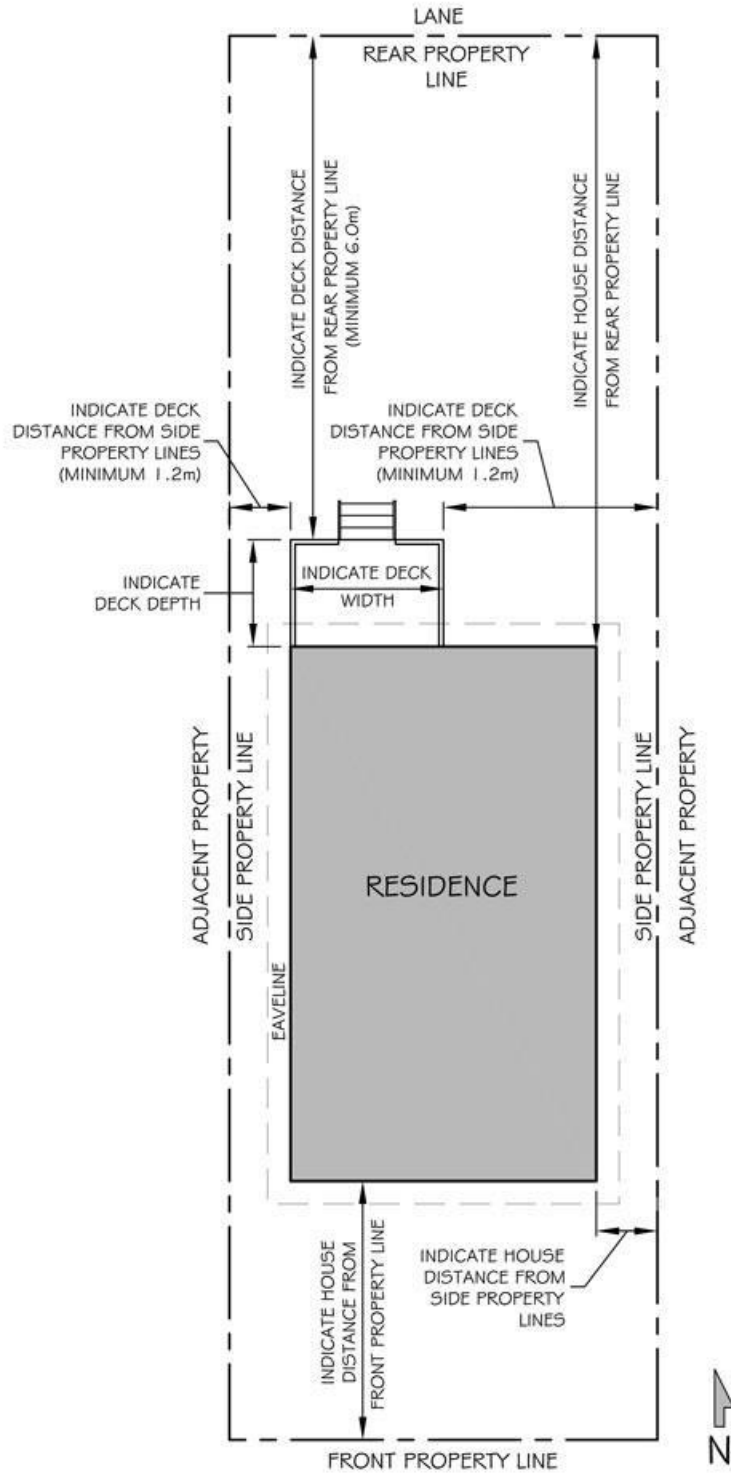
1. Guards are required where your walking surface of the deck or stair surface is greater than 24" above the grade surrounding the deck.
2. Where guards are required the minimum floor joist size is 2x8".
3. Guards on stairs are measured from the front edge of the tread on a right angle to the top of the guard.
4. Guards cannot be climbable and must not have any horizontal plane between 5.5" and 36" off the walking surface of the deck (The top surface of the **bottom rail** on guards cannot exceed 5.5" in height off the walking surface of the deck it serves)
5. Guards must be installed as per SB-7 of the 2012 Ontario Building code
6. Guards that have a bottom and top rail shall have a **MAXIMUM** span between 4x4 guard posts of 5'
7. All 4x4 posts in a guard system **MUST** be installed behind the rim joist and cannot be notched in any manner.
8. 4x4 posts need two points of contact at all times to structural adequacy as per SB-7 ([Available to download on the main page](#))
9. The most common connections are:
 - EA 1-5 Top and Bottom Rail Connection Details
 - EB-3 for posts that sit adjacent to the rim board and a joist.
 - EB-2 where the max post span falls in a joist space and you cannot put adjacent to another joist.
 - EB-6 where post is where joists are parallel to each other and a piece of blocking is installed.
 - ED-1 Cantilever Picket System where floor decking long dimension is parallel to rim joist.
 - ED-2 Cantilever Picket System where floor decking short dimension is parallel to rim joist.
 - ED-5 Corner joint for Cantilever Picket (min 10 pickets on each side of joint)


10. All cantilever guard systems require a post at the termination point of all guards and a post at all change in direction that does not have a minimum of 10 pickets in the guard on each side of the change of direction.

Drawing Requirements

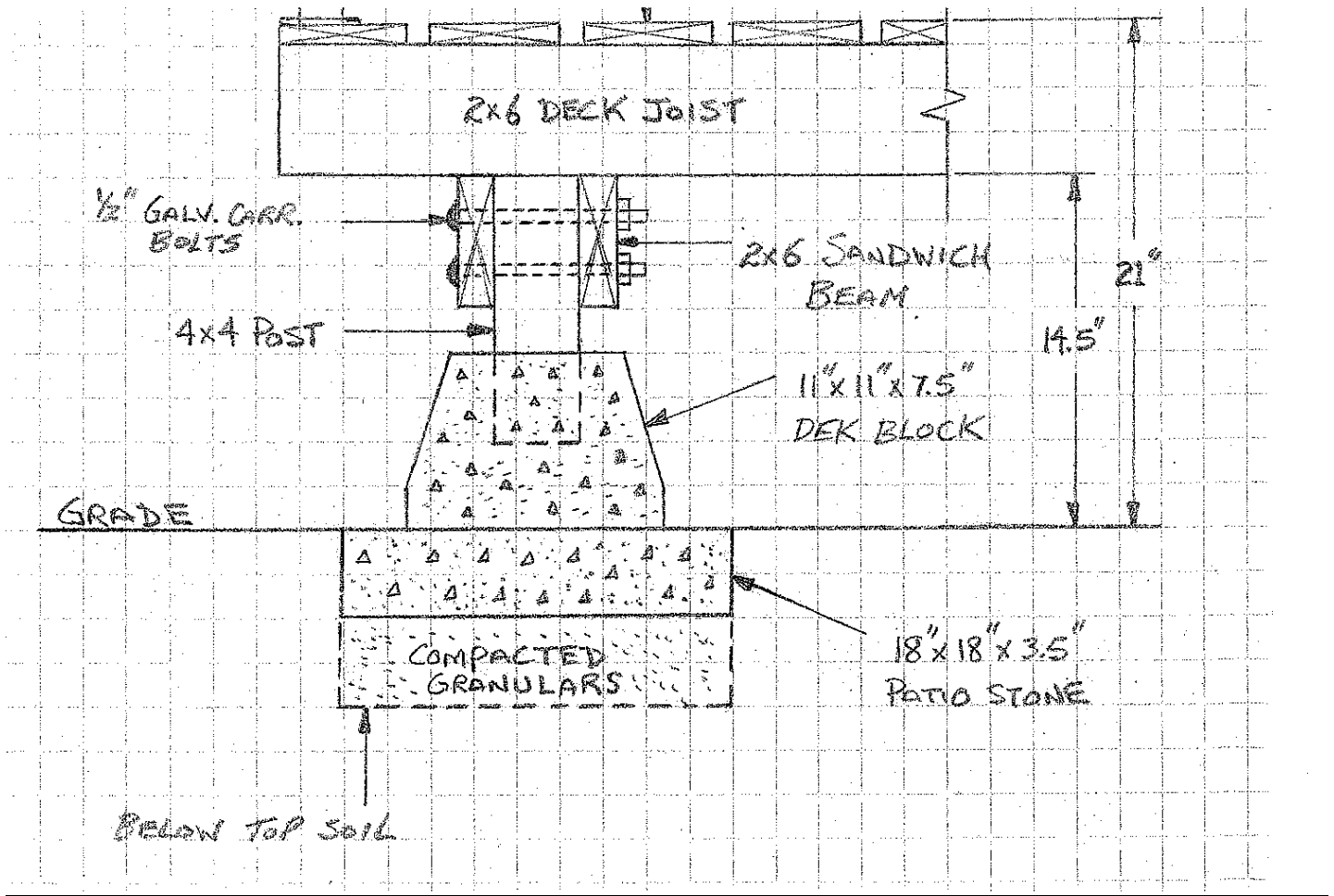
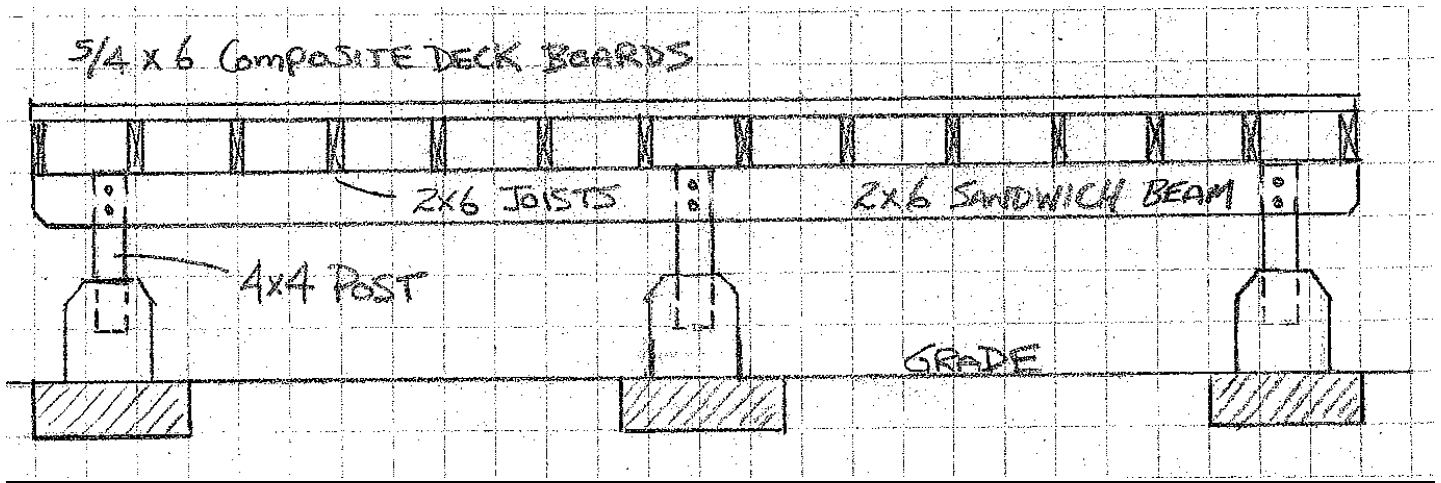
1. One "Plan View" drawing (looking down at deck from above) showing the following:
 - Beam location and size
 - Joist direction, size and spacing
 - Location of posts and deck blocks supporting beam
 - Spans between beam support posts
 - Beam cantilever distance (if applicable)
 - Dimensions of the deck
 - Area of the deck
 - Stair location (if applicable)
 - The location of the house relative to the new deck
 - Stair dimensions
 - Owners signature and date on each page
2. Two "Cross Section" drawings (looking at the side of the deck) showing the following:
 - Beam Location and size
 - Post and Deck Block location and size
 - Joist Size and orientation
 - Beam connection details
 - Height to bottom of joist from grade
 - Height to walking surface from grade
 - Joist Cantilever (if applicable)
 - Stair dimensions
 - Owners signature and date on each page
3. Siteplan showing the following:
 - House
 - Property lines
 - Deck(s) location(s)
 - Distance from each deck edge to the property line that is parallel to it
 - Address
 - Street location
 - Driveway location

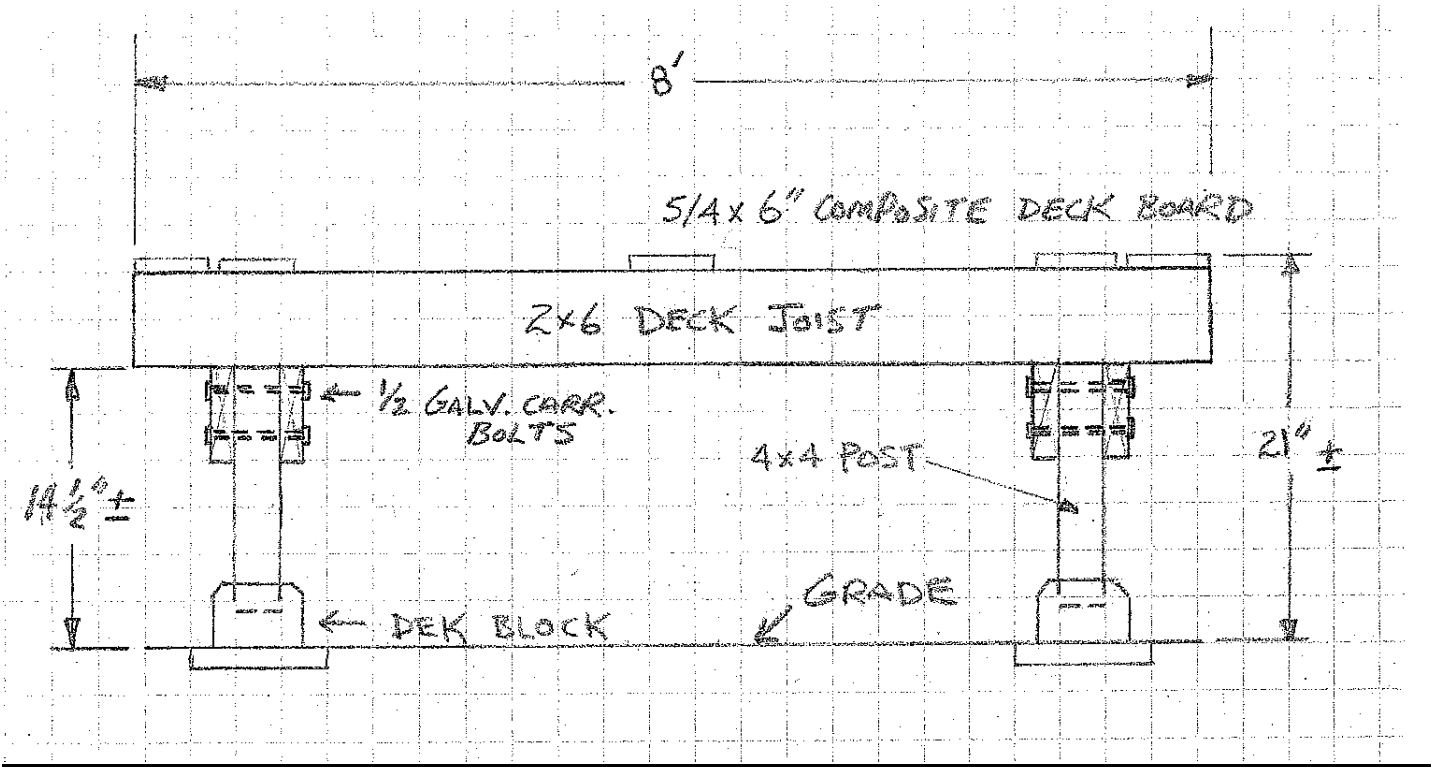
Sample Siteplan



	SAMPLE ELEVATION	DATE: MARCH 3, 2016
	ADDRESS: 123 FOUR ST NW	SCALE: $\frac{3}{16}'' = 1'$

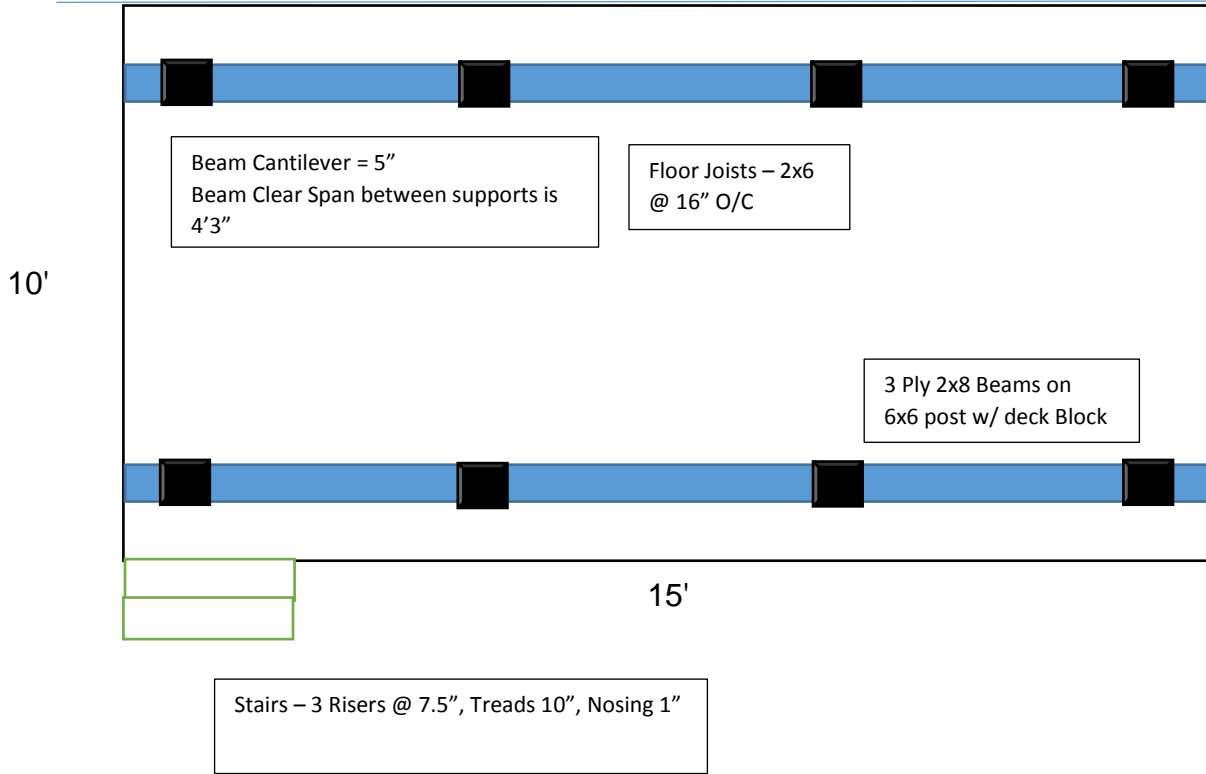
Sample Cross Sections





Sample Plan View Drawing

HOUSE (With Floating Deck) AREA = 150ft² Deck Surface < 24" to Grade.



Joist Span and Spacing Chart

Max Deck Joist Spans for S.P.F. No 1&2 Joists with Solid Bridging at 1/2 Span (Imperial)			
	On Center Joist Spacing		
Joist Size	12"	16"	24"
2x4	6'6"	5'11"	5'2"
2x6	10'3"	9'4"	8'2"
2x8	12'6"	11'8"	10'8"
2x10	14'6"	13'8"	12'10"
2x12	16'5"	15'5"	14'6"

Max Deck Joist Spans for Eastern White Cedar with Solid Bridging at 1/2 Span (imperial)			
	On Center Joist Spacing		
Joist Size	12"	16"	24"
2x4	5'8"	5'1"	4'5"
2x6	8'11"	7'9"	6'4"
2x8	10'11"	9'6"	7'9"
2x10	12'9"	11'7"	9'5"
2x12	14'6"	13'5"	11'0"

Max Beam Span Chart (see notes at bottom of page)

Forming Part of Sentence 9.23.4.2.(3)

Commercial Designation	Grade	Supported Length, m ⁽³⁾⁽⁴⁾	Maximum Span, m ⁽⁵⁾⁽⁶⁾								
			Size of Built-up Beam, mm								
			3 – 38 x 184	4 – 38 x 184	5 – 38 x 184	3 – 38 x 235	4 – 38 x 235	5 – 38 x 235	3 – 38 x 286	4 – 38 x 286	5 – 38 x 286
Spruce – Pine – Fir (includes Spruce (all species except Coast Sitka Spruce), Jack Pine, Lodgepole Pine, Balsam Fir and Alpine Fir)	Select Structural	2.4	3.17	3.49	3.76	4.05	4.46	4.81	4.93	5.42	5.73
		3.0	2.95	3.24	3.49	3.76	4.14	4.46	4.58	5.04	5.42
		3.6	2.77	3.05	3.29	3.54	3.90	4.20	4.31	4.74	5.11
		4.2	2.63	2.90	3.12	3.36	3.70	3.99	4.09	4.51	4.85
		4.8	2.52	2.77	2.99	3.22	3.54	3.81	3.82	4.31	4.64
		5.4	2.42	2.67	2.87	3.09	3.41	3.67	3.60	4.14	4.46
		6.0	2.34	2.57	2.77	2.95	3.29	3.54	3.32	3.95	4.31
	No. 1 and No. 2	2.4	3.07	3.38	3.64	3.92	4.32	4.65	4.57	5.25	5.59
		3.0	2.85	3.14	3.38	3.52	4.01	4.32	4.09	4.72	5.25
		3.6	2.63	2.95	3.18	3.22	3.71	4.06	3.73	4.31	4.82
		4.2	2.44	2.80	3.02	2.98	3.44	3.84	3.46	3.99	4.46
		4.8	2.28	2.63	2.89	2.79	3.22	3.60	3.23	3.73	4.17
		5.4	2.15	2.48	2.77	2.63	3.03	3.39	3.05	3.52	3.93
		6.0	2.04	2.35	2.63	2.49	2.88	3.22	2.89	3.34	3.73
	2.4	2.84	3.12	3.36	3.62	3.99	4.30	4.33	4.65	5.23	
	3.0	2.63	2.90	3.12	3.34	3.70	3.99	3.88	4.47	4.85	

Notes to Table A-8:

- (1) Beam spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* on the floors does not exceed that specified for residential areas as described in Table 4.1.5.3.
- (2) When the floors have a concrete topping of not more than 51 mm, the spans must be multiplied by 0.8.
- (3) Supported length means half the sum of the joists spans on both sides of the beam.
- (4) Straight interpolation may be used for other supported lengths.
- (5) Spans are clear spans between supports. For total span, add two bearing lengths.
- (6) 3-ply beams with supported lengths greater than 4.2 m require minimum bearing length of 114 mm. All other beams require minimum bearing length of 76 mm.

FLOOR NAILING

BUILDING CODE REFERENCES

- DIVISION B
- 9.23.3.3. Prevention of Splitting
- 9.23.3.4. Nailing of Framing
- 9.23.8.3. Built-up Wood Beams

Floor nailing requirements can be found in Article 9.23.3.4. of the Code. These nailing provisions encompass all nailing requirements for houses. The requirements as they apply to the floor system alone follow.

NAILING OF FLOOR FRAMING

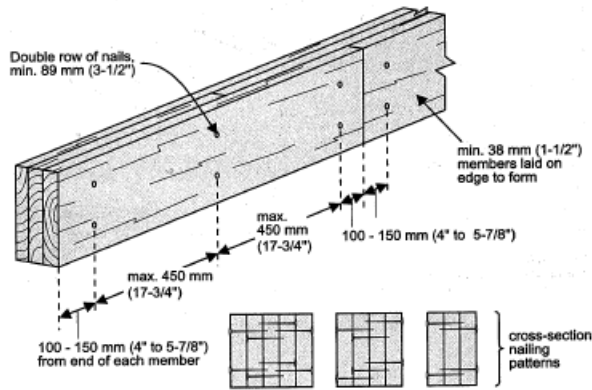
Figure 3.11 identifies the minimum nail length and number to be used in the framing of floors. Nails must be staggered in the direction of the grain and kept well in from the edges of the member to minimize splitting of the wood.

Nailing for Framing		
Construction Detail	Minimum Length Nails mm (Inches)	Minimum Number or Maximum Spacing of Nails
• Floor joist to plate - toe nail	82 (3-1/4")	2
• Wood or metal strapping to underside of floor joists	57 (2-1/4")	2
• Cross bridging to joists	57 (2-1/4")	2 each end
• Double header or trimmer joists	76 (3")	300 mm (11-3/4") o.c.
• Floor joist to stud (balloon construction)	76 (3")	2
• Ledger strip to wood beam	82 (3-1/4")	2 per joist
• Joist to joist splice	76 (3")	2 at each end
• Tail joist to adjacent header joist (end nailed) around openings	82 (3-1/4") 101 (4")	5 3
• Each header joist to adjacent trimmer joist (end nailed) around openings	82 (3-1/4") 101 (4")	5 3

Figure 3.11
Nailing for Framing (9.23.3.4.)

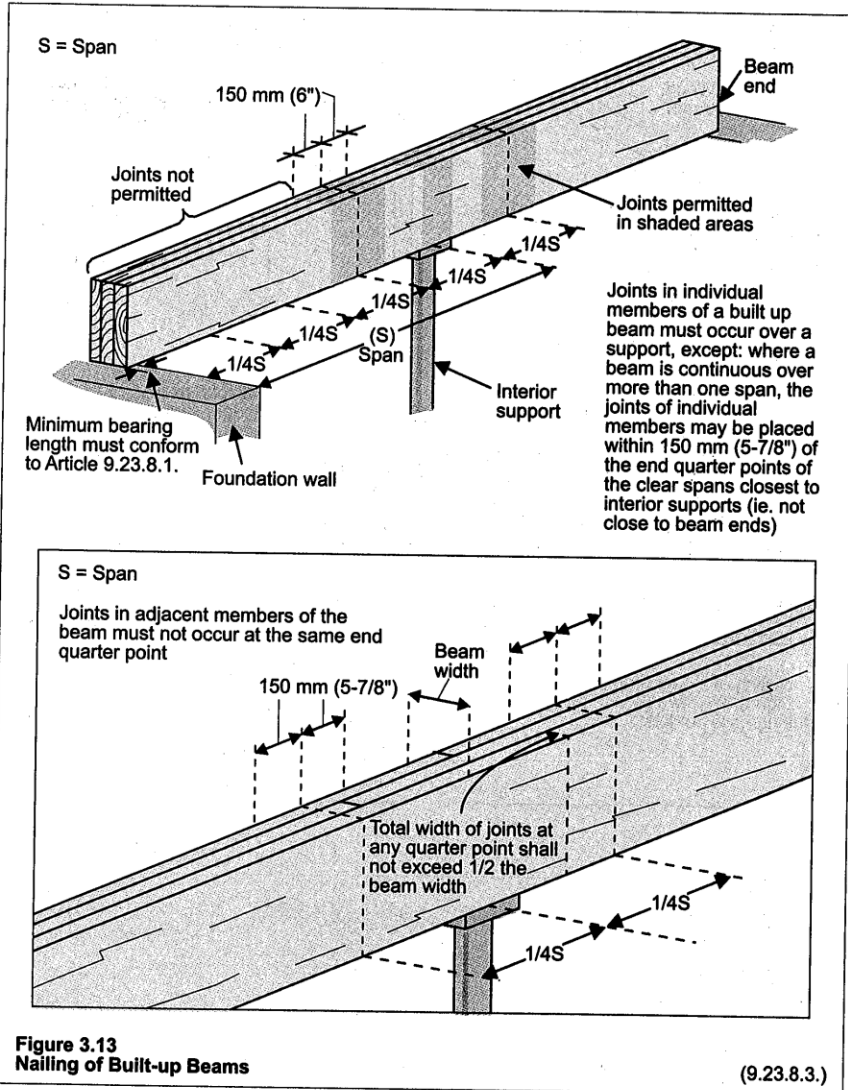
NAILING OF BEAMS

The requirements for the nailing of built-up wood beams are intended to ensure that the built-up wood members act as a single piece of lumber. Three, four, or five individual pieces of lumber that comprise a beam and that have not been suitably tied together will not have the same strength as the equivalent single piece of lumber. Figure 3.12 and 3.13 show the Code requirements for nailing of built-up beams.



Note:
As an alternative to nailing, bolt members together with minimum 12.7 mm (1/2") diameter bolts with washers and spaced 1.2 m (3' 11") max. o.c. with end bolts not more than 600 mm (23-5/8") from the ends of the members.

Figure 3.12
Nailing of Built-up Beams (9.23.8.3.)



JOIST AND BEAM SUPPORT

BUILDING CODE REFERENCES

DIVISION B

- 9.20.8.3. Bearing of Beams and Joists
- 9.23.8.1. Bearing for Beams
- 9.23.9.1. End Bearing for Joists
- 9.23.9.2. Joists Supported by Beams
- 9.23.9.3. Restraint of Joist Bottoms
- 9.23.9.4. Strapping and Bridging in Tables A-1 and A

Wood, glue-laminated or steel beams used in houses must bear no less than 89 mm (3-1/2") at end supports to avoid the crushing of beam or support material and to adequately transfer the load from the beam to the support. Beams should be level and bear evenly. Refer to Figure 3.14. Further requirements for built-up wood beams are detailed in the notes associated with the span tables in the Code. For example when supporting not more than one floor, 3-ply wood beams supporting lengths greater than 4.2 m (14') require a minimum bearing length of 114 mm (4-1/2") while 4-ply and 5-ply wood beams will only require a minimum bearing length of 76 mm (3").

End bearing for joists can be no less than 38 mm (1-1/2").

Any beam or joist bearing that does not comply with Part 9 must comply with Part 4.

