

S-152547-152577
S-165208-S-165209

MODEL: 5003(OAKGROVE) - EL.C
- LOT 91

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

Ceramic tile application as per O.B.C. 9.30.6
1-2X6 SPS#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.

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

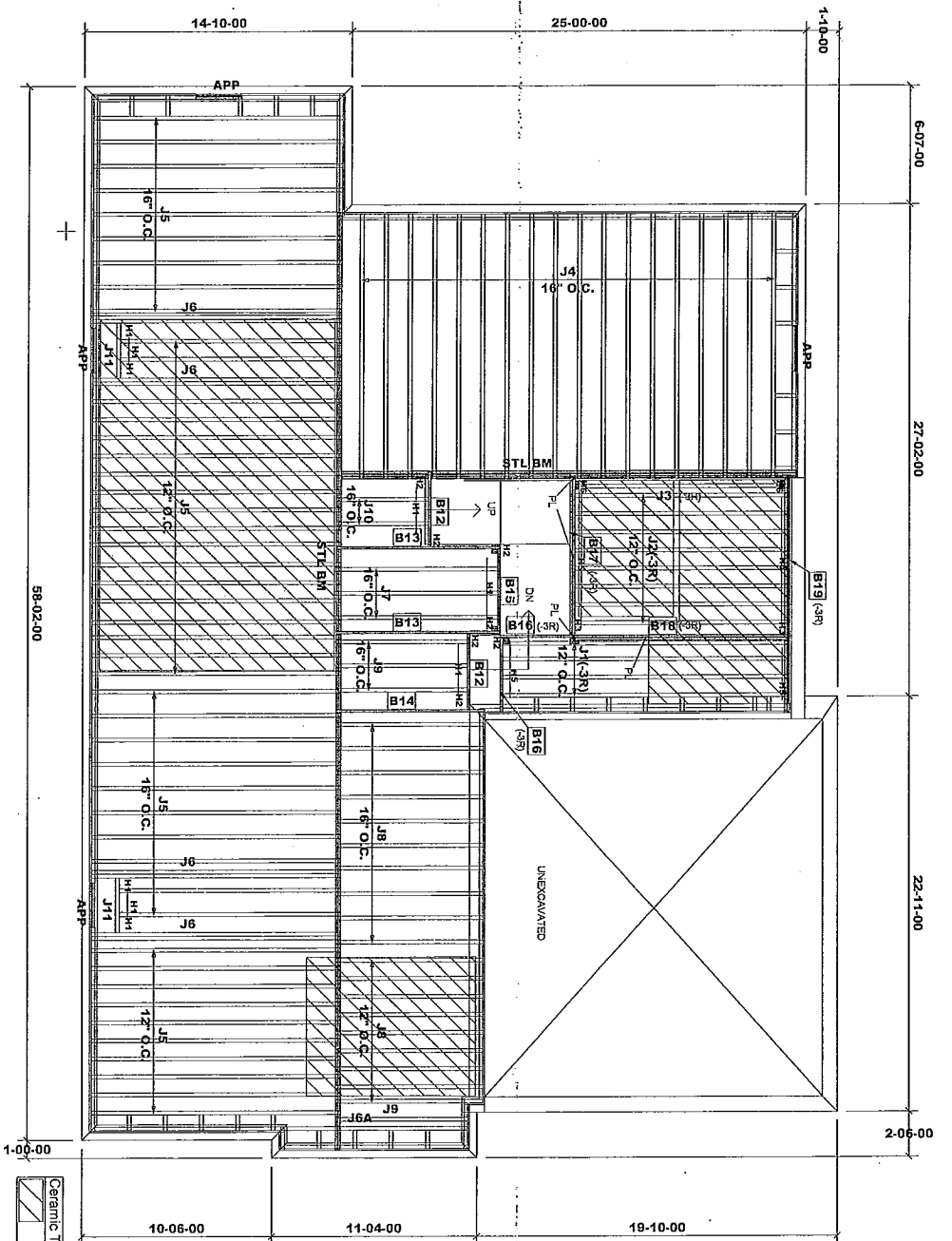
HANGER SCHEDULE
H1-----L1231188 (TM)
H2-----H031810(PW)
H3-----H031810(PW)
NOTE:
TM-----TOP MOUNT HANGERS
FM-----FACE MOUNT HANGERS

ProdID	Length	Product	Pieces	Net Qty
J1	15'-00-00	11 7/8" N-20	1	24
J2	14'-00-00	11 7/8" N-20	1	44
J3	13'-00-00	11 7/8" N-20	1	10
J4	12'-00-00	11 7/8" N-20	1	6
J5	11'-00-00	11 7/8" N-20	1	7
J6	10'-00-00	11 7/8" N-20	1	13
J7	8'-00-00	11 7/8" N-20	1	21
J8	5'-00-00	11 7/8" N-20	1	12
B32	15'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	15'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	14'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B33	14'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	13'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	13'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B24	12'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B22	11'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B21	10'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	9'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B23	6'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B1	5'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B20	2'-00-00	1-3/4" X 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

102326 / April 23, 2019

JT/PL: 45147/102259 Builder: Gold Park Location: Vaughan Designer: NL Salesperson: Derek

LI: 308356(290683) Project: Pine Valley Date: April 18, 2019 Sheet: 1 of 3 Maple, Ontario Home Lumber



Product	Piles	Net Qty
J1 16-00-00 9 1/2" N-20	1	4
J2 12-00-00 9 1/2" N-20	1	8
J3 12-00-00 9 1/2" N-20	2	2
J4 15-00-00 11 7/8" N-20	1	18
J5 14-00-00 11 7/8" N-20	1	47
J6 14-00-00 11 7/8" N-20	2	8
J6A 11-00-00 11 7/8" N-20	1	1
J7 10-00-00 11 7/8" N-20	1	3
J8 9-00-00 11 7/8" N-20	1	19
J9 8-00-00 11 7/8" N-20	1	4
J10 6-00-00 11 7/8" N-20	1	1
J11 4-00-00 11 7/8" N-20	1	2
B15 13-00-00 1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B16 12-00-00 1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B17 9-00-00 1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B18 5-00-00 1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	2
B19 10-00-00 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	2
B20 9-00-00 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B21 5-00-00 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	2
B22 5-00-00 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B23 5-00-00 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1

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

HANGER SCHEDULE
H1 - LT251188 (TM)
H2 - HUS18710(FM)
H3 - HUS18710(FM)
H4 - LT251188 (TM)
H5 - MHS15-2(TM)
NOTE: TOP MOUNT HANGERS
FM - FACE MOUNT HANGERS

TOTAL 11 7/8" BLOCKING LENGTH: 44'

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

First Floor Framing

ENGINEERING FILE NO.

S-152547 - 152577

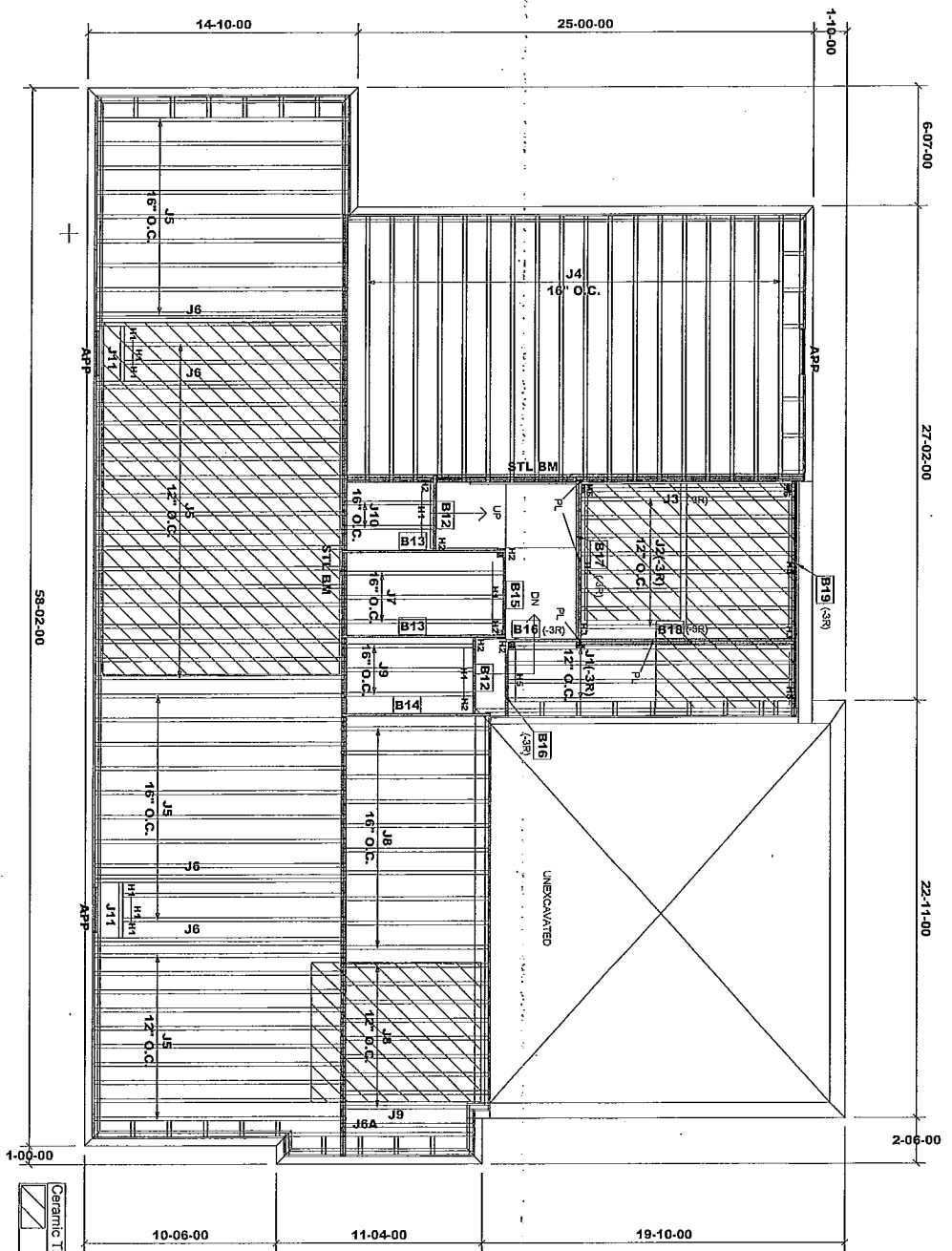


MODEL: 5003(OAKGROVE) - EL.C
- LOT 91

+W.O.D. CONSTRUCTION

102326/10/11/23/2016

JT/PL: 45147/102259 Builder: Gold Park Location: Vaughan Designer: NL Salesperson: Derek
LI: 308356(290683) Project: Pine Valley Date: April 18, 2019 Sheet: 2 of 3 Maple, Ontario Home Lumber



Product	Length	Product	Piles	Net Qty
J1	16-00-00	9 1/2" NI-20	1	4
J2	12-00-00	9 1/2" NI-20	1	8
J3	12-00-00	9 1/2" NI-20	2	2
J4	15-00-00	11 7/8" NI-20	1	18
J5	14-00-00	11 7/8" NI-20	1	47
J6	14-00-00	11 7/8" NI-20	2	8
J7	10-00-00	11 7/8" NI-20	1	1
J8	10-00-00	11 7/8" NI-20	1	19
J9	8-00-00	11 7/8" NI-20	1	4
J10	6-00-00	11 7/8" NI-20	1	2
J11	4-00-00	11 7/8" NI-20	1	2
B19	13-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B18	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B17	9-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B16	5-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	2
B13	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	2
B14	9-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B12	5-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	2
B15	5-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1

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

HANGER SCHEDULE
 H1 - LT251168 (TM)
 H2 - HUS1.8110FM
 H3 - HUS410FM
 H4 - LT259(TM)
 H5 - MT39.5-2(TM)
 NOTE: TOP MOUNT HANGERS
 FM - FACE MOUNT HANGERS

TOTAL 11 7/8" BLOCKING LENGTH: 44'

Ceramic tile application as per O.B.C. 9.30.6
 1.2X6 SPC#2 Squash Block rest on one side of each first floor timber beam bearing wall. Multiple Squash Blocks are req'd under concentrated loads.

First Floor Framing

ENGINEERING FILE NO.

S- 152547 - 152577

Do not scale - refer to architectural plans for dimensions

MODEL: 5003(OAKGROVE) - E.L.C
 - LOT 91(WLOD & WOB COND.)

JT/PL: 45147/102259 Builder: Gold Park Location: Vaughan Designer: NL Salesperson: Derek
 LI: 308356(290683) Project: Pine Valley Date: April 18, 2019 Sheet: 3 of 3 Maple, Ontario Home Lumber

102326

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

November 26, 2017 11:07:53

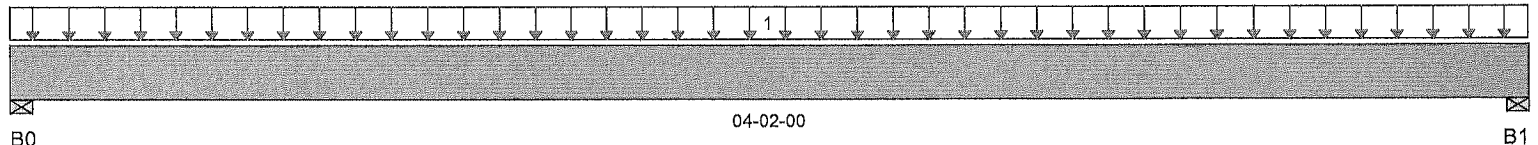
BC CALC® Design Report



Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 04-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	417 / 0	169 / 0		
B1, 3-1/2"	417 / 0	169 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft^2)		L	00-00-00	04-02-00	40	15			05-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	690 ft-lbs	17,696 ft-lbs	3.9%	1	02-01-00
Shear	322 lbs	7,232 lbs	4.5%	1	01-03-06
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	02-01-00
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-01-00
Max Defl.	0.002"	n/a	n/a	4	02-01-00
Span / Depth	3.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

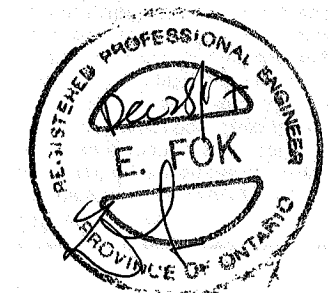
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance 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

	Support	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate	3-1/2" x 1-3/4"	836 lbs	22.2%	11.2%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	836 lbs	22.2%	11.2%	Spruce Pine Fir

Notes

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

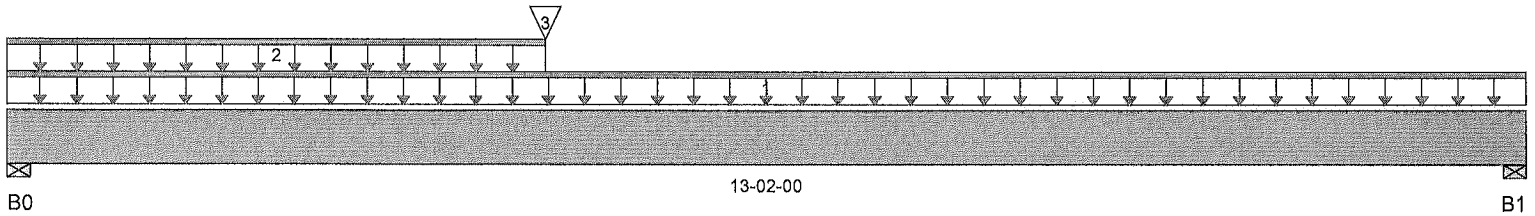


BC CALC® Design Report


Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 13-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	554 / 0	691 / 0		
B1, 3-1/2"	344 / 0	597 / 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	13-02-00	27	74				n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	04-08-00	27	14				n/a
	Conc. Pt. (lbs)	L	04-08-00	04-08-00	417	169				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,368 ft-lbs	17,696 ft-lbs	30.3%	1	04-08-00
End Shear	1,441 lbs	7,232 lbs	19.9%	1	01-03-06
Total Load Defl.	L/693 (0.22")	0.635"	34.6%	4	06-04-05
Live Load Defl.	L/999 (0.097")	n/a	n/a	5	06-02-15
Max Defl.	0.22"	1"	22%	4	06-04-05
Span / Depth	12.8	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.

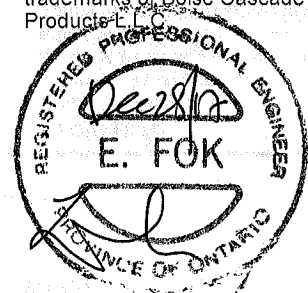
Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,695 lbs	45%	22.7%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	835 lbs	34.1%	17.2%	Spruce Pine Fir

Notes

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

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



BC CALC® Design Report


Build 6080

Name: 45147 (5003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290683.bcc

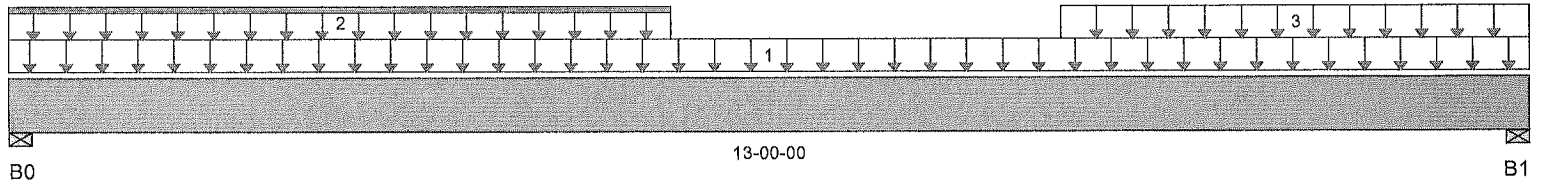
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 13'-0"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	886 / 0	411 / 0		
B1, 3-1/2"	1,041 / 0	468 / 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	13-00-00	40	15			02-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	05-08-00	40	15			n/a
3		Unf. Area (lb/ft ²)	L	09-00-00	13-00-00	40	15			02-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,449 ft-lbs	35,392 ft-lbs	15.4%	1	06-06-00
End Shear	1,623 lbs	14,464 lbs	11.2%	1	11-08-10
Total Load Defl.	L/999 (0.114")	n/a	n/a	4	06-06-00
Live Load Defl.	L/999 (0.078")	n/a	n/a	5	06-06-00
Max Defl.	0.114"	n/a	n/a	4	06-06-00
Span / Depth	12.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

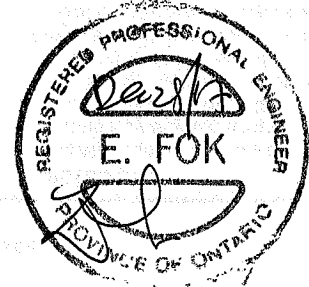
Bearing Supports

B0	Wall/Plate	3-1/2" x 3-1/2"	1,843 lbs	24.4%	12.3%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	2,146 lbs	28.5%	14.4%	Spruce Pine Fir

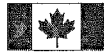
Notes

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 @ 12"
 o.c, staggered in 2 rows



BC CALC® Design Report



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

November 26, 2017 10:14:43

Build 6080

Name: 45147 (5003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290683.bcc

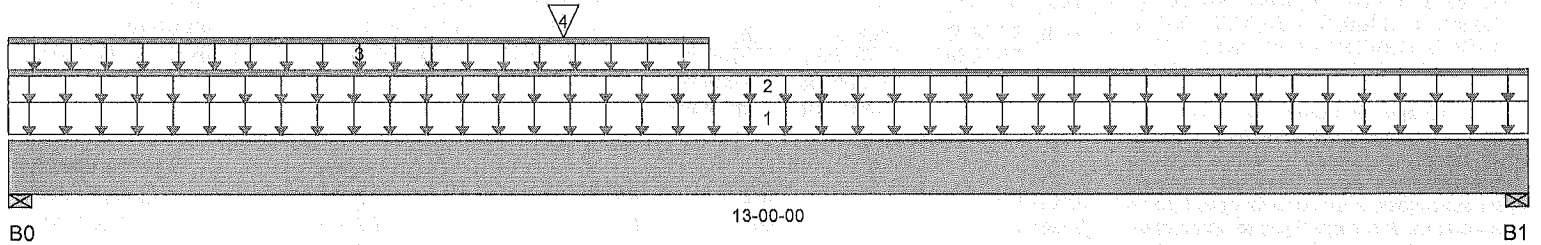
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 13-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,578 / 0	1,739 / 0		
B1, 3-1/2"	2,240 / 0	1,577 / 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	13-00-00	40	20				07-03-00
2	Unf. Lin. (lb/ft)	L	00-00-00	13-00-00		60				n/a
3	Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	27	14				n/a
4	Conc. Pt. (lbs)	L	04-09-00	04-09-00	886	411				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	18,916 ft-lbs	35,392 ft-lbs	53.4%	1	05-06-06
End Shear	5,061 lbs	14,464 lbs	35%	1	01-03-06
Total Load Defl.	L/392 (0.384")	0.627"	61.2%	4	06-04-05
Live Load Defl.	L/655 (0.23")	0.418"	54.9%	5	06-04-05
Max Defl.	0.384"	1"	38.4%	4	06-04-05
Span / Depth	12.7	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

B0	Wall/Plate	3-1/2" x 3-1/2"	6,040 lbs	80.2%	40.4%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5,332 lbs	70.8%	35.7%	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 @ 10" o.c., staggered in 2 rows

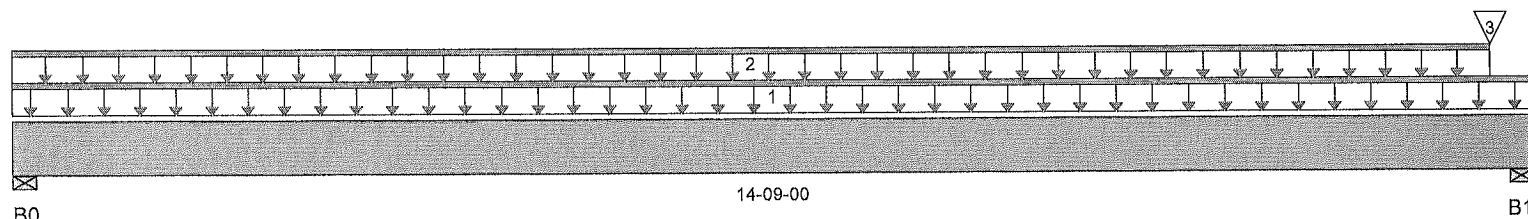




Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 14-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	428 / 0	758 / 0		
B1, 3-1/2"	2,598 / 0	2,288 / 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	14-09-00	27	74				n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	14-04-00	27	14				n/a
	Conc. Pt. (lbs)	L	14-04-00	14-04-00	2,240	1,577				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,785 ft-lbs	23,005 ft-lbs	16.5%	0	07-06-13
End Shear	1,909 lbs	14,464 lbs	13.2%	1	13-05-10
Total Load Defl.	L/1,045 (0.164")	0.715"	23%	4	07-06-13
Live Load Defl.	L/999 (0.061")	n/a	n/a	5	07-06-13
Max Defl.	0.164"	1"	16.4%	4	07-06-13
Span / Depth	14.4	n/a	n/a		00-00-00
Squash Blocks	Valid				

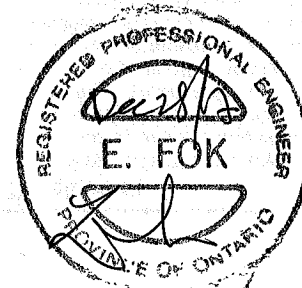
Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,062 lbs	21.7%	10.9%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	6,757 lbs	89.7%	45.2%	Spruce Pine Fir

Notes

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

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

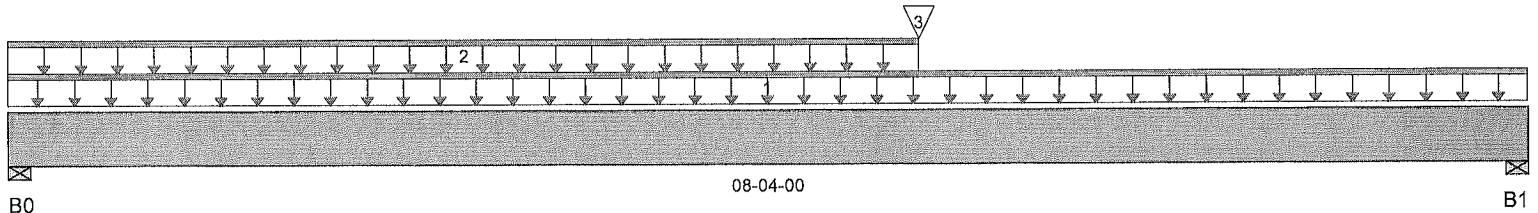


BC CALC® Design Report


Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 08-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	619 / 0	568 / 0		
B1, 3-1/2"	782 / 0	637 / 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	08-04-00	27	74			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	05-00-00	27	14			n/a
		Conc. Pt. (lbs)	L	05-00-00	05-00-00	1,041	468			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,337 ft-lbs	17,696 ft-lbs	30.2%	1	05-00-00
End Shear	1,790 lbs	7,232 lbs	24.7%	1	07-00-10
Total Load Defl.	L/999 (0.075")	n/a	n/a	4	04-03-10
Live Load Defl.	L/999 (0.043")	n/a	n/a	5	04-03-10
Max Defl.	0.075"	n/a	n/a	4	04-03-10
Span / Depth	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"	1,638 lbs	43.5%	21.9%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,970 lbs	52.3%	26.4%	Spruce Pine Fir

Notes

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



BC CALC® Design Report



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

November 26, 2017 11:15:38

Build 6080

Name: 45147 (5003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290683.bcc

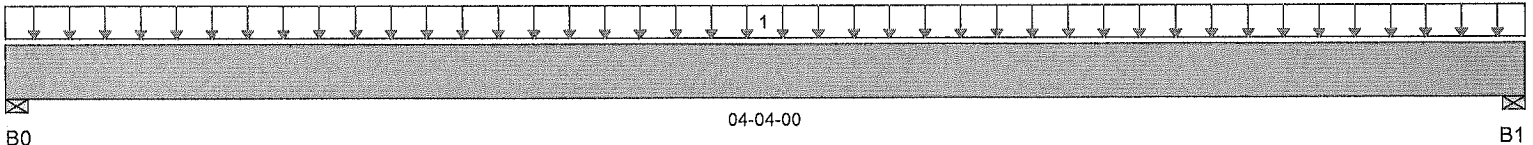
Description: First Floor Framing

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"	433 / 0	176 / 0		
B1, 3-1/2"	433 / 0	176 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft^2)	L	00-00-00	04-04-00	40	15		1.00	1.15	05-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	753 ft-lbs	17,696 ft-lbs	4.3%	1	02-02-00
Shear	355 lbs	7,232 lbs	4.9%	1	01-03-06
Total Load Defl.	L/999 (0.003")	n/a	n/a	4	02-02-00
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-02-00
Max Defl.	0.003"	n/a	n/a	4	02-02-00
Span / Depth	3.9	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

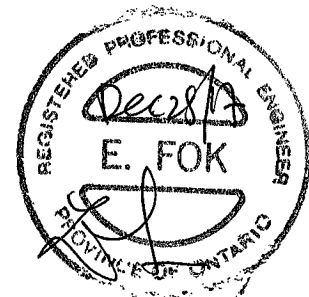
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance 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

B0	Wall/Plate	3-1/2" x 1-3/4"	869 lbs	23.1%	11.6%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	869 lbs	23.1%	11.6%	Spruce Pine Fir

Notes

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



BC CALC® Design Report



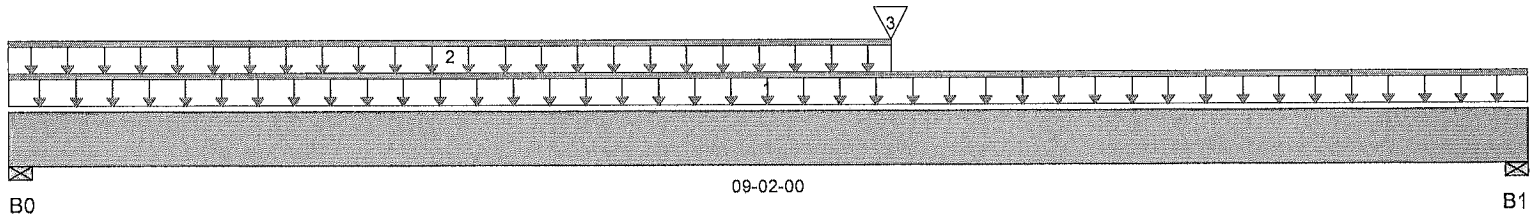
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 26, 2017 11:16:10

Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	407 / 0	218 / 0		
B1, 3-1/2"	418 / 0	216 / 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	09-02-00	27	14				n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	05-04-00	27	14				n/a
	Conc. Pt. (lbs)	L	05-04-00	05-04-00	433	176				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,752 ft-lbs	17,696 ft-lbs	15.6%	1	05-04-00
End Shear	813 lbs	7,232 lbs	11.2%	1	07-10-10
Total Load Defl.	L/999 (0.048")	n/a	n/a	4	04-08-06
Live Load Defl.	L/999 (0.032")	n/a	n/a	5	04-08-06
Max Defl.	0.048"	n/a	n/a	4	04-08-06
Span / Depth	8.8	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"	883 lbs	23.4%	11.8%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	897 lbs	23.8%	12%	Spruce Pine Fir

Notes

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



BC CALC® Design Report



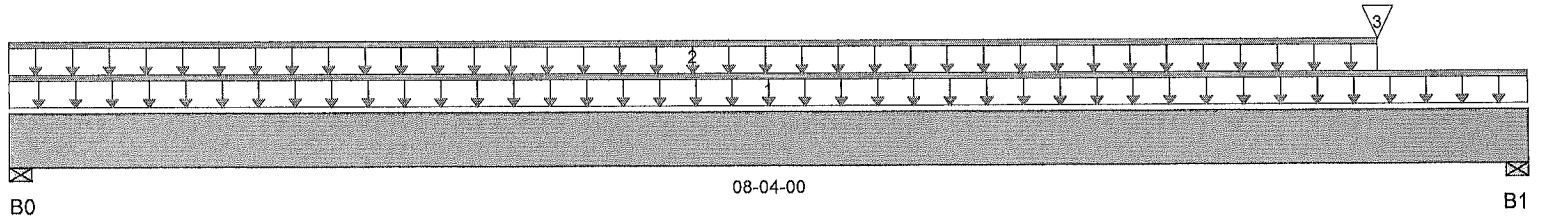
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 26, 2017 11:16:44

Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 08-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	258 / 0	405 / 0		
B1, 3-1/2"	603 / 0	543 / 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	08-04-00	27	74			n/a
2	Unf. Lin. (lb/ft)		L	00-00-00	07-06-00	27	14			n/a
	Conc. Pt. (lbs)		L	07-06-00	07-06-00	433	176			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,807 ft-lbs	17,696 ft-lbs	10.2%	1	04-06-05
End Shear	1,009 lbs	7,232 lbs	14%	1	07-00-10
Total Load Defl.	L/999 (0.031")	n/a	n/a	4	04-03-01
Live Load Defl.	L/999 (0.013")	n/a	n/a	5	04-04-03
Max Defl.	0.031"	n/a	n/a	4	04-03-01
Span / Depth	8	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

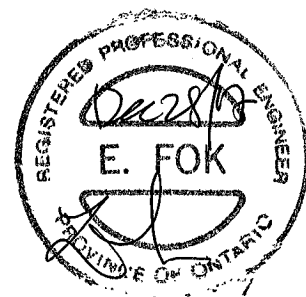
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance 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"	893 lbs	23.7%	11.9%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,583 lbs	42%	21.2%	Spruce Pine Fir

Notes

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



BC CALC® Design Report



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

November 26, 2017 15:34:33

Build 6080

Name: 45147 (5003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290683.bcc

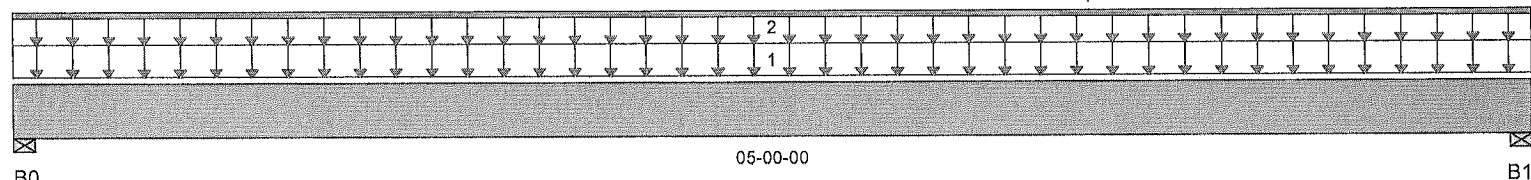
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 05-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	458 / 0	337 / 0		
B1, 3-1/2"	458 / 0	337 / 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	05-00-00	40	15			04-07-00
2		Unf. Lin. (lb/ft)	L	00-00-00	05-00-00		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,143 ft-lbs	17,696 ft-lbs	6.5%	1	02-06-00
End Shear	540 lbs	7,232 lbs	7.5%	1	01-03-06
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-06-00
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-06-00
Max Defl.	0.006"	n/a	n/a	4	02-06-00
Span / Depth	4.6	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

			Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports	Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 1-3/4"	1,109 lbs	29.4%	14.8%
B1	Wall/Plate	3-1/2" x 1-3/4"	1,109 lbs	29.4%	14.8%

Notes

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



BC CALC® Design Report



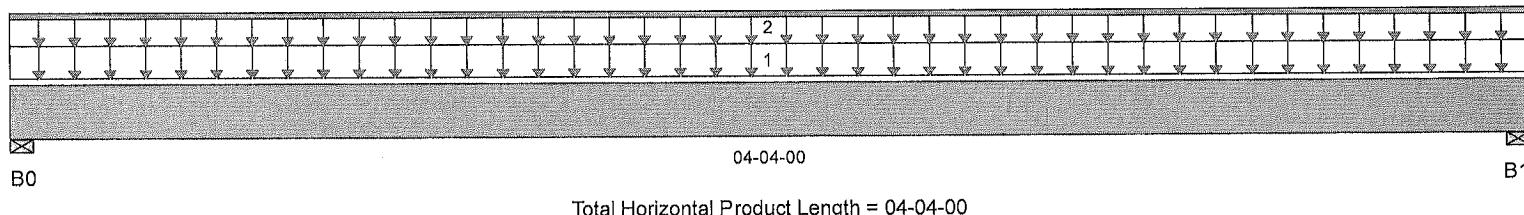
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 26, 2017 11:18:01

Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: First Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	780 / 0	530 / 0		
B1, 3-1/2"	780 / 0	530 / 0		

Load Summary

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

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,588 ft-lbs	11,610 ft-lbs	13.7%	1	02-02-00
End Shear	917 lbs	5,785 lbs	15.8%	1	01-01-00
Total Load Defl.	L/999 (0.012")	n/a	n/a	4	02-02-00
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	02-02-00
Max Defl.	0.012"	n/a	n/a	4	02-02-00
Span / Depth	4.9	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

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

Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 1-3/4"	1,833 lbs	48.6%	24.5%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,833 lbs	48.6%	24.5%	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





Build 6080

Name: 45147 (5003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290683.bcc

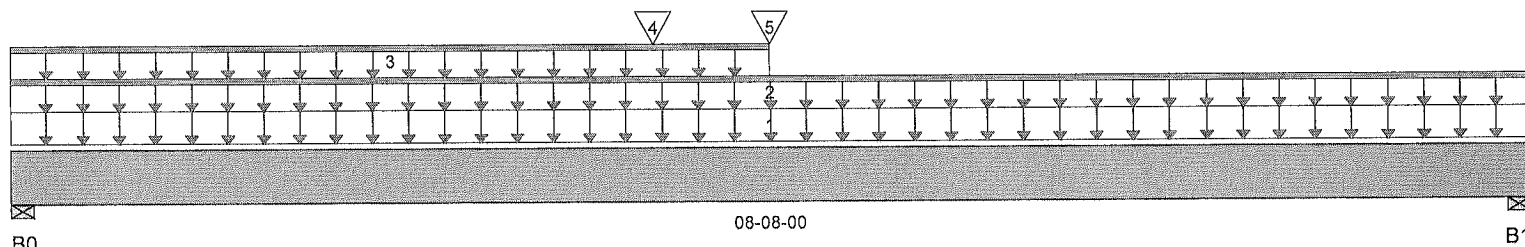
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 08-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,743 / 0	1,365 / 0		
B1, 3-1/2"	1,569 / 0	1,290 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Area (lb/ft^2)	L	00-00-00	08-08-00	40	20				06-00-00
2	Unf. Lin. (lb/ft)	L	00-00-00	08-08-00		120				n/a
3	Unf. Lin. (lb/ft)	L	00-00-00	04-04-00	27	14				n/a
4	Conc. Pt. (lbs)	L	03-08-00	03-08-00	698	262				n/a
5	Conc. Pt. (lbs)	L	04-04-00	04-04-00	417	169				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,016 ft-lbs	23,220 ft-lbs	43.1%	1	04-00-00
End Shear	3,530 lbs	11,571 lbs	30.5%	1	01-01-00
Total Load Defl.	L/599 (0.164")	0.41"	40%	4	04-03-00
Live Load Defl.	L/999 (0.095")	n/a	n/a	5	04-03-00
Max Defl.	0.164"	1"	16.4%	4	04-03-00
Span / Depth	10.4	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

B0	Wall/Plate	3-1/2" x 3-1/2"	4,321 lbs	57.3%	28.9%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	3,966 lbs	52.6%	26.5%	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

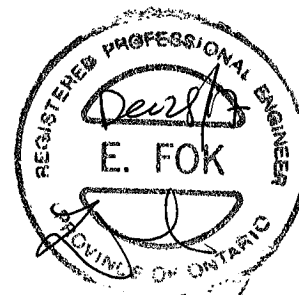
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 4

Nail one ply to another with

3 1/2" spiral nails @ (2)

o.c, staggered in 2 rows



S.152563

BC CALC® Design Report



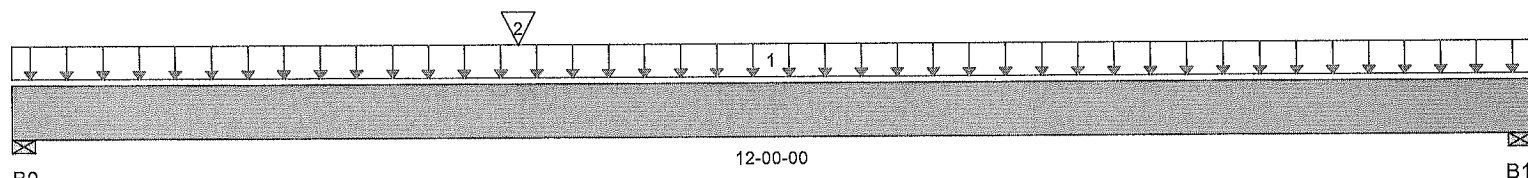
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 26, 2017 11:21:47

Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.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"	559 / 0	298 / 0		
B1, 3-1/2"	394 / 0	236 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	12-00-00	40	20			01-00-00
2		Conc. Pt. (lbs)	L	04-00-00	04-00-00	473	178			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,787 ft-lbs	23,220 ft-lbs	16.3%	1	04-00-00
End Shear	1,105 lbs	11,571 lbs	9.5%	1	01-01-00
Total Load Defl.	L/999 (0.116")	n/a	n/a	4	05-08-12
Live Load Defl.	L/999 (0.076")	n/a	n/a	5	05-08-12
Max Defl.	0.116"	n/a	n/a	4	05-08-12
Span / Depth	14.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

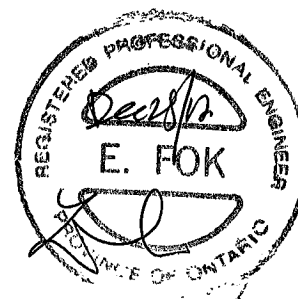
Bearing Supports

			Demand/ Resistance Support	Demand/ Resistance Member	Material	
Bearing Supports	Dim. (L x W)	Demand				
B0	Wall/Plate	3-1/2" x 3-1/2"	1,210 lbs	16.1%	8.1%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	887 lbs	11.8%	5.9%	Spruce Pine Fir

Notes

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

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



S. 152564

BC CALC® Design Report



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

November 26, 2017 12:08:36

Build 6080

Name:

45147 (5003)

Address:

Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290683.bcc

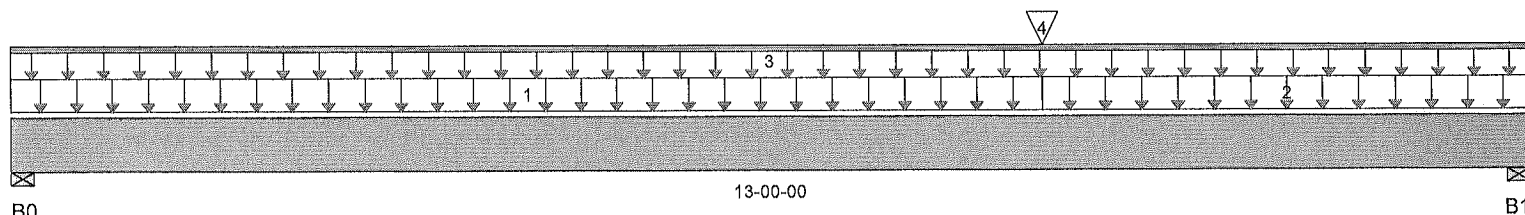
Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 13-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,733 / 0	1,331 / 0		
B1, 3-1/2"	2,114 / 0	1,536 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft ²)	L	00-00-00	08-10-00	40	20			06-00-00
2		Unf. Area (lb/ft ²)	L	08-10-00	13-00-00	40	20			08-00-00
3		Unf. Lin. (lb/ft)	L	00-00-00	13-00-00		60			n/a
4		Conc. Pt. (lbs)	L	08-10-00	08-10-00	394	236			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	14,264 ft-lbs	23,220 ft-lbs	61.4%	1	07-01-10
End Shear	4,261 lbs	11,571 lbs	36.8%	1	11-11-00
Total Load Defl.	L/259 (0.581")	0.627"	92.7%	4	06-07-13
Live Load Defl.	L/452 (0.333")	0.418"	79.6%	5	06-07-13
Max Defl.	0.581"	1"	58.1%	4	06-07-13
Span / Depth	15.8	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"	4,264 lbs	56.6%	28.5%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	5,092 lbs	67.6%	34.1%	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.

Resistance Factor : Normal Part code : Part 4

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


BC CALC® Design Report



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

November 26, 2017 13:08:50

Build 6080

Name:

45147 (5003)

Address:

Pine Valley

City, Province, Postal Code:

Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290683.bcc

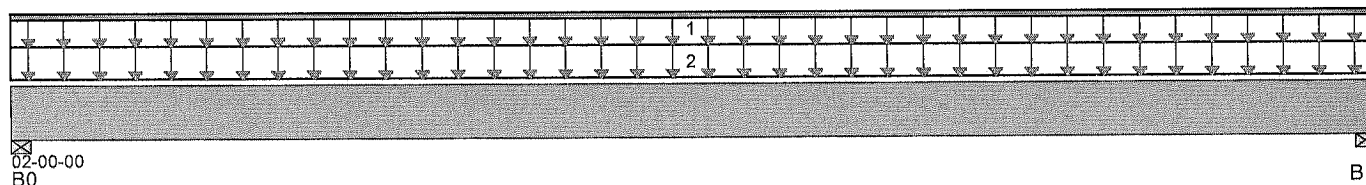
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 02-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	27 / 0	225 / 0	189 / 0	
B1, 3-1/2"	27 / 0	225 / 0	189 / 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	02-00-00	27	114			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	02-00-00		11	21		09-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	172 ft-lbs	35,392 ft-lbs	0.5%	5	01-00-00
End Shear	163 lbs	14,464 lbs	1.1%	5	01-03-06
Total Load Defl.	L/999 (0")	n/a	n/a	13	01-00-00
Max Defl.	0"	n/a	n/a	13	01-00-00
Span / Depth	1.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 3-1/2"	578 lbs	7.7%	3.9%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	578 lbs	7.7%	3.9%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.

Design meets User specified (1") Maximum Total load deflection criteria.

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 4

Nail one ply to another with

3 1/2" spiral nails @ 6"

o.c, staggered in 2 rows



BC CALC® Design Report



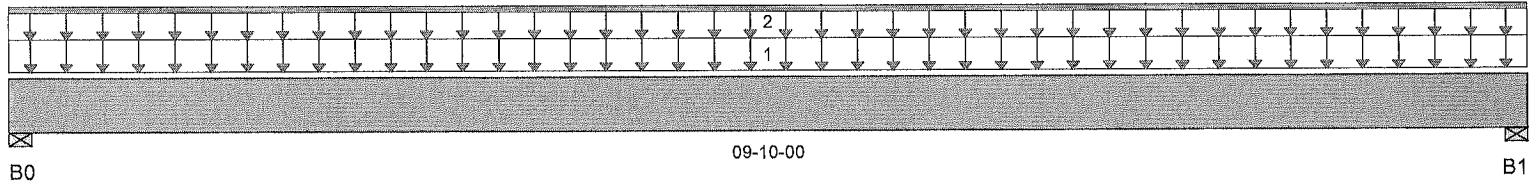
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 26, 2017 13:16:13

Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 09-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,163 / 0	1,436 / 0		
B1, 3-1/2"	2,163 / 0	1,436 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	09-10-00	40	20			11-00-00
2		Unf. Lin. (lb/ft)	L	00-00-00	09-10-00		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	11,261 ft-lbs	35,392 ft-lbs	31.8%	1	04-11-00
End Shear	3,726 lbs	14,464 lbs	25.8%	1	01-03-06
Total Load Defl.	L/864 (0.13")	0.469"	27.8%	4	04-11-00
Live Load Defl.	L/999 (0.078")	n/a	n/a	5	04-11-00
Max Defl.	0.13"	1"	13%	4	04-11-00
Span / Depth	9.5	n/a	n/a		00-00-00
Squash Blocks	Valid				

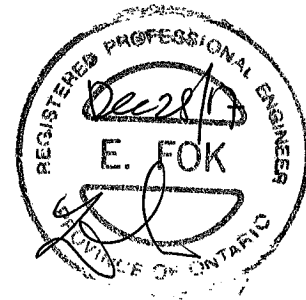
Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 3-1/2"	5,040 lbs	66.9%	33.7%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5,040 lbs	66.9%	33.7%	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 @ 10"
 o.c, staggered in 2 rows



S.152567

BC CALC® Design Report



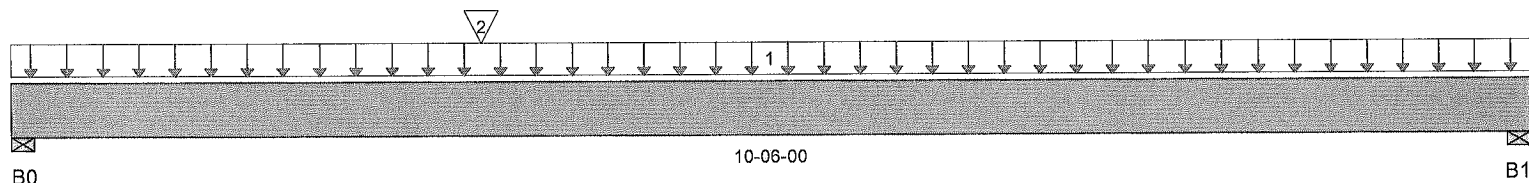
Dry | 1 span | No cantilevers | 0/12 slope (deg)

November 26, 2017 13:18:23

Build 6080

Name: 45147 (5003)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 290683.bcc
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses
 Misc:



Total Horizontal Product Length = 10-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3,213 / 0	1,918 / 0		
B1, 3-1/2"	2,352 / 0	1,346 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Area (lb/ft^2)	L	00-00-00	10-06-00	54	27			06-00-00
2		Conc. Pt. (lbs)	L	03-03-00	03-03-00	2,163	1,436			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	18,109 ft-lbs	35,392 ft-lbs	51.2%	1	03-03-00
End Shear	6,315 lbs	14,464 lbs	43.7%	1	01-03-06
Total Load Defl.	L/538 (0.224")	0.502"	44.6%	4	05-00-04
Live Load Defl.	L/859 (0.14")	0.335"	41.9%	5	05-00-04
Max Defl.	0.224"	1"	22.4%	4	05-00-04
Span / Depth	10.1	n/a	n/a		00-00-00
Squash Blocks	Valid				

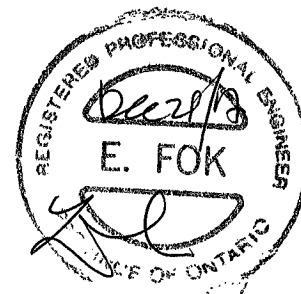
Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 3-1/2"	7,217 lbs	95.8%	48.3%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5,210 lbs	69.1%	34.9%	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



5152568

BC CALC® Design Report


Build 6080

Name:

45147 (5003)

Address:

Pine Valley

City, Province, Postal Code:

Vaughan, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 290683.bcc

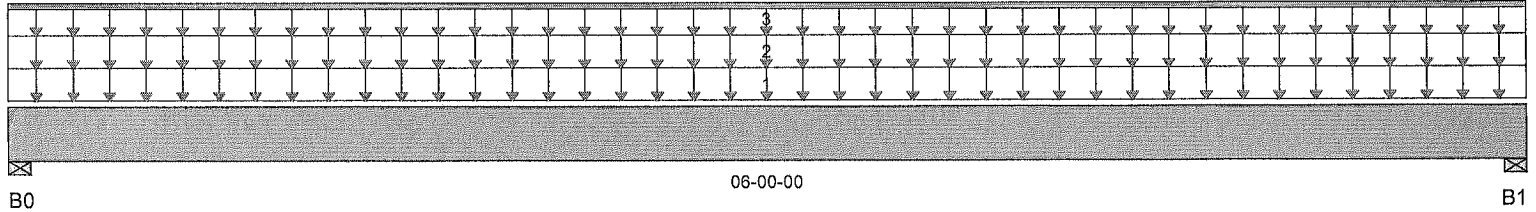
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 06-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	660 / 0	681 / 0	63 / 0	
B1, 3-1/2"	660 / 0	681 / 0	63 / 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	06-00-00	40	20				05-06-00
2	Unf. Area (lb/ft²)	L	00-00-00	06-00-00		11		21		01-00-00
	Unf. Lin. (lb/ft)	L	00-00-00	06-00-00		100				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,396 ft-lbs	17,696 ft-lbs	13.5%	1	03-00-00
End Shear	1,073 lbs	7,232 lbs	14.8%	1	01-03-06
Total Load Defl.	L/999 (0.02")	n/a	n/a	11	03-00-00
Live Load Defl.	L/999 (0.01")	n/a	n/a	15	03-00-00
Max Defl.	0.02"	n/a	n/a	11	03-00-00
Span / Depth	5.6	n/a	n/a		00-00-00
Squash Blocks	Valid				

Disclosure

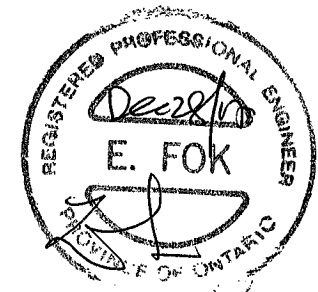
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance 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

B0	Wall/Plate	3-1/2" x 1-3/4"	1,873 lbs	49.7%	25.1%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,873 lbs	49.7%	25.1%	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





Build 6080

Name: 45147 (5003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Gold Park

Code reports: CCMC 12472-R

File Name: 290683.bcc

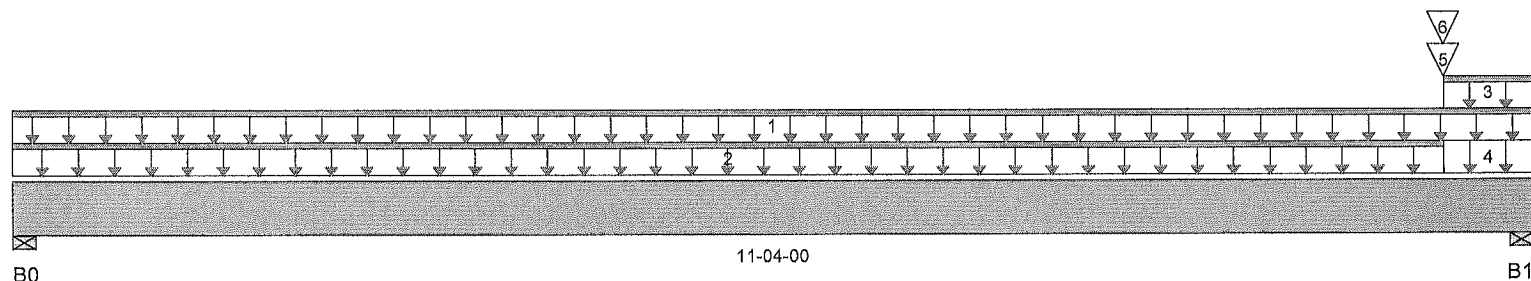
Description: Second Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses

Misc:



Total Horizontal Product Length = 11-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	332 / 0	266 / 0	8 / 0	
B1, 3-1/2"	922 / 0	1,201 / 0	229 / 0	

Load Summary

Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	11-04-00	27	14			n/a
2	Unf. Lin. (lb/ft)	L	00-00-00	10-08-00	27	14			n/a
3	Unf. Lin. (lb/ft)	L	10-08-00	11-04-00		100			n/a
4	Unf. Area (lb/ft^2)	L	10-08-00	11-04-00		11	21		03-00-00
5	Conc. Pt. (lbs)	L	10-08-00	10-08-00	660	681	63		n/a
6	Conc. Pt. (lbs)	L	10-08-00	10-08-00		252	132		n/a

Controls Summary

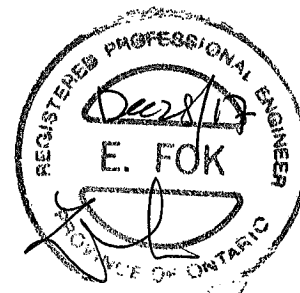
Description	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,471 ft-lbs	35,392 ft-lbs	7%	1	06-04-04
End Shear	1,447 lbs	14,464 lbs	10%	1	10-00-10
Total Load Defl.	L/999 (0.04")	n/a	n/a	11	05-09-10
Live Load Defl.	L/999 (0.022")	n/a	n/a	15	05-09-10
Max Defl.	0.04"	n/a	n/a	11	05-09-10
Span / Depth	11	n/a	n/a		00-00-00
Squash Blocks	Valid				

Bearing Supports

				Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand			
B0	Wall/Plate	3-1/2" x 3-1/2"	835 lbs	11.1%	5.6%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	2,998 lbs	39.8%	20.1%	Spruce Pine Fir

Notes

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



1st Floor\Flush Beams\B32(i6299)

Dry | 1 span | No cant.

April 18, 2019 12:52:38

BC CALC® Member Report

Build 6766

Job name: 45147(5003)

File name: 308356-C-LOT 91.mmdl

Address: Pine Valley

Description: 1st Floor\Flush Beams\B32(i6299)

City, Province, Postal Code: Vaughan, ON

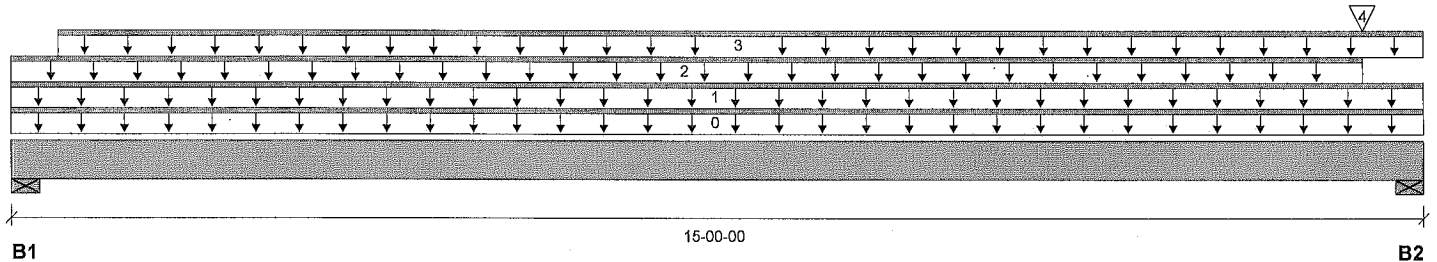
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 15-00-00

Reaction Summary (Down / Uplift) (lbs)

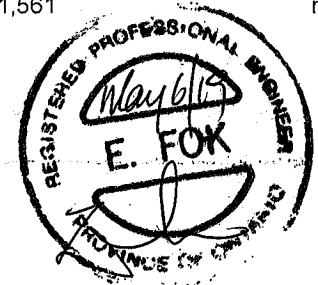
Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2,267 / 0	1,642 / 0		
B2, 6"	4,697 / 0	3,262 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-00-00	Top		12			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	15-00-00	Top	288	144			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-04-04	Top	19	9			n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-06-00	15-00-00	Top		60			n/a
4	B4(i3557)	Conc. Pt. (lbs)	L	14-04-04	14-04-04	Top	2,379	1,561			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	17,627 ft-lbs	35,392 ft-lbs	49.8 %	1	06-11-06
End Shear	4,626 lbs	14,464 lbs	32.0 %	1	13-06-02
Total Load Deflection	L/363 (0.468")	n/a	66.1 %	4	07-05-06
Live Load Deflection	L/635 (0.268")	n/a	56.7 %	5	07-05-06
Max Defl.	0.468"	n/a	46.8 %	4	07-05-06
Span / Depth	14.3				


Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	5,453 lbs	46.0 %	23.2 %	Unspecified
B2	Wall/Plate 6" x 3-1/2"	11,124 lbs	86.1 %	43.4 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Concentrated side-load exceeds allowable magnitude for connection design. Please consult a technical representative or Professional Engineer for the design of the connection.

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

Disclosure

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

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

1st Floor\Flush Beams\B33(i6273)

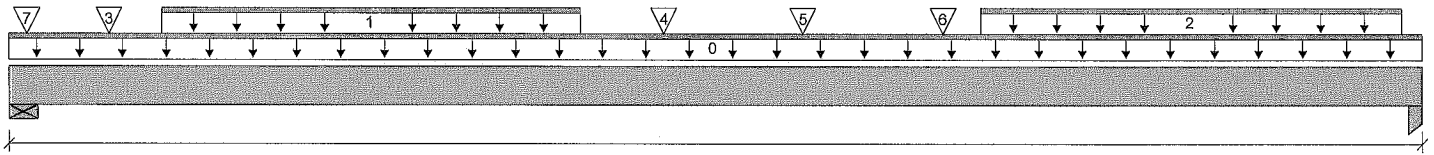
Dry | 1 span | No cant.

April 18, 2019 12:52:38

BC CALC® Member Report
Build 6766

Job name: 45147(5003)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File name: 308356-C-LOT 91.mmdl
Description: 1st Floor\Flush Beams\B33(i6273)
Specifier:
Designer: NL
Company: Alpa Roof Trusses



B1

13-06-00

B2

Total Horizontal Product Length = 13-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	3,306 / 0	1,892 / 0		
B2, 3"	2,888 / 0	1,835 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-06-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-05-10	05-05-10	Top	430	214			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	09-03-10	13-03-10	Top	430	274			n/a
3	-	Conc. Pt. (lbs)	L	00-11-08	00-11-08	Top	521	260			n/a
4	-	Conc. Pt. (lbs)	L	06-03-04	06-03-04	Top	573	334			n/a
5	-	Conc. Pt. (lbs)	L	07-07-03	07-07-03	Top	573	366			n/a
6	-	Conc. Pt. (lbs)	L	08-11-05	08-11-05	Top	546	343			n/a
7	B7(i3559)	Conc. Pt. (lbs)	L	00-02-00	00-02-00	Top	542	305			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	20,391 ft-lbs	35,392 ft-lbs	57.6 %	1	06-04-06
End Shear	5,786 lbs	14,464 lbs	40.0 %	1	12-03-02
Total Load Deflection	L/346 (0.45")	n/a	69.4 %	6	06-11-00
Live Load Deflection	L/557 (0.279")	n/a	64.6 %	8	06-11-00
Max Defl.	0.45"	n/a	45.0 %	6	06-11-00
Span / Depth	13.1				

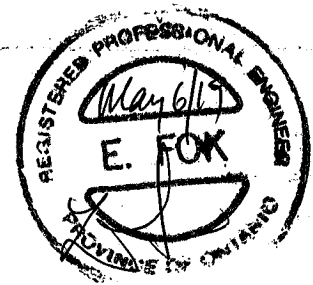
Bearing Supports

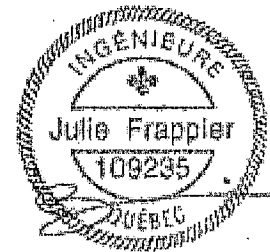
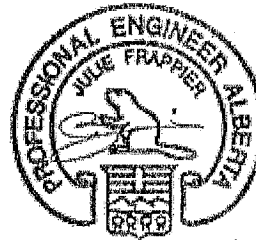
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5" x 3-1/2"	7,324 lbs	68.0 %	34.3 %	Unspecified
B2	Column 3" x 3-1/2"	6,626 lbs	60.4 %	51.7 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

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

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

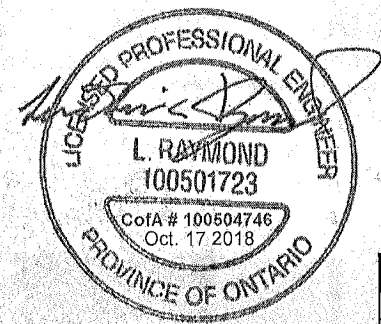
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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

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



N-C301/April 2014

MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of $1.50L + 1.25D$. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of $L/480$. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nail oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in C085-71.24 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA O86-07 Standard, and NRC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

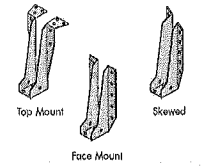
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Clear Span	Joist Depth	Simple Spanning						Multiple Spanning					
		12"	15"	18"	21"	24"	27"	12"	15"	18"	21"	24"	27"
9'-1/2"	Ni-20	13'-1"	14'-2"	15'-9"	15'-5"	16'-3"	16'-3"	13'-1"	14'-2"	15'-9"	15'-5"	16'-3"	16'-3"
	Ni-40x	18'-1"	15'-2"	14'-0"	14'-0"	17'-2"	16'-5"	15'-10"	13'-10"	15'-10"	15'-5"	16'-5"	16'-5"
	Ni-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-2"	16'-5"	15'-10"	13'-10"	15'-10"	15'-5"	16'-5"	16'-5"
	Ni-70	17'-1"	16'-1"	15'-4"	15'-7"	18'-7"	17'-4"	16'-9"	14'-9"	16'-9"	16'-9"	17'-2"	17'-2"
	Ni-90	17'-3"	16'-3"	15'-8"	15'-8"	18'-10"	17'-8"	16'-11"	14'-11"	16'-11"	16'-11"	17'-2"	17'-2"
11'-7/8"	Ni-20	16'-3"	16'-0"	16'-5"	16'-5"	18'-7"	17'-4"	16'-9"	14'-9"	16'-9"	16'-9"	17'-2"	17'-2"
	Ni-40x	18'-1"	17'-0"	16'-5"	16'-5"	20'-0"	18'-5"	17'-5"	15'-5"	17'-5"	17'-5"	18'-9"	18'-9"
	Ni-60	18'-4"	17'-2"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	15'-9"	18'-0"	18'-0"	19'-9"	19'-9"
	Ni-70	19'-2"	18'-2"	17'-4"	17'-4"	21'-4"	19'-9"	18'-11"	15'-11"	19'-9"	19'-9"	21'-4"	21'-4"
	Ni-90	19'-9"	18'-3"	17'-4"	17'-7"	21'-9"	20'-2"	19'-3"	15'-3"	19'-3"	19'-3"	21'-9"	21'-9"
14'	Ni-20	20'-2"	18'-7"	17'-10"	17'-11"	22'-2"	20'-7"	19'-8"	15'-8"	19'-8"	19'-8"	22'-2"	22'-2"
	Ni-40x	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-6"	19'-8"	15'-8"	19'-8"	19'-8"	22'-2"	22'-2"
	Ni-60	20'-3"	18'-11"	18'-1"	18'-2"	22'-2"	20'-11"	20'-0"	15'-10"	20'-0"	20'-0"	22'-2"	22'-2"
	Ni-70	21'-3"	20'-2"	19'-1"	19'-1"	23'-10"	22'-1"	21'-1"	15'-11"	21'-1"	21'-1"	23'-10"	23'-10"
	Ni-90	21'-11"	21'-1"	19'-4"	19'-5"	24'-3"	22'-3"	21'-5"	15'-5"	21'-5"	21'-5"	24'-3"	24'-3"
16'	Ni-20	22'-2"	20'-8"	19'-9"	19'-9"	24'-9"	22'-10"	21'-10"	15'-10"	21'-10"	21'-10"	24'-9"	24'-9"
	Ni-40x	22'-3"	20'-11"	19'-11"	19'-11"	24'-9"	22'-11"	22'-0"	15'-11"	22'-0"	22'-0"	24'-9"	24'-9"
	Ni-60	22'-3"	20'-8"	19'-9"	19'-9"	24'-9"	22'-10"	22'-10"	15'-10"	22'-10"	22'-10"	24'-9"	24'-9"
	Ni-70	23'-4"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	15'-11"	22'-11"	22'-11"	26'-0"	26'-0"
	Ni-90	23'-11"	22'-1"	21'-5"	21'-6"	26'-11"	24'-6"	23'-9"	15'-9"	23'-9"	23'-9"	26'-11"	26'-11"
18'	Ni-20x	24'-6"	22'-9"	21'-6"	21'-10"	27'-3"	25'-2"	24'-0"	15'-10"	24'-0"	24'-0"	27'-3"	27'-3"
	Ni-40x	24'-6"	22'-9"	21'-6"	21'-10"	27'-3"	25'-2"	24'-0"	15'-10"	24'-0"	24'-0"	27'-3"	27'-3"

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

- Hangers shown illustrate the three most commonly used metal hangers to support I-joists.
- All nailing must meet the hanger manufacturer's recommendations.
- Hangers should be selected based on the joist depth, flange width and load capacity listed 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.



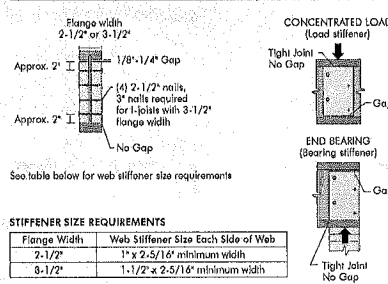
WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2 WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

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

NORDIC I-JOIST SERIES

Ni-20	Ni-40x	Ni-60	Ni-70	Ni-90	Ni-90x
3" x 12"	3" x 12"	3" x 12"	3" x 12"	3" x 12"	3" x 12"
33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit

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

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

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

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

1c Provide backer for siding attachment unless nailable sheathing is used.

1d Wall sheathing, as required.

1e Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

1f Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

1g Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support.

1h Double I-joist header.

1i Top- or face-mount hanger.

1j Filler block per detail 1j.

1k Backer block required (both sides for face-mount hangers).

1l Notes: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1m For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

1n 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-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

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

1p 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. (clinch 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 lbf/ft. Verify double I-joist capacity.

1q FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

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

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

1t Notes:

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

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

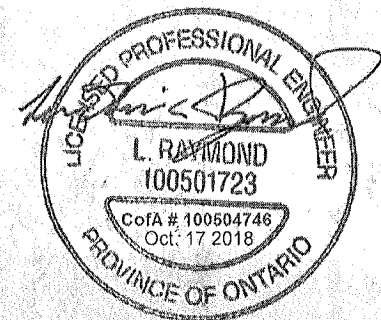
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

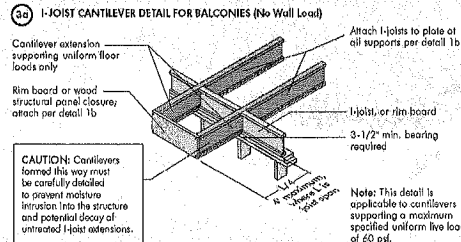
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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

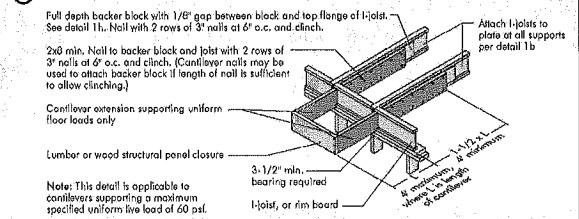
Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



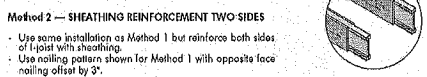
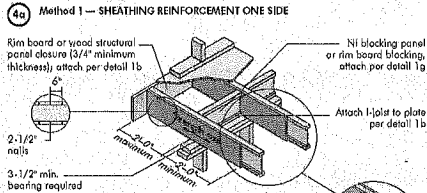
CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



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



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on one side 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.

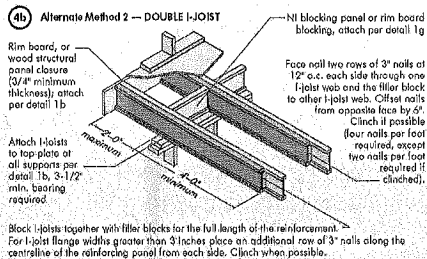
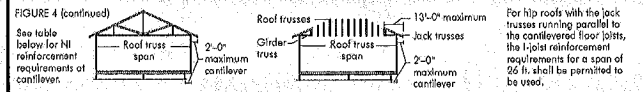


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Span (ft.)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf DL = 15 psf				LL = 40 psf DL = 15 psf				LL = 50 psf DL = 15 psf			
		12'	14'	16'	18'	12'	14'	16'	18'	12'	14'	16'	18'
9-1/2"	26	N	N	N	1	2	N	1	2	X	X	X	X
	28	N	N	N	1	X	N	1	2	X	X	X	X
	30	N	N	1	1	X	N	1	2	X	X	X	X
	32	N	1	2	X	N	2	X	X	1	X	X	X
	34	N	1	2	X	N	2	X	X	1	X	X	X
11-7/8"	26	N	1	2	X	1	2	X	X	1	X	X	X
	28	N	1	N	N	1	1	N	1	2	N	1	2
	30	1	N	N	1	2	N	1	2	X	1	2	X
	32	1	1	1	2	N	1	2	N	1	1	2	X
	34	1	1	1	2	2	1	1	X	X	1	2	X
14"	26	2	N	1	2	X	1	2	X	X	1	2	X
	28	N	N	N	N	N	N	N	1	1	N	N	1
	30	N	N	N	N	N	N	N	1	1	N	N	1
	32	N	N	N	1	N	N	1	1	N	N	1	2
	34	N	N	N	1	N	N	1	1	N	N	1	2
16"	26	N	N	N	1	N	N	1	2	N	1	2	X
	28	N	N	N	1	N	N	1	2	N	1	2	X
	30	N	N	N	1	N	N	1	2	N	1	2	X
	32	N	N	N	1	N	N	1	2	N	1	2	X
	34	N	N	N	1	N	N	1	2	N	1	2	X

- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf roof dead load, 65 psf floor total load, and 80 psf wall load. Wall load is based on 3-0" maximum width window or door openings.
- For larger openings, or multiple 3-0" width openings spaced less than 6-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

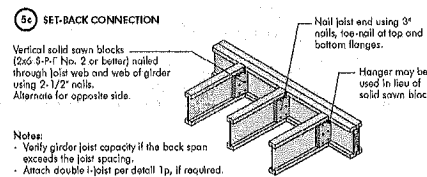
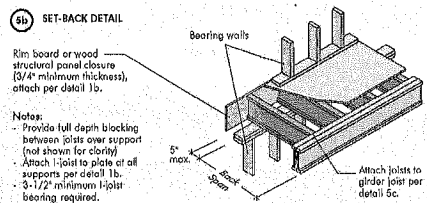
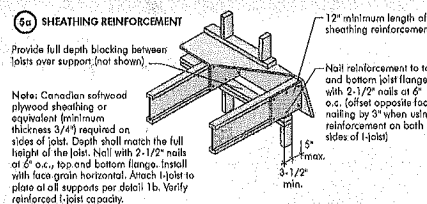
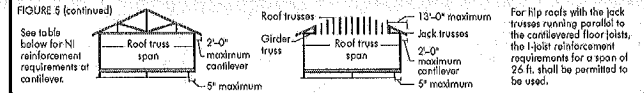


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Span (ft.)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf DL = 15 psf				LL = 40 psf DL = 15 psf				LL = 50 psf DL = 15 psf			
		12'	14'	16'	18'	12'	14'	16'	18'	12'	14'	16'	18'
9-1/2"	26	1	X	X	X	2	X	X	X	X	X	X	X
	28	1	X	X	X	2	X	X	X	X	X	X	X
	30	1	X	X	X	2	X	X	X	X	X	X	X
	32	2	X	X	X	2	X	X	X	X	X	X	X
	34	2	X	X	X	2	X	X	X	X	X	X	X
11-7/8"	26	X	2	X	X	X	X	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X	X	X	X	X
14"	26	N	2	X	X	1	X	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X	1	X	X	X
	30	1	2	X	X	1	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X
16"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X

- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf roof dead load, 65 psf floor total load, and 80 psf wall load. Wall load is based on 3-0" maximum width window or door openings.
- For larger openings, or multiple 3-0" width openings spaced less than 6-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

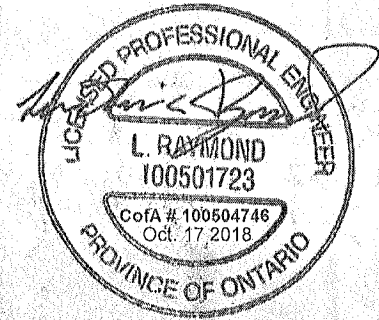
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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

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



WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
- The sides of square holes or larger sized rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest 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 conditioned section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

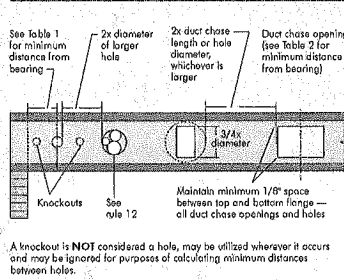
Joist Depth (D)	Joist Series	Minimum distance from inside face of any support to centre of hole (D)												Span (S)
		8	10	12	14	16	18	20	22	24	26	28	30	
9-1/2"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-26	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-28	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-30	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
11-7/8"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-26	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-28	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-30	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
14"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-26	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-28	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-30	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
16"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-26	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-28	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
	N-30	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Minimum distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.

OPTIONALS:

- The above table is based on the I-joists used at their maximum spans. If the I-joists are placed at less than their full maximum span (see Maximum Floor Span), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:
Reduced = $\frac{\text{Actual Span}}{\text{Full Span}} \times D$
- Where:
D = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (6). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
Actual = The actual measured span distance between the inside faces of supports (6).
Full = Span Adjustment Factor given in this table.
D = The minimum distance from the inside face of any support to centre of hole from this table.
If located in greater than 1, use 1 in the above calculation for Actual Span.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (D)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
11-7/8"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
14"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
16"	N-20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	N-24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple span joists only. For other applications, consult 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 15 psf, and a live load deflection limit of $L/460$. For other applications, consult your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Minimum Joist Spacing	Deck Thickness	Nail Size and Spacing			Minimum Spacing of Fasteners	
		Joist Flange	Panel Edge	Panel Interior	Edge	Interior
16	5/8	2"	1-3/4"	2"	6"	12"
20	5/8	2"	1-3/4"	2"	6"	12"
24	3/4	2"	1-3/4"	2"	6"	12"

- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
- Use only adhesives conforming to CAN/CSG-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 treated surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

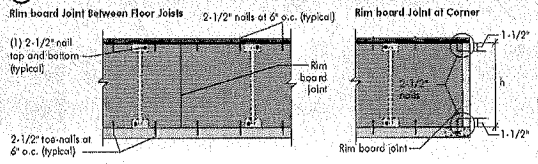
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

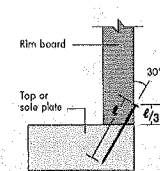
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

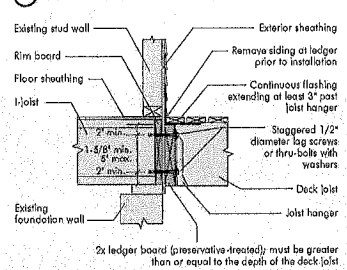
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD



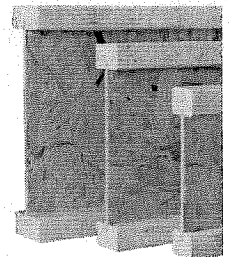
8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

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

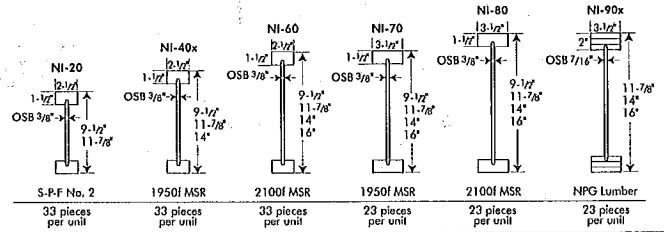
Furthermore, Chemical Chiboguan warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.



CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS



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



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

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

TABLE 1

LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

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

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

TABLE 2

DUCT CHASE OPENING SIZES AND LOCATIONS

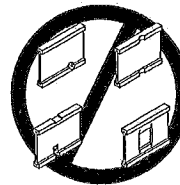
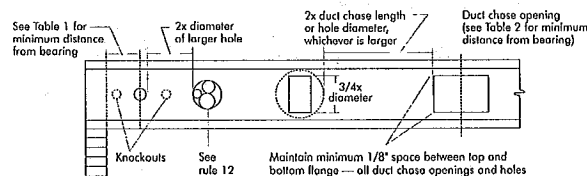
Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)												
		Duct Chase Length (in.)												
		8	10	12	14	16	18	20	22	24				
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"				
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"				
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-8"				
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"				
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"				
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"				
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"				
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"				
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"				
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-8"				
14"	NI-20x	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	11-2"				
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"				
	NI-60	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	13-3"	13-0"				
	NI-70	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"				
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"				
16"	NI-20x	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"				
	NI-40x	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"				
	NI-60	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-3"	14-0"				
	NI-70	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-8"	14-4"				
	NI-80	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"				

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

FIGURE 7

FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

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



PRODUCT WARRANTY

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

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

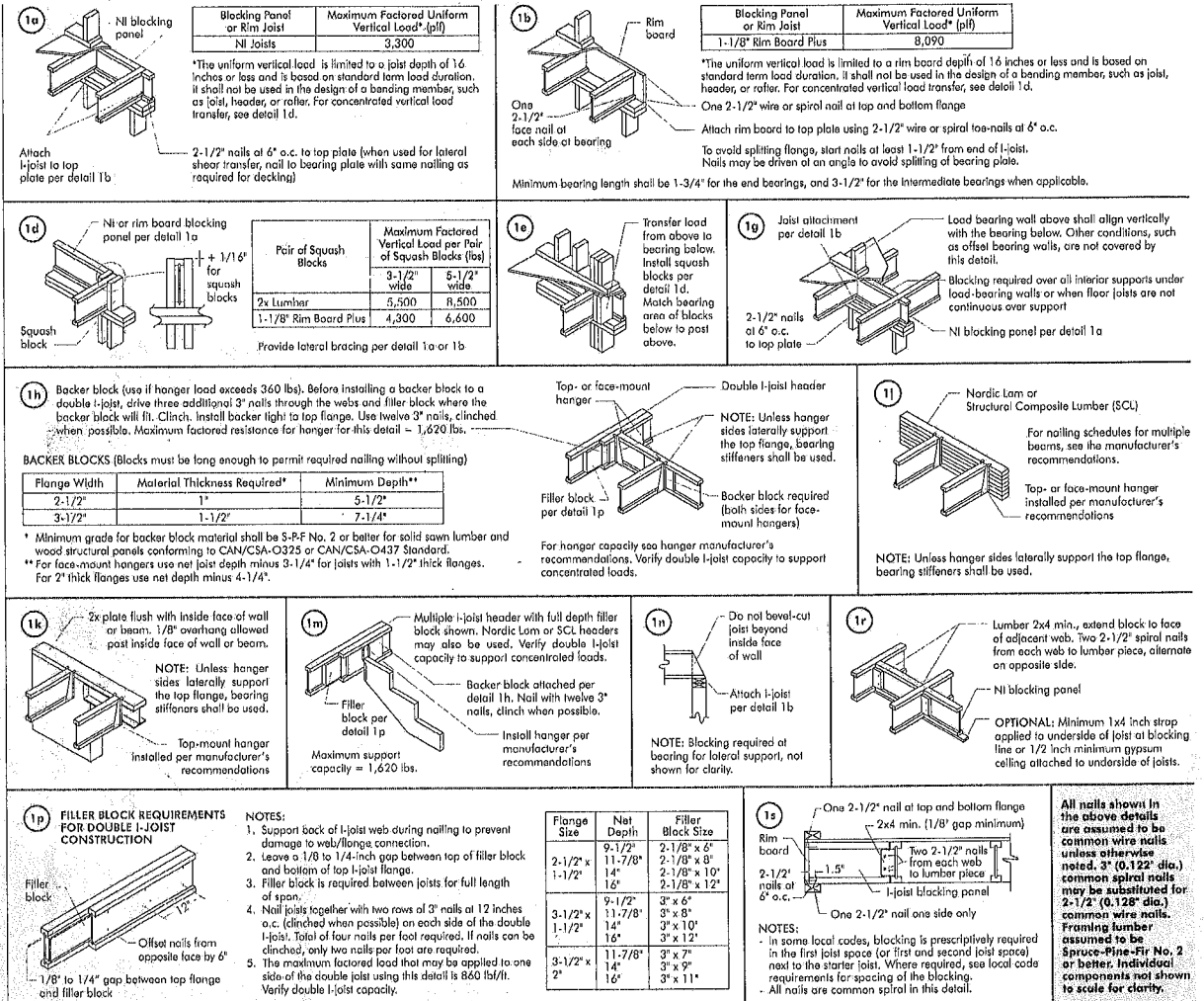
The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

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

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

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



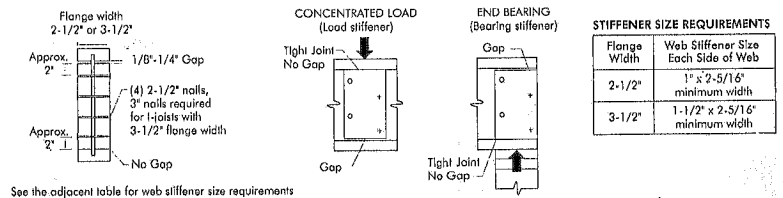
WEB STIFFENERS

RECOMMENDATIONS:

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

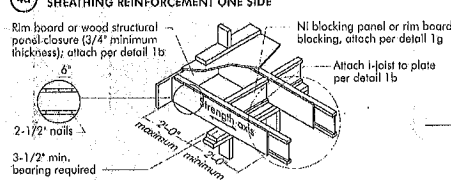
FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

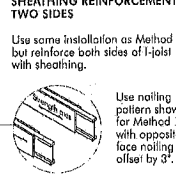


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

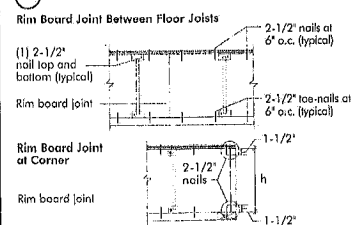


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

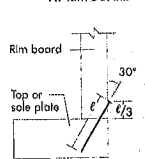


RIM BOARD INSTALLATION DETAILS

ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



TOE-NAIL CONNECTION AT RIM BOARD



The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

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

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

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



The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

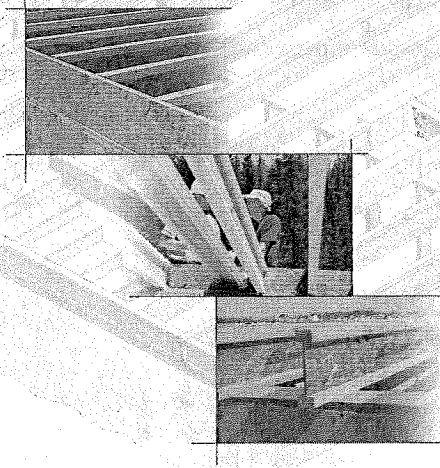
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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

NORDIC ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS

WARNING

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

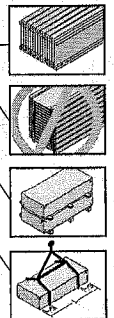
Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

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

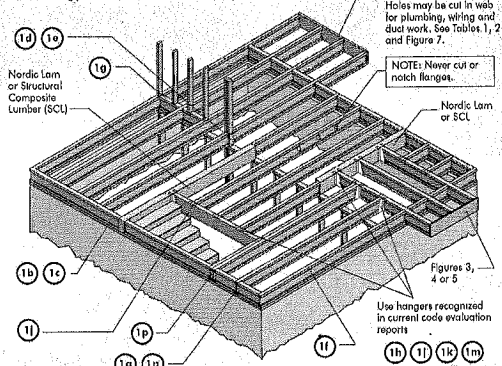


INSTALLING NORDIC I-JOISTS

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

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

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



All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" 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.

1a

Attach I-joist to top plate per detail 1b

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
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.

1b

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 end bearings, and 3-1/2" for the intermediate bearings when applicable.

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
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.

1c

Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

Attach I-joist per detail 1b

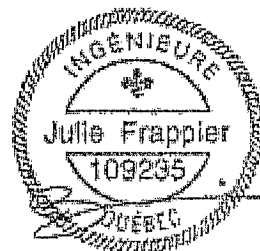
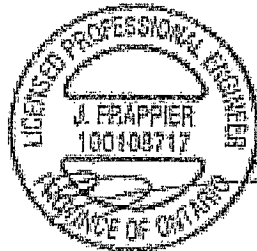
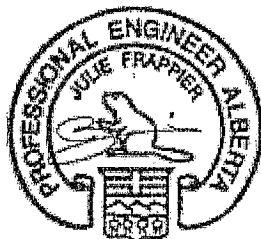
Minimum 1-3/4" bearing required

1d

Attach rim joist to top plate per detail 1a

Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (plf)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/360 Deflection Limit
5/8" 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'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
15"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-5"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A
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	16'-10"	15'-5"	14'-6"	N/A	17'-1"	15'-5"	14'-6"	N/A
	NI-40x	17'-11"	16'-11"	16'-4"	N/A	18'-5"	17'-4"	16'-7"	N/A
	NI-60	18'-2"	17'-1"	16'-6"	N/A	18'-7"	17'-6"	16'-10"	N/A
	NI-70	19'-2"	17'-10"	17'-2"	N/A	19'-7"	18'-3"	17'-7"	N/A
	NI-80	19'-5"	18'-0"	17'-4"	N/A	19'-10"	18'-5"	17'-8"	N/A
11-7/8"	NI-20	19'-6"	18'-1"	17'-5"	N/A	20'-2"	18'-8"	17'-6"	N/A
	NI-40x	21'-0"	19'-6"	18'-8"	N/A	21'-7"	20'-2"	19'-3"	N/A
	NI-60	21'-4"	19'-9"	18'-11"	N/A	21'-11"	20'-4"	19'-6"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-5"	20'-5"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-8"	N/A
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	NI-40x	23'-7"	21'-11"	20'-11"	N/A	24'-3"	22'-7"	21'-7"	N/A
	NI-60	24'-0"	22'-3"	21'-3"	N/A	24'-8"	22'-11"	21'-11"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-11"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	25'-3"	24'-2"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

- 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 5/8 inch for a joist spacing of 19.2 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.