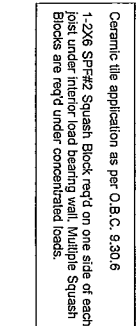


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PileID	Length	Products		Piles	Net Qty
		Product			
J1	18.00-00	11 7/8" NI-20		1	37
J2	18.00-00	11 7/8" NI-20		2	2
J3	14.00-00	11 7/8" NI-20		1	31
J4	11.00-00	11 7/8" NI-20		1	39
J5	9.00-00	11 7/8" NI-20		1	25
J6	7.00-00	11 7/8" NI-20		1	35
J7	3.00-00	11 7/8" NI-20		1	1
B6	14.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		1	2
B4	13.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		2	2
B2	12.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		2	2
B1	11.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		1	1
B8	11.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		1	1
B9	9.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		2	2
B5A	7.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		1	2
B7	3.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		1	1
B9	3.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP		2	2

H1 _____ LT2511(B) (TM)
H3 _____ HGU5410(FM)
H4 _____ MTT311.98-2(TM)
H5 _____ LF2511(FM)
H6 _____ HU310-2(FM)

NOTE _____
TM _____ TOP MOUNT HANGERS
FM _____ FACE MOUNT HANGERS

RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED
APP - AS PER PLAN
BBO - BEAM BY OTHERS

TOTAL 11 7/8" BLOCKING LENGTH: 19"

Ceramic tile application as per O.B.C. 9.30.6

Second Floor Framing

ENGINEERING FILE NO.
S-152508 - 152546

JT/PL: 45147/102259
LI: 308357(290673)

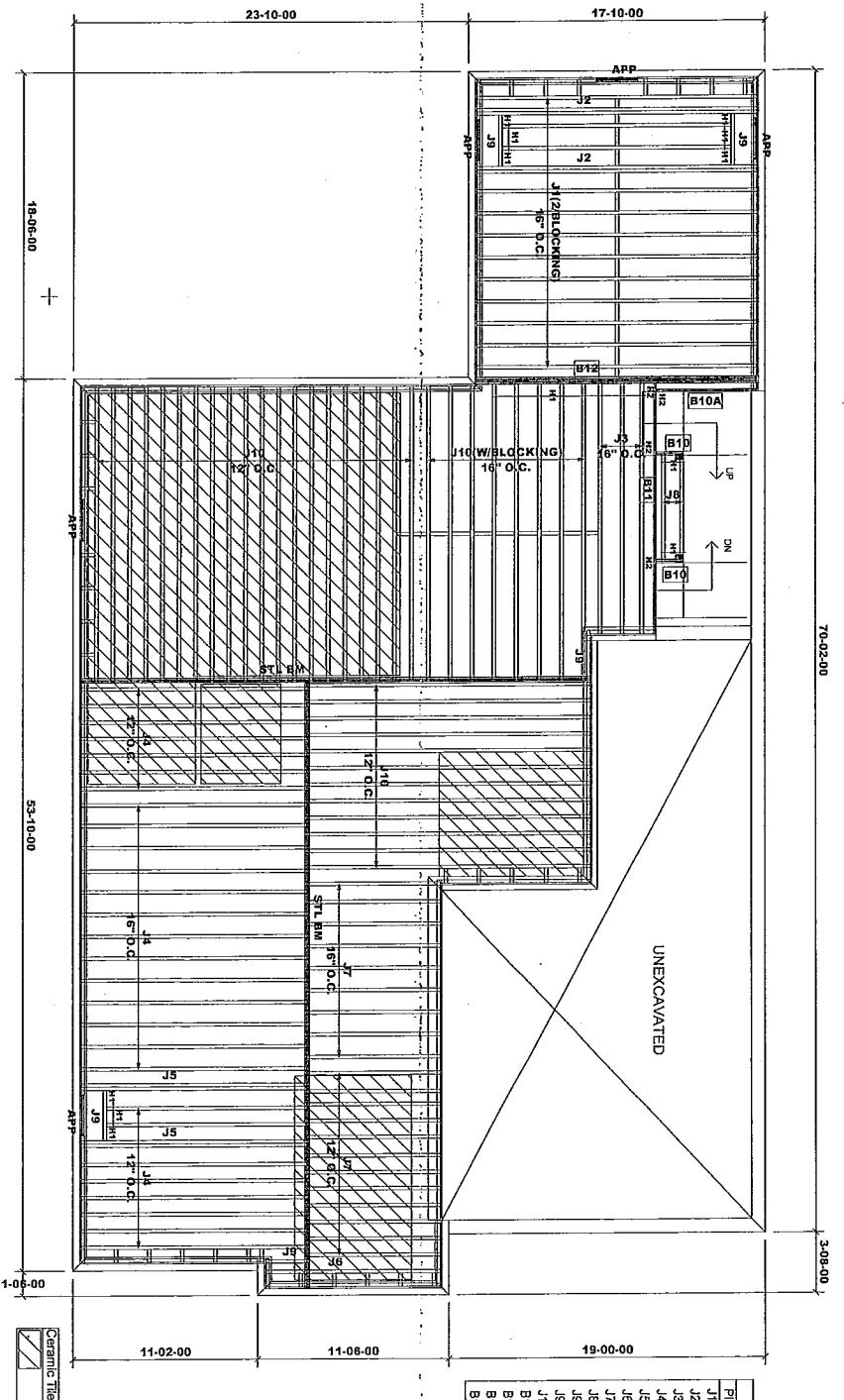
Builder: Gold Park
Project: Pine Valley

Location: Vaughan
Date: April 18, 2019

Designer: NL
Sheet: 1 of 4

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber



MODEL: 5004(BEAUMONT) - E.L.A
- LOT 92(+ W.O.D. COND.)

First Floor Framing

Do not scale - refer to architectural plans for dimensions

102326/Rev 23, 2019

JT/PL: 45147/1102259
LI: 308357(290673)

Builder: Gold Park
Project: Pine Valley

Location: Vaughan
Date: April 18, 2019

Designer: NL
Sheet: 2 of 4

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber

Product	Length	Product	Pieces	Nat Qty
J1	17-00-00	11 7/8" NL-20	1	12
J2	17-00-00	11 7/8" NL-20	2	4
J3	16-00-00	11 7/8" NL-20	1	3
J4	14-00-00	11 7/8" NL-20	1	28
J5	14-00-00	11 7/8" NL-20	2	4
J6	11-00-00	11 7/8" NL-20	1	1
J7	9-00-00	11 7/8" NL-20	1	21
J8	7-00-00	11 7/8" NL-20	1	2
J9	4-00-00	11 7/8" NL-20	1	4
J10	3-00-00	11 7/8" NL-20	1	1
J11	18-00-00	11 7/8" NL-40X	1	1
J12	17-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	40
B10	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10A	7-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B11	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	2

HANGER SCHEDULE

H1 - 1/2" x 11 7/8" (10')

H2 - 1/2" x 11 7/8" (10')

NOTE: TOP MOUNT HANGERS

FM - FACE MOUNT HANGERS

RIMBOARD

1- 1/8" x 11 7/8" O.S.B.

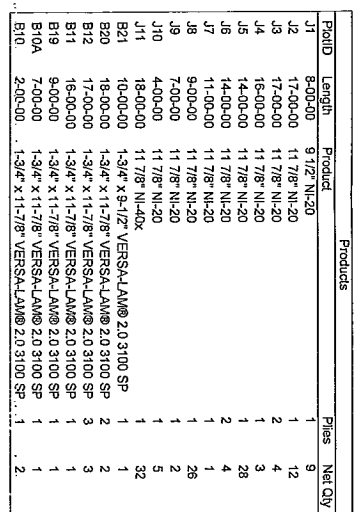
SUBFLOOR - 3/4" NAILED & GLUED

APP - AS PER PLAN

BBO - BEAM BY OTHERS

TOTAL 11 7/8" BLOCKING LENGTH: 74'

Ceramic tile application as per O.B.C. S.30.6
1-2X6 SPP#2 Square Block, nail on one side of each
block and nail to subfloor on the other side.
Blocks are used under concentrated loads.



Ceramic tile application as per O.B.C. 9.30.6

RIMBOARD
1- 1/8" X 9 1/2" O.S.B,
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED
APP - AS PER PLAN
BBO - BEAM BY OTHERS

HANGER SCHEDULE

H1	LT251188 (TM)
H2	HUS1.8170(FM)
H5	LT259(TM)

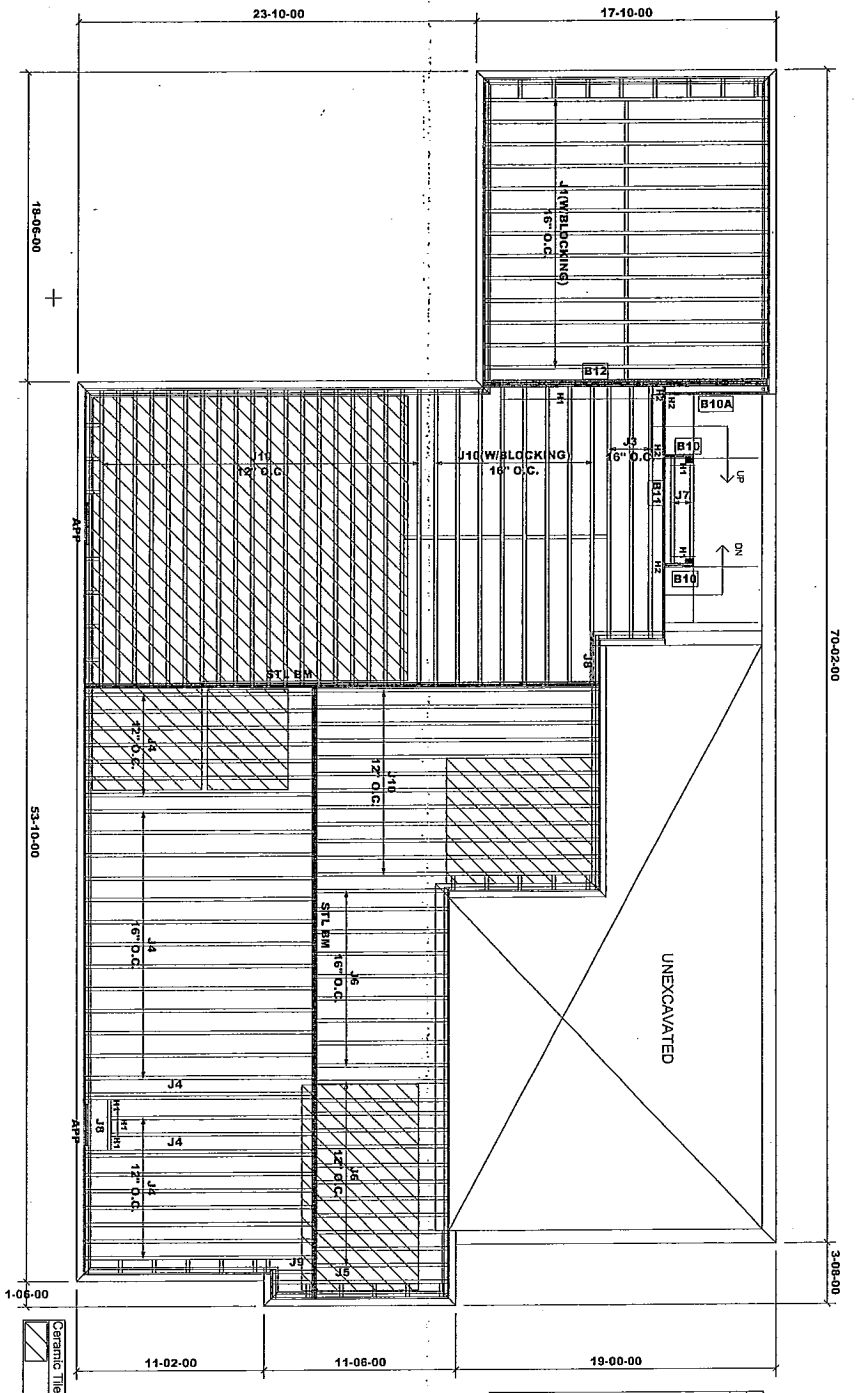
NOTE:

TM	TOP MOUNT HANGERS
FM	FACE MOUNT HANGERS

First Floor Framing

Do not scale - refer to architectural plans for dimensions

Salesperson: Derek
Home Lumber



MODEL: 5004(BEAUMONT) - EL.A
- LOT 92(W/ L.O.D. & W.O.B.)

First Floor Framing

Do not scale - refer to architectural plans for dimensions



ProdID	Length	Product	Piles	Nat Qty
J1	17-00-00	11 7/8" NI-20	1	13
J2	16-00-00	11 7/8" NI-20	1	3
J3	14-00-00	11 7/8" NI-20	1	28
J4	14-00-00	11 7/8" NI-20	2	4
J5	11-00-00	11 7/8" NI-20	1	1
J6	9-00-00	11 7/8" NI-20	1	21
J7	7-00-00	11 7/8" NI-20	1	1
J8	4-00-00	11 7/8" NI-20	1	2
J9	3-00-00	11 7/8" NI-20	1	1
J10	16-00-00	11 7/8" NI-40x	1	40
B12	17-00-00	1-3/4" x 11-7/8" VERSA-LAW® 2.0 3100 SP	3	3
B11	16-00-00	1-3/4" x 11-7/8" VERSA-LAW® 2.0 3100 SP	1	1
B10A	7-00-00	1-3/4" x 11-7/8" VERSA-LAW® 2.0 3100 SP	1	1
B10	2-00-00	1-3/4" x 11-7/8" VERSA-LAW® 2.0 3100 SP	1	2

HANGER SCHEDULE

H1 - 125/118 (TM)
H2 - HUS18/110 (TM)

NOTE: TOP MOUNT HANGERS
FM - FACE MOUNT HANGERS

RIMBOARD

1- 1/8" X 11 7/8" O.S.B.

SUBFLOOR - 3/4" NAILED & GLUED
APP - AS PER PLAN
BBO - BEAM BY OTHERS

TOTAL 11 7/8" BLOCKING LENGTH: 74'

Ceramic tile application as per O.B.C. 9.30.6
1-2X6 SPS2 Squash Block neld on one side of each
joist under interior load bearing wall. Multiple Squash
Blocks are req'd under concentrated loads.

JT/PL: 45147/102259
LI: 308357(290673)

Builder: Gold Park
Project: Pine Valley

Location: Vaughan
Date: April 18, 2019

Designer: NL
Sheet: 4 of 4

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber

102326

BC CALC® Design Report



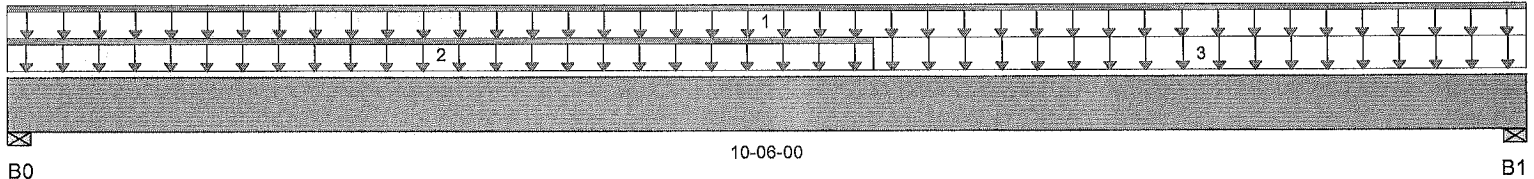
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 15, 2017 14:14:59

Build 6080

Name: 45147 (5004)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File Name: 290673.bcc
Description: Second Floor Framing
Specifier:
Designer: NL
Company: Alpa Roof Trusses
Misc:



Total Horizontal Product Length = 10-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	513 / 0	261 / 0		
B1, 3-1/2"	1,192 / 0	505 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	10-06-00	27	14			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	27	14			n/a
3		Unf. Area (lb/ft^2)	L	06-00-00	10-06-00	40	15			07-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,209 ft-lbs	17,696 ft-lbs	23.8%	1	06-07-04
End Shear	1,630 lbs	7,232 lbs	22.5%	1	09-02-10
Total Load Defl.	L/999 (0.103")	n/a	n/a	4	05-06-11
Live Load Defl.	L/999 (0.071")	n/a	n/a	5	05-06-11
Max Defl.	0.103"	n/a	n/a	4	05-06-11
Span / Depth	10.1	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

Bearing Supports

B0	Wall/Plate	3-1/2" x 1-3/4"	1,096 lbs	29.1%	14.7%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	2,420 lbs	64.2%	32.4%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

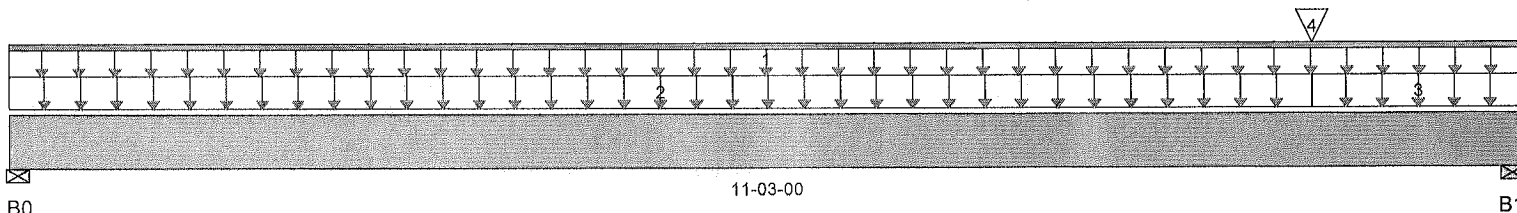


BC CALC® Design Report


Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 11-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3"	2,143 / 0	1,297 / 0		
B1, 3-1/2"	1,735 / 0	1,552 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	11-03-00	27	74			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	09-08-00	40	15			09-00-00
3		Unf. Area (lb/ft^2)	L	09-08-00	11-03-00	40	15			01-06-00
4		Conc. Pt. (lbs)	L	09-08-00	09-08-00		540			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	12,755 ft-lbs	35,392 ft-lbs	36%	1	05-07-00
End Shear	4,201 lbs	14,464 lbs	29%	1	09-11-10
Total Load Defl.	L/659 (0.197")	0.542"	36.4%	4	05-07-00
Live Load Defl.	L/999 (0.119")	n/a	n/a	5	05-07-00
Max Defl.	0.197"	1"	19.7%	4	05-07-00
Span / Depth	10.9	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

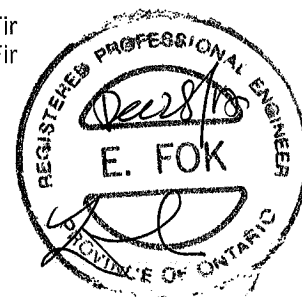
				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3" x 3-1/2"	4,836 lbs	74.9%	37.8%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	4,542 lbs	60.3%	30.4%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 10"
 o.c, staggered in 2 rows

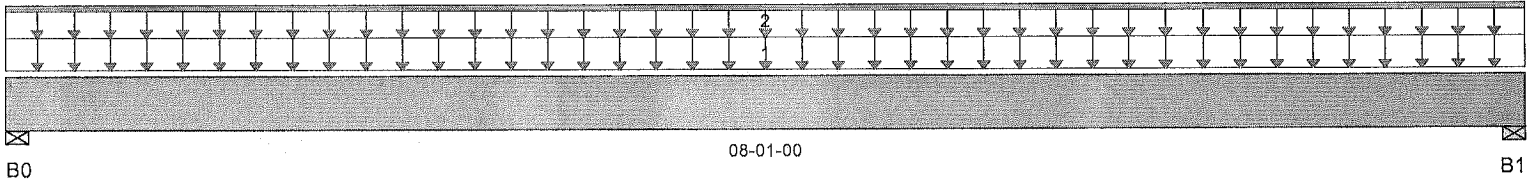


BC CALC® Design Report


Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 08-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,506 / 0	1,544 / 0		
B1, 3-1/2"	2,506 / 0	1,544 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	08-01-00	40	20			15-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	08-01-00		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,229 ft-lbs	35,392 ft-lbs	28.9%	1	04-00-08
End Shear	3,885 lbs	14,464 lbs	26.9%	1	01-03-06
Total Load Defl.	L/999 (0.078")	n/a	n/a	4	04-00-08
Live Load Defl.	L/999 (0.048")	n/a	n/a	5	04-00-08
Max Defl.	0.078"	n/a	n/a	4	04-00-08
Span / Depth	7.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

B0	Wall/Plate	3-1/2" x 3-1/2"	5,689 lbs	75.5%	38.1%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5,689 lbs	75.5%	38.1%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 9"
 o.c, staggered in 2 rows



BC CALC® Design Report


Build 6080

Name: 45147 (5004)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290673.bcc

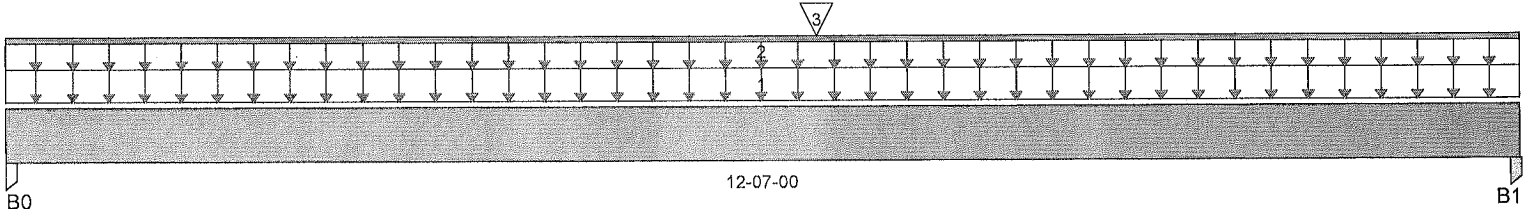
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 12-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3,561 / 0	2,370 / 0		
B1, 3"	3,726 / 0	2,471 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Area (lb/ft^2)	L	00-00-00	12-07-00	40	20				09-06-00
2	Unf. Lin. (lb/ft)	L	00-00-00	12-07-00		60				n/a
	Conc. Pt. (lbs)	L	06-09-00	06-09-00	2,506	1,544				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	33,735 ft-lbs	35,392 ft-lbs	95.3%	1	06-09-00
End Shear	7,566 lbs	14,464 lbs	52.3%	1	11-04-02
Total Load Defl.	L/247 (0.591")	0.608"	97.1%	4	06-04-14
Live Load Defl.	L/409 (0.357")	0.406"	88%	5	06-04-14
Max Defl.	0.591"	1"	59.1%	4	06-04-14
Span / Depth	12.3	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Post	3-1/2" x 3-1/2"	8,305 lbs	39.1%	55.6%	Spruce Pine Fir
B1 Post	3" x 3-1/2"	8,678 lbs	47.6%	67.7%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 8"
 o.c., staggered in 2 rows



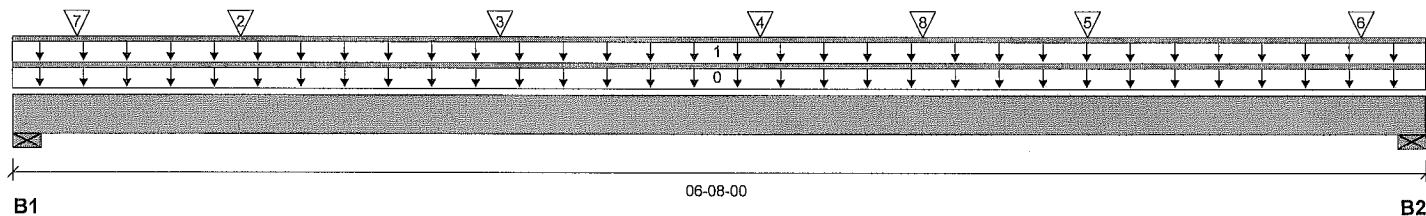
BC CALC® Member Report
Build 6766

Dry | 1 span | No cant.

April 18, 2019 15:01:02

Job name: 45147(5004)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File name: 308357-A-LOT 92.mmdl
Description: 1st Floor\Flush Beams\B5A(i5935)
Specifier:
Designer: NL
Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

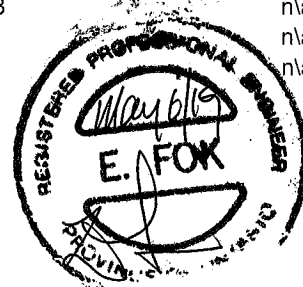
Bearing	Live	Dead	Snow	Wind
B1, 4"	1,537 / 0	606 / 0		
B2, 4"	1,550 / 0	609 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-08-00	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-08-00	Top		60			n/a
2	-	Conc. Pt. (lbs)	L	01-00-15	01-00-15	Top	533	134			n/a
3	-	Conc. Pt. (lbs)	L	02-03-10	02-03-10	Top	517	130			n/a
4	-	Conc. Pt. (lbs)	L	03-06-06	03-06-06	Top	517	130			n/a
5	-	Conc. Pt. (lbs)	L	05-00-15	05-00-15	Top	530	133			n/a
6	-	Conc. Pt. (lbs)	L	06-04-06	06-04-06	Top	512	128			n/a
7	J1(i6425)	Conc. Pt. (lbs)	L	00-03-10	00-03-10	Top	317	79			n/a
8	J5(i6418)	Conc. Pt. (lbs)	L	04-03-10	04-03-10	Top	159	40			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,000 ft-lbs	17,696 ft-lbs	22.6 %	1	03-06-10
End Shear	2,137 lbs	7,232 lbs	29.6 %	1	01-03-14
Total Load Deflection	L/999 (0.038")	n/a	n/a	4	03-03-10
Live Load Deflection	L/999 (0.027")	n/a	n/a	5	03-03-10
Max Defl.	0.038"	n/a	n/a	4	03-03-10
Span / Depth	6.2				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 1-3/4"	3,062 lbs	71.1 %	35.9 %	Unspecified
B2	Wall/Plate 4" x 1-3/4"	3,086 lbs	71.7 %	36.1 %	Unspecified

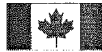
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Design meets User specified (0.75") Maximum live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

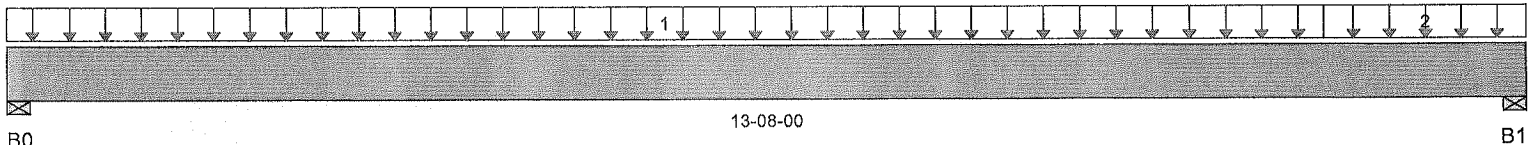
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

BC CALC® Design Report


Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 13-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,985 / 0	1,572 / 0		
B1, 3-1/2"	2,625 / 0	1,347 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	11-10-00	40	20			11-00-00
2		Unf. Area (lb/ft^2)	L	11-10-00	13-08-00	40	15			05-06-00

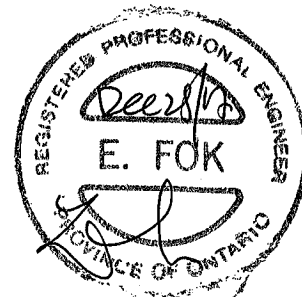
Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
B.Moment	20,395 ft-lbs	35,392 ft-lbs	57.6%	1	06-08-11
End Shear	5,226 lbs	14,464 lbs	36.1%	1	01-03-06
Total Load Defl.	L/343 (0.462")	0.66"	70%	4	06-10-10
Live Load Defl.	L/523 (0.303")	0.44"	68.8%	5	06-10-10
Max Defl.	0.462"	1"	46.2%	4	06-10-10
Span / Depth	13.3	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	6,443 lbs	85.5%	43.1%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	5,621 lbs	74.6%	37.6%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 9" o.c., staggered in 2 rows



BC CALC® Design Report


Build 6080

Name: 45147 (5004)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290673.bcc

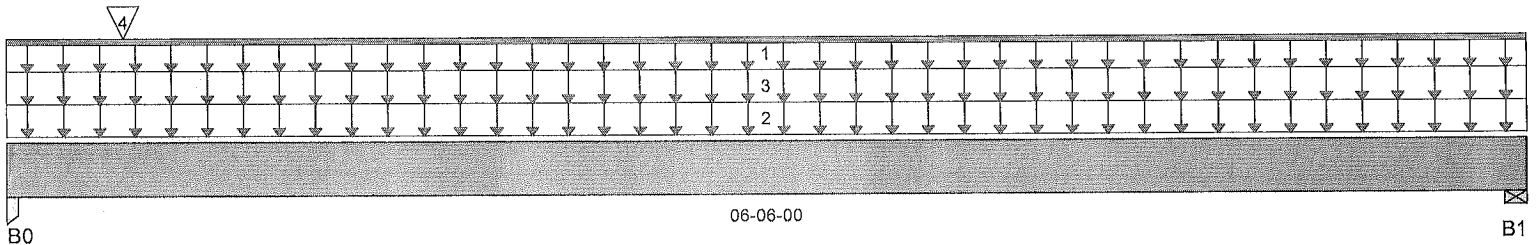
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 06-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,594 / 0	1,930 / 0	770 / 0	
B1, 3-1/2"	206 / 0	704 / 0	770 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	06-06-00	27	114			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	06-06-00		20	78		02-06-00
3		Unf. Area (lb/ft^2)	L	00-00-00	06-06-00		11	21		02-00-00
4		Conc. Pt. (lbs)	L	00-06-00	00-06-00	2,625	1,347			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,236 ft-lbs	35,392 ft-lbs	9.1%	5	03-00-01
End Shear	1,730 lbs	14,464 lbs	12%	1	01-03-06
Total Load Defl.	L/999 (0.016")	n/a	n/a	13	03-02-04
Live Load Defl.	L/999 (0.008")	n/a	n/a	17	03-02-04
Max Defl.	0.016"	n/a	n/a	13	03-02-04
Span / Depth	6.1	n/a	n/a		00-00-00
Squash Blocks	Valid				

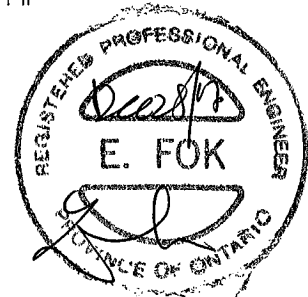
Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Post	3-1/2" x 3-1/2"	6,689 lbs	31.5%	44.8%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	2,139 lbs	28.4%	14.3%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 12" o.c., staggered in 2 rows



BC CALC® Design Report



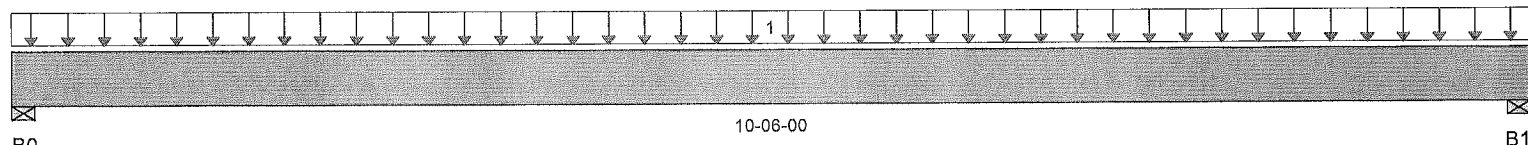
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 15, 2017 14:15:04

Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 10-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,260 / 0	662 / 0		
B1, 3-1/2"	1,260 / 0	662 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft^2)	L	00-00-00	10-06-00	40	20				06-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	6,523 ft-lbs	17,696 ft-lbs	36.9%	1	05-03-00
Shear	2,054 lbs	7,232 lbs	28.4%	1	01-03-06
Total Load Defl.	L/703 (0.171")	0.502"	34.1%	4	05-03-00
Live Load Defl.	L/999 (0.112")	n/a	n/a	5	05-03-00
Max Defl.	0.171"	1"	17.1%	4	05-03-00
Span / Depth	10.1	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

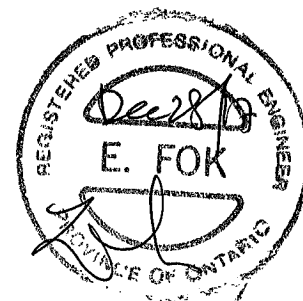
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Bearing Supports

		Dim. (L x W)	Demand	Support	Member	
B0	Wall/Plate	3-1/2" x 1-3/4"	2,717 lbs	72.1%	36.4%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	2,717 lbs	72.1%	36.4%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

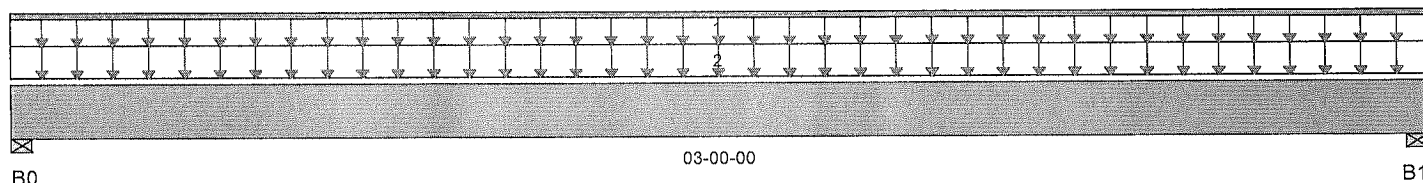




Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 03-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	40 / 0	338 / 0	283 / 0	
B1, 3-1/2"	41 / 0	338 / 0	283 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	03-00-00	27	114			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	03-00-00		11	21		09-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	467 ft-lbs	35,392 ft-lbs	1.3%	5	01-06-00
End Shear	127 lbs	14,464 lbs	0.9%	5	01-03-06
Total Load Defl.	L/999 (0")	n/a	n/a	13	01-06-00
Live Load Defl.	L/999 (0")	n/a	n/a	17	01-06-00
Max Defl.	0"	n/a	n/a	13	01-06-00
Span / Depth	2.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

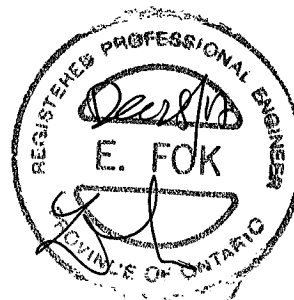
Bearing Supports

			Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports	Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 3-1/2"	867 lbs	11.5%	5.8%
B1	Wall/Plate	3-1/2" x 3-1/2"	867 lbs	11.5%	5.8%

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 6"
 o.c, staggered in 2 rows



BC CALC® Design Report



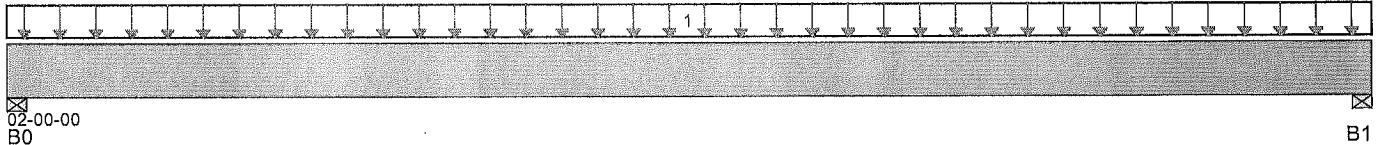
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 15, 2017 14:15:05

Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 02-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	140 / 0	59 / 0		
B1, 3-1/2"	140 / 0	59 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	02-00-00	40	15			03-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	84 ft-lbs	17,696 ft-lbs	0.5%	1	01-00-00
Shear	80 lbs	7,232 lbs	1.1%	1	01-03-06
Total Load Defl.	L/999 (0")	n/a	n/a	4	01-00-00
Max Defl.	0"	n/a	n/a	4	01-00-00
Span / Depth	1.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

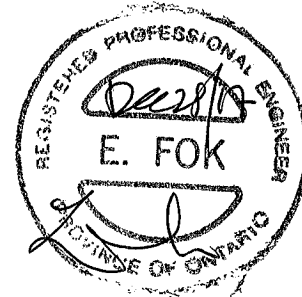
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Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	283 lbs	7.5%	3.8%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	283 lbs	7.5%	3.8%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4



BC CALC® Design Report


Build 6080

Name: 45147 (5004)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290673.bcc

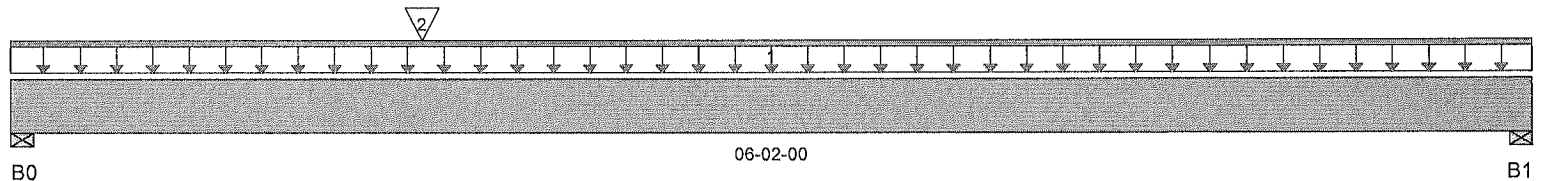
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 06-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	331 / 0	335 / 0		
B1, 3-1/2"	152 / 0	268 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	06-02-00	20	70			n/a
2		Conc. Pt. (lbs)	L	01-08-00	01-08-00	360	135			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,146 ft-lbs	17,696 ft-lbs	6.5%	1	01-08-00
End Shear	756 lbs	7,232 lbs	10.4%	1	01-03-06
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-10-08
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-09-04
Max Defl.	0.009"	n/a	n/a	4	02-10-08
Span / Depth	5.8	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

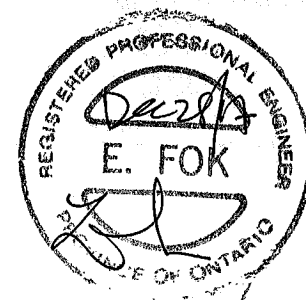
Bearing Supports

B0	Wall/Plate	3-1/2" x 1-3/4"	916 lbs	24.3%	12.3%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	376 lbs	15.3%	7.7%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.



BC CALC® Design Report


Build 6080

Name: 45147 (5004)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290673.bcc

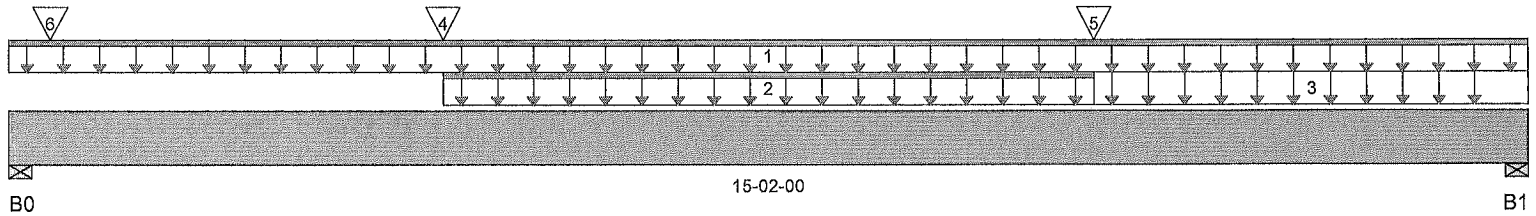
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	782 / 0	596 / 0		
B1, 3-1/2"	587 / 0	317 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	15-02-00	27	14			n/a
2		Unf. Lin. (lb/ft)	L	04-04-00	10-10-00	27	14			n/a
3		Unf. Area (lb/ft^2)	L	10-10-00	15-02-00	40	15			01-00-00
4		Conc. Pt. (lbs)	L	04-04-00	04-04-00	140	59			n/a
5		Conc. Pt. (lbs)	L	10-10-00	10-10-00	140	59			n/a
6		Conc. Pt. (lbs)	L	00-05-00	00-05-00	331	335			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,438 ft-lbs	17,696 ft-lbs	25.1%	1	07-09-07
End Shear	1,092 lbs	7,232 lbs	15.1%	1	13-10-10
Total Load Defl.	L/691 (0.255")	0.735"	34.7%	4	07-07-00
Live Load Defl.	L/1,081 (0.163")	0.49"	33.3%	5	07-07-00
Max Defl.	0.255"	1"	25.5%	4	07-07-00
Span / Depth	14.9	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

Bearing Supports

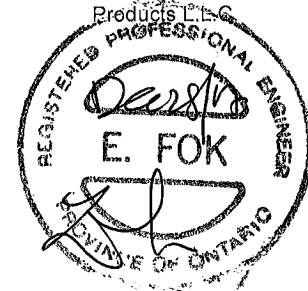
Bearing Supports		Dim. (L x W)	Demand	Resistance Support	Resistance Member	Material
B0	Wall/Plate	3-1/2" x 1-3/4"	1,918 lbs	50.9%	25.7%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,277 lbs	33.9%	17.1%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 4



BC CALC® Design Report



Dry | 1 span | No cantilevers | 0/12 slope (deg)

December 15, 2017 13:46:26

Build 6080

Name: 45147 (5004)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290673.bcc

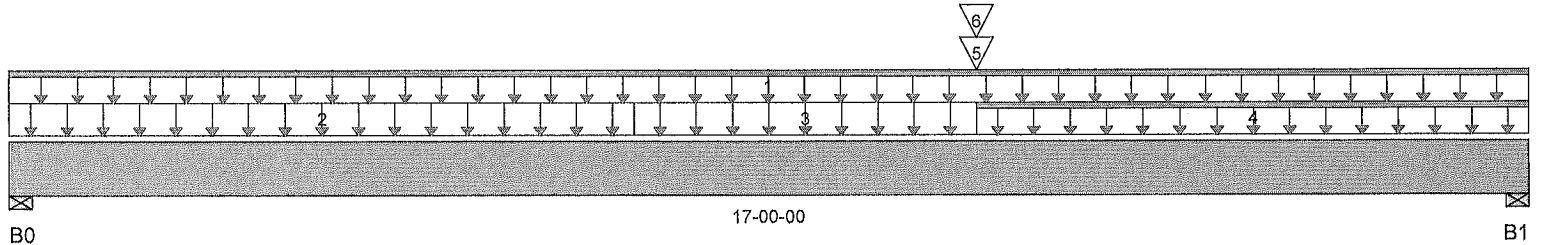
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 17'-00"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3,263 / 0	1,552 / 0		
B1, 3-1/2"	2,229 / 0	1,278 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
		Unf. Lin. (lb/ft)	L	00-00-00	17-00-00	27	14			n/a
		Unf. Area (lb/ft^2)	L	00-00-00	07-00-00	40	15			09-00-00
3		Unf. Area (lb/ft^2)	L	07-00-00	10-10-00	40	15			07-06-00
4		Unf. Lin. (lb/ft)	L	10-10-00	17-00-00	20	8			n/a
5		Conc. Pt. (lbs)	L	10-10-00	10-10-00	782	596			n/a
6		Conc. Pt. (lbs)	L	10-10-00	10-10-00	457	264			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	28,235 ft-lbs	55,212 ft-lbs	51.1%	1	08-11-00
End Shear	5,823 lbs	21,696 lbs	26.8%	1	01-03-06
Total Load Defl.	L/301 (0.659")	0.827"	79.7%	4	08-05-04
Live Load Defl.	L/459 (0.433")	0.551"	78.4%	5	08-05-04
Max Defl.	0.659"	1"	65.9%	4	08-05-04
Span / Depth	16.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

B0	Wall/Plate	3-1/2" x 5-1/4"	6,835 lbs	60.5%	30.5%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 5-1/4"	4,940 lbs	43.7%	22%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

Nail one ply to another with
3 1/2" spiral nails @ 6"
o.c, staggered in 2 rows

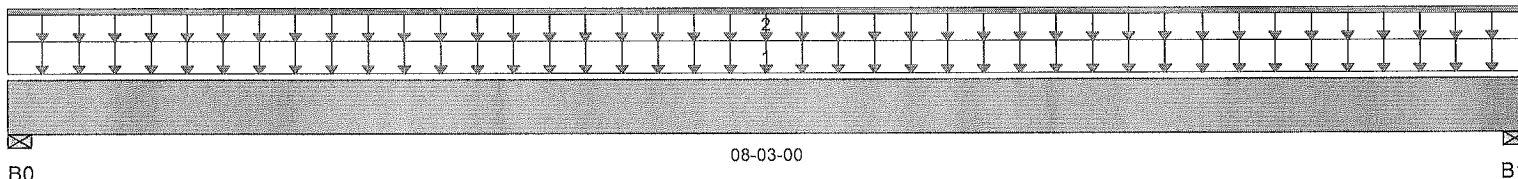


BC CALC® Design Report


Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 08-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	687 / 0	530 / 0		
B1, 3-1/2"	687 / 0	530 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	08-03-00	40	15			04-02-00
2		Unf. Lin. (lb/ft)	L	00-00-00	08-03-00		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,116 ft-lbs	17,696 ft-lbs	17.6%	1	04-01-08
End Shear	1,168 lbs	7,232 lbs	16.1%	1	01-03-06
Total Load Defl.	L/999 (0.05")	n/a	n/a	4	04-01-08
Live Load Defl.	L/999 (0.028")	n/a	n/a	5	04-01-08
Max Defl.	0.05"	n/a	n/a	4	04-01-08
Span / Depth	7.9	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 1-3/4"	1,694 lbs	45%	22.7%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,694 lbs	45%	22.7%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4



BC CALC® Design Report


Build 6080

Name: 45147 (5004)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290673.bcc

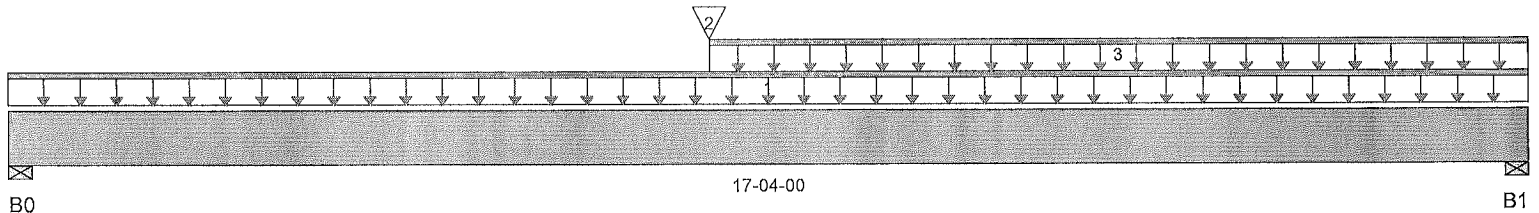
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 17-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	839 / 0	772 / 0		
B1, 3-1/2"	784 / 0	995 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	17-04-00	54	27				n/a
2	Conc. Pt. (lbs)	L	08-00-00	08-00-00	687	530				n/a
	Unf. Lin. (lb/ft)	L	08-00-00	17-04-00	60					n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,121 ft-lbs	35,392 ft-lbs	37.1%	1	08-00-00
End Shear	2,158 lbs	14,464 lbs	14.9%	1	16-00-10
Total Load Defl.	L/450 (0.45")	0.844"	53.4%	4	08-07-09
Live Load Defl.	L/914 (0.221")	0.562"	39.4%	5	08-06-01
Max Defl.	0.45"	1"	45%	4	08-07-09
Span / Depth	17.1	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	
Bearing Supports		Dim. (L x W)	Demand			Material
B0	Wall/Plate	3-1/2" x 3-1/2"	2,222 lbs	29.5%	14.9%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	2,420 lbs	32.1%	16.2%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c., staggered in 2 rows



BC CALC® Design Report



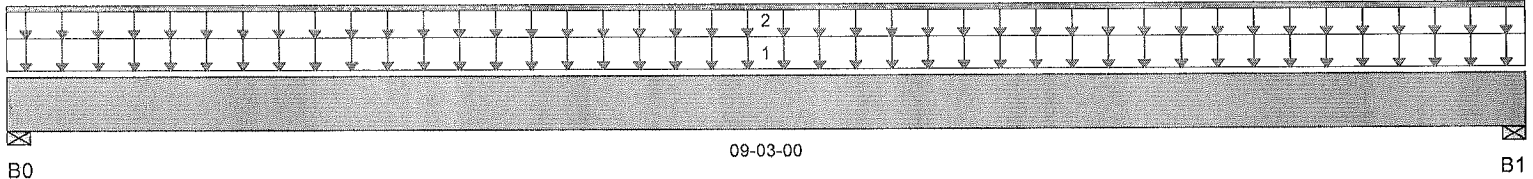
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 15, 2017 14:14:55

Build 6080

Name: 45147 (5004)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290673.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 09-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	740 / 0	675 / 0		
B1, 3-1/2"	740 / 0	675 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Area (lb/ft ²)	L	00-00-00	09-03-00	40	20				04-00-00
2	Unf. Lin. (lb/ft)	L	00-00-00	09-03-00	60					n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,082 ft-lbs	17,696 ft-lbs	23.1%	1	04-07-08
End Shear	1,413 lbs	7,232 lbs	19.5%	1	01-03-06
Total Load Defl.	L/999 (0.084")	n/a	n/a	4	04-07-08
Live Load Defl.	L/999 (0.044")	n/a	n/a	5	04-07-08
Max Defl.	0.084"	n/a	n/a	4	04-07-08
Span / Depth	8.9	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

Bearing Supports

B0	Wall/Plate	3-1/2" x 1-3/4"	1,954 lbs	51.9%	26.2%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,954 lbs	51.9%	26.2%	Spruce Pine Fir

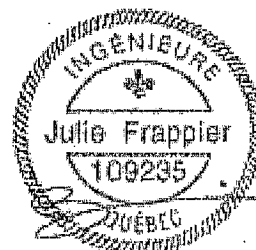
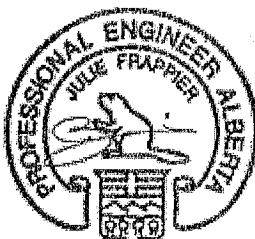
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/360 Deflection Limit
3/4" OSB G&N Sheathing



Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-5"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"	16'-7"	15'-11"	15'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-7"	18'-5"	17'-3"	16'-7"	15'-11"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-6"	18'-6"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-6"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	NI-40x	21'-5"	19'-10"	18'-11"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
15"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"
Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	17'-1"	15'-5"	14'-6"	13'-5"	17'-1"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-8"	17'-6"	16'-7"	15'-3"	19'-2"	17'-8"	16'-7"	15'-3"
	NI-60	18'-11"	17'-8"	16'-10"	15'-7"	19'-4"	18'-0"	16'-10"	15'-7"
	NI-70	20'-0"	18'-7"	17'-9"	17'-0"	20'-5"	19'-0"	18'-2"	17'-0"
	NI-80	20'-3"	18'-10"	17'-11"	17'-2"	20'-8"	19'-3"	18'-4"	17'-5"
11-7/8"	NI-20	20'-2"	18'-8"	17'-6"	16'-2"	20'-7"	18'-8"	17'-6"	16'-2"
	NI-40x	21'-10"	20'-4"	19'-5"	17'-8"	22'-5"	20'-11"	19'-9"	17'-8"
	NI-60	22'-1"	20'-7"	19'-7"	18'-7"	22'-8"	21'-2"	20'-3"	18'-8"
	NI-70	23'-4"	21'-8"	20'-8"	19'-7"	23'-10"	22'-3"	21'-3"	20'-1"
	NI-80	23'-7"	21'-11"	20'-11"	19'-9"	24'-1"	22'-6"	21'-5"	20'-4"
14"	NI-90x	24'-3"	22'-6"	21'-6"	20'-4"	24'-8"	23'-0"	22'-0"	20'-9"
	NI-40x	24'-5"	22'-9"	21'-8"	19'-5"	25'-1"	23'-6"	21'-9"	19'-5"
	NI-60	24'-10"	23'-1"	22'-0"	20'-10"	25'-6"	23'-10"	22'-9"	21'-4"
	NI-70	26'-1"	24'-3"	23'-2"	21'-10"	26'-8"	24'-11"	23'-9"	22'-6"
	NI-80	26'-6"	24'-7"	23'-5"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
	NI-60	27'-3"	25'-5"	24'-2"	22'-10"	28'-0"	26'-2"	25'-0"	23'-8"
	NI-70	28'-8"	26'-8"	25'-4"	23'-11"	29'-3"	27'-4"	26'-1"	24'-8"
	NI-80	29'-1"	27'-0"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90x	29'-11"	27'-10"	26'-6"	25'-0"	30'-6"	28'-5"	27'-2"	25'-8"

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/360 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.

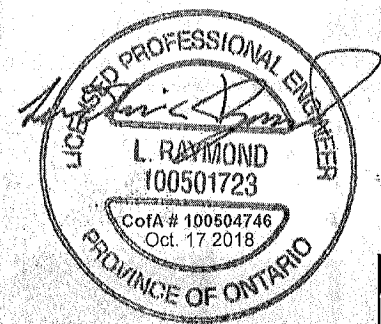
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



N-C301/April 2014

MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.75SD. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in C085-71.24 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C085-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

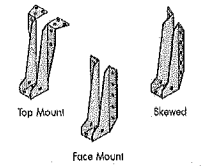
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Depth	Species	Simple spans					Multiple spans				
		15'	16'	17'	18'	19'	15'	16'	17'	18'	19'
9-1/2"	Ni-20	15.1'	14.2'	13.5'	12.9'	12.4'	16.3'	15.4'	14.7'	14.2'	13.7'
	Ni-40x	16.1'	15.2'	14.5'	13.9'	13.4'	17.3'	16.4'	15.7'	15.2'	14.7'
	Ni-60	16.3'	15.4'	14.7'	14.1'	13.6'	17.5'	16.6'	15.9'	15.4'	14.9'
	Ni-70	17.1'	16.1'	15.4'	14.8'	14.3'	18.7'	17.4'	16.9'	16.4'	15.9'
	Ni-80	17.3'	16.3'	15.6'	15.0'	14.5'	18.9'	17.6'	17.1'	16.6'	16.1'
11-7/8"	Ni-20	16.1'	15.2'	14.5'	13.9'	13.4'	17.3'	16.4'	15.7'	15.2'	14.7'
	Ni-40x	18.1'	17.2'	16.5'	15.9'	15.4'	20.3'	19.4'	18.7'	18.2'	17.7'
	Ni-60	18.4'	17.5'	16.8'	16.2'	15.7'	20.5'	19.6'	18.9'	18.4'	17.9'
	Ni-70	19.4'	18.4'	17.7'	17.1'	16.6'	21.4'	20.4'	19.7'	19.2'	18.7'
	Ni-80	19.9'	18.9'	18.2'	17.6'	17.1'	21.9'	20.9'	20.2'	19.7'	19.2'
14'	Ni-20	20.2'	19.2'	18.5'	17.9'	17.4'	22.2'	21.2'	20.5'	20.0'	19.5'
	Ni-40x	20.1'	19.1'	18.4'	17.8'	17.3'	22.2'	21.2'	20.5'	20.0'	19.5'
	Ni-60	20.5'	19.5'	18.8'	18.2'	17.7'	22.2'	21.2'	20.5'	20.0'	19.5'
	Ni-70	21.1'	20.1'	19.4'	18.8'	18.3'	22.2'	21.2'	20.5'	20.0'	19.5'
	Ni-80	22.5'	21.5'	20.8'	20.2'	19.7'	24.9'	23.9'	23.2'	22.7'	22.2'
16'	Ni-20	22.7'	21.7'	21.0'	20.4'	19.9'	25.0'	24.0'	23.3'	22.8'	22.3'
	Ni-40x	22.7'	21.7'	21.0'	20.4'	19.9'	25.0'	24.0'	23.3'	22.8'	22.3'
	Ni-60	23.4'	22.4'	21.7'	21.1'	20.6'	26.0'	25.0'	24.3'	23.8'	23.3'
	Ni-70	23.4'	22.4'	21.7'	21.1'	20.6'	26.0'	25.0'	24.3'	23.8'	23.3'
	Ni-80	24.8'	23.8'	23.1'	22.5'	22.0'	27.3'	26.3'	25.6'	25.1'	24.6'

CCMC EVALUATION REPORT 18032-R

I-JOIST HANGERS

- Hangers shown illustrate the three most commonly used metal hangers to support I-joists.
- All nailing must meet the hanger manufacturer's recommendations.
- Hangers should be selected based on the joist depth, flange width and load capacity based on the maximum spans.
- Web stiffeners are required when the sides of the hangers do not laterally brace the top flange of the I-joist.



WEB STIFFENERS

RECOMMENDATIONS:

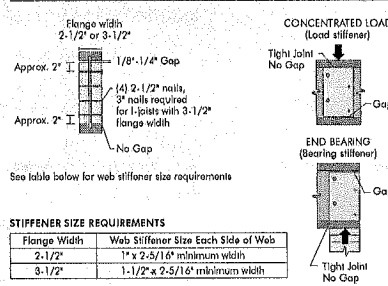
■ A bearing stiffener is required in all engineered applications with factored reactions greater than the factored load of the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.

■ A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and the flange is at the top.

■ A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2 WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

NORDIC I-JOIST SERIES

Series	Depth	Flange Width	Material Thickness	Minimum Depth
Ni-20	9-1/2"	15.1"	1/4"	5-1/2"
Ni-40x	9-1/2"	16.1"	1/4"	5-1/2"
Ni-60	9-1/2"	16.3"	1/4"	5-1/2"
Ni-70	11-7/8"	19.4"	1/4"	7-1/4"
Ni-80	11-7/8"	19.9"	1/4"	7-1/4"
Ni-90	14'	22.5"	1/4"	7-1/4"
Ni-90x	14'	22.5"	1/4"	7-1/4"

Chambers Chibougoum Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

Nordic Engineered Wood I-joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.

1e

Transfer load from above to bearing below. Install squish blocks per detail 1c. Match bearing area of blocks below to post above.

1f

Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.

Provide backer for siding attachment unless nailable sheathing is used.

Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

1g

Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support.

NI blocking panel per detail 1a

2-1/2" nails at top plate

1h

Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will lie. Clinch. Install backer (right) to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

Double I-joist header

Top- or face-mount hanger

Filler block per detail 1p

Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

Backer block required (both sides for face-mount hangers)

1i

Nordic Lam or SCL

Top- or face-mount hanger - Installed per manufacturer's recommendations

For nailing schedules for multiple beams, see the manufacturer's recommendations.

Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1j

2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

Top-mount hanger installed per manufacturer's recommendations

Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1k

Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible.

Maximum support capacity = 1,620 lbs.

1l

Do not bevel-cut joist beyond inside face of wall.

Attach I-joist per detail 1b

Note: Blocking required at bearing for lateral support, not shown for clarity.

1m

Filler block requirements for double I-joist construction

Flange Size	Joist Depth	Filler Block Size
2-1/2" x 1-1/2"	11-7/8"	2-1/8" x 6"
3-1/2" x 1-1/2"	14"	2-1/8" x 8"
3-1/2" x 1-1/2"	16"	2-1/8" x 10"
3-1/2" x 1-1/2"	18"	2-1/8" x 12"
3-1/2" x 1-1/2"	11-7/8"	3" x 6"
3-1/2" x 1-1/2"	14"	3" x 8"
3-1/2" x 1-1/2"	16"	3" x 10"
3-1/2" x 1-1/2"	18"	3" x 12"
3-1/2" x 1-1/2"	11-7/8"	3" x 7"
3-1/2" x 1-1/2"	14"	3" x 9"
3-1/2" x 1-1/2"	16"	3" x 11"

1n

Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" split nails from each web to lumber piece, alternate on opposite side.

NI blocking panel

Optional: Minimum 1x4 inch strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joist.

1o

One 2-1/2" nails at top and bottom flange of adjacent web. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum). I-joist blocking panel. One 2-1/2" nails one side only. Two 2-1/2" nails at 6" o.c.

Note:

- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, use local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

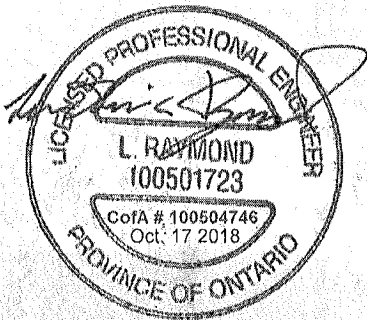
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

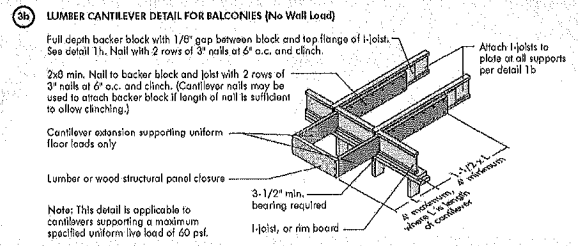
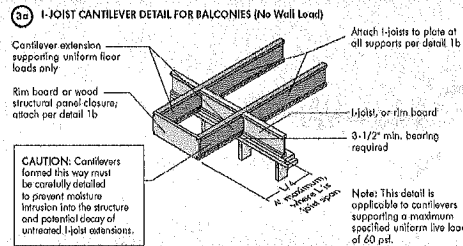
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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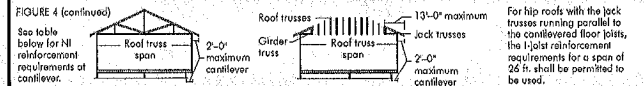
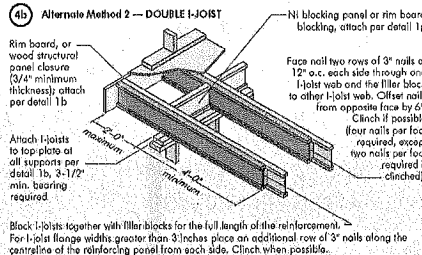
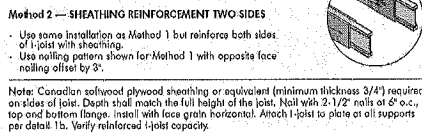
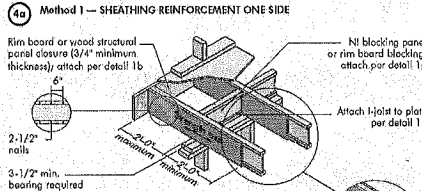
Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

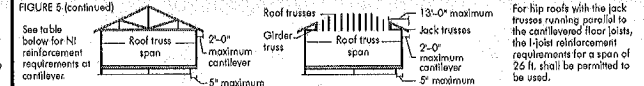
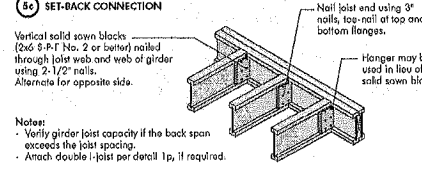
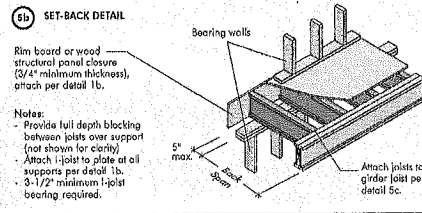
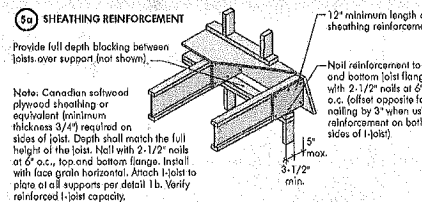


CANTILEVER REINFORCEMENT METHODS ALLOWED

Depth (ft.)	Roof Truss Span (ft.)	U.L. = 30 psf, D.L. = 15 psf				U.L. = 40 psf, D.L. = 15 psf				U.L. = 50 psf, D.L. = 15 psf			
		Joist Spacing (in.)				Joist Spacing (in.)				Joist Spacing (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	X	N	1	2	X	N	2	X	X
	30	N	1	2	X	N	1	2	X	N	2	X	X
	32	N	1	2	X	N	2	X	X	N	2	X	X
	34	N	1	2	X	N	2	X	X	N	1	X	X
11-7/8	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	1	2	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	1	2	X	N	2	X	X
	34	N	N	1	2	N	1	2	X	N	2	X	X
14	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	1	2	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	1	2	X	N	2	X	X
	34	N	N	1	2	N	1	2	X	N	2	X	X
16	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	1	2	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	1	2	X	N	2	X	X
	34	N	N	1	2	N	1	2	X	N	2	X	X

- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf dead load, 55 psf floor load, and 60 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls or joists used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Depth (ft.)	Roof Truss Span (ft.)	U.L. = 30 psf, D.L. = 15 psf				U.L. = 40 psf, D.L. = 15 psf				U.L. = 50 psf, D.L. = 15 psf			
		Joist Spacing (in.)				Joist Spacing (in.)				Joist Spacing (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X	2	X	X	X
11-7/8	26	X	2	X	X	X	X	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X	X	X	X	X
14	26	X	2	X	X	X	X	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X	X	X	X	X
16	26	1	2	X	X	1	X	X	X	2	X	X	X
	28	1	2	X	X	1	X	X	X	2	X	X	X
	30	1	X	X	X	1	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X

- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf dead load, 55 psf floor load, and 60 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls or joists used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)

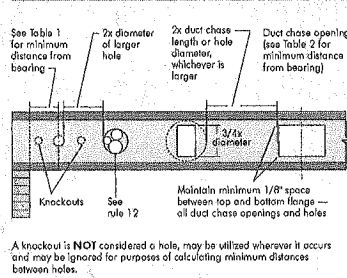


WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-Joist web shall equal the clear distance between the flanges of the I-Joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-Joist flange.
- The sides of square holes or larger sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the largest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are preformed holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-Joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web. Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth (in.)	Joist Series	Minimum distance from inside face of any support to centre of hole (in.)												Span (ft.)			
		Round hole diameter in in.															
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
2-1/2"	N-20	0.7	1.3	2.0	2.7	3.4	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0	9.7	10.4	11.1
	N-40	1.3	2.4	3.4	4.4	5.4	6.4	7.4	8.4	9.4	10.4	11.4	12.4	13.4	14.4	15.4	16.4
	N-60	2.0	3.4	4.9	6.3	7.8	9.2	10.7	12.1	13.6	15.0	16.5	17.9	19.4	20.8	22.3	23.7
	N-80	2.7	4.1	5.6	7.0	8.5	10.0	11.4	12.9	14.3	15.8	17.2	18.7	20.1	21.6	23.0	24.5
	N-100	3.4	4.9	6.3	7.8	9.2	10.7	12.1	13.6	15.0	16.5	17.9	19.4	20.8	22.3	23.7	25.2
	N-120	4.1	5.6	7.0	8.5	10.0	11.4	12.9	14.3	15.8	17.2	18.7	20.1	21.6	23.0	24.5	26.0
3-1/2"	N-20	0.8	1.5	2.2	2.9	3.6	4.3	5.0	5.7	6.4	7.1	7.8	8.5	9.2	9.9	10.6	11.3
	N-40	1.4	2.6	3.8	5.0	6.2	7.4	8.6	9.8	11.0	12.2	13.4	14.6	15.8	17.0	18.2	19.4
	N-60	2.1	3.6	5.1	6.6	8.1	9.6	11.1	12.6	14.1	15.6	17.1	18.6	20.1	21.6	23.1	24.6
	N-80	2.8	4.3	5.8	7.3	8.8	10.3	11.8	13.3	14.8	16.3	17.8	19.3	20.8	22.3	23.8	25.3
	N-100	3.5	5.0	6.5	8.0	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0
	N-120	4.2	5.7	7.2	8.7	10.2	11.7	13.2	14.7	16.2	17.7	19.2	20.7	22.2	23.7	25.2	26.7
4-1/2"	N-20	0.9	1.7	2.5	3.3	4.1	4.9	5.7	6.5	7.3	8.1	8.9	9.7	10.5	11.3	12.1	12.9
	N-40	1.5	2.9	4.3	5.7	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.1	22.5
	N-60	2.2	3.9	5.6	7.3	9.0	10.7	12.4	14.1	15.8	17.5	19.2	20.9	22.6	24.3	26.0	27.7
	N-80	2.9	4.6	6.3	8.0	9.7	11.4	13.1	14.8	16.5	18.2	19.9	21.6	23.3	25.0	26.7	28.4
	N-100	3.6	5.3	7.0	8.7	10.4	12.1	13.8	15.5	17.2	18.9	20.6	22.3	24.0	25.7	27.4	29.1
	N-120	4.3	6.0	7.7	9.4	11.1	12.8	14.5	16.2	17.9	19.6	21.3	23.0	24.7	26.4	28.1	29.8
5-1/2"	N-20	1.0	1.9	2.8	3.7	4.6	5.5	6.4	7.3	8.2	9.1	10.0	10.9	11.8	12.7	13.6	14.5
	N-40	1.6	3.1	4.6	6.1	7.6	9.1	10.6	12.1	13.6	15.1	16.6	18.1	19.6	21.1	22.6	24.1
	N-60	2.3	4.1	5.9	7.7	9.5	11.3	13.1	14.9	16.7	18.5	20.3	22.1	23.9	25.7	27.5	29.3
	N-80	3.0	4.9	6.7	8.6	10.4	12.2	14.0	15.8	17.6	19.4	21.2	23.0	24.8	26.6	28.4	30.2
	N-100	3.7	5.6	7.4	9.2	11.0	12.8	14.6	16.4	18.2	20.0	21.8	23.6	25.4	27.2	29.0	30.8
	N-120	4.4	6.3	8.1	9.9	11.7	13.5	15.3	17.1	18.9	20.7	22.5	24.3	26.1	27.9	29.7	31.5
6-1/2"	N-20	1.1	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1	10.1	11.1	12.1	13.1	14.1	15.1	16.1
	N-40	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3	17.0	18.7	20.4	22.1	23.8	25.5	27.2
	N-60	2.4	4.3	6.2	8.1	10.0	11.9	13.8	15.7	17.6	19.5	21.4	23.3	25.2	27.1	29.0	30.9
	N-80	3.1	5.0	6.9	8.8	10.7	12.6	14.5	16.4	18.3	20.2	22.1	24.0	25.9	27.8	29.7	31.6
	N-100	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1	19.0	20.9	22.8	24.7	26.6	28.5	30.4	32.3
	N-120	4.5	6.4	8.3	10.2	12.1	14.0	15.9	17.8	19.7	21.6	23.5	25.4	27.3	29.2	31.1	33.0
7-1/2"	N-20	1.2	2.3	3.4	4.5	5.6	6.7	7.8	8.9	10.0	11.1	12.2	13.3	14.4	15.5	16.6	17.7
	N-40	1.8	3.7	5.6	7.5	9.4	11.3	13.2	15.1	17.0	18.9	20.8	22.7	24.6	26.5	28.4	30.3
	N-60	2.5	4.6	6.7	8.8	10.9	13.0	15.1	17.2	19.3	21.4	23.5	25.6	27.7	29.8	31.9	34.0
	N-80	3.2	5.3	7.4	9.5	11.6	13.7	15.8	17.9	20.0	22.1	24.2	26.3	28.4	30.5	32.6	34.7
	N-100	3.9	6.0	8.1	10.2	12.3	14.4	16.5	18.6	20.7	22.8	24.9	27.0	29.1	31.2	33.3	35.4
	N-120	4.6	6.7	8.8	10.9	13.0	15.1	17.2	19.3	21.4	23.5	25.6	27.7	29.8	31.9	34.0	36.1
8-1/2"	N-20	1.3	2.5	3.7	4.9	6.1	7.3	8.5	9.7	10.9	12.1	13.3	14.5	15.7	16.9	18.1	19.3
	N-40	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	19.9	21.9	23.9	25.9	27.9	29.9	31.9
	N-60	2.6	4.8	6.9	9.0	11.1	13.2	15.3	17.4	19.5	21.6	23.7	25.8	27.9	30.0	32.1	34.2
	N-80	3.3	5.5	7.6	9.7	11.8	13.9	16.0	18.1	20.2	22.3	24.4	26.5	28.6	30.7	32.8	34.9
	N-100	4.0	6.2	8.3	10.4	12.5	14.6	16.7	18.8	20.9	23.0	25.1	27.2	29.3	31.4	33.5	35.6
	N-120	4.7	6.9	9.0	11.1	13.2	15.3	17.4	19.5	21.6	23.7	25.8	27.9	30.0	32.1	34.2	36.3
9-1/2"	N-20	1.4	2.7	4.0	5.3	6.6	7.9	9.2	10.5	11.8	13.1	14.4	15.7	17.0	18.3	19.6	20.9
	N-40	2.0	4.1	6.2	8.3	10.4	12.5	14.6	16.7	18.8	20.9	23.0	25.1	27.2	29.3	31.4	33.5
	N-60	2.7	5.0	7.1	9.2	11.3	13.4	15.5	17.6	19.7	21.8	23.9	26.0	28.1	30.2	32.3	34.4
	N-80	3.4	5.7	7.8	9.9	12.0	14.1	16.2	18.3	20.4	22.5	24.6	26.7	28.8	30.9	33.0	35.1
	N-100	4.1	6.4	8.5	10.6	12.7	14.8	16.9	19.0	21.1	23.2	25.3	27.4	29.5	31.6	33.7	35.8
	N-120	4.8	7.1	9.2	11.3	13.4	15.5	17.6	19.7	21.8	23.9	26.0	28.1	30.2	32.3	34.4	36.5
10-1/2"	N-20	1.5	2.9	4.3	5.7	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.1	22.5
	N-40	2.1	4.3	6.5	8.7	10.9	13.1	15.3	17.5	19.7	21.9	24.1	26.3	28.5	30.7	32.9	35.1
	N-60	2.8	5.2	7.5	9.8	12.1	14.4	16.7	19.0	21.3	23.6	25.9	28.2	30.5	32.8	35.1	37.4
	N-80	3.5	5.9	8.2	10.5	12.8	15.1	17.4	19.7	22.0	24.3	26.6	28.9	31.2	33.5	35.8	38.1
	N-100	4.2	6.6	8.9	11.2	13.5	15.8	18.1	20.4	22.7	25.0	27.3	29.6	31.9	34.2	36.5	38.8
	N-120	4.9	7.3	9.6	11.9	14.2	16.5	18.8	21.1	23.4	25.7	28.0	30.3	32.6	34.9	37.2	39.5
11-1/2"	N-20	1.6	3.1	4.6	6.1	7.6	9.1	10.6	12.1	13.6	15.1	16.6	18.1	19.6	21.1	22.6	24.1
	N-40	2.2	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23.0	25.3	27.6	29.9	32.2	34.5	36.8
	N-60	2.9	5.4	7.9	10.3	12.7	15.1	17.5	19.9	22.3	24.7	27.1	29.5	31.9	34.3	36.7	39.1
	N-80	3.6	6.1	8.5	10.9	13.3	15.7	18.1	20.5	22.9	25.3	27.7	30.1	32.5	34.9	37.3	39.7
	N-100	4.3	6.8	9.2	11.6	14.0	16.4	18.8	21.2	23.6	26.0	28.4	30.8	33.2	35.6	38.0	40.4
	N-120	5.0	7.5	9.9	12.3	14.7	17.1	19.5	21.9	24.3	26.7	29.1	31.5	33.9	36.3	38.7	41.1
12-1/2"	N-20	1.7	3.3	4.9	6.5	8.1	9.7	11.3	12.9	14.5	16.1	17.7	19.3	20.9	22.5	24.1	25.7
	N-40	2.3	4.9	7.3	9.7	12.1	14.5	16.9	19.3	21.7	24.1	26.5	28.9	31.3	33.7	36.1	38.5
	N-60	3.0	5.6	8.1	10.5	12.9	15.3	17.7	20.1	22.5	24.9	27.3	29.7	32.1	34.5	36.9	39.3
	N-80	3.7	6.3	8.7	11.1	13.5	15.9	18.3	20.7	23.1	25.5	27.9	30.3	32.7	35.1	37.5	39.9
	N-100	4.4	7.0	9.4	11.8	14.2	16.6	19.0	21.4	23.8	26.2	28.6	31.0	33.4	35.8	38.2	40.6
	N-120	5.1	7.7	10.1	12.5	14.9	17.3	19.7	22.1	24.5	26.9	29.3	31.7	34.1	36.5	38.9	41.3

1. Above table may be used for I-joist spacing of 24 inches on centre or less.

2. Hole location distance is measured from inside face of supports to centre of hole.

3. Distances in this chart are based on uniformly loaded joists.

Produced by: Lateral x D

Where: Lateral = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (1). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.

D = The actual measured span distance between the inside faces of supports (ft.).

SAF = Span Adjustment Factor given in this table.

D = The minimum distance from the inside face of any support to centre of hole from this table.

If Lateral is greater than 1, use 1 in the above calculation for Lateral.

SAF =

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only

Joist Depth (in.)	Joist Series	Minimum distance from inside face of any support to centre of duct chase opening (in.)											
		0	1	2	3	4	5	6	7	8	9	10	11
2-1/2"	N-20	1.1	1.8	2.5	3.2	3.9	4.6	5.3	6.0	6.7	7.4	8.1	8.8
	N-40	1.8	2.9	3.9	4.9	5.9	6.9	7.9	8.9	9.9	10.9	11.9	12.9
	N-60	2.5	3.9	5.3	6.7	8.1	9.5	10.9	12.3	13.7	15.1	16.5	17.9
3-1/2"	N-20	1.2	2.0	2.8	3.6	4.4	5.2	6.0	6.8	7.6	8.4	9.2	10.0
	N-40	2.0	3.2	4.4	5.6	6.8	8.0	9.2	10.4	11.6	12.8	14.0	15.2
	N-60	2.7	4.1	5.5	6.9	8.3	9.7	11.1	12.5	13.9	15.3	16.7	18.1
4-1/2"	N-20	1.3	2.2	3.1	4.0	4.9	5.8	6.7	7.6	8.5	9.4	10.3	11.2
	N-40	2.1	3.4	4.7	6.0	7.3	8.6	9.9	11.2	12.5	13.8	15.1	16.4
	N-60	2.8	4.3	5.7	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3
5-1/2"	N-20	1.4	2.4	3.4	4.4	5.4	6.4	7.4	8.4	9.4	10.4	11.4	12.4
	N-40	2.2	3.7	5.1	6.5	7.9	9.3	10.7	12.1	13.5	14.9	16.3	17.7
	N-60	2.9	4.6	6.2	7.8	9.4	11.0	12.6	14.2	15.8	17.4	19.0	20.6
6-1/2"	N-20	1.5	2.6	3.7	4.8	5.9	7.0	8.1	9.2	10.3	11.4	12.5	13.6
	N-40	2.3	3.9	5.5	7.1	8.7	10.3	11.9	13.5	15.1	16.7	18.3	19.9
	N-60	3.0	4.8	6.6	8.4	10.2	12.0	13.8	15.6	17.4	19.2	21.0	22.8
7-1/2"	N-20	1.6	2.8	4.0	5.2	6.4	7.6	8.8	10.0	11.2	12.4	13.6	14.8
	N-40	2.4	4.1	5.8	7.5	9.2	10.9	12.6	14.3	16.0	17.7	19.4	21.1
	N-60	3.1	5.0	6.9	8.8	10.7	12.6	14.5	16.4	18.3	20.2	22.1	24.0
8-1/2"	N-20	1.7	3.0	4.3	5.6	6.9	8.2	9.5	10.8	12.1	13.4	14.7	16.0
	N-40	2.5	4.3	6.1	7.9	9.7	11.5	13.3	15.1	16.9	18.7	20.5	22.3
	N-60	3.2	5.3	7.3	9.3	11.3	13.3	15.3	17.3	19.3	21.3	23.3	25.3
9-1/2"	N-20	1.8	3.2	4.6	6.0	7.4	8.8	10.2	11.6	13.0	14.4	15.8	17.2
	N-40	2.6	4.5	6.4	8.3	10.2	12.1	14.0	15.9	17.8	19.7	21.6	23.5
	N-60	3.3	5.5	7.6	9.7	11.8	13.9	16.0	18.1	20.2	22.3	24.4	26.5
10-1/2"	N-20	1.9	3.4	4.9	6.4	7.9	9.4	10.9	12.4	13.9	15.4	16.9	18.4
	N-40	2.7	4.7	6.7	8.7	10.7	12.7	14.7	16.7	18.7	20.7	22.7	24.7
	N-60	3.4	5.7	7.9	10.1	12.3	14.5	16.7	18.9	21.1	23.3	25.5	27.7
11-1/2"	N-20	2.0	3.6	5.1	6.6	8.1	9.6	11.1	12.6	14.1	15.6	17.1	18.6
	N-40	2.8	4.9	6.9	8.9	10.9	12.9	14.9	16.9	18.9	20.9	22.9	24.9
	N-60	3.5	5.9	8.1	10.3	12.5	14.7	16.9	19.1	21.3	23.5	25.7	27.9
12-1/2"	N-20	2.1	3.8	5.4	7.0	8.6	10.2	11.8	13.4	15.0	16.6	18.2	19.8
	N-40	2.9	5.1	7.2	9.3	11.4	13.5	15.6	17.7	19.8	21.9	24.0	26.1
	N-60	3.6	6.1	8.3	10.5	12.7	14.9	17.1	19.3	21.5	23.7	25.9	28.1

1. Above table may be used for I-joist spacing of 24 inches on centre or less.

2. Duct chase opening location distance is measured from inside face of supports to centre of opening.

3. The above table is based on simple span joists only. For other applications, contact your local distributor.

4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water, or ice from I-Joist flanges before gluing.
- Snap a chalk line across the I-Joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tipped into place with a block and sledgehammer.
- Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-Joist. Apply glue in a winding pattern on wide areas, such as will double I-Joists.
- Apply two lines of glue on I-Joists where panel ends butt to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-Joist flanges.
- Top the second row of panels into place, using a block to protect groove edges.
- Stagger and joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 1/2-1/2" common nail to assure accurate and consistent spacing.)
- Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Minimum Sheathing Thickness (in.)	Panel Size (ft. x ft.)	Nail Size and Type		Nail Spacing (in.)		Maximum Span (ft.)
		Ends and Edges	Field	Ends and Edges	Field	
1/2	4/8	2"	1-3/4"	2"	6"	12'
5/8	5/8	2"	1-3/4"	2"	6"	12'
3/4	3/4	2"	1-3/4"	2"	6"	12'

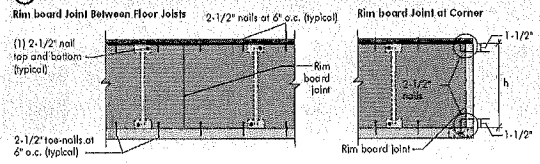
- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
- Use only adhesives conforming to CAN/CGSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:
Floor sheathing must be field glued to the I-Joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-Joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

80 ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



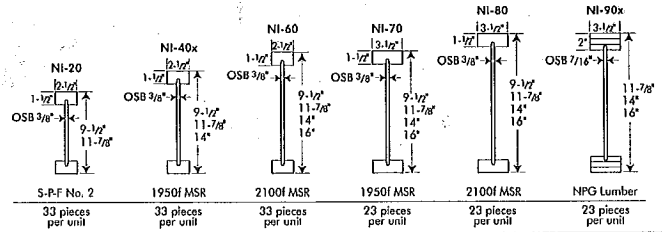


CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / September 2013



Refer to the Installation Guide for Residential Floors for additional information.
CCMC EVALUATION REPORT 13032-R



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centred on the middle of the web.
4. The maximum size hole or the maximum depth of a duct chase opening that can be cut into a joist web shall equal the clear distance between the flanges of the joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent joist flange.

5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
7. A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft. - in.)											
		Round Hole Diameter (in.)											
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	...	...	...	...	...	...
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	...	...	...	...	...	...
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	...	...	...	...	...	...
	NI-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	...	...	...	...	...	...
	NI-80	2-3"	3-6"	5-0"	6-6"	8-2"	8-8"	...	...	...	...	...	...
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	...	...	...
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-5"	7-0"	8-4"	...	...	...
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	...	...	...
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	...	...	...
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	...	...	...
14"	NI-20	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	...	...	...	...	...
	NI-40x	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"
	NI-60	0-7"	0-8"	1-8"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	8-8"	10-4"	11-9"
	NI-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"
	NI-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"
16"	NI-20	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"
	NI-40x	0-7"	0-8"	1-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"
	NI-60	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"
	NI-70	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"
	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"

1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Hole location distance is measured from inside face of supports to centre of hole.
3. Distances in this chart are based on uniformly loaded joists.
4. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

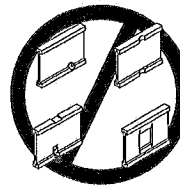
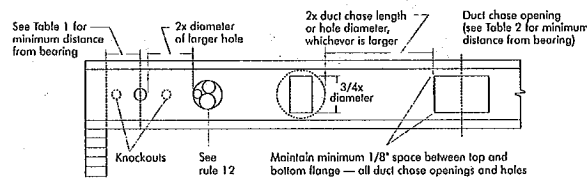
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft. - in.)											
		Duct Chase Length (in.)											
		8	10	12	14	16	18	20	22	24			
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"			
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"			
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"			
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"			
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"			
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"			
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"			
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"			
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"			
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-8"			
14"	NI-20	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	11-2"			
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"			
	NI-60	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-3"	13-0"			
	NI-70	8-7"	9-1"	9-5"	10-1"	10-4"	10-8"	11-2"	11-7"	12-3"			
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"			
16"	NI-20	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"			
	NI-40x	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"			
	NI-60	10-1"	10-5"	11-0"	11-4"	11-9"	12-4"	12-8"	13-3"	14-0"			
	NI-70	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-8"	14-4"			
	NI-80	11-1"	11-5"	11-10"	11-4"	12-1"	12-7"	13-2"	13-9"	14-4"			

1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Duct chase opening location distance is measured from inside face of supports to centre of opening.
3. The above table is based on simple-span joists only. For other applications, contact your local distributor.
4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
5. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

SAFETY AND CONSTRUCTION PRECAUTIONS



Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



Never stack building materials over unshathed I-joists. Once sheathed, do not over-stress I-joists with concentrated loads from building materials.

WARNING: I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.



PRODUCT WARRANTY

Chambers Chirogagan guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

Furthermore, Chambers Chirogagan warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.

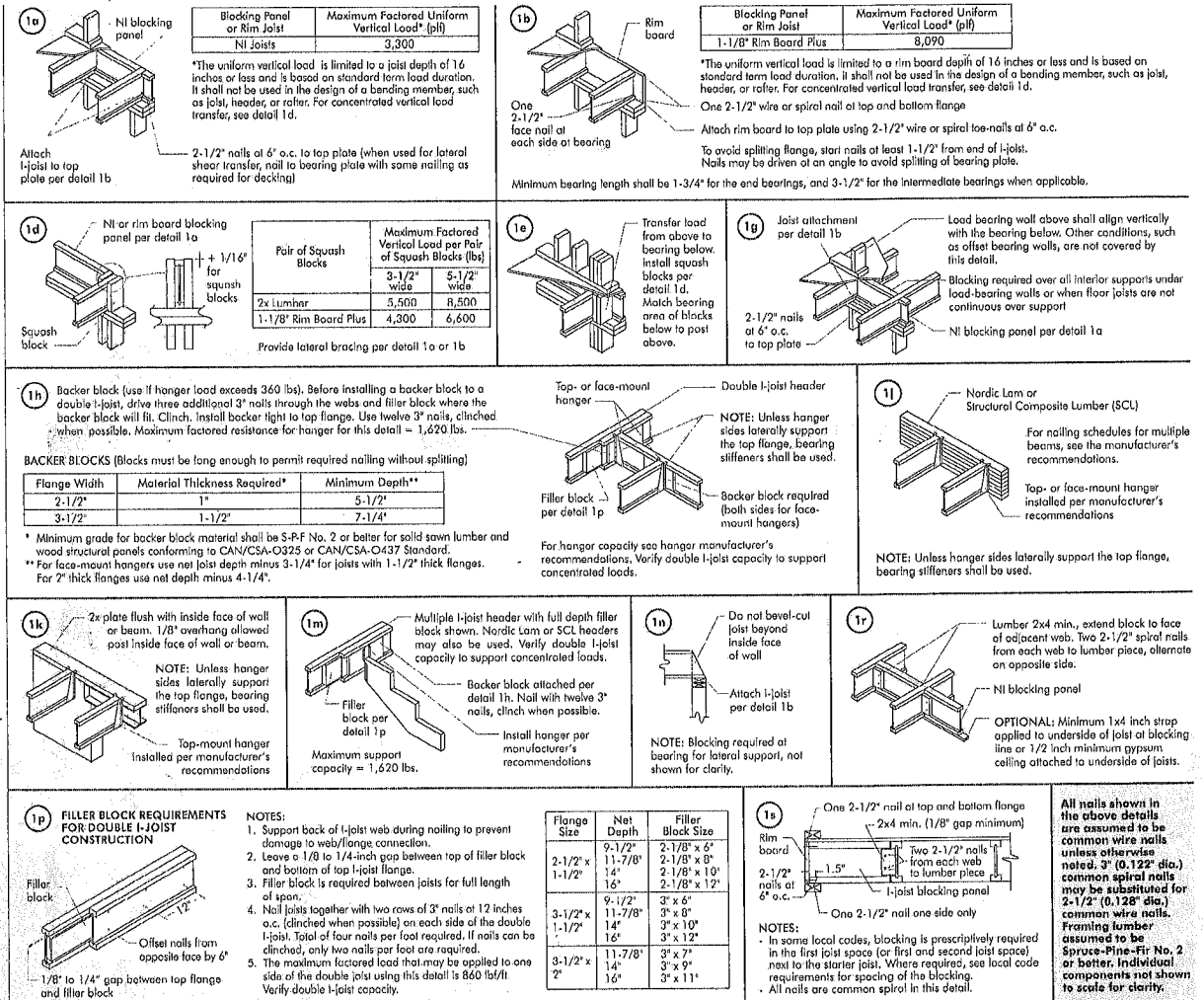
The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



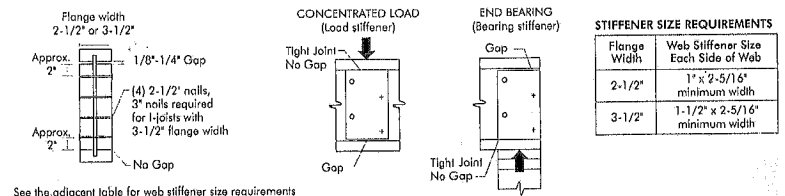
WEB STIFFENERS

RECOMMENDATIONS:

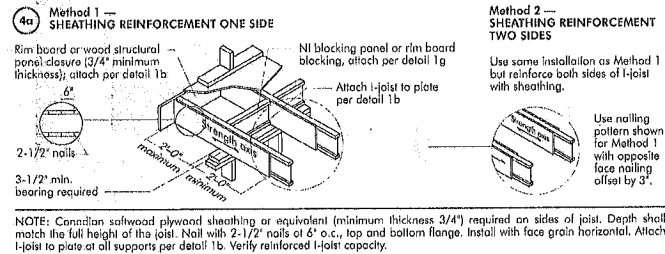
- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

FIGURE 2

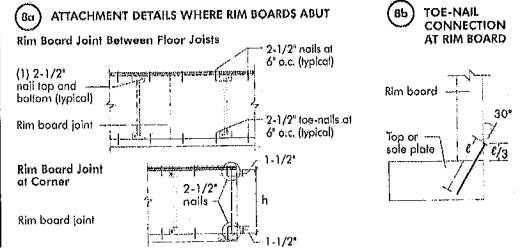
WEB STIFFENER INSTALLATION DETAILS



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET



RIM BOARD INSTALLATION DETAILS



The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



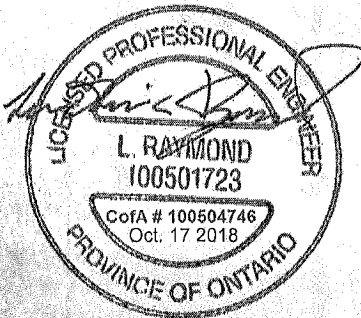
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

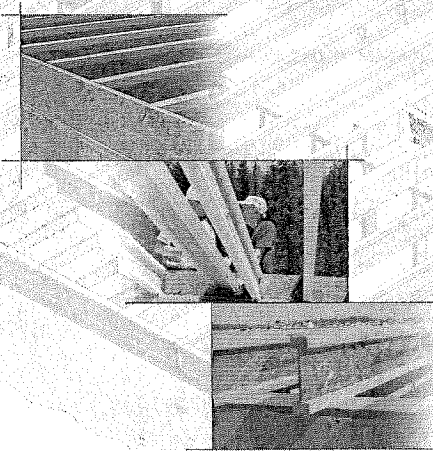
This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



NORDIC ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS

WARNING

I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

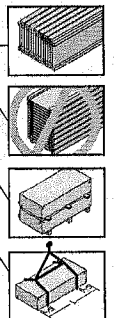
Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-briding at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-briding.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

STORAGE AND HANDLING GUIDELINES

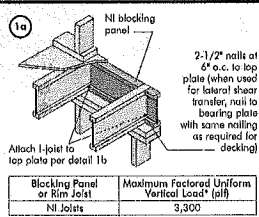
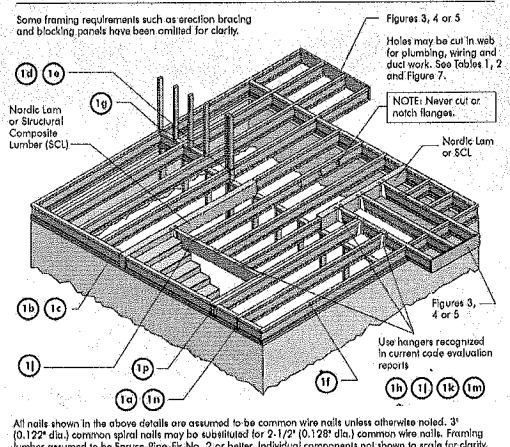
1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flatwise.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



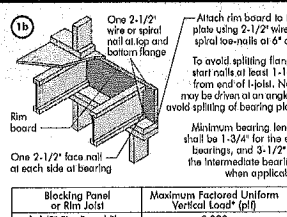
INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set as edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

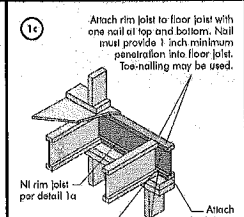
FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS



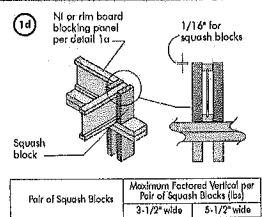
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter, for concentrated vertical load transfer, see detail 1d.



*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*The uniform vertical load is limited to a rim joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*The uniform vertical load is limited to a squash block depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.