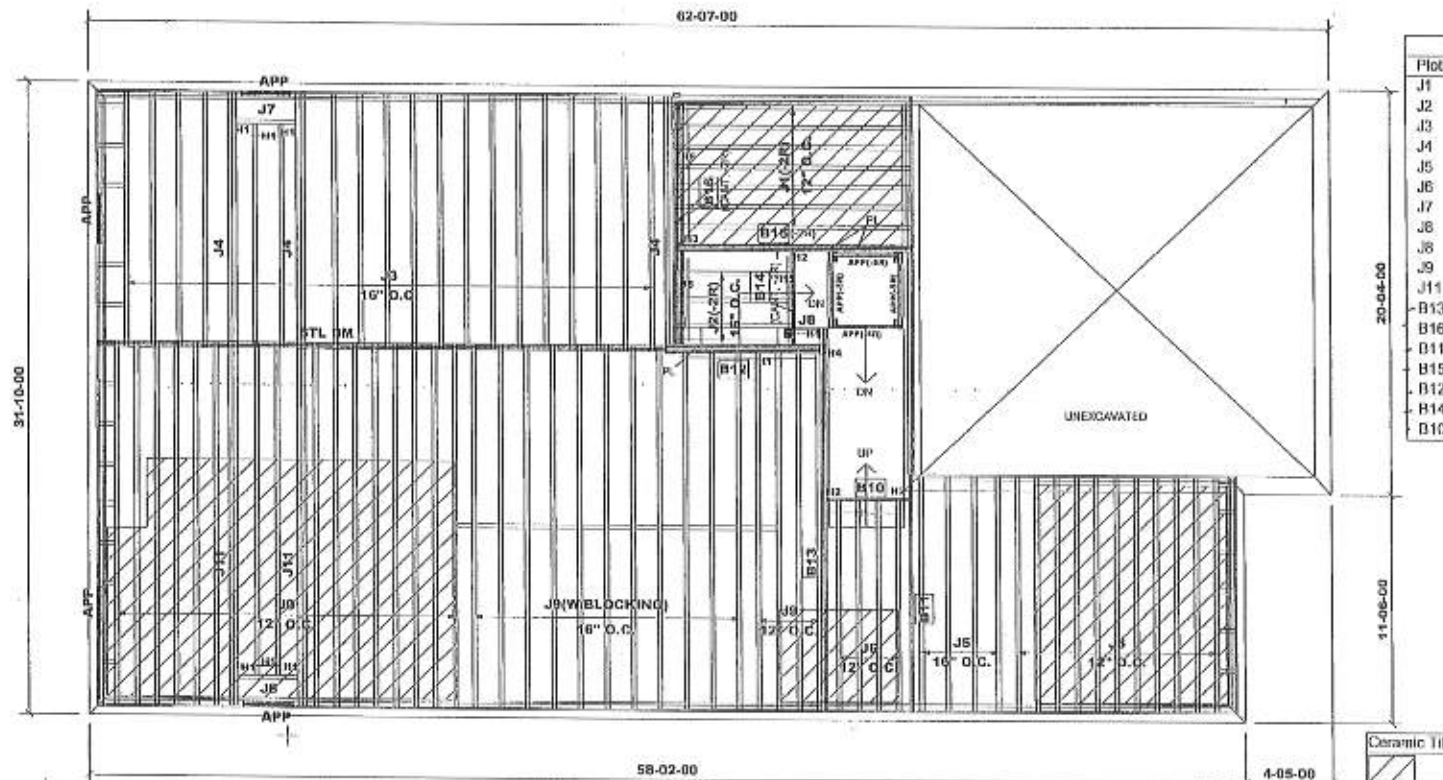




Products				
PlotID	Length	Product	Piles	Net Qty
J1	12-00-00	9 1/2" NI-20	1	7
J2	6-00-00	9 1/2" NI-20	1	4
J3	13-00-00	11 7/8" NI-20	1	19
J4	13-00-00	11 7/8" NI-20	2	8
J5	12-00-00	11 7/8" NI-20	1	15
J6	11-00-00	11 7/8" NI-20	1	4
J7	3-00-00	11 7/8" NI-20	1	1
J8	3-00-00	11 7/8" NI-20	1	1
J8	2-00-00	11 7/8" 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	LT2511B5 (1M)
H2	HUS13110(FM)
H3	HUS410(FM)
H4	HUS55110(FM)
H5	LT259(1M)

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

RIMBOARD
1- 1/2" 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
BRO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.8
1-2X6 SPF#2 Squeesh Block req'd on one side of each joist under interior load bearing wall. Multiple Squeesh Blocks are req'd under concentrated loads

REVISION: June 29, 2018

MODEL: UNIT 4003 - ELA+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

Builder: Gold Park

Location: Vaughan

Designer: NL

Alpa Roof Trusses Inc.

Salosperson: Derek

LI: 299722(290676)

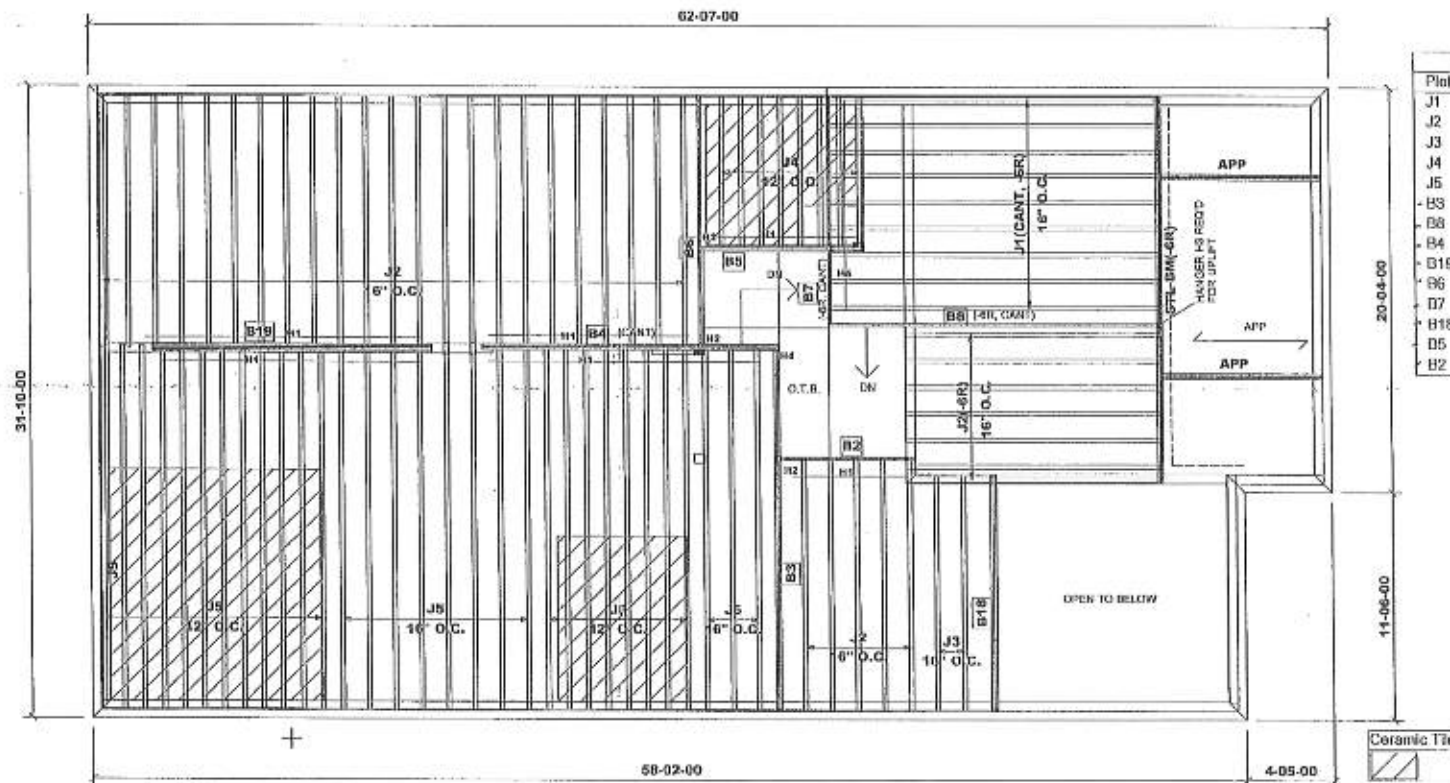
Project: Pine Valley

Date: June 29, 2018

Sheet: 2 of 3

Maple, Ontario

Home Lumber



Products				
ProdID	Length	Product	Pieces	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
D7	12-00-00	VERSALAM-12 2.0E	1	1
B15	12-00-00	VERSALAM-12 2.0E	2	2
D5	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	HUS18110(TM)
H4	HUC410(TM)
H5	HUS10(FM)

NOTE:

TM — TOP MOUNT HANGERS
FM — FACE MOUNT HANGERS

RIMBOARD

1- 1W" X 11 7/8" O.S.F.

SUBFLOOR - 3/4" NAILED & GLUED

APP - AS PER PLAN
BRD - BEAM BY OTHERS

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

Provide 1-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 17

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

BC CALC® Design Report



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

June 29, 2018 08:46:18

Build 6536

File Name: 290676.bcc

Job Name:

45147 (4003)

Description: Second Floor Framing

Address:

Pine Valley

Specifier:

City, Province, Postal Code: Vaughan, ON

Designer: NL

Customer:

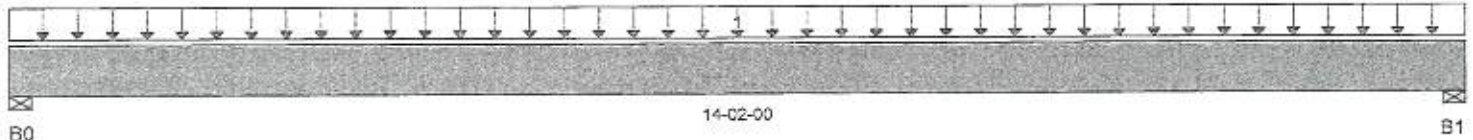
Gold Park

Company: Alpa Roof Trusses

Code reports:

CCMC 12472-R

Misc:



Total Horizontal Product Length = 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/ft^2)		L	00-00-00	14-02-00	40	20			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

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





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

Floor Beam\B18

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

January 22, 2018 10:03:53

BC CALC® Design Report



File Name: 290676.bcc

Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:

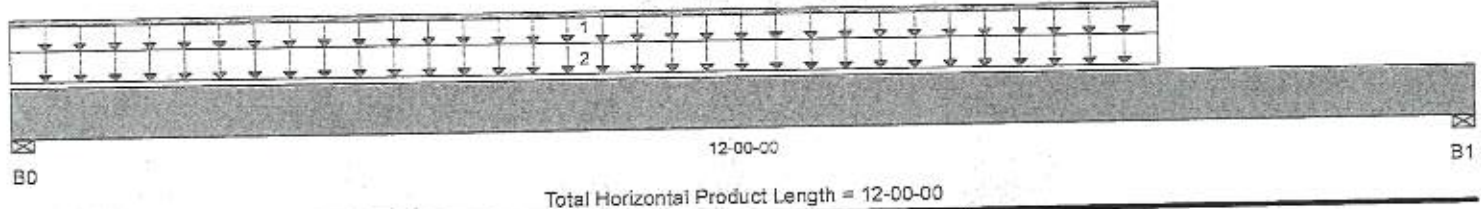
Name: 45147 (4003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R



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/ft²)	L	00-00-00	09-05-00		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

BC CALC® Design Report



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

November 19, 2017 10:13:50

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

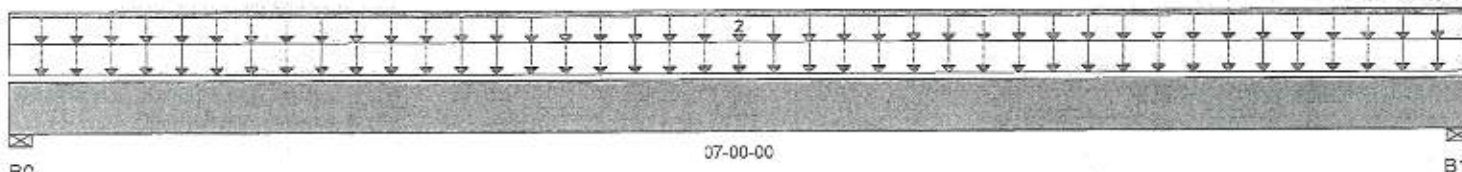
Description: Second Floor Framing

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

	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

Notes

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

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



BC CALC® Design Report



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

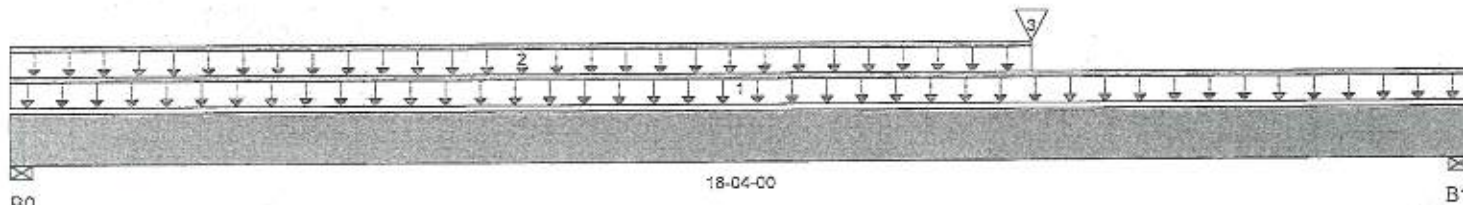
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpha 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

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	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





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

J. Name:

45147 (4003)

Address:

Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290676.bcc

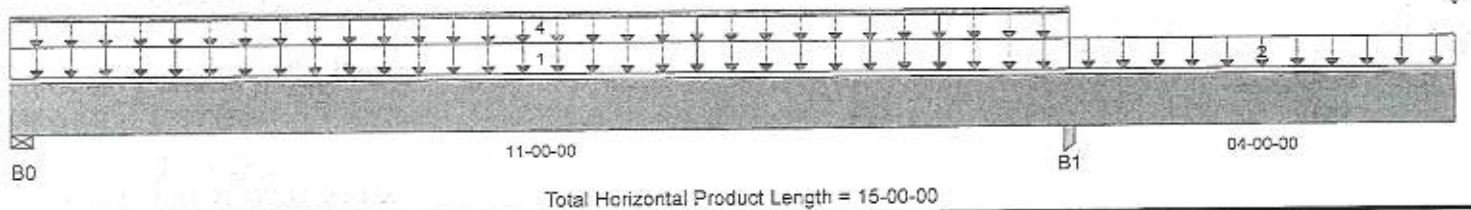
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft ²)	L	00-00-00	11-00-00	40	20			15-06-00
2		Unf. Area (lb/ft ²)	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

	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.



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

S. 152675

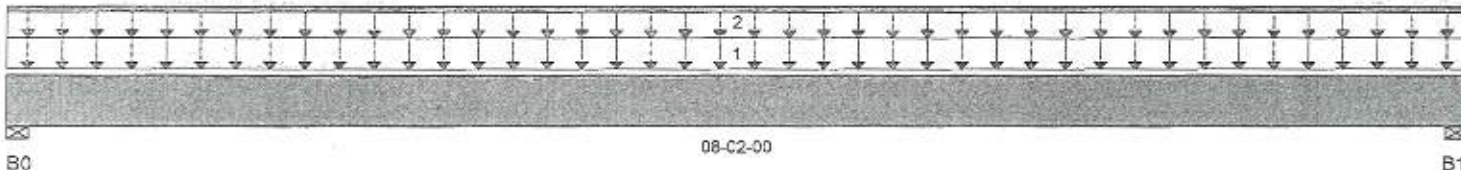
BC CALC® Design Report


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:


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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	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			n/a

Controls Summary

	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.

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





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

Floor Beam\B06

BC CALC® Design Report



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

November 19, 2017 12:00:51

Build 6080

Jame:

45147 (4003)

Address:

Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290676.bcc

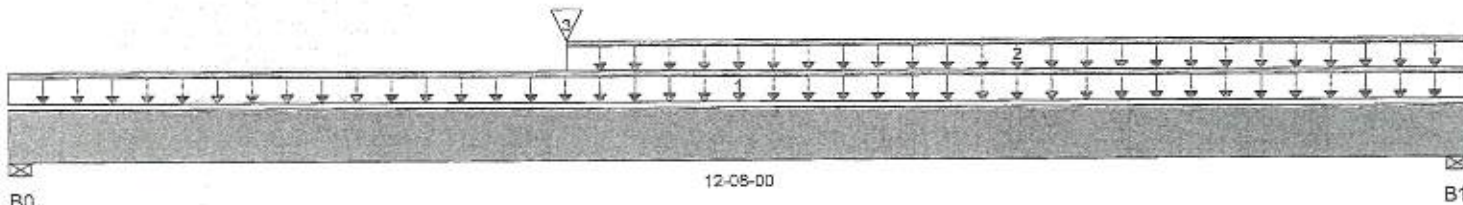
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpha 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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	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

	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.

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	2,102 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

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



S 152677

BC CALC® Design Report



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

November 19, 2017 12:04:51

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

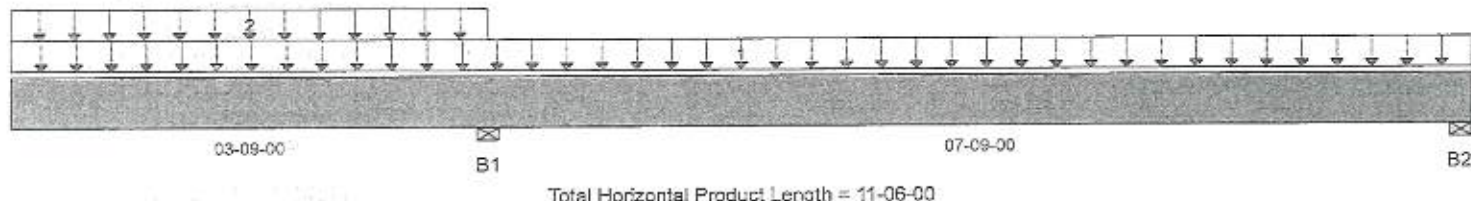
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpha Roof Trusses

Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft²)	L	00-00-00	11-06-00	40	15			02-00-00
2		Unf. Area (lb/ft²)	L	00-00-00	03-09-00	40	15			01-06-00

Controls Summary

	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

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 118 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



BC CALC® Design Report



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

November 19, 2017 10:31:58

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:

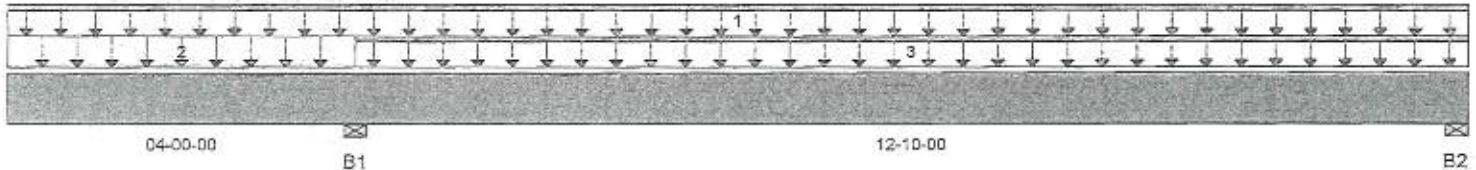
Gold Park

Company: Alpa Roof Trusses

Code reports:

CCMC 12472-R

Misc:



Total Horizontal Product Length = 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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	16-10-00	27	14				n/a
2	Unf. Area (lb/ft^2)	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

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


BC CALC® Design Report



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

November 19, 2017 11:45:25

Build 6080

File Name: 290676.bcc

Name: 45147 (4003)

Description: Second Floor Framing

Address: Pine Valley

Specifier:

City, Province, Postal Code: Vaughan, ON

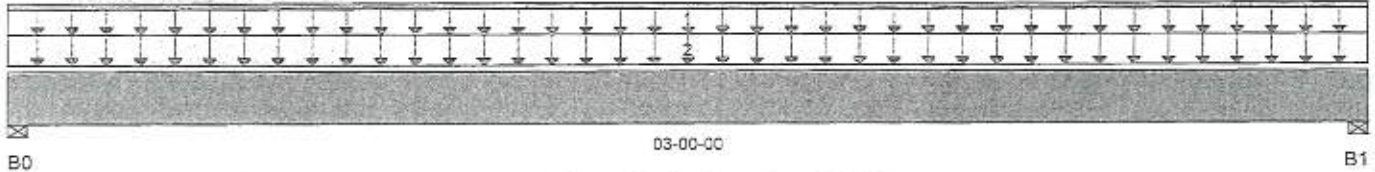
Designer: NL

Customer: Gold Park

Company: Alpa Roof Trusses

Code reports: CCMC 12472-R

Misc:



Total Horizontal Product Length = 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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	03-00-00	27	114			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	03-00-00		11	21		08-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	430 ft-lbs	35,392 ft-lbs	1.2%	5	01-06-00
End Shear	117 lbs	14,464 lbs	0.8%	5	01-03-06
Total Load Defl.	L/999 (0")	n/a	n/a	13	01-06-00
Live Load Defl.	L/999 (0")	n/a	n/a	17	01-06-00
Max Defl.	0"	n/a	n/a	13	01-06-00
Span / Depth	2.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	800 lbs	10.6%	5.4%	Spruce Pine Fir
B1 Wall/Plate	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



BC CALC® Design Report



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

November 19, 2017 12:05:28

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

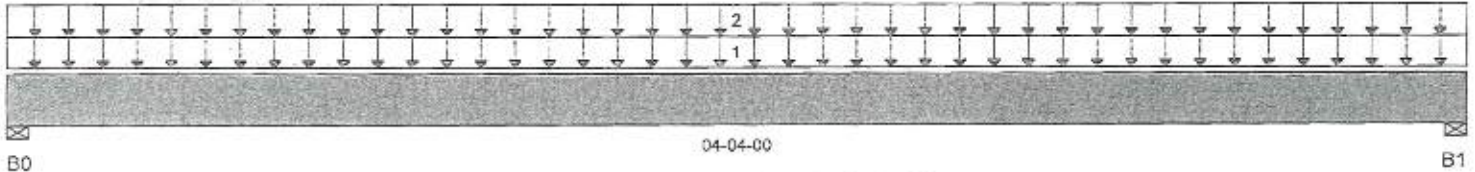
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 04-04-00

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

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

Disclosure

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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / 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





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

Floor Beam\B11

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

November 19, 2017 12:06:03

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

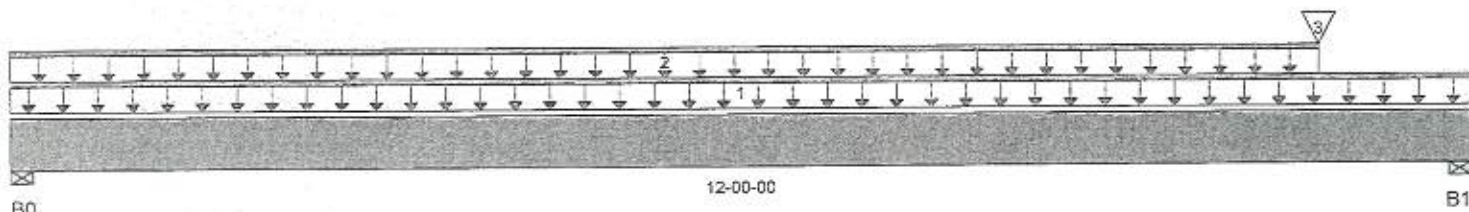
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 12-00-00

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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	27	14			n/a
	Unf. Lin. (lb/ft)	L	00-00-00	10-09-00	27	14			n/a
	Conc. Pt. (lbs)	L	10-09-00	10-09-00	997	446			n/a

Controls Summary

	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.

Bearing Supports

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

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



S. 152682



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

Floor Beam\B12

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

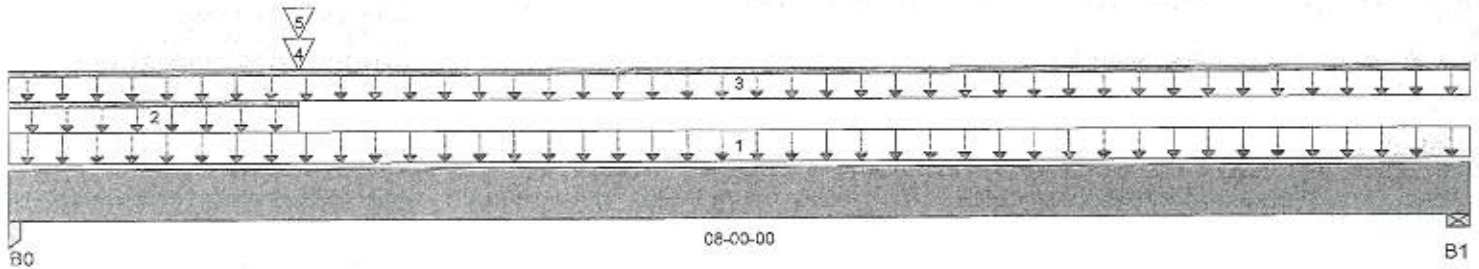
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpha Roof Trusses

Misc:



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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Area (lb/ft²)	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

	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	Demand / 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.

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

CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 4

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



S.152683



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

Floor Beam\B13

BC CALC® Design Report



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

November 19, 2017 12:10:43

Build 6080

File Name: 290676.bcc

Jame:

45147 (4003)

Description: First Floor Framing

Address:

Pine Valley

Specifier:

City, Province, Postal Code: Vaughan, ON

Designer: NL

Customer:

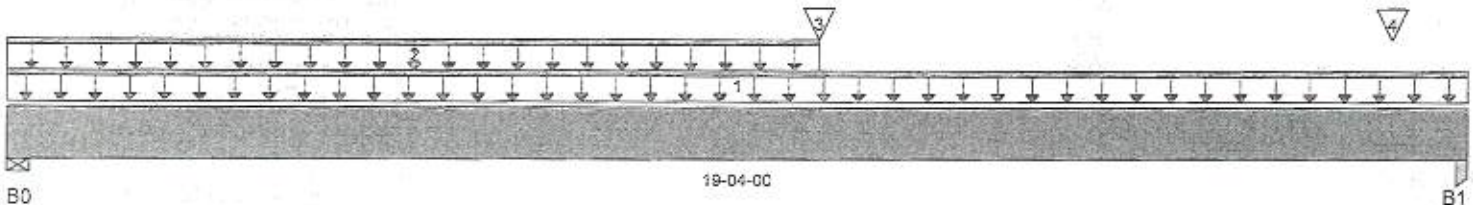
Gold Park

Company: Alpa Roof Trusses

Code reports:

CCMC 12472-R

Misc:



Total Horizontal Product Length = 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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	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

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	16,971 ft-lbs	35,392 ft-lbs	48%	1	10-09-00
End Shear	6,292 lbs	14,464 lbs	43.5%	1	18-00-10
Total Load Defl.	L/316 (0.717")	0.944"	76%	4	10-00-02
Live Load Defl.	L/496 (0.456")	0.629"	72.5%	5	10-00-02
Max Defl.	0.717"	1"	71.7%	4	10-00-02
Span / Depth	19.1	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"	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 CALC® 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



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

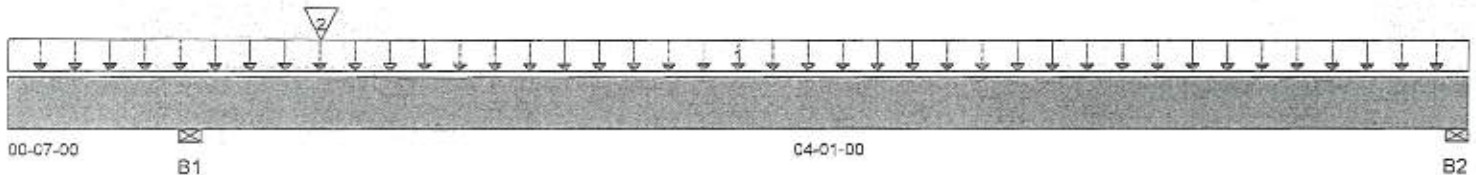
Description: First Floor Framing

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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft ²)	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

	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

			Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand		
B1	Wall/Plate	3-1/2" x 1-3/4"	1,705 lbs	45.3%	22.8%
B2	Wall/Plate	3-1/2" x 1-3/4"	796 lbs	21.1%	10.7%
					Spruce Pine Fir
					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

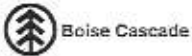
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 4

Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.



S. 152685



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

Floor Beam\B15

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

November 19, 2017 12:13:20

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

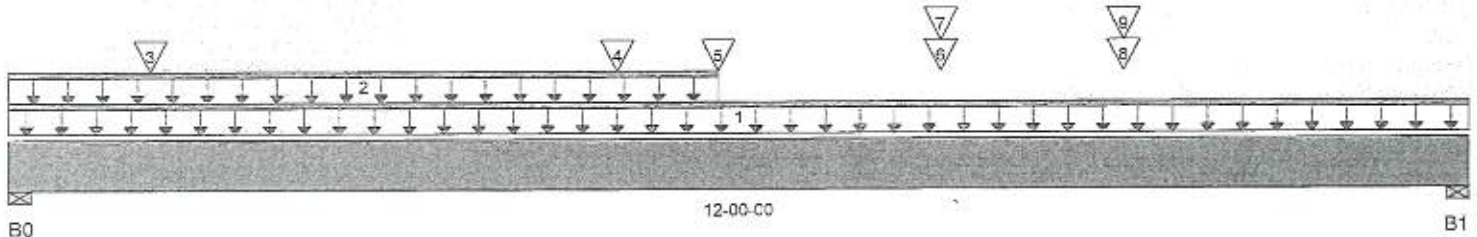
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 12-00-00

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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
		Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	27	74			n/a
		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

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	16,256 ft-lbs	23,220 ft-lbs	70%	1	07-08-00
End Shear	4,874 lbs	11,571 lbs	42.1%	1	10-11-00
Total Load Defl.	L/263 (0.526")	0.577"	91.2%	4	06-02-02
Live Load Defl.	L/455 (0.304")	0.385"	79.1%	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

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 @ 2'
o.c., staggered in 2 rows



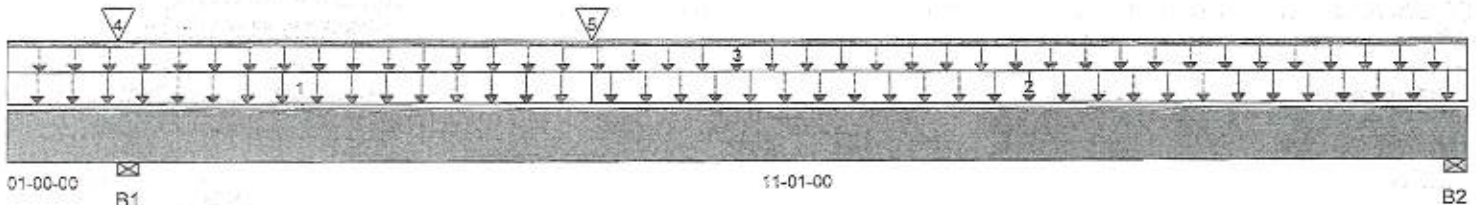
S152686



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 1.00	Dead 0.65	Snow 1.00	Wind 1.15	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		00-00-00
Squash Blocks	Valid				

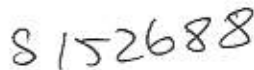
Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 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





Maximum Floor Spans

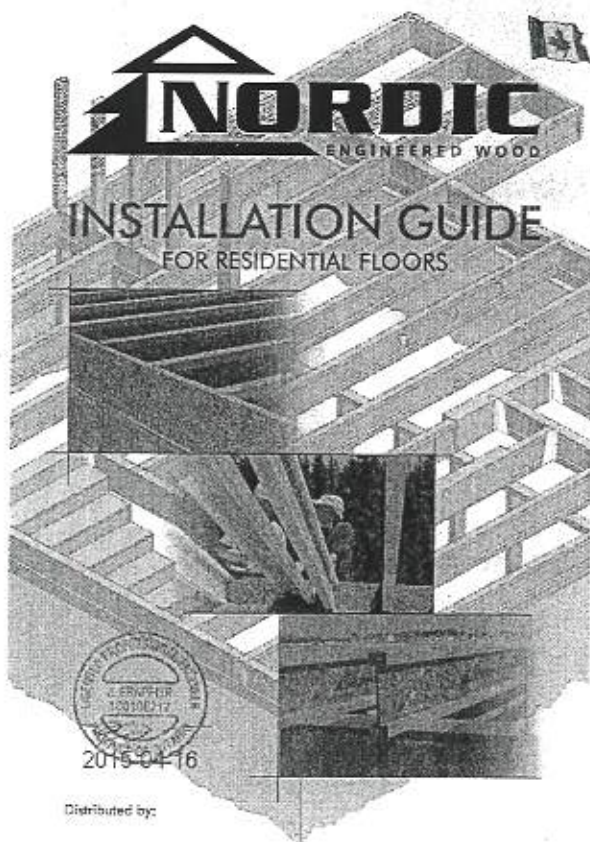
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/360 Deflection Limit
3/4" OSB G&N Sheathing



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

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

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



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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 joint areas. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at their location, blocking will be required at the interior support.
2. When the blocking 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 center, 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 continuous I-joists, brace top and bottom flanges, and brace ends with Gypsum 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.

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

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Drive, 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.
 - Pick the bundles at the SP 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.



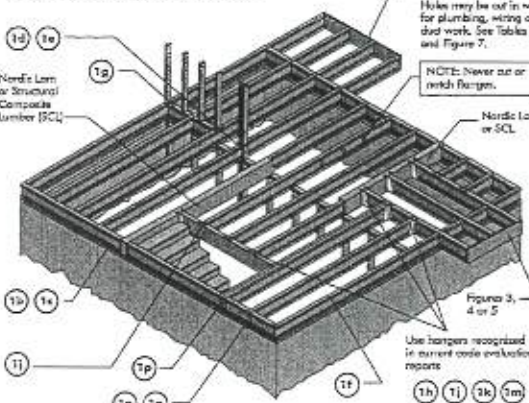
INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact the 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 I-joists must be level.
5. Minimum bearing length: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist and end headers.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joist or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or square blocking (joist 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 end-bearing I-joists and support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. Edge-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 codes requirements or approved building plans.

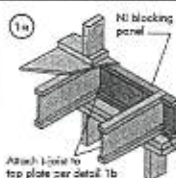
FIGURE 1

TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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

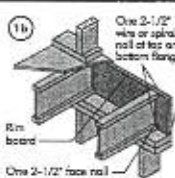


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 2" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
Nil joists	3,500

*The uniform vertical load is limited to a joist depth of 7.6 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.



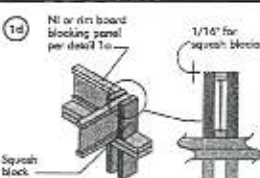
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
1-1/8" Rim Board Plus	8,000

*The uniform vertical load is limited to a rim board depth of 1.6 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.



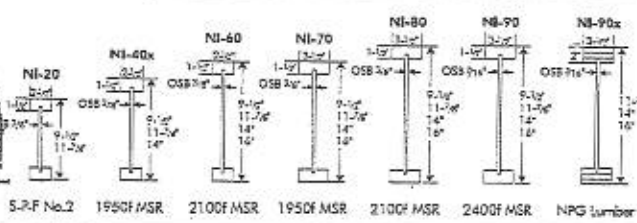
Pair of Squash Blocks	Maximum Factored Uniform Vertical Load* (psf)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,500

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



Pair of Squash Blocks	Maximum Factored Uniform Vertical Load* (psf)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,500

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



2015-03-25

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS

1. The distance between the inside edge of the support and the centerline of any hole or duct opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, fixed-cut holes should be centered on the middle of the web.
4. The maximum side hole or the maximum depth of a duct chase opening that can be cut into an I-joint web shall equal the clear distance between the flanges of the I-beam 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-joint flange.

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

9. A 1-1/2 inch hole or smaller can be placed anywhere in the wall 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 residential size holes per span, of which one may be a duct chase opening.
12. A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

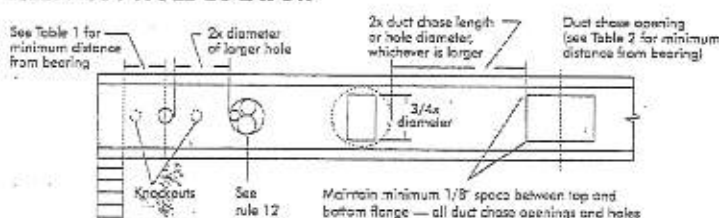
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joint Depth	Joint Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)												
		Raisol Hole Diameter (in.)												
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	12
9-7/2"	Ni-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	---	---
	Ni-40x	0-7"	1-5"	3-0"	4-4"	5-0"	6-4"	---	---	---	---	---	---	---
	Ni-60	1-3"	2-4"	4-0"	5-4"	7-0"	8-4"	---	---	---	---	---	---	---
	Ni-70	2-0"	3-4"	4-2"	5-3"	6-0"	8-4"	---	---	---	---	---	---	---
	Ni-80	2-3"	3-6"	5-0"	6-2"	7-8"	8-8"	---	---	---	---	---	---	---
11-7/8"	Ni-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---	---
	Ni-40x	0-3"	0-8"	1-3"	2-8"	4-0"	4-4"	5-3"	7-0"	8-4"	---	---	---	---
	Ni-60	0-7"	1-6"	3-0"	4-3"	5-9"	6-0"	7-8"	10-0"	10-0"	---	---	---	---
	Ni-70	1-3"	2-4"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	---	---	---	---
	Ni-80	1-6"	2-10"	4-2"	5-5"	7-0"	7-5"	8-6"	10-5"	11-4"	---	---	---	---
14"	Ni-90	0-7"	0-8"	1-5"	3-2"	4-10"	5-8"	6-7"	8-9"	10-2"	---	---	---	---
	Ni-90x	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---	---
	Ni-40x	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"	---
	Ni-60	0-7"	0-8"	1-6"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	8-8"	10-4"	11-9"	---
	Ni-70	0-8"	1-0"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"	---
16"	Ni-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-5"	9-0"	10-0"	10-8"	12-4"	13-8"	---
	Ni-90	0-7"	0-8"	0-10"	2-5"	4-0"	4-5"	5-9"	7-5"	8-8"	9-4"	11-4"	12-11"	---
	Ni-90x	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-3"	7-5"	8-5"	9-4"	11-4"	12-11"	---
	Ni-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-8"	7-0"	8-5"	10-2"	12-2"	13-9"
	Ni-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-8"	9-2"	10-8"	12-4"	14-0"
18"	Ni-80	0-7"	1-5"	2-6"	3-10"	5-3"	6-3"	6-8"	8-0"	9-0"	9-12"	11-2"	12-3"	14-0"
	Ni-90	0-7"	0-8"	0-8"	1-9"	3-3"	3-8"	4-8"	6-5"	7-5"	8-0"	9-10"	11-3"	11-5"
	Ni-90x	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"	12-0"
	Ni-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-8"	7-0"	8-5"	10-2"	12-2"	13-9"
	Ni-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-8"	9-2"	10-8"	12-4"	14-0"

1. Above table may be used for 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 joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

Joist Depth	Joist System	Minimum distance from inside face of supports to centre of opening (ft. - in.)									
		Duct Chase Length (in.)									
		8	10	12	14	16	18	20	22	24	
9-1/2"	NL-20	4'-1"	4'-5"	4'-10"	5'-2"	5'-8"	6'-1"	6'-6"	7'-1"	7'-5"	
	NL-40x	5'-3"	5'-8"	5'-0"	6'-5"	4'-10"	7'-3"	7'-8"	8'-2"	8'-6"	
	NL-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	8'-3"	8'-9"	
	NL-70	5'-11"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-6"	8'-1"	8'-4"	
	NL-80	5'-3"	5'-8"	6'-0"	6'-5"	4'-10"	7'-3"	7'-8"	8'-2"	8'-6"	
	NL-90	5'-8"	6'-2"	6'-6"	7'-1"	7'-5"	8'-3"	8'-6"	9'-4"		
11-7/8"	NL-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-5"	9'-1"	9'-6"	10'-1"	10'-5"	
	NL-60	7'-3"	7'-8"	8'-1"	8'-6"	9'-0"	9'-3"	9'-9"	10'-3"	10'-9"	
	NL-70	7'-1"	7'-4"	7'-9"	8'-3"	8'-7"	9'-1"	9'-6"	10'-1"	10'-4"	
	NL-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"	
	NL-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"	
	NL-90x	7'-7"	8'-1"	8'-5"	8'-10"	9'-4"	9'-8"	10'-2"	10'-8"	11'-2"	
14"	NL-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	12'-0"	12'-8"	
	NL-60	8'-5"	9'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	13'-3"	13'-0"	
	NL-70	8'-7"	9'-1"	9'-5"	9'-10"	10'-4"	10'-8"	11'-2"	11'-7"	12'-3"	
	NL-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	
	NL-90	9'-2"	9'-8"	10'-0"	10'-6"	11'-0"	11'-5"	11'-8"	12'-4"	12'-11"	
	NL-90x	9'-4"	9'-9"	10'-3"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-2"	
16"	NL-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	14'-1"	14'-10"	
	NL-70	10'-1"	10'-5"	11'-0"	11'-4"	11'-10"	12'-5"	12'-8"	13'-3"	14'-0"	
	NL-80	10'-4"	10'-8"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"	
	NL-90	10'-9"	11'-1"	11'-7"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-10"	
	NL-90x	11'-1"	11'-5"	12'-0"	12'-4"	12'-10"	13'-0"	13'-7"	14'-3"	14'-11"	
	NL-90x	11'-1"	11'-5"	12'-0"	12'-4"	12'-10"	13'-0"	13'-7"	14'-3"	14'-11"	

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-joins being used at their maximum spans. The minimum distance given above may be reduced for shorter spans; contact your local distributor.



Kneecuts 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 16 inches on centre along the length of the joist. Where possible, it is preferable to use kneecuts 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-joint.



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



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

WARNING: 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. Brose and nail each I-joint as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joint ends. When I-joints are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joints. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joint rafter or buckling.
 - Temporary bracing or struts must be 1-4 inch minimum, or 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-joint. Nail the bracing to a lateral restraint at the end of each bay. Lay ends of adjoining bracing over at least two I-joints.
 - Or, sheathing temporary or permanent can be nailed to the top flange of the first 4 feet of I-joints at the end of the bay.
3. For cantilevered I-joints, brace top and bottom flanges, and brose ends with closure panels, rim board, or cross-bracing.
4. Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a cantilever I-joint.

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



PRODUCT WARRANTY

Chemiers Chibougamau guarantees that, in accordance with our specifications, Nordde products are free from manufacturing defects in material and workmanship.

Furthermore, Chantiers Oubougouma 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.

1a NI blocking panel

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

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

Attach I-joist to top plate per detail 1b

2-1/2" nails at 6" o.c. to top plate (when used for lateral shear transfer, nail to bearing plate with same nailing as required for decking)

1b Rim board

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

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. 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 toe-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.

1c NI or rim board blocking panel per detail 1a

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

Provide lateral bracing per detail 1a or 1b

2-1/2" wide

5-1/2" wide

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

1e Joint attachment per detail 1b

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

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

NI blocking panel per detail 1a

2-1/2" nails at 6" o.c. to top plate

1h Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer 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**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-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".

Top- or face-mount hanger

Double I-joist header

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

Filler block per detail 1p

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

1i Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

1k 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

1m 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.

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

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

1n Do not break-out joist beyond inside face of wall

Attach I-joist per detail 1b

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

1r 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.

NI blocking panel

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

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face 3x 6"

1/8" to 1/4" gap between top flange and filler block

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. (clinched when possible) on each side of the double I-joist. Total of four nails per foot 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 lbs/ft. Verify double I-joist capacity.

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

1s One 2-1/2" nail at top and bottom flange

Rim board

2x4 min. (1/8" gap minimum)

Two 2-1/2" nails from each web to lumber piece

I-joist blocking panel

One 2-1/2" nail one side only

NOTE: In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space), next to the starter joist. Where required, 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" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.125" 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 3,370 lbs is applied to the top flange between supports, or in the case of a stiffener, anywhere between the stiffener 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 2-1/2" or 3-1/2"

Approx. 2" ±

1/8"-1/4" Gap

(4) 2-1/2" nails, 3" nails required for I-joists with 3-1/2" flange width

No Gap

See the adjacent table for web stiffener size requirements

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

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

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

NI blocking panel or rim board blocking, attach per detail 1g

Attach I-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

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" 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.

RIM BOARD INSTALLATION DETAILS

5a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

(1) 2-1/2" nail top and bottom (typical)

Rim board joint

2-1/2" toe-nails at 6" o.c. (typical)

Rim Board Joint at Corner

2-1/2" nails

Rim board joint

1-1/2"

Rim board

Top or sole plate

30°

4/3

2015

REGISTERED PROFESSIONAL ENGINEER

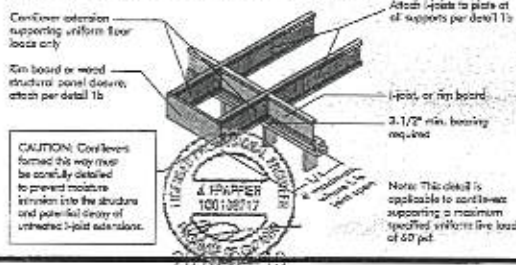
J. FRAPPIER

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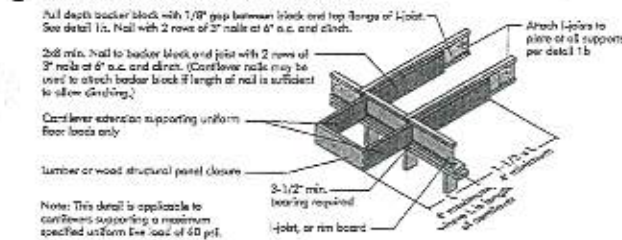
ALBERTA

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

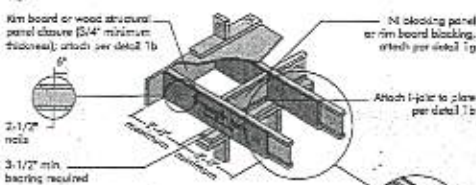


(3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

(4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE

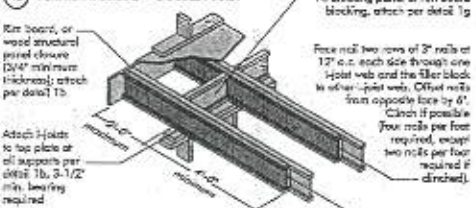


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

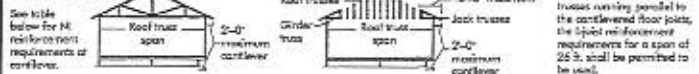
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4\"/>

(4b) Alternate Method 2 — DOUBLE I-JOIST



Block joists together with filler blocks for the full length of the reinforcement. For full length with greater than 3 inches place an additional row of 2\"/>

FIGURE 4 (continued)



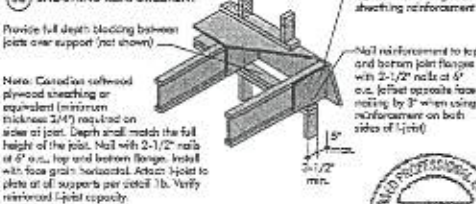
CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	ROOF LOADING (UNF. TO CODE)											
		LL = 30 psf, DL = 15 psf				LL = 20 psf, DL = 15 psf				LL = 15 psf, DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
7-1/2"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
11-7/8"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
14"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
16"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N

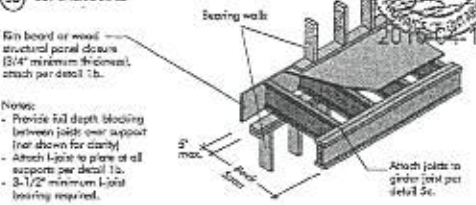
1. N = No reinforcement required.
2. = N1 reinforced with 2\"/>

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

(5a) SHEATHING REINFORCEMENT



(5b) SET-BACK DETAIL



(5c) SET-BACK CONNECTION

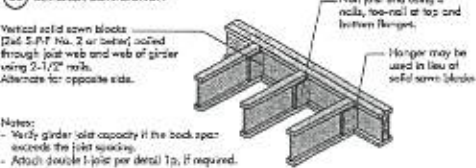
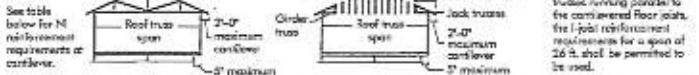


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	ROOF LOADING (UNF. TO CODE)											
		LL = 30 psf, DL = 15 psf				LL = 20 psf, DL = 15 psf				LL = 15 psf, DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
7-1/2"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
11-7/8"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
14"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
16"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N

1. N = No reinforcement required.
2. = N1 reinforced with 2\"/>

WEB HOLES

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-joint 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-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/2 inch shall always be maintained between the top or bottom of the hole or opening and the adjacent I-joint flange.
- The side of square holes or largest sides of rectangular holes shall not exceed 3/4 of the diameter of the minimum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the use of the largest square hole (or twice the length of the longest side of the largest rectangular hole or duct chase opening), and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a continuous section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a symmetrical manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS
Simple or Multiple Span for Dead Loads up to 18 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum distance from inside face of any support to center of hole (in.)														Span adjustment Factor
		3	4	5	6	8	10	12	14	16	18	20	24	30	36	
10-1/2"	N-10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-10A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-10B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-10C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
12-1/2"	N-12	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-12A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-12B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-12C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
14-1/2"	N-14	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-14A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-14B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-14C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
16-1/2"	N-16	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-16A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-16B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-16C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
18-1/2"	N-18	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-18A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-18B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-18C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
20-1/2"	N-20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-20A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-20B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-20C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
24-1/2"	N-24	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

- Allowable hole size may be used for light spacing of 24 inches on center or less.
- Hole location distance is measured from inside face of supports to center of hole.
- Distances in this chart are based on uniformly distributed loads.

OPTIONAL:

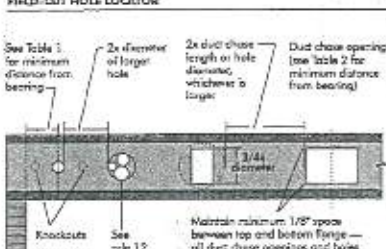
The above table is based on the I-joints used at their maximum span. If the I-joints are placed or used less than their full maximum span (see Maximum Span Table), the minimum distance from the centerline of the hole to the face of any support (S) is given above may be reduced as follows:

$$\text{Reduced } S = \frac{\text{Actual } S}{\text{Ratio}}$$

- Where:
- Actual = Distance from the inside face of any support to center of hole, reduced for less than maximum span conditions (see Maximum Span Table).
 - Ratio = The ratio of maximum span distance between the inside faces of supports (S).
 - See Adjustment Factor given in this table.
 - The minimum distance from the inside face of any support to center of hole from this table.
 - If Actual is greater than 1, use 1 in the above calculation for Ratio.



FIGURE 7
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 preformed holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 18 inches on center along the length of the I-joint. Where possible, it is preferable to use knockouts instead of field-cut holes.



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-joint.

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to center of opening (in.)														Span adjustment Factor
		3	4	5	6	8	10	12	14	16	18	20	24	30	36	
10-1/2"	N-10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-10A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-10B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-10C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
12-1/2"	N-12	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-12A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-12B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-12C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
14-1/2"	N-14	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-14A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-14B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-14C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
16-1/2"	N-16	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-16A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-16B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-16C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
18-1/2"	N-18	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-18A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-18B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-18C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
20-1/2"	N-20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-20A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-20B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-20C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
24-1/2"	N-24	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24B	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24C	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

- Allowable hole size may be used for light spacing of 24 inches on center or less.
- Duct chase opening location distance is measured from inside face of supports to center of opening.
- The above table is based on applications made on joists. For other applications, contact your local distributor.
- 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 18 psf, and on the level deflection limit of L/480. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water, or wax from I-joint flanges before gluing.
- Snap a chalk line across the I-joints four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
- Apply a continuous line of glue (about 1/8 inch diameter) to the top flange of a single I-joint. Apply glue in a wiggling pattern on wide areas, such as with double I-joints.
- Apply two lines of glue on I-joints where panel ends butt to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeezing-out by applying a thinner line (1/8 inch) from used on I-joint flanges.
- Tap the second row of panels into place, using a block to protect groove edges.
- Stagger and joints in each succeeding row of panels. A 1/8 inch space between all joints and 1/8 inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 1/8 inch common nail to assure accurate and consistent spacing.)
- Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. Warm weather conditions plus wetting (use 2" x 4" or 2" x 6" boards) for panels 3/4 inch thick or less, and 2-1/2" x 4" or 2" x 6" boards for panels 1 inch thick or more. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Fast Spacing (in.)	Minimum Panel Size (in.)	Nail Size and Type			Maximum Spacing of Fasteners	
		Common Nails	Ring Threaded Screws	Staples	Edges	Fields
16	3/8	2"	3/16"	2"	6"	12"
20	3/8	2"	3/16"	2"	6"	12"
24	3/4	2"	3/16"	2"	6"	12"

- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1/16 inch in diameter or thickness, with not less than a 3/8-inch crown given with the crown parallel to framing.
- Mooring screws shall not be less than 1/8 inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimum shown.
- Use only adhesives conforming to CAN/CG38-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with coated surfaces and edges are to be used, use only solvent-based glue; check with panel manufacturer.

Ref.: NRC-CNRC, National Building Code of Canada 2010, Table S-2.3.3.5

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

RIM BOARD INSTALLATION DETAILS

(8a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

MAXIMUM FLOOR SPANS

- Maximum clear spans are applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.5D + 1.75L. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/450. For multiple-span applications, the end spans shall be 40% or more of the adjacent spans.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 1/2 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGSB-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.
- Minimum bearing length shall be 1.5/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C08-09 Standard, and NRC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

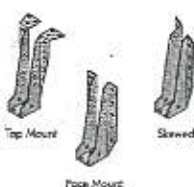
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

Joist Depth	Joist Series	Single spans				Multiple spans			
		On center spacing	On center spacing	On center spacing	On center spacing	On center spacing	On center spacing	On center spacing	On center spacing
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
1-1/2"	N1-20	18.1'	14.2'	12.5'	10.2'	18.1'	14.2'	12.5'	10.2'
	N1-40	18.1'	14.2'	12.5'	10.2'	18.1'	14.2'	12.5'	10.2'
	N1-60	18.1'	14.2'	12.5'	10.2'	18.1'	14.2'	12.5'	10.2'
	N1-80	18.1'	14.2'	12.5'	10.2'	18.1'	14.2'	12.5'	10.2'
	N1-100	18.1'	14.2'	12.5'	10.2'	18.1'	14.2'	12.5'	10.2'
2"	N2-20	24.1'	19.2'	16.5'	13.8'	24.1'	19.2'	16.5'	13.8'
	N2-40	24.1'	19.2'	16.5'	13.8'	24.1'	19.2'	16.5'	13.8'
	N2-60	24.1'	19.2'	16.5'	13.8'	24.1'	19.2'	16.5'	13.8'
	N2-80	24.1'	19.2'	16.5'	13.8'	24.1'	19.2'	16.5'	13.8'
	N2-100	24.1'	19.2'	16.5'	13.8'	24.1'	19.2'	16.5'	13.8'
2-1/2"	N2-20	30.1'	24.1'	20.5'	17.0'	30.1'	24.1'	20.5'	17.0'
	N2-40	30.1'	24.1'	20.5'	17.0'	30.1'	24.1'	20.5'	17.0'
	N2-60	30.1'	24.1'	20.5'	17.0'	30.1'	24.1'	20.5'	17.0'
	N2-80	30.1'	24.1'	20.5'	17.0'	30.1'	24.1'	20.5'	17.0'
	N2-100	30.1'	24.1'	20.5'	17.0'	30.1'	24.1'	20.5'	17.0'
3"	N3-20	36.1'	29.1'	24.5'	20.0'	36.1'	29.1'	24.5'	20.0'
	N3-40	36.1'	29.1'	24.5'	20.0'	36.1'	29.1'	24.5'	20.0'
	N3-60	36.1'	29.1'	24.5'	20.0'	36.1'	29.1'	24.5'	20.0'
	N3-80	36.1'	29.1'	24.5'	20.0'	36.1'	29.1'	24.5'	20.0'
	N3-100	36.1'	29.1'	24.5'	20.0'	36.1'	29.1'	24.5'	20.0'

CONCRETE REPORT 13032-E

I-JOIST HANGERS

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



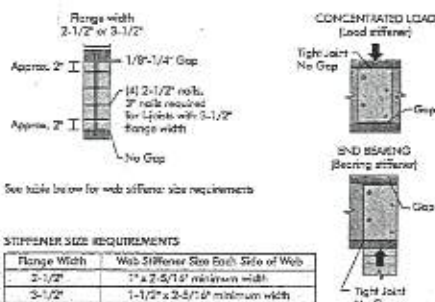
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the joist properties table found in the Joist Manufacturer's Guide (JMG). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to and support the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,070 lb is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever end and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

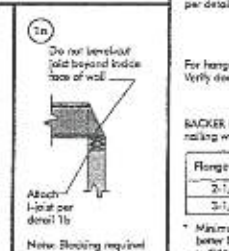
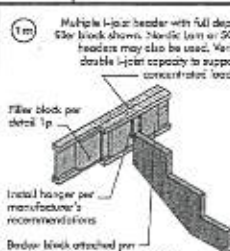
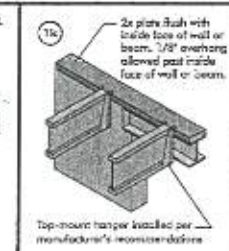
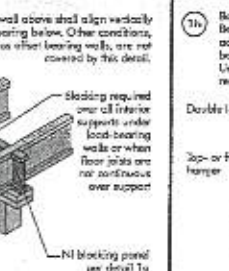
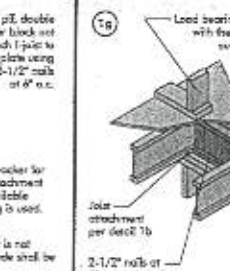
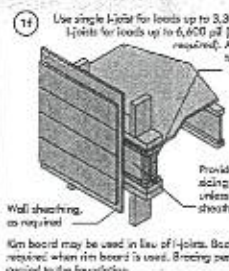
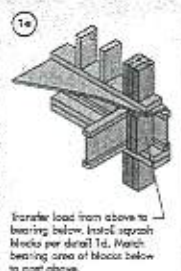
Range Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-1/2" minimum width
3-1/2"	1-1/2" x 2-1/2" minimum width

NORDIC I-JOIST SERIES

Series	Depth	Weight	Capacity
N1-20	1-1/2"	2.0 lb/ft	1,000 lb
N1-40	1-1/2"	4.0 lb/ft	2,000 lb
N1-60	1-1/2"	6.0 lb/ft	3,000 lb
N1-80	1-1/2"	8.0 lb/ft	4,000 lb
N1-100	1-1/2"	10.0 lb/ft	5,000 lb
N2-20	2"	2.5 lb/ft	1,250 lb
N2-40	2"	5.0 lb/ft	2,500 lb
N2-60	2"	7.5 lb/ft	3,750 lb
N2-80	2"	10.0 lb/ft	5,000 lb
N2-100	2"	12.5 lb/ft	6,250 lb
N2-1/2	2-1/2"	15.0 lb/ft	7,500 lb
N3-20	3"	17.5 lb/ft	8,750 lb
N3-40	3"	35.0 lb/ft	17,500 lb
N3-60	3"	52.5 lb/ft	26,250 lb
N3-80	3"	70.0 lb/ft	35,000 lb
N3-100	3"	87.5 lb/ft	43,750 lb

Overlaid Chikara Group Ltd. harvests its own trees, which enables them to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from the raw material to the finished product, reflects our commitment to quality.

Nordic Engineered Wood Joists use only finger-jointed lumber to ensure continuous spans, ensuring consistent quality, superior strength and longer span carrying capacity.



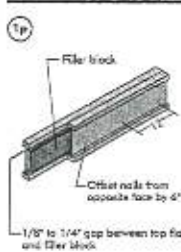
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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

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

* Minimum grade for backer block material shall be S4-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C325 or CAN/CSA-C437 Standard.

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

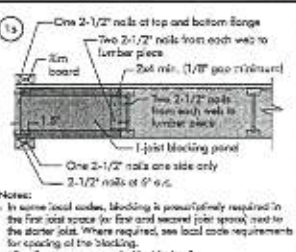
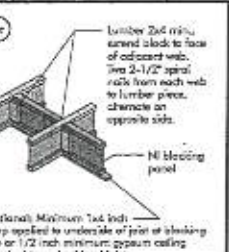


Notes:

- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8" to 1/4" 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 2" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Six of four nails per foot 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 850 Lb/ft. Verify double I-joist capacity.

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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



Notes:

- In some local codes, blocking is specifically required in the first joint space for fire and seismic joint splices, need to be the starter joint. Where required, see local code requirements for blocking.
- All nails are common spiral in this detail.