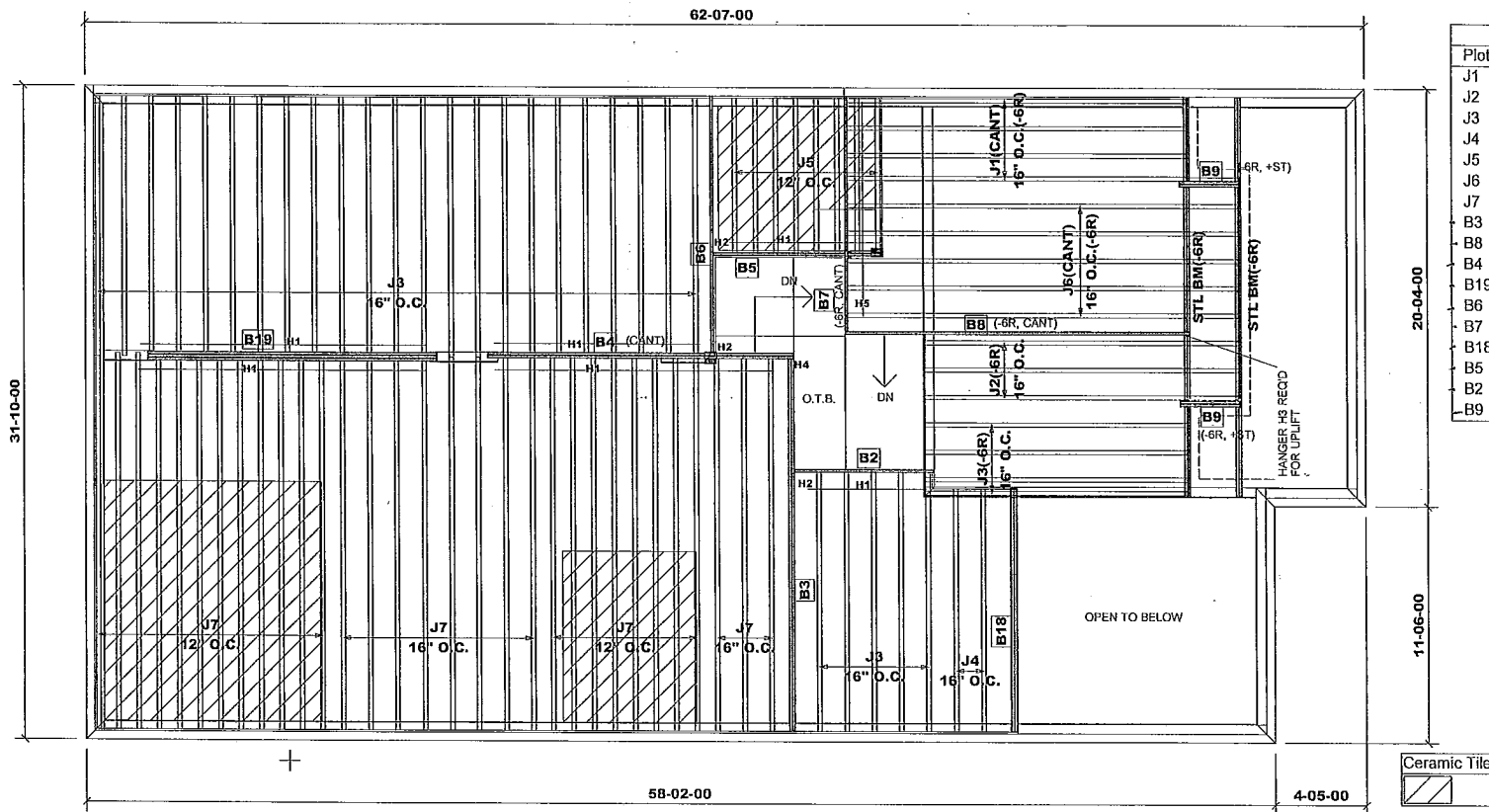




Products				
PlotID	Length	Product	Plies	Net Qty
J1	17-00-00	11 7/8" NI-20	1	4
J2	16-00-00	11 7/8" NI-20	1	3
J3	13-00-00	11 7/8" NI-20	1	32
J4	12-00-00	11 7/8" NI-20	1	2
J5	8-00-00	11 7/8" NI-20	1	8
J6	20-00-00	11 7/8" NI-40x	1	5
J7	19-00-00	11 7/8" NI-40x	1	31
B3	19-00-00	VERSALAM-12 2.0E	2	2
B8	17-00-00	VERSALAM-12 2.0E	1	1
B4	15-00-00	VERSALAM-12 2.0E	2	2
B19	15-00-00	VERSALAM-12 2.0E	3	3
B6	13-00-00	VERSALAM-12 2.0E	1	1
B7	12-00-00	VERSALAM-12 2.0E	1	1
B18	12-00-00	VERSALAM-12 2.0E	2	2
B5	9-00-00	VERSALAM-12 2.0E	1	1
B2	7-00-00	VERSALAM-12 2.0E	1	1
B9	3-00-00	VERSALAM-12 2.0E	2	4

HANGER SCHEDULE

H1-----LT251188 (TM)
H2-----HUS1.81/10(FM)
H4-----HUC410(FM)
H5-----HU310(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

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

Provide I-Joist Blocking between cantilevered joists (along bearing) and rimboard closure at ends.

1-2X6 SPF#2 Squash Block req'd on one side of each joist under interior load bearing wall. Multiple Squash Blocks are req'd under concentrated loads.

JT/PL: 45147/98839

Builder: Gold Park

Location: Vaughan

Designer: NL

Alpa Roof Trusses Inc.

Salesperson: Derek

LI: 299722(290676)

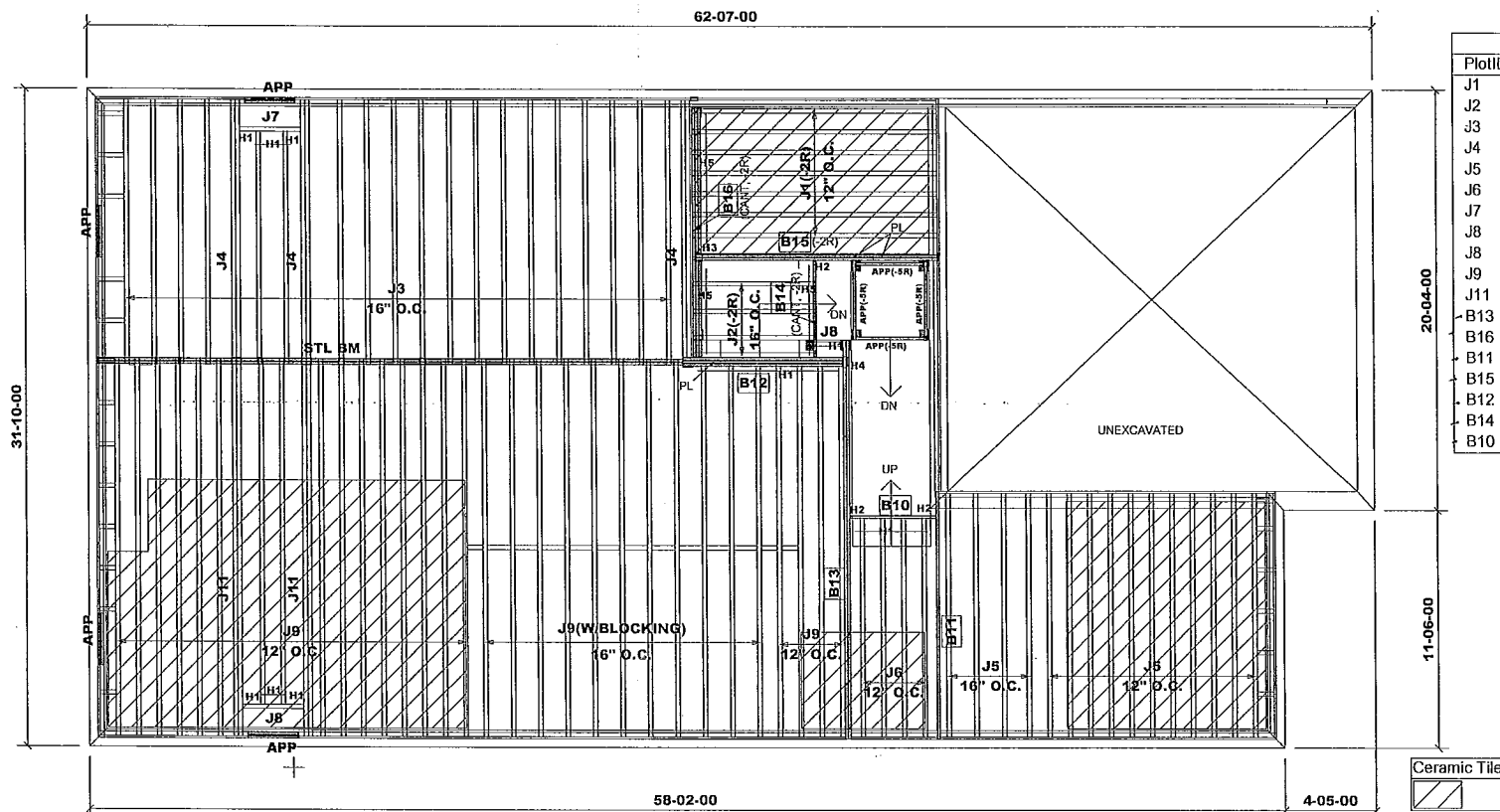
Project: Pine Valley

Date: June 29, 2018

Sheet: 1 of 3

Maple, Ontario

Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-20	1	7
J2	6-00-00	9 1/2" NI-20	1	4
J3	13-00-00	11 7/8" NI-20	1	19
J4	13-00-00	11 7/8" NI-20	2	6
J5	12-00-00	11 7/8" NI-20	1	15
J6	11-00-00	11 7/8" NI-20	1	4
J7	3-00-00	11 7/8" NI-20	1	1
J8	3-00-00	11 7/8" NI-20	1	1
J8	2-00-00	11 7/8" NI-20	1	1
J9	19-00-00	11 7/8" NI-40x	1	31
J11	19-00-00	11 7/8" NI-40x	2	4
B13	20-00-00	VERSALAM-12 2.0E	2	2
B16	13-00-00	VERSALAM-10 2.0E	3	3
B11	12-00-00	VERSALAM-12 2.0E	1	1
B15	12-00-00	VERSALAM-10 2.0E	2	2
B12	8-00-00	VERSALAM-12 2.0E	3	3
B14	5-00-00	VERSALAM-10 2.0E	1	1
B10	5-00-00	VERSALAM-12 2.0E	1	1

HANGER SCHEDULE

H1 ———— LT251188 (TM)
H2 ———— HUS1.81/10(FM)
H3 ———— HGUS410(FM)
H4 ———— HGUS5.5/10(FM)
H5 ———— LT259(TM)

NOTE:
TM ———— TOP MOUNT HANGERS
FM ———— FACE MOUNT HANGERS

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

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

1-2X6 SPF#2 Squash Block req'd on one side of each joist under interior load bearing wall. Multiple Squash Blocks are req'd under concentrated loads.

REVISION: June 29, 2018

MODEL: UNIT 4003 - EL.A+B
+ OPT. LOGGIA

First Floor Framing

Do not scale - refer to architectural plans for dimensions

11 7/8" BLOCKING
TOTAL LENGTH: 45'

JT/PL: 45147/98839
LI: 299722(290676)

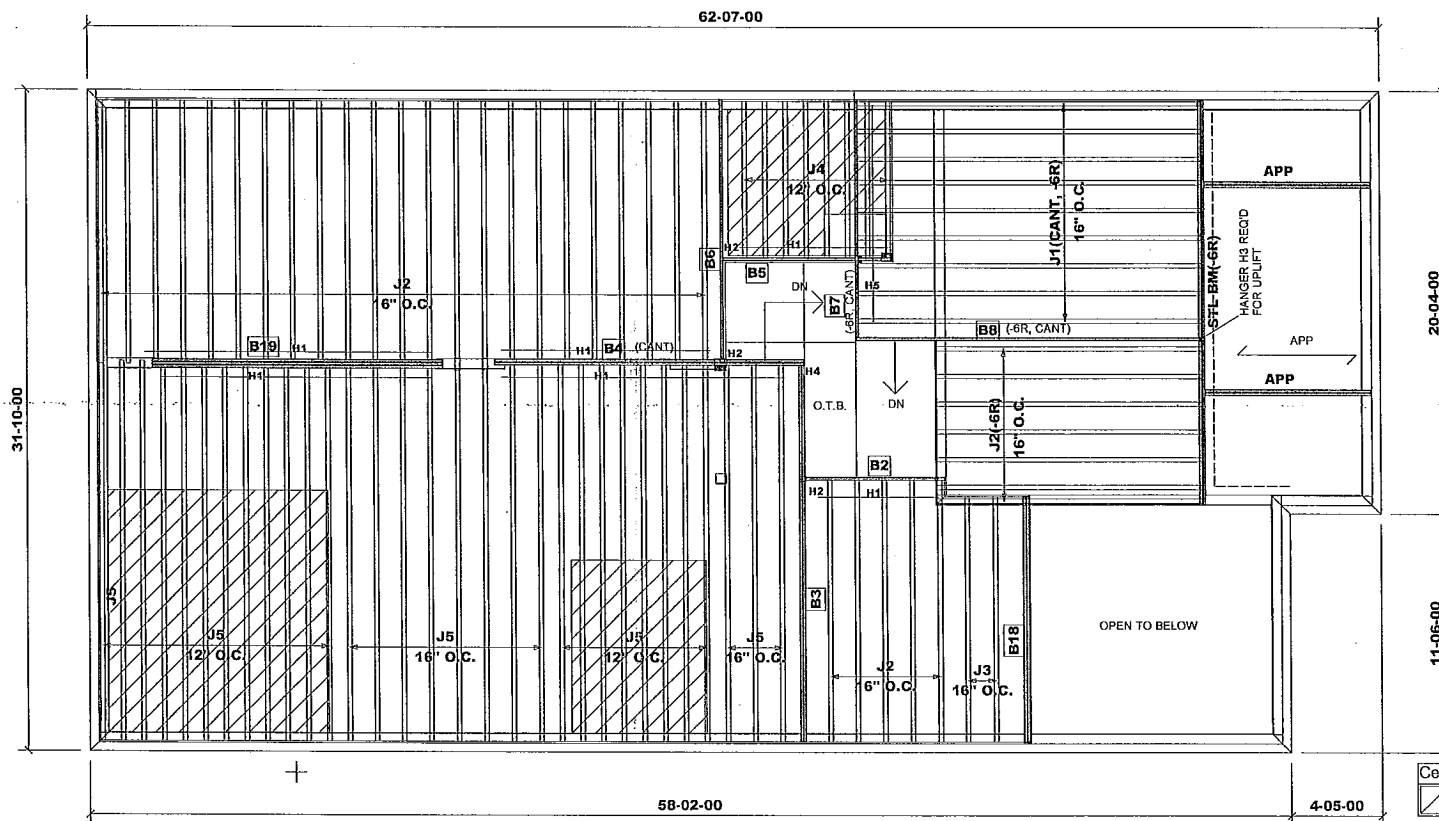
Builder: Gold Park
Project: Pine Valley

Location: Vaughan
Date: June 29, 2018

Designer: NL
Sheet: 2 of 3

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
J1	17-00-00	11 7/8" NI-20	1	9
J2	13-00-00	11 7/8" NI-20	1	35
J3	12-00-00	11 7/8" NI-20	1	2
J4	8-00-00	11 7/8" NI-20	1	8
J5	19-00-00	11 7/8" NI-40x	1	31
B3	19-00-00	VERSALAM-12 2.0E	2	2
B8	17-00-00	VERSALAM-12 2.0E	1	1
B4	15-00-00	VERSALAM-12 2.0E	2	2
B19	15-00-00	VERSALAM-12 2.0E	3	3
B6	13-00-00	VERSALAM-12 2.0E	1	1
B7	12-00-00	VERSALAM-12 2.0E	1	1
B18	12-00-00	VERSALAM-12 2.0E	2	2
B5	9-00-00	VERSALAM-12 2.0E	1	1
B2	7-00-00	VERSALAM-12 2.0E	1	1

HANGER SCHEDULE

H1 ——— LT251188 (TM)
H2 ——— HUS1.81/10(FM)
H4 ——— HUC410(FM)
H5 ——— HU310(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

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

Provide I-Joist Blocking between cantilevered joists (along bearing) and rimboard closure at ends.

1-2X6 SPF#2 Squash Block req'd on one side of each joist under interior load bearing wall. Multiple Squash Blocks are req'd under concentrated loads.

REVISION: June 29, 2018

MODEL: UNIT 4003 - EL.B
+ OPT. LOGGIA

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

11 7/8" BLOCKING

TOTAL LENGTH: 13'

JT/PL: 45147/98839

Builder: Gold Park

Location: Vaughan

Designer: NL

Alpa Roof Trusses Inc.

Salesperson: Derek

LI: 299722(290676)

Project: Pine Valley

Date: June 29, 2018

Sheet: 3 of 3

Maple, Ontario

Home Lumber



June 29, 2018 08:46:18

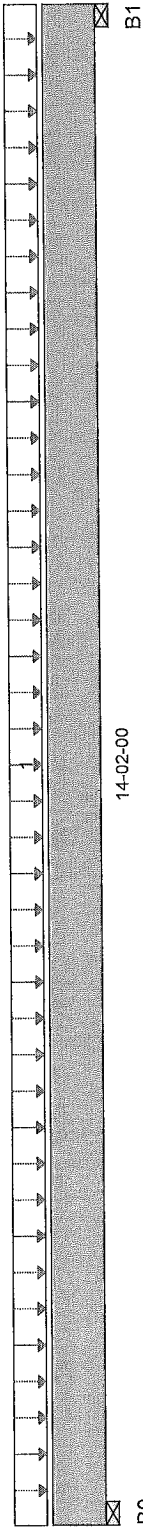
BC CALC® Design Report



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

Build 6536
Job Name: 45147 (4003)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File Name: 290676.bcc
Description: Second Floor Framing
Specifier:
Designer: NL
Company: Alpa Roof Trusses
Misc:



Total Horizontal Product Length = 14-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	4,392 / 0	2,324 / 0		
B1, 3-1/2"	4,392 / 0	2,324 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	14-02-00	40	20		1.00 1.15	15-06-00

Controls Summary

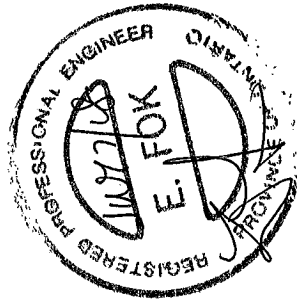
	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	31,478 ft-lbs	55,212 ft-lbs	57%	1	07-01-00
End Shear	7,775 lbs	21,696 lbs	35.8%	1	01-03-06
Total Load Defl.	L/320 (0.514")	0.685"	75%	4	07-01-00
Live Load Defl.	L/489 (0.336")	0.457"	73.6%	5	07-01-00
Max Defl.	0.514"	1"	51.4%	4	07-01-00
Span / Depth	13.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 5-1/4"	9,492 lbs	84%	42.3%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 5-1/4"	9,492 lbs	84%	42.3%	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 @ 6"
o.c, staggered in 2 rows



S.157098



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B18

January 22, 2018 10:03:53



BC CALC® Design Report

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

File Name: 290676.bcc

Description: Second Floor Framing

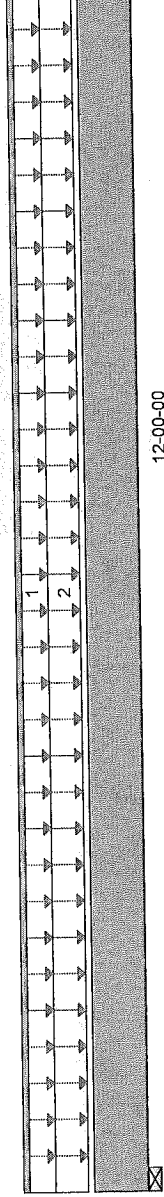
Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:

CCMC 12472-R



12-00-00

Total Horizontal Product Length = 12-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	156 / 0	815 / 0	605 / 0	
B1, 3-1/2"	99 / 0	544 / 0	384 / 0	

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	09-05-00	27	74			n/a
2	Unf. Area (lb/ft^2)	L	00-00-00	09-05-00	11	11		21	05-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,331 ft-lbs	35,392 ft-lbs	15.1%	5	05-08-12
End Shear	1,559 lbs	14,464 lbs	10.8%	5	01-03-06
Total Load Defl.	L/999 (0.092")	n/a	n/a	13	05-11-13
Live Load Defl.	L/999 (0.04")	n/a	n/a	17	05-10-05
Max Defl.	0.092"	n/a	n/a	13	05-11-13
Span / Depth	11.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

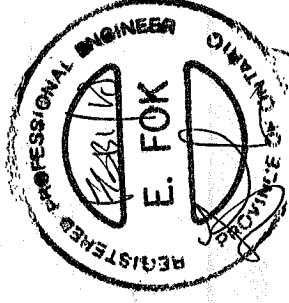
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	2,004 lbs	26.6%	13.4%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,305 lbs	17.3%	8.7%	Spruce Pine Fir

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 @ 12"
o.c, staggered in 2 rows



S-153658



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B02

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

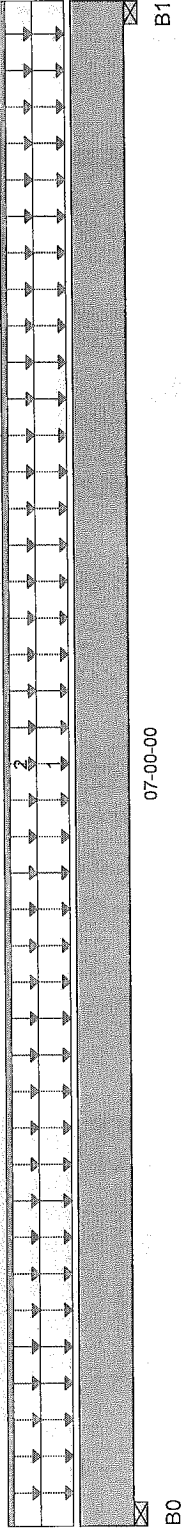
November 19, 2017 10:13:50

BC CALC® Design Report



Build 6080
 Name: 45147 (4003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290676.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 07-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	898 / 0	568 / 0		
B1, 3-1/2"	898 / 0	568 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	07-00-00	40	15			06-05-00
2	Unf. Lin. (lb/ft)	L	00-00-00	07-00-00		60			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,144 ft-lbs	17,696 ft-lbs	17.8%	1	03-06-00
End Shear	1,304 lbs	7,232 lbs	18%	1	01-03-06
Total Load Defl.	L/999 (0.035")	n/a	n/a	4	03-06-00
Live Load Defl.	L/999 (0.022")	n/a	n/a	5	03-06-00
Max Defl.	0.035"	n/a	n/a	4	03-06-00
Span / Depth	6.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

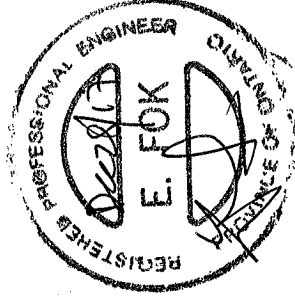
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance 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	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	2,057 lbs	54.6%	27.5%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	2,057 lbs	54.6%	27.5%	Spruce Pine Fir

BC CALC®, BC FRAMER®, AUS™, ALLJOIST®, BC RIM BOARD™, BC®, 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.

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



5152673



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B03



BC CALC® Design Report

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

November 19, 2017 10:15:20

Build 6080

Name:

45147 (4003)

Address:

Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290676.bcc

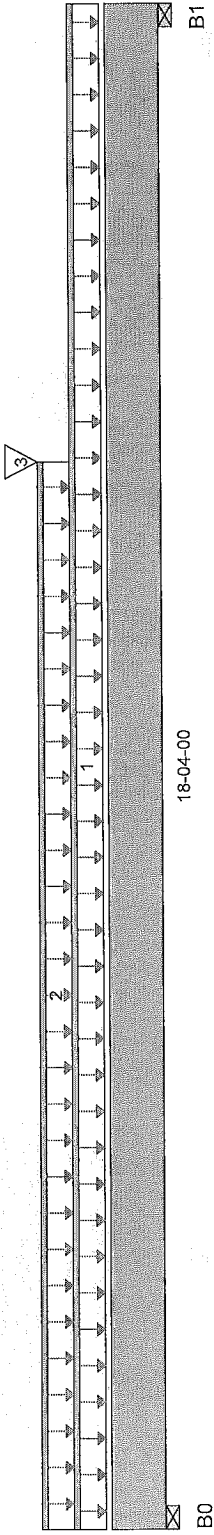
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 18-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	739 / 0	524 / 0		
B1, 3-1/2"	1,001 / 0	701 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	18-04-00	27	14			n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	12-10-00	27	14			n/a
	Conc. Pt. (lbs)	L	12-10-00	12-10-00	898	568			n/a

Controls Summary

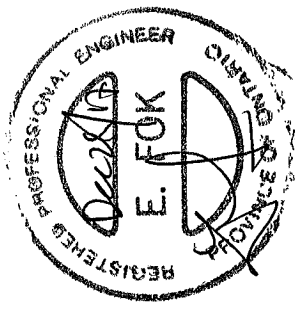
Pos.	Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
1	11,429 ft-lbs	35,392 ft-lbs	32.3%	1	12-10-00	
End Shear	2,284 lbs	14,464 lbs	15.8%	1	17-00-10	
Total Load Defl.	L/482 (0.445")	0.894"	49.8%	4	09-07-00	
Live Load Defl.	L/815 (0.263")	0.596"	44.2%	5	09-07-00	
Max Defl.	0.445"	1"	44.5%	4	09-07-00	
Span / Depth	18.1	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 Wall/Plate	3-1/2" x 3-1/2"	1,763 lbs	23.4%	11.8%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	2,378 lbs	31.6%	15.9%	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



S-152674



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B04

Dry | 2 spans | Right cantilever | 0/12 slope (deg)

November 19, 2017 11:45:53



BC CALC® Design Report

Build 6080

Job Name:

Address:

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

45147 (4003)

Pine Valley

File Name: 290676.bcc

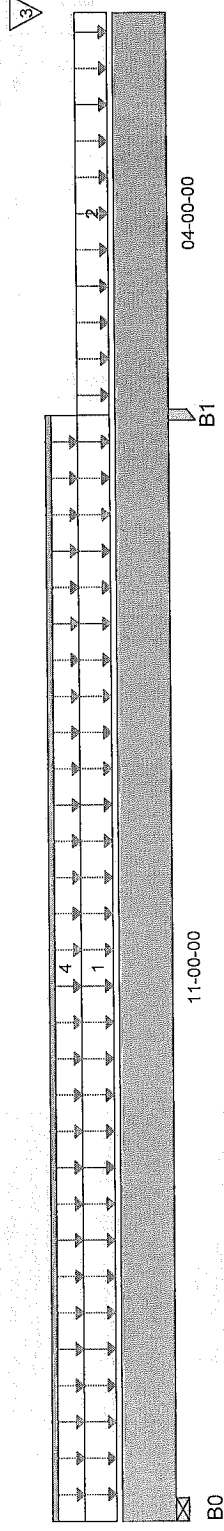
Description: Second Floor Framing

Specifier:

NL

Designer: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 15'-00-00

Reaction Summary (Down / Uplift) (lbs)

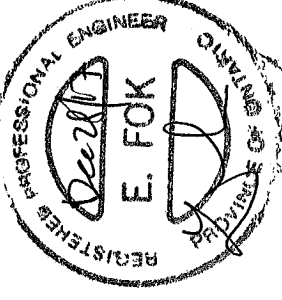
Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3,481 / 661	1,767 / 0		
B1, 3-1/2"	6,561 / 0	3,769 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	11-00-00	40	20			15-06-00
2	Unf. Area (lb/ft²)	L	11-00-00	15-00-00	40	15			09-09-00
3	Conc. Pt. (lbs)	L	15-00-00	15-00-00	1,001	701			n/a
4	Unf. Lin. (lb/ft)	L	00-00-00	11-00-00		60			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	17,946 ft-lbs	35,392 ft-lbs	50.7%	2	05-03-11
Neg. Moment	-15,774 ft-lbs	-35,392 ft-lbs	44.6%	3	11-00-00
End Shear	5,627 lbs	14,464 lbs	38.9%	2	01-03-06
Cont. Shear	7,447 lbs	14,464 lbs	51.5%	1	09-10-06
Total Load Defl.	2xL/402 (0.239")	0.4"	59.7%	10	15-00-00
Live Load Defl.	2xL/399 (0.241")	0.267"	90.3%	13	15-00-00
Total Neg. Defl.	2xL/417 (-0.23")	-0.4"	57.6%	9	15-00-00
Max Defl.	0.259"	1"	25.9%	9	05-05-04
Cant. Max Defl.	0.239"	1"	23.9%	10	15-00-00
Span / Depth	10.9	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"	7,430 lbs	98.6%	49.7%	Spruce Pine Fir
B1 Post	3-1/2" x 3-1/2"	14,554 lbs	68.5%	97.4%	Spruce Pine Fir

Cautions

Long Cantilever: Sheathing required on bottom flange and adjacent back span or bracing designed by the design professional of record. Design professional of record must address uplift at supports.

as

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

S.152675



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B05



BC CALC® Design Report

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

November 19, 2017 12:01:18

Build 6080

Name: 45147 (4003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290676.bcc

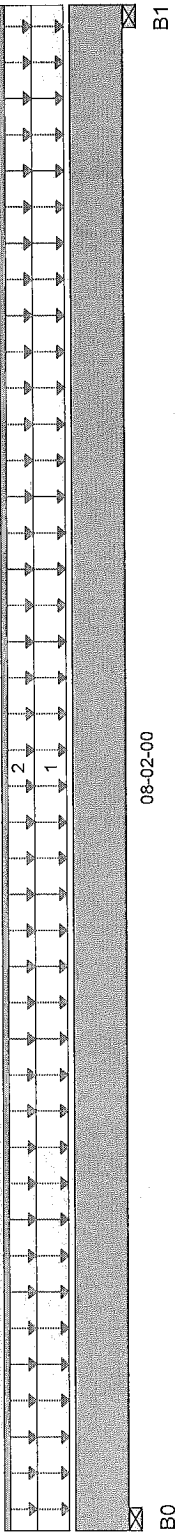
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



B0

08-02-00

B1

Total Horizontal Product Length = 08-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	653 / 0	596 / 0		
B1, 3-1/2"	653 / 0	596 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	08-02-00	40	20			04-00-00
2	Unf. Lin. (lb/ft)	L	00-00-00	08-02-00	60	60			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,138 ft-lbs	17,696 ft-lbs	17.7%	1	04-01-00
End Shear	1,184 lbs	7,232 lbs	16.4%	1	01-03-06
Total Load Defl.	L/999 (0.05")	n/a	n/a	4	04-01-00
Live Load Defl.	L/999 (0.026")	n/a	n/a	5	04-01-00
Max Defl.	0.05"	n/a	n/a	4	04-01-00
Span / Depth	7.8	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.

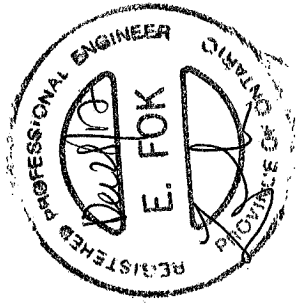
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Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,725 lbs	45.8%	23.1%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,725 lbs	45.8%	23.1%	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





Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B06

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

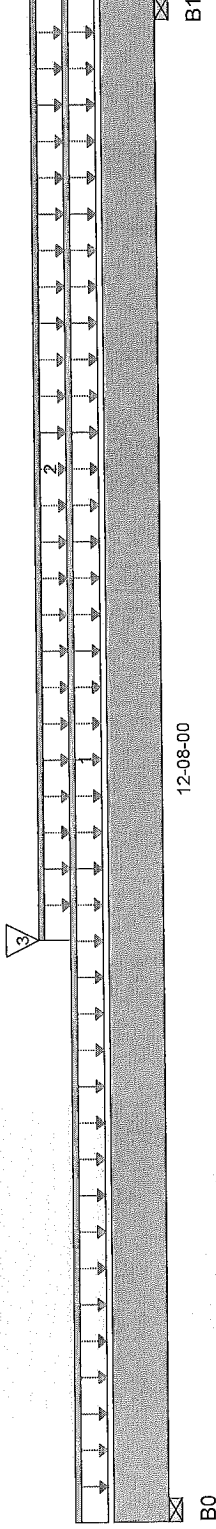
November 19, 2017 12:00:51

BC CALC® Design Report



Build 6080
 Name: 45147 (4003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290676.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 12-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	642 / 0	911 / 0		
B1, 3-1/2"	565 / 0	808 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	12-08-00	27	74			n/a
2	Unf. Lin. (lb/ft)	L	04-10-00	12-08-00	27	14			n/a
3	Conc. Pt. (lbs)	L	04-10-00	04-10-00	653	596			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,037 ft-lbs	17,696 ft-lbs	45.4%	1	04-10-00
End Shear	1,922 lbs	7,232 lbs	26.6%	1	01-03-06
Total Load Defl.	L/501 (0.292")	0.61"	47.9%	4	06-00-12
Live Load Defl.	L/1,151 (0.127")	0.407"	31.3%	5	06-00-12
Max Defl.	0.292"	1"	29.2%	4	06-00-12
Span / Depth	12.3	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.

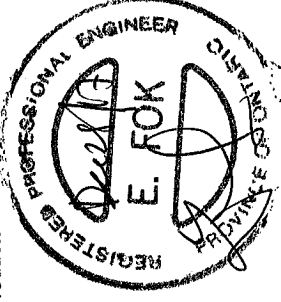
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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	2,102 lbs	55.8%	28.1%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,857 lbs	49.3%	24.9%	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



S152677



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B07



BC CALC® Design Report

Dry | 2 spans | Left cantilever | 0/12 slope (deg)

November 19, 2017 12:04:51

Build 6080

File Name: 290676.bcc

Name: 45147 (4003)

Description: Second Floor Framing

Address: Pine Valley

Specifier:

City, Province, Postal Code: Vaughan, ON

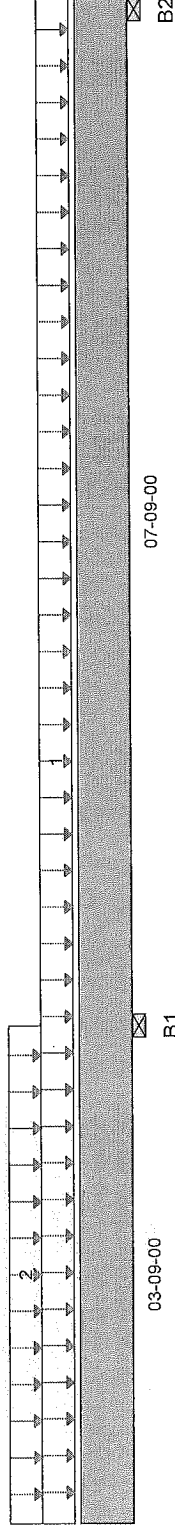
Designer: NL

Customer: Gold Park

Company: Alpa Roof Trusses

Code reports: CCMC 12472-R

Misc:



Total Horizontal Product Length = 11-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind	Trib.
B1, 3-1/2"	957 / 0	410 / 0			
B2, 3-1/2"	319 / 131	89 / 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	11-06-00	40	15			02-00-00
2	Unf. Area (lb/ft^2)	L	00-00-00	03-09-00	40	15			01-06-00

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	924 ft-lbs	17,696 ft-lbs	5.2%	3	07-10-10
Neg. Moment	-1,991 ft-lbs	-17,696 ft-lbs	11.3%	1	03-09-00
End Shear	379 lbs	7,232 lbs	5.2%	3	10-02-10
Cont. Shear	740 lbs	7,232 lbs	10.2%	1	02-07-06
Total Load Defl.	2xL/1,998 (0.055")	n/a	n/a	9	00-00-00
Live Load Defl.	2xL/1,998 (0.045")	n/a	n/a	12	00-00-00
Total Neg. Defl.	L/999 (-0.013")	n/a	n/a	9	06-07-10
Max Defl.	-0.013"	n/a	n/a	9	06-07-10
Cant. Max Defl.	0.055"	n/a	n/a	9	00-00-00
Span / Depth	7.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

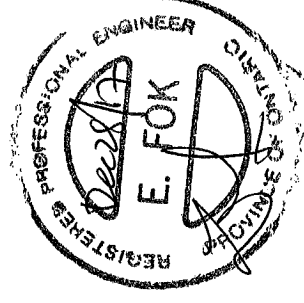
Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Wall/Plate	3-1/2" x 1-3/4"	1,947 lbs	51.7%	26.1%	Spruce Pine Fir
B2 Wall/Plate	3-1/2" x 1-3/4"	590 lbs	15.7%	7.9%	Spruce Pine Fir

Cautions

Uplift of 116 lbs found at span 2 - Right.
Long Cantilever: Sheathing required on bottom flange and adjacent back span or bracing designed by the design professional of record. Design professional of record must address uplift at supports.

Notes



8152678



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B08

Dry | 2 spans | Left cantilever | 0/12 slope (deg)

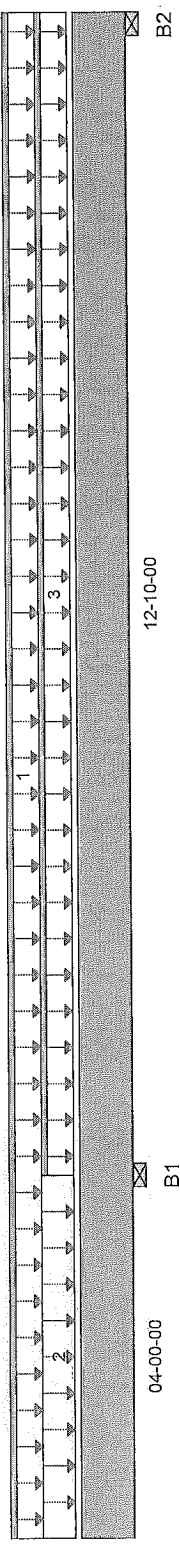
November 19, 2017 10:31:58

BC CALC® Design Report



Build 6080
Name: 45147 (4003)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File Name: 290676.bcc
Description: Second Floor Framing
Specifier:
Designer: NL
Company: Alpa Roof Trusses
Misc:



Total Horizontal Product Length = 16-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1,578 / 0	724 / 0		
B2, 3-1/2"	353 / 169	152 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	16-10-00	27	14			n/a
2	Unf. Area (lb/ft²)	L	00-00-00	04-00-00	40	15			06-00-00
3	Unf. Lin. (lb/ft)	L	04-00-00	16-10-00	27	14			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,934 ft-lbs	17,696 ft-lbs	10.9%	3	10-11-15
Neg. Moment	-4,304 ft-lbs	-17,696 ft-lbs	24.3%	1	04-00-00
End Shear	561 lbs	7,232 lbs	7.8%	3	15-06-10
Cont. Shear	1,541 lbs	7,232 lbs	21.3%	1	02-10-06
Total Load Defl.	2xL/528 (0.182")	0.4"	45.5%	9	00-00-00
Live Load Defl.	2xL/611 (0.157")	0.267"	59%	12	00-00-00
Total Neg. Defl.	L/999 (-0.071")	n/a	n/a	9	08-08-10
Max Defl.	0.072"	n/a	n/a	10	10-08-00
Cant. Max Defl.	0.182"	1"	18.2%	9	00-00-00
Span / Depth	12.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

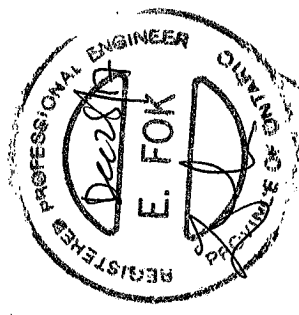
Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Wall/Plate	3-1/2" x 1-3/4"	3,272 lbs	86.8%	43.8%	Spruce Pine Fir
B2 Wall/Plate	3-1/2" x 1-3/4"	719 lbs	19.1%	9.6%	Spruce Pine Fir

Cautions

Uplift of 117 lbs found at span 2 - Right.

Notes



S.152679



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B09

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

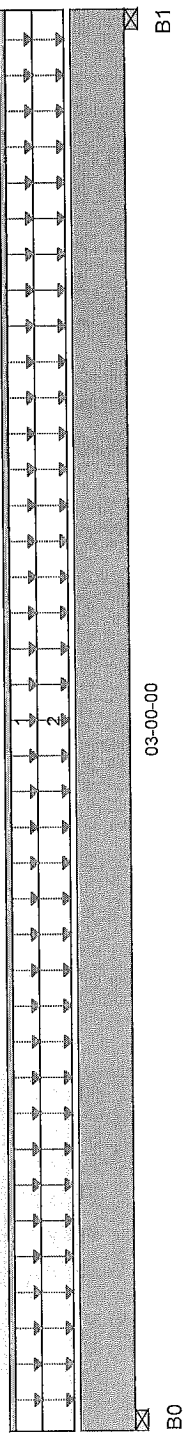
November 19, 2017 11:45:25

BC CALC® Design Report



Build 6080
 Name: 45147 (4003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290676.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	321 / 0	252 / 0	
B1, 3-1/2"	41 / 0	321 / 0	252 / 0	

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	03-00-00	27	114			n/a
2	Unf. Area (lb/ft²)	L	00-00-00	03-00-00	11				08-00-00

Controls Summary

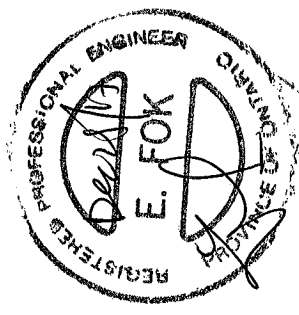
Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
1	430 ft-lbs	35,392 ft-lbs	1.2%	5	01-06-00
2	117 lbs	14,464 lbs	0.8%	5	01-03-06
3	L/999 (0")	n/a	n/a	13	01-06-00
4	L/999 (0")	n/a	n/a	17	01-06-00
5	0"	n/a	n/a	13	01-06-00
6	2.6	n/a	n/a		00-00-00
7	Valid				

Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	3-1/2" x 3-1/2"	800 lbs	10.6%	5.4%	Spruce Pine Fir
B1	3-1/2" x 3-1/2"	800 lbs	10.6%	5.4%	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 @ 6"
 o.c. staggered in 2 rows



8152680



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B10

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

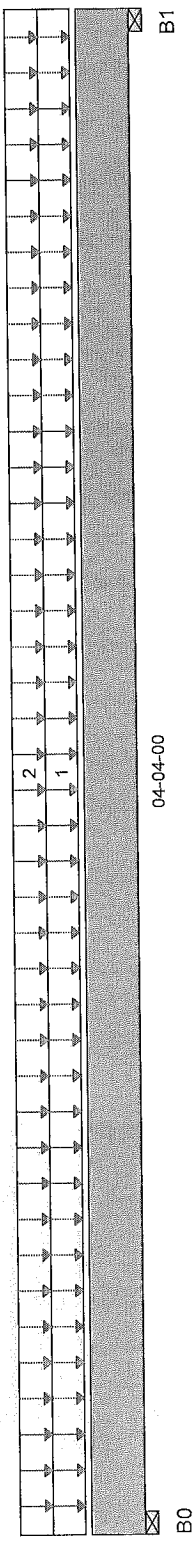
November 19, 2017 12:05:28

BC CALC® Design Report



Build 6080
 Name: 45147 (4003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290676.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"	997 / 0	446 / 0		
B1, 3-1/2"	997 / 0	446 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	04-04-00	40	15			06-00-00
2	Unf. Area (lb/ft²)	L	00-00-00	04-04-00	40	20			05-06-00

Controls Summary

Pos.	Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
1	839 lbs	1,778 ft-lbs	17,696 ft-lbs	10.1%	1	02-02-00
End Shear	L/999 (0.007")	7,232 lbs	7,232 lbs	11.6%	1	01-03-06
Total Load Defl.	L/999 (0.005")	0.007"	n/a	n/a	4	02-02-00
Live Load Defl.	0.007"	3.9	n/a	n/a	5	02-02-00
Max Defl.	Valid		n/a	n/a	4	02-02-00
Span / Depth						00-00-00
Squash Blocks						

Disclosure

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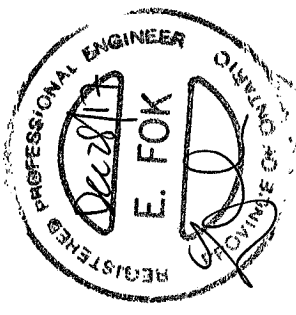
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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	2,053 lbs	54.5%	27.5%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	2,053 lbs	54.5%	27.5%	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



S-152681



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B11

BC CALC® Design Report

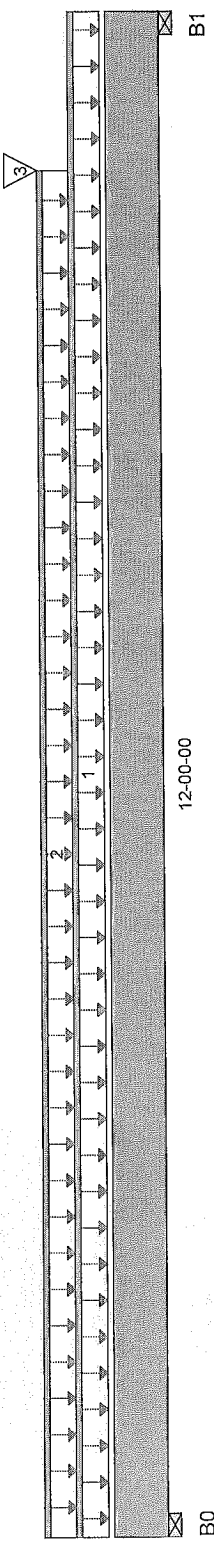
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 19, 2017 12:06:03



Build 6080
Name: 45147 (4003)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File Name: 290676.bcc
Description: First Floor Framing
Specifier:
Designer: NL
Company: Alpa Roof Trusses
Misc:



Total Horizontal Product Length = 12-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	411 / 0	243 / 0		
B1, 3-1/2"	1,200 / 0	594 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	27	14		1.00	n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	10-09-00	27	14		1.15	n/a
	Conc. Pt. (lbs)	L	10-09-00	10-09-00	997	446			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,218 ft-lbs	17,696 ft-lbs	18.2%	1	07-05-11
End Shear	2,394 lbs	7,232 lbs	33.1%	1	10-08-10
Total Load Defl.	L/999 (0.115")	n/a	n/a	4	06-03-09
Live Load Defl.	L/999 (0.074")	n/a	n/a	5	06-03-09
Max Defl.	0.115"	n/a	n/a	4	06-03-09
Span / Depth	11.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

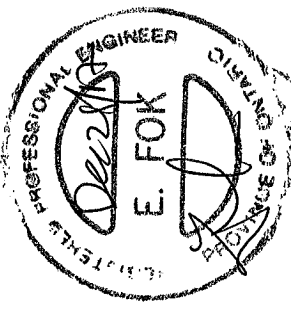
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance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

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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	920 lbs	24.4%	12.3%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	2,543 lbs	67.5%	34%	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 ("") 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



S.152682



BC CALC® Design Report

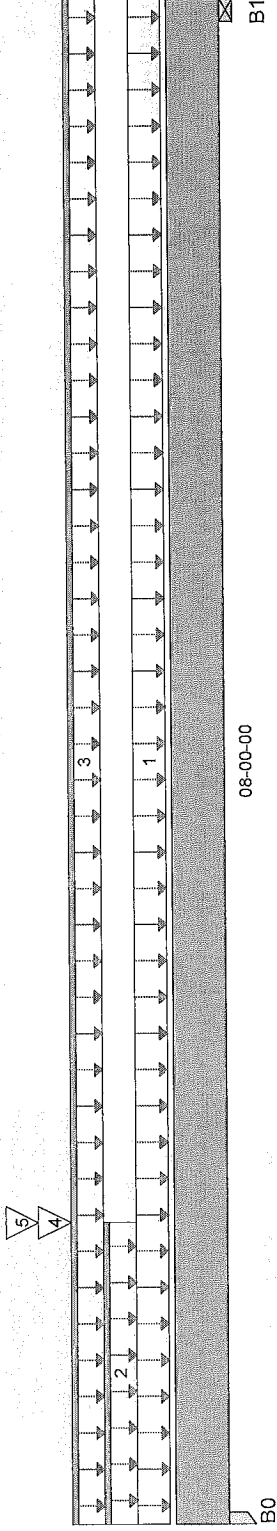
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 19, 2017 12:08:41



Build 6080
 Name: 45147 (4003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290676.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



B0
 B1
 Total Horizontal Product Length = 08-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	7,497 / 0	4,795 / 0		
B1, 3-1/2"	2,882 / 0	1,716 / 0		

Load Summary

Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft ²)	L	00-00-00	08-00-00	40	20			09-03-00
2	Unf. Lin. (lb/ft)	L	00-00-00	01-07-00		60			n/a
3	Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	27	14			n/a
4	Conc. Pt. (lbs)	L	01-07-00	01-07-00	6,561	3,769			n/a
5	Conc. Pt. (lbs)	L	01-07-00	01-07-00	642	911			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	22,202 ft-lbs	55,212 ft-lbs	40.2%	1	01-07-00
End Shear	16,032 lbs	21,696 lbs	73.9%	1	01-03-06
Total Load Defl.	L/999 (0.096")	n/a	n/a	4	03-08-01
Live Load Defl.	L/999 (0.059")	n/a	n/a	5	03-08-01
Max Defl.	0.096"	n/a	n/a	4	03-08-01
Span / Depth	7.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Post	3-1/2" x 5-1/4"	17,239 lbs	54.1%	76.9%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 5-1/4"	6,469 lbs	57.2%	28.9%	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.

Distance Factor phi has been applied to all presented results per CSA O86.

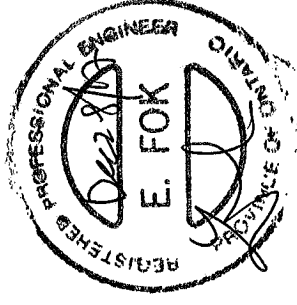
CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA

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





Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B13

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

November 19, 2017 12:10:43

BC CALCO® Design Report



Build 6080

Name:

45147 (4003)

Address:

Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290676.bcc

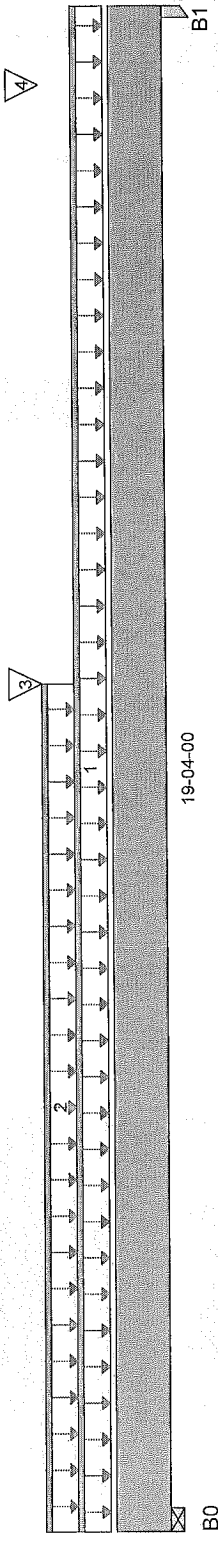
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 19-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,031 / 0	629 / 0		
B1, 3-1/2"	3,660 / 0	2,187 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	19-04-00	27	14			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	10-09-00	27	14			n/a
3		Conc. Pt. (lbs)	L	10-09-00	10-09-00	997	446			n/a
4		Conc. Pt. (lbs)	L	18-04-00	18-04-00	2,882	1,716			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
1	16,971 ft-lbs	35,392 ft-lbs	48%	1	10-09-00
2	6,292 lbs	14,464 lbs	43.5%	1	18-00-10
3	L/316 (0.717")	0.944"	76%	4	10-00-02
4	L/496 (0.456")	0.629"	72.5%	5	10-00-02
5	0.717"	1"	71.7%	4	10-00-02
6	19.1	n/a	n/a		00-00-00
7	Valid				

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	2,332 lbs	30.9%	15.6%	Spruce Pine Fir
B1 Post	3-1/2" x 3-1/2"	8,224 lbs	38.7%	55%	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 CALCO® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

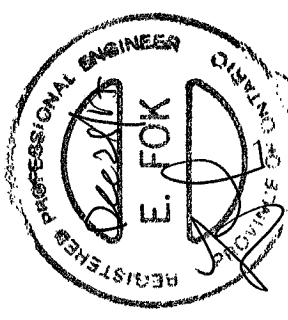
Design based on Dry Service Condition.

Resistance Factor : Normal Part code : Part 4

Nail one ply to another with

3 1/2" spiral nails @ 12"

o.c, staggered in 2 rows



S152684



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\B14

Dry | 2 spans | Left cantilever | 0/12 slope (deg)

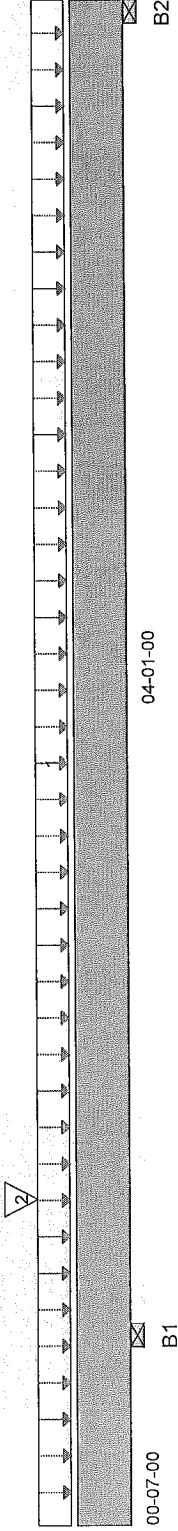
November 19, 2017 12:10:54

BC CALC® Design Report



Build 6080
 Name: 45147 (4003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290676.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 04-08-00

Reaction Summary (Down / Uplift) (lbs)

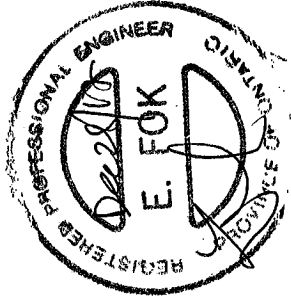
Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	855 / 0	339 / 0		
B2, 3-1/2"	399 / 7	158 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	04-08-00	40	15			04-00-00
2	Conc. Pt. (lbs)	L	01-00-00	01-00-00	500	194			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	813 ft-lbs	11,610 ft-lbs	7%	3	02-02-06
Neg. Moment	-55 ft-lbs	-11,610 ft-lbs	0.5%	1	00-07-00
End Shear	448 lbs	5,785 lbs	7.7%	3	03-07-00
Cont. Shear	564 lbs	5,785 lbs	9.8%	1	01-06-04
Total Load Defl.	L/999 (0.006")	n/a	n/a	10	02-05-01
Live Load Defl.	L/999 (0.005")	n/a	n/a	13	02-05-01
Total Neg. Defl.	2xL/1,998 (-0.003")	n/a	n/a	10	00-00-00
Max Defl.	0.006"	n/a	n/a	10	02-05-01
Cant. Max Defl.	-0.003"	n/a	n/a	10	00-00-00
Span / Depth	4.9	n/a	n/a		00-00-00
Squash Blocks	Valid				



Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B1 Wall/Plate	3-1/2" x 1-3/4"	1,705 lbs	45.3%	22.8%	Spruce Pine Fir
B2 Wall/Plate	3-1/2" x 1-3/4"	796 lbs	21.1%	10.7%	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.
 Design meets arbitrary (1") Cantilever 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
 Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

S.152685



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\B15



BC CALC® Design Report

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

November 19, 2017 12:13:20

Build 6080

Name: 45147 (4003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290676.bcc

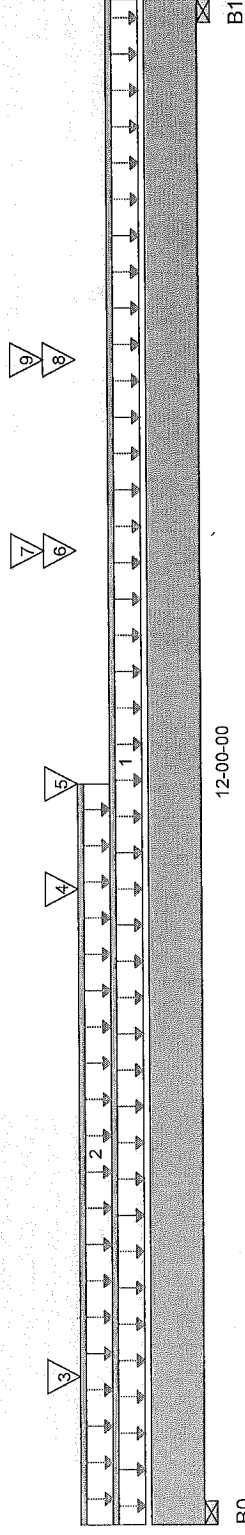
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 12-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,582 / 0	1,208 / 0		
B1, 3-1/2"	1,958 / 0	1,675 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	27	74			n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	05-10-00	27	14			n/a
3	Conc. Pt. (lbs)	L	01-02-00	01-02-00	250	94			n/a
4	Conc. Pt. (lbs)	L	05-00-00	05-00-00	400	150			n/a
5	Conc. Pt. (lbs)	L	05-10-00	05-10-00	399	158			n/a
6	Conc. Pt. (lbs)	L	07-08-00	07-08-00	400	150			n/a
7	Conc. Pt. (lbs)	L	07-08-00	07-08-00	957	410			n/a
8	Conc. Pt. (lbs)	L	09-02-00	09-02-00	653	596			n/a
9	Conc. Pt. (lbs)	L	09-02-00	09-02-00		240			n/a

Controls Summary

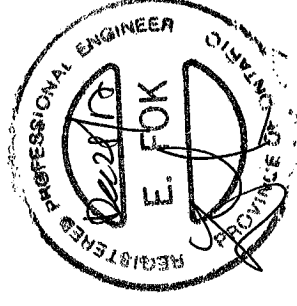
Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
16,256 ft-lbs	23,220 ft-lbs	70%		1	07-08-00
4,874 lbs	11,571 lbs	42.1%		1	10-11-00
Total Load Defl.	L/263 (0.526")	0.577"		4	06-02-02
Live Load Defl.	L/455 (0.304")	0.385"		5	06-02-02
Max Defl.	0.526"	1"	52.6%	4	06-02-02
Span / Depth	14.6	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"	3,883 lbs	51.5%	26%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	5,032 lbs	66.8%	33.7%	Spruce Pine Fir

Notes

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





Boise Cascade

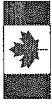
Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\B16

Dry | 2 spans | Left cantilever | 0/12 slope (deg)

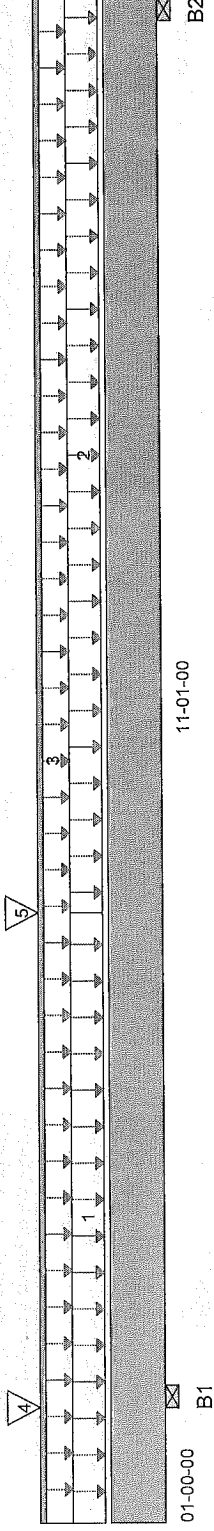
November 19, 2017 13:12:50

BC CALC® Design Report



Build 6080
Name: 45147 (4003)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File Name: 290676.bcc
Description: First Floor Framing
Specifier:
Designer: NL
Company: Alpa Roof Trusses
Misc:



Total Horizontal Product Length = 12-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2,470 / 0	1,877 / 0		
B2, 3-1/2"	1,835 / 9	1,469 / 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	04-10-00	40	15			03-00-00
	Unf. Area (lb/ft^2)	L	04-10-00	12-01-00	40	20			06-00-00
	Unf. Lin. (lb/ft)	L	00-00-00	12-01-00		60			n/a
4	Conc. Pt. (lbs)	L	00-11-00	00-11-00	394	151			n/a
5	Conc. Pt. (lbs)	L	04-10-00	04-10-00	1,582	1,208			n/a

Controls Summary

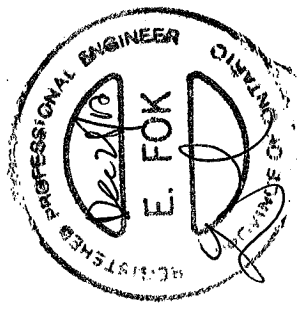
	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	16,382 ft-lbs	36,222 ft-lbs	45.2%	3	04-10-00
Neg. Moment	-231 ft-lbs	-36,222 ft-lbs	0.6%	2	01-00-00
End Shear	3,935 lbs	17,356 lbs	22.7%	3	11-00-00
Cont. Shear	4,634 lbs	17,356 lbs	26.7%	1	01-11-04
Total Load Defl.	L/422 (0.309")	0.543"	56.9%	10	06-03-06
Live Load Defl.	L/757 (0.172")	0.362"	47.6%	13	06-03-06
Total Neg. Defl.	2xL/1,998 (-0.092")	n/a	n/a	10	00-00-00
Max Defl.	0.309"	1"	30.9%	10	06-03-06
Cant. Max Defl.	-0.092"	n/a	n/a	10	00-00-00
Span / Depth	13.7	n/a	n/a		
Squash Blocks	Valid				

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B1 Wall/Plate	3-1/2" x 5-1/4"	6,051 lbs	53.5%	27%	Spruce Pine Fir
B2 Wall/Plate	3-1/2" x 5-1/4"	4,588 lbs	40.6%	20.5%	Spruce Pine Fir

Notes

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



S152687

PROJECT
45147(4002)
Gold Park
Pine Valley,
1-NI-20-6(1)

Nordic Sizer – Canada 6.4

Lead	Type	Distribution	Location	Latitude	Unit
			Start	End	
Lead321	Dead	Full Area	3.00	4.00	psf
Lead322	Live	Full Area	3.00	4.00	psf
Lead323	Live	Point	1.17	250	158
Lead324	Dead	Point	1.17	94	158
Lead325	Dead	Point	5.00	4.00	158
Lead326	Dead	Point	5.00	4.00	158
Lead327	Dead	Full UOL	2.2	2.2	psf
Sub Forest	Point	Full UOL	2.2	2.2	psf

1

	I	D	
Unfastened:	151		134
Dead	384		500
Live			
Record:			
	765		933
Bearing:			
Resistance	1634		1634
Support	2798		2798
Des ratio	0.47		0.61
Load	0.36		0.36
Support	0.27		0.36
Load case	12		1-3/4
Min req'd	14		1-3/4
Min req'd	14		1-3/4
Stiffener	No		1.00
KB support	1.00		1.00
KB support	1.00		1.00
Top sup	765		1.03

Kzcd sup	1.03
----------	------

Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

Limit States Design using CSA O86-14 and Vibration Criterion:

Catégorie	Analysis Value	Design Value	Unit	Analysis/Design
Moment+1	0.1	88	lb-ft.	0.23
Perm. Defl'n	0.01	47,959	1/360 in.	0.04
Live Defl'n	0.02	47,959	1/360 in.	0.09
Total Defl'n	0.03	47,959	1/360 in.	0.09
Share Defl'n	0.02	47,959	1/360 in.	0.12
Unbr. Defl'n	0.02	47,959	1/360 in.	0.09
Design Defl'n Limit	0.027	0	in.	0.09

Additional Data:

Additional Data:									
FACTORS:									
	f/e	KB	KH	KZ	KL	KT	K5	KN	LCM
VE	1787	1.00	1.00	-	-	-	-	-	12
ME	4307	1.00	1.00	-	-	-	-	-	12
ET	450.0 million	-	-	-	1.000	-	-	-	12

CRITICAL LOAD COMBINATIONS:

CRITICAL LOAD COMBINATIONS:

Shear	: LC #2	= 1.250 + 1.5L
Moment(+) :	LC #2	= 1.250 + 1.5L
Deflection:	LC #1	= 1.00 (permanent)
	LC #2	= 1.0L (live)
	LC #2	= 1.00 (total)
Bearing :	Support 1 - LC #2	= 1.00 (bare joist)
	Support 2 - LC #2	= 1.250 + 1.5L
	Support 3 - LC #2	= 1.250 + 1.5L

Load Types: D

Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake
L=live (use, occupancy) Ls=live (storage, equipment) f=fire
All Load Combinations (LCs) are listed in the Analysis output

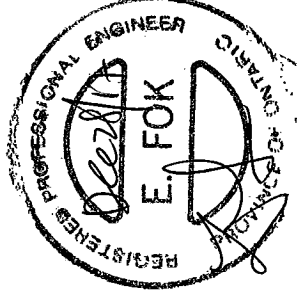
Deflection:

Deflection: $E I_{eff} = 1.91e06 \text{ lb-in}^2$ $K_w = 4.94e06 \text{ lbs}$

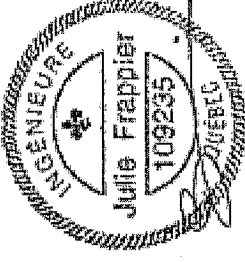
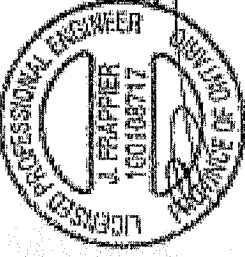
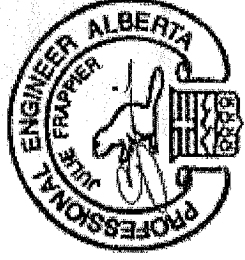
Design Notes:

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA 086-14 Engineering Design in Wood standard (July 2014 edition).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to technical documentation for fabrication guidelines and construction details.
4. Nordic Joists are listed in CBCAC evaluation report 13-022, which is available along the compression edge.
5. The design assumptions and specifications were provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis 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 this component based on the design criteria and loadings shown.



8152688



Maximum Floor Spans

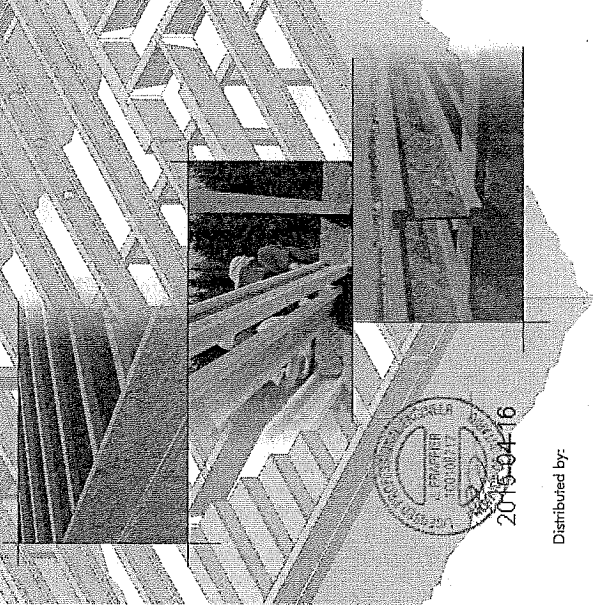
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/360 Deflection Limit
3/4" OSB G&N Sheathing

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

- 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.



INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



2015-04-16
L. PRATHER
FLOORING

Distributed by:



N-C301 / November 2014

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-bracing at the ends. When I-joists are applied continuously across multiple bays, temporary bracing should be 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 flange 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-bracing.
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.

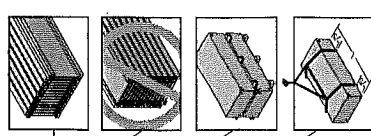


Never stack building materials over unsheathed I-joists. Once sheathed, do not stack building materials over concentrated loads from building materials.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable load 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 flatwires.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Do not handle I-joists 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.



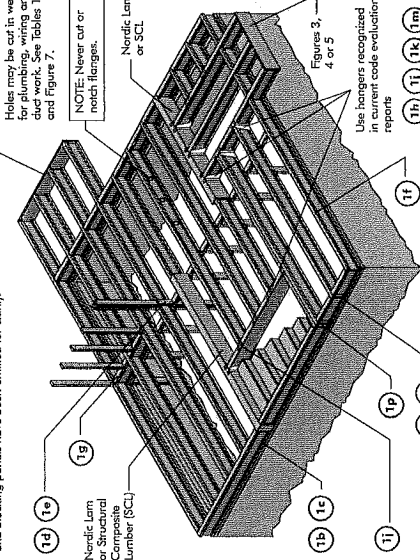
INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact 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 bays 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, seal I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the ends of I-joists. For example, heavy equipment, such as a generator, should not be placed on the ends of I-joists. 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 on 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 cantilevered 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.

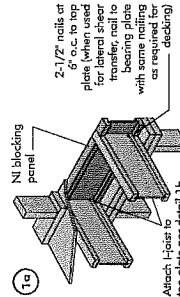
FIGURE 1

TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.

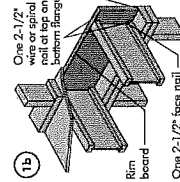


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.127 dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



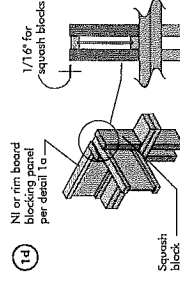
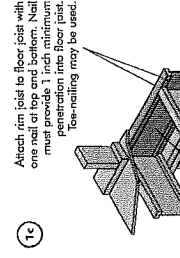
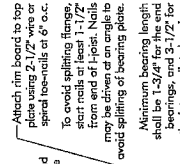
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load (psf)
N1 Joists	3,500

*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. For other load durations, such as joist, header, or rafter, for concentrated vertical load transfer, see detail 1d.



Blocking Panel or Rim Board Plus	Maximum Factored Uniform Vertical Load (psf)
1-1/8" Rim Board Plus	6,090

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. For other load durations, such as joist, header, or rafter, for concentrated vertical load transfer, see detail 1d.



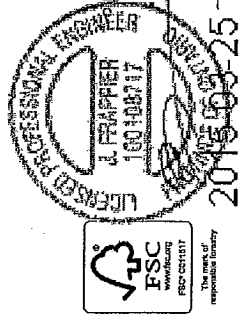
Pair of Squash Blocks	Maximum Factored Vertical Load (psf)
2x Lumber	8,500
1-1/8" Rim Board Plus	4,300

Provide lateral bracing per detail 1a, 1b, or 1c.



www.nordicewp.com

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



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centerline 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 centered 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.

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.)											
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4
9-1/2"	NL-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	12-3/4
	NL-40x	0-7"	1-6"	2-0"	4-4"	5-8"	6-4"	---	---	---	---	---	---
	NL-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---
	NL-70	2-3"	3-6"	4-9"	6-3"	8-0"	8-4"	---	---	---	---	---	---
	NL-80	2-3"	3-6"	5-0"	6-6"	8-2"	8-8"	---	---	---	---	---	---
11-7/8"	NL-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---
	NL-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-6"	7-0"	8-4"	---	---	---
	NL-60	1-3"	2-6"	4-0"	5-4"	6-8"	7-3"	8-10"	10-0"	11-4"	---	---	---
	NL-70	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
	NL-80	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
14"	NL-20	0-7"	0-8"	1-1"	2-5"	3-9"	4-1"	5-1"	6-5"	8-0"	9-2"	---	---
	NL-40x	0-7"	0-8"	1-1"	2-5"	3-9"	4-1"	5-1"	6-5"	8-0"	9-2"	---	---
	NL-60	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
	NL-70	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
	NL-80	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
16"	NL-20	0-7"	0-8"	1-1"	2-5"	3-9"	4-1"	5-1"	6-5"	8-0"	9-2"	---	---
	NL-40x	0-7"	0-8"	1-1"	2-5"	3-9"	4-1"	5-1"	6-5"	8-0"	9-2"	---	---
	NL-60	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
	NL-70	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---
	NL-80	1-3"	2-6"	4-0"	5-4"	6-8"	7-2"	8-4"	10-0"	11-4"	---	---	---

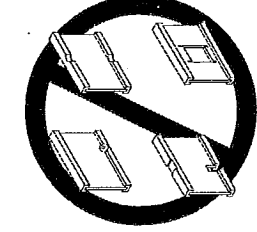
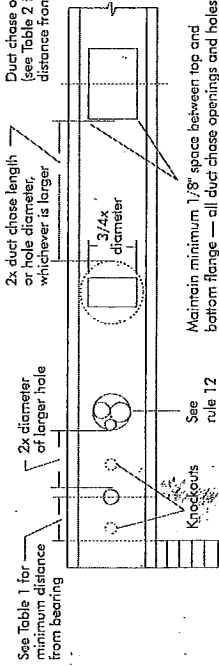
1. Above table may be used for I-joist spacing of 24 inches on centre or less.

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.

FIELD-CUT HOLE LOCATOR



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 unfastened I-joists. Once 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:

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing 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.
- 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. Lip 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.
- For canistered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
- 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.
- 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.

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.)											
		8	10	12	14	16	18	20	22	24	Duct Chase Length (in.)		
9-1/2"	NL-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	23 pieces per unit	23 pieces per unit	23 pieces per unit
	NL-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"			
	NL-60	5-1"	5-5"	6-1"	6-7"	7-1"	7-5"	7-9"	8-3"	8-7"			
	NL-70	5-1"	5-5"	6-1"	6-7"	7-1"	7-5"	7-9"	8-3"	8-7"			
	NL-80	5-1"	5-5"	6-1"	6-7"	7-1"	7-5"	7-9"	8-3"	8-7"			
11-7/8"	NL-20	5-9"	6-9"	6-6"	7-1"	7-3"	7-9"	8-3"	8-9"	9-4"	23 pieces per unit	23 pieces per unit	23 pieces per unit
	NL-40x	6-9"	7-9"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-6"			
	NL-60	7-9"	7-8"	8-0"	8-6"	9-1"	9-6"	10-1"	10-6"	11-1"			
	NL-70	7-9"	7-8"	8-0"	8-6"	9-1"	9-6"	10-1"	10-6"	11-1"			
	NL-80	7-9"	7-8"	8-0"	8-6"	9-1"	9-6"	10-1"	10-6"	11-1"			
14"	NL-20	7-6"	7-7"	7-7"	8-0"	8-5"	9-2"	9-9"	10-7"	11-4"	23 pieces per unit	23 pieces per unit	23 pieces per unit
	NL-40x	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
	NL-60	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
	NL-70	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
	NL-80	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
16"	NL-20	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"	23 pieces per unit	23 pieces per unit	23 pieces per unit
	NL-40x	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
	NL-60	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
	NL-70	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			
	NL-80	8-1"	8-1"	8-1"	8-5"	9-0"	9-7"	10-4"	11-1"	11-8"			

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 given above may be reduced for shorter spans; contact your local distributor.

Knockouts are predrilled 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.



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



Never stack building materials over unfastened I-joists. Once I-joists with concentrated loads from building materials.

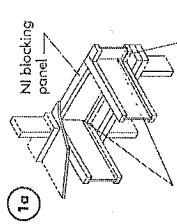


PRODUCT WARRANTY

Charlert's Construction guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

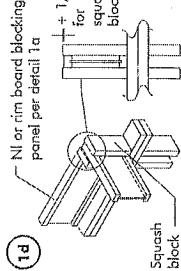
Furthermore, Charlert's Construction warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Blocking panel	3,300

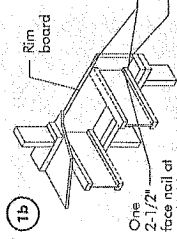


Attach I-joist to top plate per detail 1b

Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
3-1/2" wide	5,500
5-1/2" wide	8,500
2x Lumber	4,300
1-1/8" Rim Board Plus	6,600

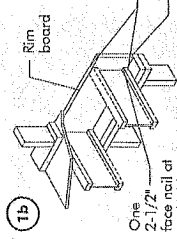


NI or rim board blocking panel per detail 1a



One 2-1/2" face nail at each side at bearing

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090



One 2-1/2" face nail at each side at bearing

*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.

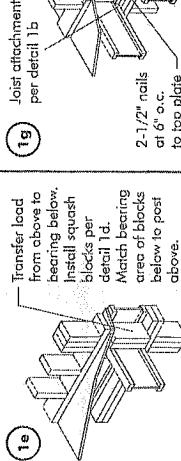
One 2-1/2" wire or spiral nail at top and bottom flange

Attach rim board to top plate using 2-1/2" wire or spiral tie-nails at 6" o.c.

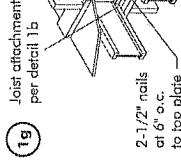
To avoid splitting flange, start nails at least 1-1/2" from end of I-joist.

Nails may be driven at an angle to avoid splitting of bearing plate.

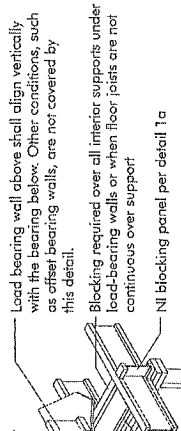
Minimum bearing length shall be 1-3/4" for the end bearings, and 3-1/2" for the intermediate bearings when applicable.



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



Joist attachment per detail 1b



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

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 fit. Clinch, install backer block tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

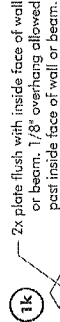
BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

Flange Width	Material Thickness Required*	Minimum Depth**
3-1/2"	1"	5-1/2"
2-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges.

For 2" thick flanges use net depth minus 4-1/4".

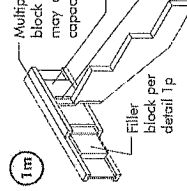


2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

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



Top-mount hanger installed per manufacturer's recommendations

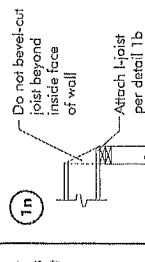


Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

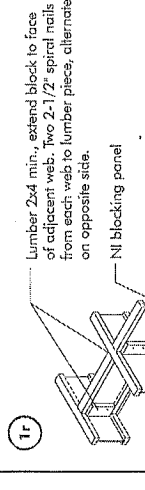
1n Do not bevel-cut joist beyond inside face of wall

Attach I-joist per detail 1b

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



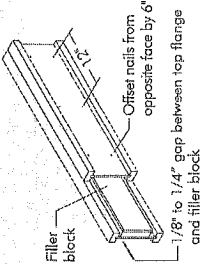
Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side.



One 2-1/2" nail at top and bottom flange. Rim board. Two 2-1/2" nails from each web to lumber piece, alternate on opposite side.

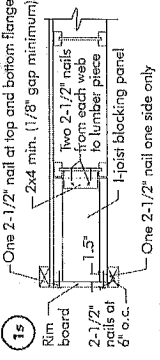
OPTIONAL: Minimum 1x4 inch strip applied to underside of joist or blocking line on 1/2 inch minimum gypsum ceiling attached to underside of joists.

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION



- NOTES:
- Support back of I-joist web during nailing to prevent damage to web/flange connection.
 - Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
 - Filler block is required between joists for full length of span.
 - Nail joists together with two rows of 3" nails at 12 inches o.c. (clipped when possible) on each side of the double I-joist. Total of four nails per foot are required. If nails can be clinched, only two nails per foot are required.
 - The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-joist capacity.

Flange Size	Net Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2"	2-1/8" x 6"
2-1/2" x 1-1/2"	11-7/8"	2-1/8" x 8"
2-1/2" x 1-1/2"	14"	2-1/8" x 10"
2-1/2" x 1-1/2"	16"	2-1/8" x 12"
3-1/2" x 1-1/2"	9-1/2"	3" x 6"
3-1/2" x 1-1/2"	11-7/8"	3" x 8"
3-1/2" x 1-1/2"	14"	3" x 10"
3-1/2" x 1-1/2"	16"	3" x 12"
3-1/2" x 1-1/2"	9-1/2"	3" x 7"
3-1/2" x 1-1/2"	11-7/8"	3" x 9"
3-1/2" x 1-1/2"	14"	3" x 11"
3-1/2" x 1-1/2"	16"	3" x 13"



One 2-1/2" nail at top and bottom flange. Rim board. Two 2-1/2" nails from each web to lumber piece, alternate on opposite side.

NOTES:

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

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

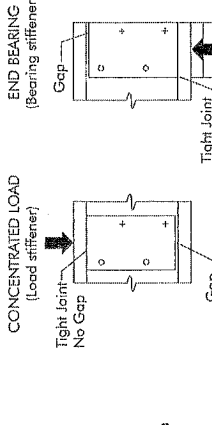
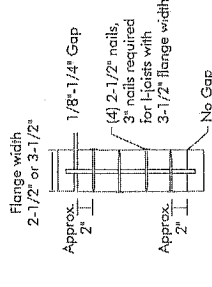
WEB STIFFENERS

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 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

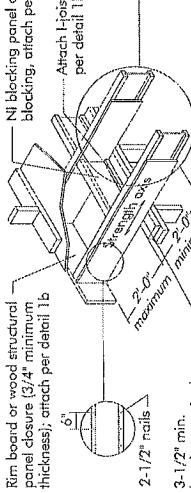


Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1" x 2-5/16" minimum width

See the adjacent table for web stiffener size requirements

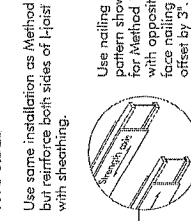
CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

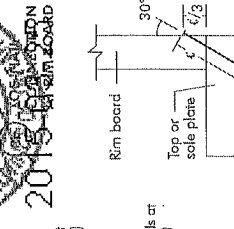


Rim board or wood structural panel closure (3/4" minimum thickness), attach per detail 1b

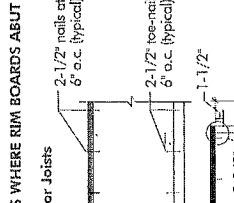
Method 2 — SHEATHING REINFORCEMENT TWO SIDES



Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.



Rim board joint between floor joists

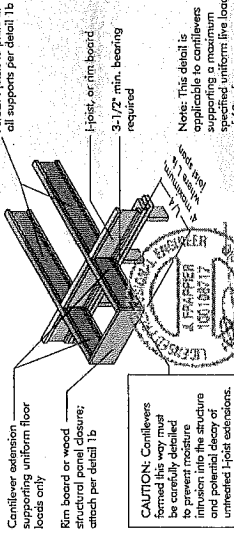


Rim board joint at corner

NOTE: Condition softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail 1b. Verify reinforced I-joist capacity.

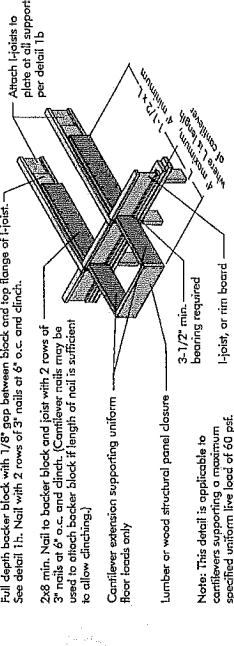
CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

3c) I-JOIST CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CAUTION: Cantilevers for and this detail be carefully detailed to prevent moisture intrusion into the structure and potential decay at unbraced I-joist extensions.

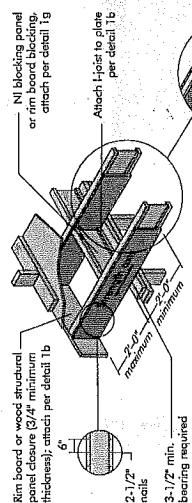
3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE

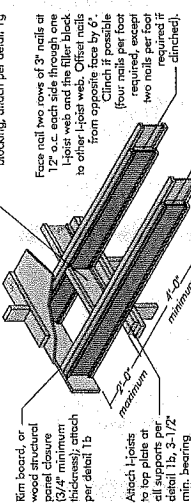


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.
- Use nailing pattern shown for Method 1 with opposite face nailing offset by 3\"/>

Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4\") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2\"/>

4b) Alternate Method 2 — DOUBLE I-JOIST



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3\"/>

FIGURE 4 (continued)

See table below for NI reinforcement requirements at cantilever.

CANTILEVER REINFORCEMENT METHODS ALLOWED

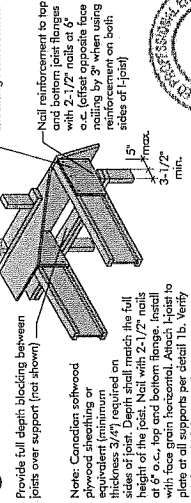
JOIST DEPTH (in)	ROOF TRUSS SPAN (ft)	ROOF LOADING UNFACTORED											
		LL = 30 psf, DL = 15 psf JOIST SPACING (in)				LL = 40 psf, DL = 15 psf JOIST SPACING (in)				LL = 50 psf, DL = 15 psf JOIST SPACING (in)			
	(ft)	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26												
	30												
	34												
	38												
	42												
11-7/8"	26												
	30												
	34												
	38												
	42												
14"	26												
	30												
	34												
	38												
	42												
16"	26												
	30												
	34												
	38												
	42												

1. N = No reinforcement required.
- 2 = NI reinforced with 3/4\"/>

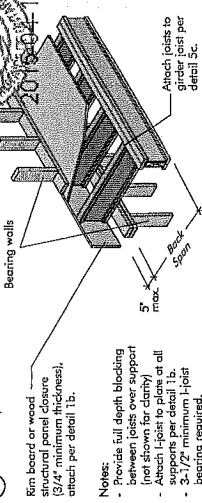
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is formed using a ridge board, the Roof Truss Span is equivalent to the line load of 40 psf and design live load of 15 psf truss is used.
5. Cantilevered joists supporting girder beams or roof beams may require additional reinforcing.

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

5a) SHEATHING REINFORCEMENT

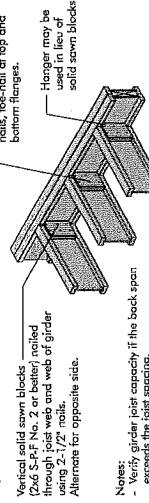


5b) SET-BACK DETAIL



- Notes:**
- Provide full depth blocking between joists over support (not shown for clarity)
 - Attach I-joist to plate 1b
 - 3-1/2\"/>

5c) SET-BACK CONNECTION



- Notes:**
- Attach girder joist spacing if the back span exceeds the joist spacing.
 - Attach double I-joist per detail 1b, if required.

FIGURE 5 (continued)

See table below for NI reinforcement requirements at cantilever.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in)		ROOF TRUSS SPAN (ft)	ROOF LOADING UNFACTORED											
			LL = 30 psf DL = 15 psf JOIST SPACING (in)				LL = 40 psf DL = 15 psf JOIST SPACING (in)				LL = 50 psf DL = 15 psf JOIST SPACING (in)			
			12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26													
	30													
	32													
	34													
	36													
11-7/8"	26													
	30													
	32													
	34													
	36													
14"	26													
	30													
	32													
	34													
	36													
16"	26													
	30													
	32													
	34													
	36													

1. N = No reinforcement required.
- 2 = NI reinforced with 3/4\"/>

4. 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 formed using a ridge board, the Roof Truss Span is equivalent to the line load of 40 psf and design live load of 15 psf truss is used.
5. Cantilevered joists supporting girder beams or roof beams may require additional reinforcing.

1. The distance between the inside edge of the support and the centroid of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. Lipst top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centered on the middle of the web.
4. The maximum size hole at the maximum depth of a duct chase opening that the Lipst minus 1/4" hole will still allow the clear distance between the flanges of the Lipst minus 1/4" hole. A minimum of 1/8" hole should always be maintained between the top or bottom of the hole or opening and the adjacent Lipst flange.
5. The sides of square holes or longer 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 longest rectangular hole or duct chase opening), and each hole and duct chase opening shall be located in compliance with the requirements of Tables 1 and 2, respectively.
7. Any holecut is not considered a hole, may be welded anywhere it occurs and does not require a reinforcing plate, and is not a reinforcing plate. Reinforcing plates are required in calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a considered 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 at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

1. Wipe any mud, dirt, water, or ice from the panel edge alignment and as a boundary for spreading glue.
2. Draw a chalk line across the I-joints four feet from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue by one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. Lay the first panel with tongue side to this wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledhammer.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joint. Apply glue in a winding pattern on wide areas, such as with double I-joints.
6. Apply two lines of glue on I-joints where panels end built to assure proper gluing of each end.
7. 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 may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joint flanges.
8. Tap the second row of panels into place, using a block to protect groove edges.
9. Spread all edges, including top of panels. A 1/8-inch space between all joints and 1/8-inch at all joints, including T&G edges, is recommended. (Use a spacer tool or an 1/2" cement nail to assure accurate and consistent spacing.)
10. 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 glue bond can be walked on right away and carry construction loads after the glue has cured to the glue bond.

- 8a** ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Jest Death	Jest Series	Minimum distances from under body to base of rostrum (mm)												Sex Age	
		Second body diameter (mm)													
		1	2	3	4	5	6	7	8	9	10	11	12	12/14	
5/12	N40	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	♂ 12/14
	N41	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N42	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N43	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
11/18	N44	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	♂ 12/14
	N45	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N46	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N47	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
14	N48	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	♂ 12/14
	N49	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N50	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N51	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
16	N52	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	♂ 12/14
	N53	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N54	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	
	N55	0.7	1.3	2.1	3.1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	

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.

The above table is based on the I-joints used at their maximum span. If the I-joints are placed at less than their full maximum span, the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

Reduced $\frac{\text{Lactical} \times \text{D}}$

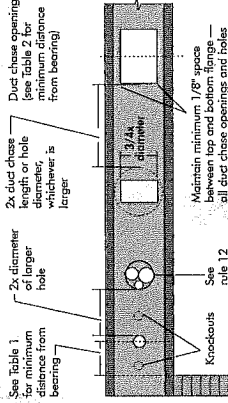
Where:

D_{reduced} =

l_{actual} = The actual measured span distance between
 = distance shall not be less than 6 inches from
 = 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 $\frac{\text{Actual}}{\text{SAF}}$ is greater than 1, use 1 in the above calculation for $\frac{\text{Actual}}{\text{SAF}}$.

FIELD-CUT HOLE LOCATOR



A knockout is NOT considered a hole, may be utilized wherever it occurs and may be ignored for purposes of calculating minimum distances between holes.

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 center along the length of the I-joint. Where possible, it is preferable to use knockouts instead of field-cut holes.



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-joint.

DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only											
Joint Depth	Joint Spacing	Minimum distance from rail face (in.) of any support to nearest opening (ft.)									
		8	10	12	14	16	18	20	22	24	
9 1/2"	27	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	27 1/2	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	28	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
11 7/8"	27	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	27 1/2	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	28	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
14"	27	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	27 1/2	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	28	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
16"	27	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	27 1/2	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	
	28	4 1/2	4 3/4	4 7/8	4 10	4 11	4 11 1/2	4 12	4 12 1/2	4 13	

1. Above table may be used for joist spacing of 24 inches on centre or less.
2. Due to 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 2.5 and are in feet, rounded floor joists of 14880. For other applications, contact your local distributor.



PRODUCT WARRANTY

Changtong Changtong guarantees this, in accordance with our specifications, these products are free from manufacturing defects in material and workmanship.

Furthermore, Changtong Changtong 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.

Maximum Spanning Feet	Minimum Spanning Thickness (in.)	Nom. Size and Type			Maximum Spanning Feet	
		Common Wire Spans	Round Wire Spans	Staples	Edges	Interj.
16	5/8	2"	1-3/4"	2"	6"	12"
20	5/8	2"	1-3/4"	2"	6"	12"
24	3/4	2"	1-3/4"	2"	6"	12"

1. Fasteners of sheathing and subflooring shall conform to the above table.
2. 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.
3. Flooring screws shall not be less than 1/8-inch in diameter.
4. Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
5. Use only adhesives conforming to CAN/CSA 71.26 Standard, Adhesive for Field-Gluing Plywood. OSB panels with sealed surfaces and edges are to be used, use only solvent-based gloves check with panel manufacturer.

Ref.: NRC-CNRC, 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.

MAXIMUM FLOOR SPANS

1. Maximum clear spans applicable to simple-span or multiple-span conditions are based on a design live load of 40 psf and a dead load of 15 lb/ft. Limit states are based on the factored loads of 1.50L + 1.25D. 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.

2. Spans are based on a composite floor with glued-rolled oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less and 3/4 inch for a joist spacing of 19.2 inches or greater. OSB shall meet the requirements given in CGS-71.26 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.

3. Minimum bearing length shall be 1.3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings. with the spans and spacings given in this table, except as required for hangers.

4. Bearing stiffeners are not required when joists are used with other than uniform loads, an engineering analysis may be required based on the use of the design properties.

5. 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.

6. Tables are based on Limit States Design per CAN/CSA

OSB-409 Standard, and NSC 2010.

7. SI units conversion: 1 inch = 25.4 mm

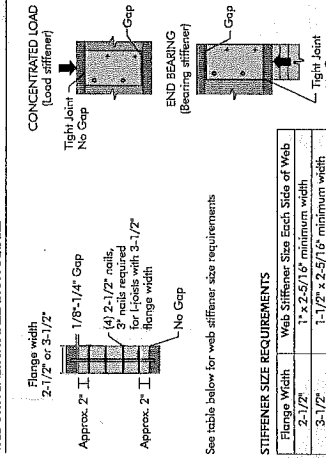
1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

SIMPLE AND MULTIPLE SPANS

Joist Depth	Series	Simple spans			Multiple spans		
		On center spacing	2x6	2x8	On center spacing	2x6	2x8
9-1/2"	NL-20	15.1	14.2	13.9	13.5	15.4	14.1
	NL-40	16.1	15.2	14.8	14.8	16.5	15.3
	NL-60	16.5	15.4	14.1	14.1	17.5	16.0
	NL-80	17.5	16.1	15.6	15.6	18.1	16.7
	NL-90	17.5	16.1	15.6	15.6	18.1	16.7
11-7/8"	NL-20	16.1	15.0	14.5	14.5	17.3	16.0
	NL-40	18.1	17.0	16.5	16.5	18.4	17.0
	NL-60	18.4	17.3	16.7	16.7	18.9	17.5
	NL-80	19.9	18.7	17.4	17.4	20.2	18.9
	NL-90	20.2	18.7	17.4	17.4	20.2	18.9
14"	NL-20	20.4	18.9	17.5	17.5	20.5	19.1
	NL-40	20.5	19.1	18.0	18.0	22.5	20.9
	NL-60	20.5	19.1	18.0	18.0	22.5	20.9
	NL-80	21.7	20.0	19.1	19.1	22.1	21.0
	NL-90	21.7	20.0	19.1	19.1	22.1	21.0
16"	NL-20	21.1	20.3	19.4	19.4	22.5	21.5
	NL-40	22.7	20.8	19.5	19.5	24.5	23.0
	NL-60	22.7	20.8	19.5	19.5	24.5	23.0
	NL-80	22.8	21.9	20.9	20.9	24.0	22.1
	NL-90	23.1	22.1	21.1	21.1	24.5	23.0
18"	NL-20	24.8	22.9	21.9	21.9	25.0	24.1
	NL-90	24.8	22.9	21.9	21.9	25.0	24.1

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

See table below for web stiffener size requirements

WEB STIFFENERS

RECOMMENDATIONS:

■ A bearing stiffener is required in all reactions greater than shown in the I-joist properties table (CGS-71.26) or the I-joist properties table (CGS-71.26) 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 flange do not extend up to, and the flange is not supported by the stiffener and the flange is at the top.

■ A load stiffener is required at locations where a factored concentrated load greater than 2,070 lbs is applied to the top flange. The stiffener shall be installed between the stiffener and the flange is at the top.

SI units conversion: 1 inch = 25.4 mm

NORDIC I-JOIST SERIES

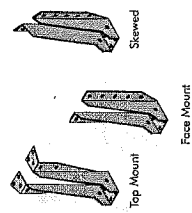
Series	20' spans	25' spans	30' spans	35' spans	40' spans
NL-20	15.1	14.2	13.9	13.5	15.4
NL-40	16.1	15.2	14.8	14.8	16.5
NL-60	16.5	15.4	14.1	14.1	17.5
NL-80	17.5	16.1	15.6	15.6	18.1
NL-90	17.5	16.1	15.6	15.6	18.1
NL-20	16.1	15.0	14.5	14.5	17.3
NL-40	18.1	17.0	16.5	16.5	18.4
NL-60	18.4	17.3	16.7	16.7	18.9
NL-80	19.9	18.7	17.4	17.4	20.2
NL-90	20.2	18.7	17.4	17.4	20.2
NL-20	20.4	18.9	17.5	17.5	20.5
NL-40	20.5	19.1	18.0	18.0	22.5
NL-60	20.5	19.1	18.0	18.0	22.5
NL-80	21.7	20.0	19.1	19.1	22.1
NL-90	21.7	20.0	19.1	19.1	22.1
NL-20	21.1	20.3	19.4	19.4	22.5
NL-40	22.7	20.8	19.5	19.5	24.5
NL-60	22.7	20.8	19.5	19.5	24.5
NL-80	22.8	21.9	20.9	20.9	24.0
NL-90	23.1	22.1	21.1	21.1	24.5
NL-20	24.8	22.9	21.9	21.9	25.0
NL-90	24.8	22.9	21.9	21.9	25.0

Charlton's Chibougama Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures through the entire manufacturing process. Every phase of the operation, from the selection of the finished product, reflects our commitment to quality.

Nordic Engineered Wood I-joists use only finger-jointed, kiln-dried, superior lumber in their flanges, ensuring consistent quality, superior structural performance and longer span carrying capacity.

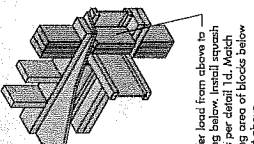
I-JOIST HANGERS

- 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.

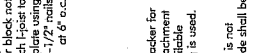


Face Mount

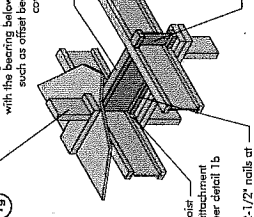
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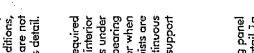
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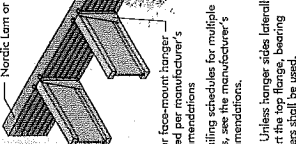
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11i



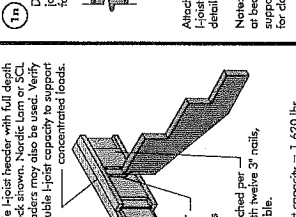
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11k



11l



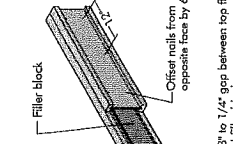
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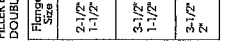
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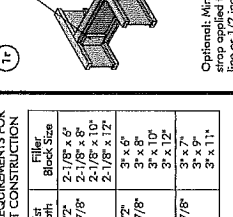
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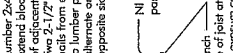
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11r



11s



11t



Notes:

- Support back 4-1/2 inch web during nailing to prevent damage to web/flange connection.
- Provide a 1/8 to 1/4 inch gap between top of filler block and bottom of top I-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3\"/>

Flange Size	Joist Depth	Block Size	Filler
2-1/2" x 11-7/8"	9-1/2"	2-1/8" x 6"	2-1/8" x 6"
2-1/2" x 14"	11-7/8"	2-1/8" x 8"	2-1/8" x 8"
2-1/2" x 16"	14"	2-1/8" x 10"	2-1/8" x 10"
3-1/2" x 11-7/8"	9-1/2"	3" x 6"	3" x 6"
3-1/2" x 14"	11-7/8"	3" x 8"	3" x 8"
3-1/2" x 16"	14"	3" x 10"	3" x 10"
3-1/2" x 18"	16"	3" x 12"	3" x 12"
3-1/2" x 20"	18"	3" x 14"	3" x 14"
3-1/2" x 22"	20"	3" x 16"	3" x 16"

Notes:

- 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, see local code requirements for blocking details.
- All nails are common spiral in this detail.