

NO	DATE	PLNG

MODEL : 42-2  
ELEVATION A & B  
JOB CONDITION

FIRST FLOOR FRAMING

OFFICE USE ONLY  
ENGINEERED FROM  
S-129688 TO S-125712  
S-

Do not scale - refer to architectural plans for dimensions

ProdID	Length	Product	Pieces	Net Qty
J1	15'-00'-00	9 1/2" Nl-20	1	38
J2	15'-00'-00	9 1/2" Nl-20	2	4
J3	14'-00'-00	9 1/2" Nl-20	1	13
J4	13'-00'-00	9 1/2" Nl-20	1	13
J5	13'-00'-00	9 1/2" Nl-20	2	4
J6	11'-00'-00	9 1/2" Nl-20	1	13
J7	10'-00'-00	9 1/2" Nl-20	1	3
J8	8'-00'-00	9 1/2" Nl-20	1	1
J9	4'-00'-00	9 1/2" Nl-20	1	1
J10	3'-00'-00	9 1/2" Nl-20	1	3
J11	2'-00'-00	9 1/2" Nl-20	1	2
B13	15'-00'-00	VERSALAM-10 2.0E	1	1
B15	14'-00'-00	VERSALAM-10 2.0E	1	1
B18	14'-00'-00	VERSALAM-10 2.0E	2	2
B16	11'-00'-00	VERSALAM-10 2.0E	1	1
B17	11'-00'-00	VERSALAM-10 2.0E	1	1
B11	5'-00'-00	VERSALAM-10 2.0E	1	1
B19	4'-00'-00	VERSALAM-10 2.0E	1	1
B12	2'-00'-00	VERSALAM-10 2.0E	1	1

9 1/2" BLOCKING 40 LF

APP - AS PER PLAN  
BBO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED  
RIMBOARD  
1-1/8" X 9 1/2" O.S.B

FANGERS SCHEDULE

H1-----LT259  
H3-----HUS1 B1110



TILE AREA

1-2x6 SPF#2 Squash Block req'd on one side of joists under interior load bearing wall  
Multiple squash blocks are required under concentrated loads  
Joists spacing under ceramic tile is 12" o/c  
Ceramic tiles application is as per O.B.C 9.30.6

JT: 40297/85974/89318RV  
File: 274838

Builder: Gold Park Homes  
Project: Huntington & Nashville

Location: Kleinburg  
Date: Nov. 02/16

Designer: LA/SG  
Sheet: 2 of 5

Alpa Roof Trusses Inc.  
Maple, Ontario

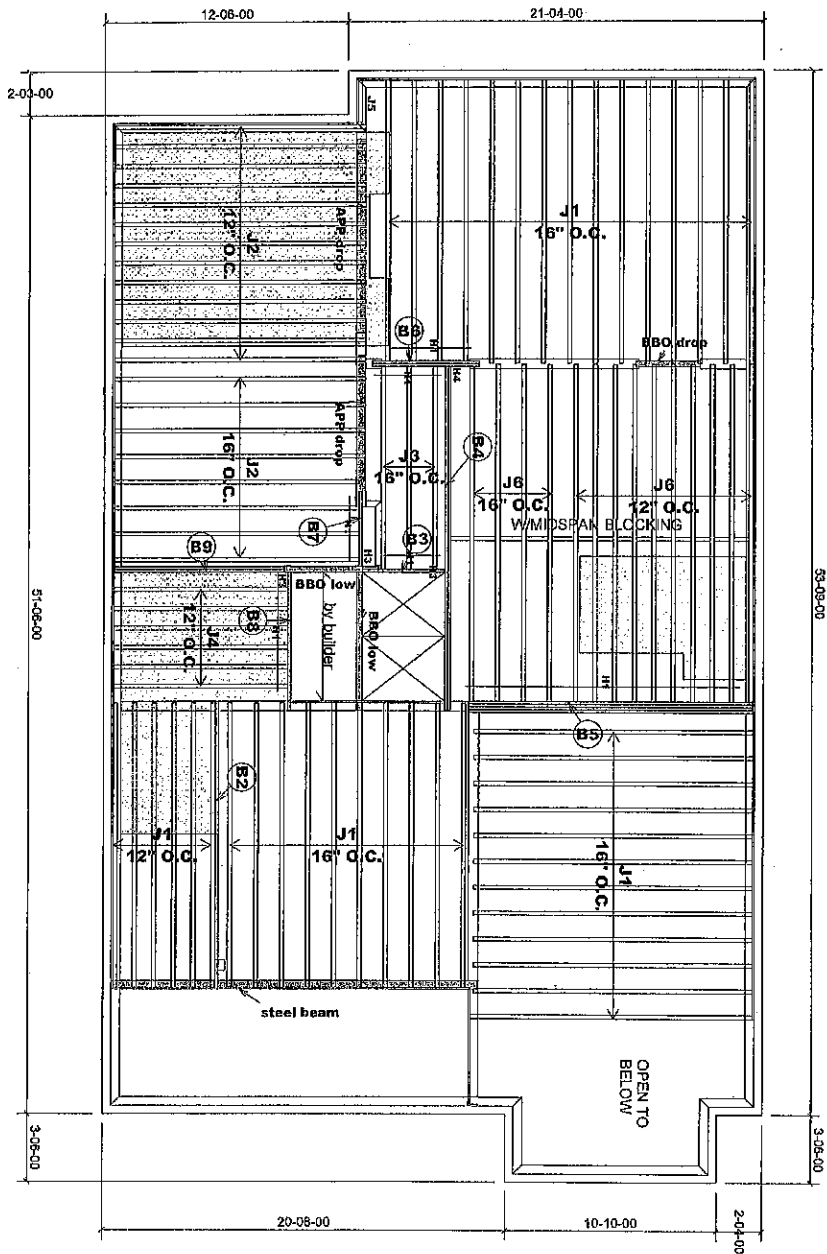
Salesperson: Derek  
Home Lumber



MODEL: 42-2  
ELEVATION A & B

## SECOND FLOOR FRAMING

**Do not scale - refer to architectural plans for dimensions**



		Products		
PlotID	Length	Product	Piles	Net Qty
J1	15-00-00	9 1/2" NI-20	1	43
J2	13-00-00	9 1/2" NI-20	1	21
J3	11-00-00	9 1/2" NI-20	1	3
J4	9-00-00	9 1/2" NI-20	1	6
J5	3-00-00	9 1/2" NI-20	1	1
J6	18-00-00	9 1/2" NI-40x	1	1
B4	18-00-00	VERSALAM-10 2.0E	2	2
B2	15-00-00	VERSALAM-10 2.0E	1	1
B5	15-00-00	VERSALAM-10 2.0E	4	4
B9	14-00-00	VERSALAM-10 2.0E	2	2
B8	8-00-00	VERSALAM-10 2.0E	1	1
B6	6-00-00	VERSALAM-10 2.0E	1	1
B3	4-00-00	VERSALAM-10 2.0E	1	1
B7	4-00-00	VERSALAM-10 2.0E	1	1

9 1/2" BLOCKING 16 LF.

APP - AS PER PLAN  
BBO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED

1-1/8" X 9 1/2" O.S.B

## HANGERS SCHEDULE

H1-----LT259  
H3-----HUS1.81/10  
H4-----HGUS410

TILE AREA

1-2x6 SPF#2 Squash Block req'd on one side of joists under interior load bearing wall

Multiple squash blocks are required under concentrated loads

Joists spacing under ceramic tile is 12"o/c

Ceramic tiles application is as per O.B.C 9.30.6

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

File: 274838

**Builder:** Gold Park Homes  
**Project:** Huntington & Nash

Location: Kleinburg  
Date: May 01/15

Designer: LA  
Sheet: 4 of 5

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Derek  
Home Lumber



BC CALC® Design Report



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

May-04-15

Build 3272

Job Name:

40297

Address:

Huntington &amp; Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

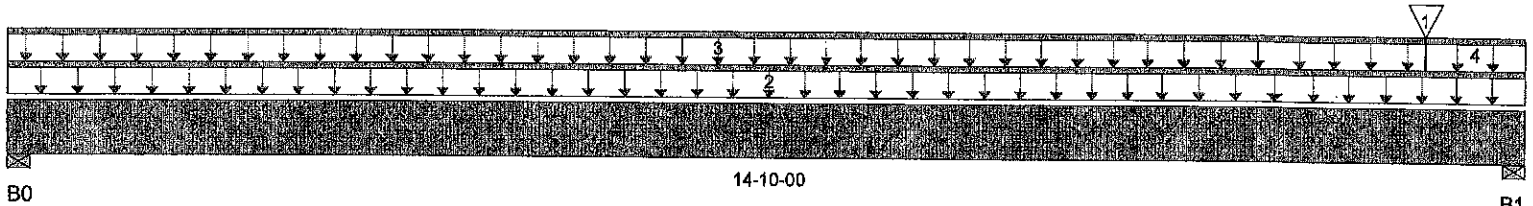
Description: Designs\02

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 14-10-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	355 / 0	194 / 0	14 / 0	
B1, 3-1/2"	455 / 0	413 / 0	253 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Conc. Pt. (lbs)	L	13-10-00	13-10-00	133	149	267		n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	14-10-00	27	10			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	13-10-00	20	10			n/a
4		Unf. Lin. (lb/ft)	L	13-10-00	14-10-00	0	100			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,838 ft-lbs	12,704 ft-lbs	0.22	1	07-07-06
End Shear	1,170 lbs	5,785 lbs	0.2	1	13-09-00
Total Load Defl.	L/565 (0.305")	0.719"	0.42	11	07-06-03
Live Load Defl.	L/874 (0.197")	0.479"	0.41	15	07-06-03
Max Defl.	0.305"	1"	0.31	11	07-06-03
Span / Depth	18.2	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	782 lbs	0.21	0.1	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,325 lbs	0.35	0.18	Spruce Pine Fir

**Notes**

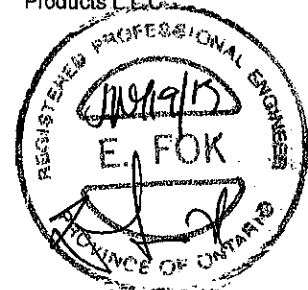
Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum total load deflection criteria.  
 Calculations assume Member is Fully Braced.  
 Resistance Factor phi has been applied to all presented results per CSA 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS

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



S-129696

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

May-02-15

## BC CALC® Design Report



Build 3272

Job Name:

40297

Address:

Huntington & Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

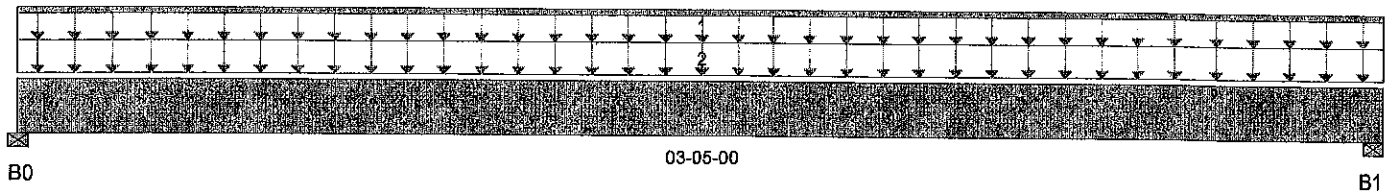
Description: Designs\03

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 03-05-00

## Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	348 / 0	236 / 0		
B1, 3-1/2"	372 / 0	254 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	03-05-00	0	60			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	03-05-00	40	15			05-03-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	588 ft-lbs	12,704 ft-lbs	0.05	1	01-07-15
End Shear	340 lbs	5,785 lbs	0.06	1	00-11-08
Total Load Defl.	L/999 (0.003")	n/a	n/a	4	01-07-15
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	01-07-15
Max Defl.	0.003"	n/a	n/a	4	01-07-15
Span / Depth	3.9	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	2" x 1-3/4"	814 lbs	0.38	0.19	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	876 lbs	0.23	0.12	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

## User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS

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

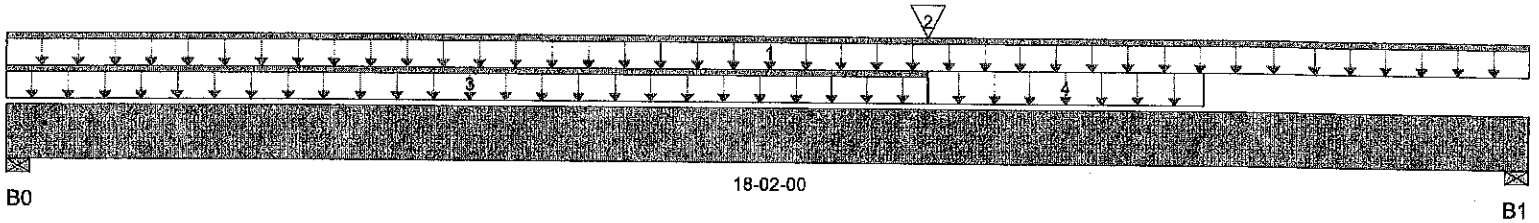


S129697



Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\04  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:


**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	684 / 0	387 / 0		
B1, 3-1/2"	759 / 0	440 / 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	18-02-00	27	10			n/a
2		Conc. Pt. (lbs)	L	11-00-00	11-00-00	372	254			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	11-00-00	27	10			n/a
4		Unf. Area (lb/ft^2)	L	11-00-00	14-04-00	40	15			02-01-08

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,117 ft-lbs	25,408 ft-lbs	0.36	1	11-00-00
End Shear	1,618 lbs	11,571 lbs	0.14	1	17-01-00
Total Load Defl.	L/316 (0.672")	0.885"	0.76	4	09-03-09
Live Load Defl.	L/498 (0.427")	0.59"	0.72	5	09-03-09
Max Defl.	0.672"	1"	0.67	4	09-03-09
Span / Depth	22.4	n/a	n/a		00-00-00

**Bearing Supports**

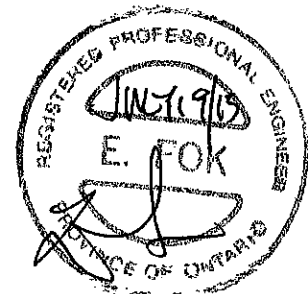
				Support	Member	Material
B0	Wall/Plate	3-1/2" x 3-1/2"	1,509 lbs	0.2	0.1	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	1,689 lbs	0.22	0.11	Spruce Pine Fir

**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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ 12" O.C., STAGGERED IN TWO ROWS



S.129698





Build 3272

Job Name:

40297

Address:

Huntington &amp; Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

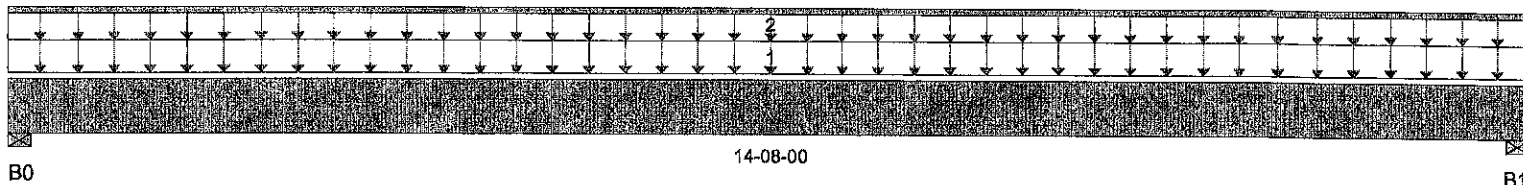
Description: Designs\05

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 14-08-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,789 / 0	1,186 / 0		
B1, 3-1/2"	2,789 / 0	1,186 / 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 <sup>2</sup> )	L	00-00-00	14-08-00	40	15			08-10-00
2		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	27	10			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	19,499 ft-lbs	52,848 ft-lbs	0.37	1	07-04-00
End Shear	4,829 lbs	23,142 lbs	0.21	1	01-01-00
Total Load Defl.	L/343 (0.497")	0.71"	0.7	4	07-04-00
Live Load Defl.	L/489 (0.349")	0.474"	0.74	5	07-04-00
Max Defl.	0.497"	1"	0.5	4	07-04-00
Span / Depth	17.9	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 7"	5,666 lbs	0.38	0.19	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 7"	5,666 lbs	0.38	0.19	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS

 @ 6' O.C., STAGGERED IN TWO ROWS, PLUS 1/2" Φ BOLTS. NOTE  
 + WASHERS @ 40" O.C., STAGGERED IN 2 ROWS


S.129699



Build 3272

Job Name:

40297

Address:

Huntington &amp; Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

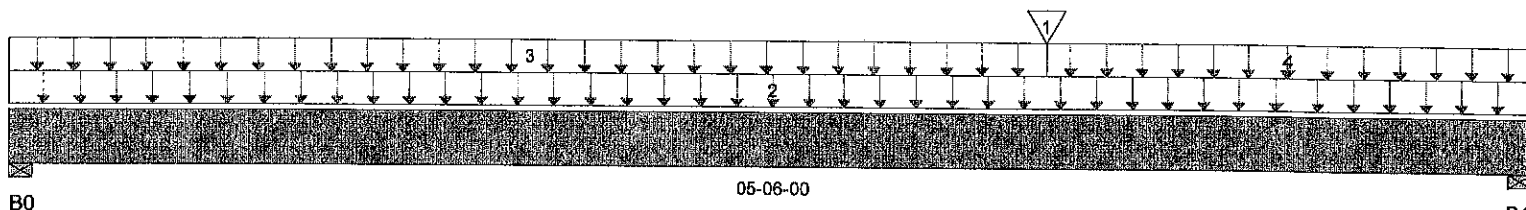
Description: Designs\06

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 05-06-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,595 / 0	662 / 0		
B1, 5-1/2"	2,081 / 0	900 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Conc. Pt. (lbs)	L	03-09-00	03-09-00	684	387			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	05-06-00	40	15			07-02-08
3		Unf. Area (lb/ft^2)	L	00-00-00	03-09-00	40	15			05-03-00
4		Unf. Area (lb/ft^2)	L	03-09-00	05-06-00	40	15			08-10-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,025 ft-lbs	25,408 ft-lbs	0.16	1	03-03-06
End Shear	2,651 lbs	11,571 lbs	0.23	1	04-03-00
Total Load Defl.	L/999 (0.022")	n/a	n/a	4	02-09-12
Live Load Defl.	L/999 (0.016")	n/a	n/a	5	02-09-12
Max Defl.	0.022"	n/a	n/a	4	02-09-12
Span / Depth	5.9	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	3,221 lbs	0.27	0.14	Spruce Pine Fir
B1 Wall/Plate	5-1/2" x 3-1/2"	4,245 lbs	0.36	0.18	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS

@ 10" O.C., STAGGERED IN TWO ROWS



S.129700

**BC CALC® Design Report**


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

May-02-15

Build 3272

Job Name:

40297

Address:

Huntington &amp; Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

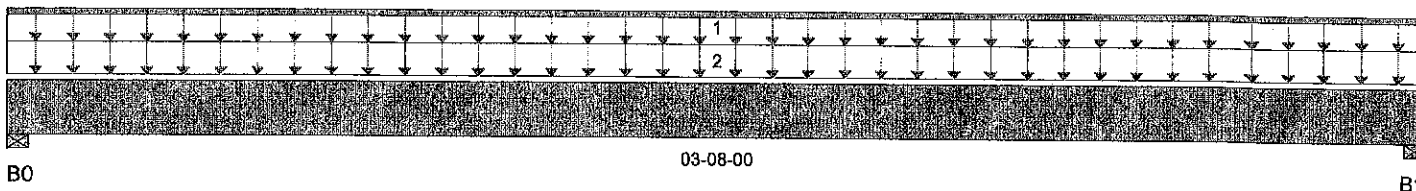
Description: Designs\07

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 03-08-00

**Reaction Summary (Down / Uplift) ( lbs )**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	508 / 0	199 / 0		
B1, 3-1/2"	508 / 0	199 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	03-08-00	27	10			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	03-08-00	40	15			06-03-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	709 ft-lbs	12,704 ft-lbs	0.06	1	01-10-00
End Shear	413 lbs	5,785 lbs	0.07	1	01-01-00
Total Load Defl.	L/999 (0.004")	n/a	n/a	4	01-10-00
Live Load Defl.	L/999 (0.003")	n/a	n/a	5	01-10-00
Max Defl.	0.004"	n/a	n/a	4	01-10-00
Span / Depth	4.1	n/a	n/a		00-00-00

**Disclosure**

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**Bearing Supports**

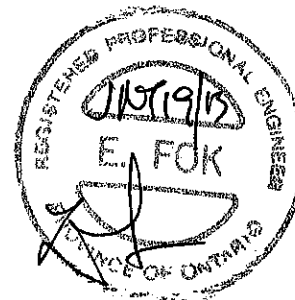
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,011 lbs	0.27	0.14	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,011 lbs	0.27	0.14	Spruce Pine Fir

**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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS



S.129701

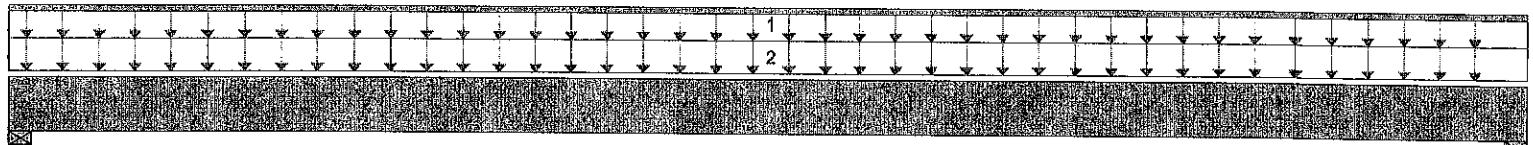
**BC CALC® Design Report**


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

May-02-15

Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\08  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



B0

07-02-00

B1

Total Horizontal Product Length = 07-02-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	657 / 0	561 / 0		
B1, 3-1/2"	657 / 0	561 / 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	07-02-00	0	60			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	07-02-00	40	20			04-07-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,647 ft-lbs	12,704 ft-lbs	0.21	1	03-07-00
End Shear	1,177 lbs	5,785 lbs	0.2	1	01-01-00
Total Load Defl.	L/999 (0.062")	n/a	n/a	4	03-07-00
Live Load Defl.	L/999 (0.033")	n/a	n/a	5	03-07-00
Max Defl.	0.062"	n/a	n/a	4	03-07-00
Span / Depth	8.5	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,686 lbs	0.45	0.23	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,686 lbs	0.45	0.23	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS

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



S.129702



Build 3272

Job Name:

40297

Address:

Huntington &amp; Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

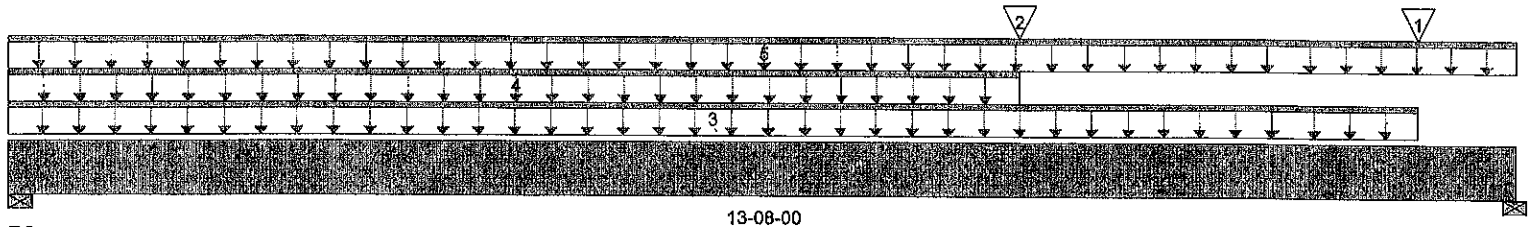
Description: Designs\09

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



13-08-00

B1

Total Horizontal Product Length = 13-08-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	557 / 0	808 / 0		
B1, 2"	1,136 / 0	1,123 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Conc. Pt. (lbs)	L	12-09-00	12-09-00	508	199			n/a
2		Conc. Pt. (lbs)	L	09-02-00	09-02-00	657	561			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	12-09-00	27	10			n/a
4		Unf. Lin. (lb/ft)	L	00-00-00	09-02-00	20	10			n/a
5		Unf. Lin. (lb/ft)	L	00-00-00	13-08-00	0	60			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,821 ft-lbs	25,408 ft-lbs	0.35	1	09-02-00
End Shear	2,971 lbs	11,571 lbs	0.26	1	12-08-08
Total Load Defl.	L/419 (0.382")	0.667"	0.57	4	07-03-04
Live Load Defl.	L/936 (0.171")	0.444"	0.38	5	07-03-04
Max Defl.	0.382"	1"	0.38	4	07-03-04
Span / Depth	16.8	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,844 lbs	0.24	0.12	Spruce Pine Fir
B1 Wall/Plate	2" x 3-1/2"	3,108 lbs	0.72	0.36	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

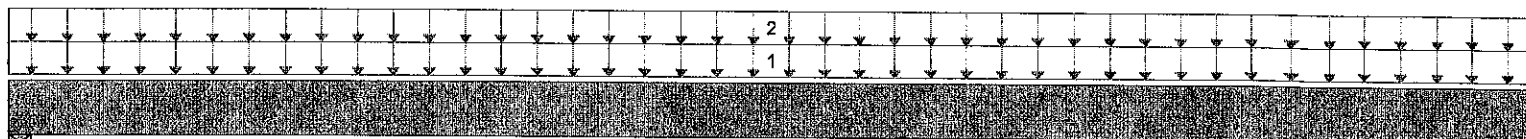
NAIL ONE ROW TO ANOTHER WITH 3 1/2" SPIRAL NAIL  
 @ 12" O.C., STRENGTHENED IN 2 ROWS



S.129703

Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\11  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



B0 04-02-00  
 Total Horizontal Product Length = 04-02-00 B1

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	840 / 0	325 / 0		
B1, 3-1/2"	840 / 0	325 / 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 <sup>2</sup> )	L	00-00-00	04-02-00	40	15			07-04-00
2		Unf. Area (lb/ft <sup>2</sup> )	L	00-00-00	04-02-00	40	15			02-09-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,375 ft-lbs	12,704 ft-lbs	0.11	1	02-01-00
End Shear	800 lbs	5,785 lbs	0.14	1	01-01-00
Total Load Defl.	L/999 (0.01")	n/a	n/a	4	02-01-00
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	02-01-00
Max Defl.	0.01"	n/a	n/a	4	02-01-00
Span / Depth	4.7	n/a	n/a		00-00-00

**Disclosure**

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**Bearing Supports**

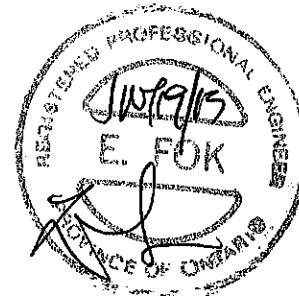
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,667 lbs	0.44	0.22	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,667 lbs	0.44	0.22	Spruce Pine Fir

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum total load deflection criteria.  
 Calculations assume Member is Fully Braced.  
 Resistance Factor phi has been applied to all presented results per CSA 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS



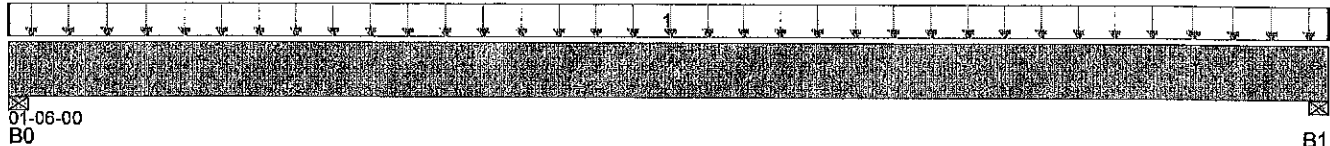
**BC CALC® Design Report**


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

May-04-15

Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\12  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



Total Horizontal Product Length = 01-06-00

## Reaction Summary (Down / Uplift) ( lbs )

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	165 / 0	65 / 0		
B1, 3-1/2"	165 / 0	65 / 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	01-06-00	40	15	1.00	1.15	05-06-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	60 ft-lbs	12,704 ft-lbs	0	1	00-09-00
End Shear	146 lbs	5,785 lbs	0.03	1	01-01-00
Span / Depth	1.3	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	329 lbs	0.09	0.04	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	329 lbs	0.09	0.04	Spruce Pine Fir

## Notes

Calculations assume Member is Fully Braced.  
 Resistance Factor phi has been applied to all presented results per CSA 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

## User Notes

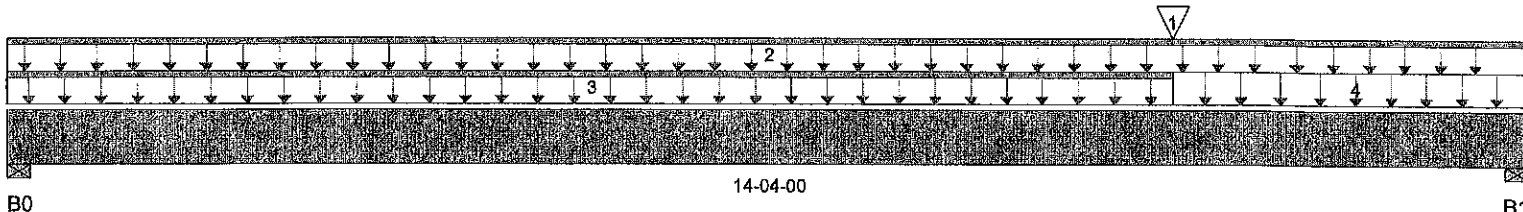
NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS





Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\13  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



Total Horizontal Product Length = 14-04-00

## Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	430 / 0	195 / 0		
B1, 3-1/2"	564 / 0	247 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Conc. Pt. (lbs)		L	11-00-00	11-00-00	165	65			n/a
2	Unf. Lin. (lb/ft)		L	00-00-00	14-04-00	27	10			n/a
3	Unf. Lin. (lb/ft)		L	00-00-00	11-00-00	27	10			n/a
4	Unf. Area (lb/ft^2)		L	11-00-00	14-04-00	40	15			01-01-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,316 ft-lbs	12,704 ft-lbs	0.26	1	07-10-13
End Shear	998 lbs	5,785 lbs	0.17	1	13-03-00
Total Load Defl.	L/509 (0.327")	0.694"	0.47	4	07-03-06
Live Load Defl.	L/736 (0.226")	0.462"	0.49	5	07-03-06
Max Defl.	0.327"	1"	0.33	4	07-03-06
Span / Depth	17.5	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	888 lbs	0.24	0.12	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,154 lbs	0.31	0.15	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

## User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS

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

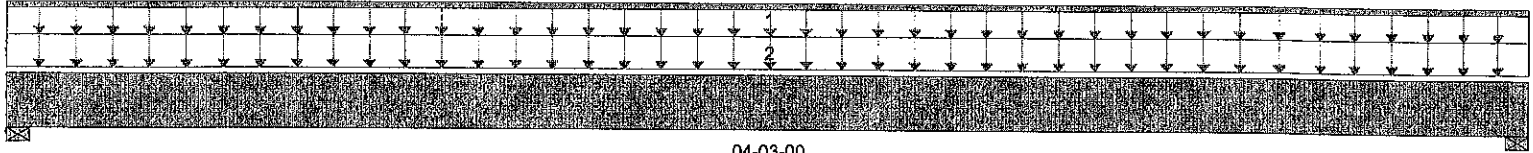






Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\14  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



B0

04-03-00

B1

Total Horizontal Product Length = 04-03-00

## Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	610 / 0	239 / 0		
B1, 3-1/2"	610 / 0	239 / 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	04-03-00	27	10			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	04-03-00	40	15			06-06-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,026 ft-lbs	12,704 ft-lbs	0.08	1	02-01-08
End Shear	595 lbs	5,785 lbs	0.1	1	01-01-00
Total Load Defl.	L/999 (0.007")	n/a	n/a	4	02-01-08
Live Load Defl.	L/999 (0.005")	n/a	n/a	5	02-01-08
Max Defl.	0.007"	n/a	n/a	4	02-01-08
Span / Depth	4.8	n/a	n/a		00-00-00

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

## Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,213 lbs	0.32	0.16	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,213 lbs	0.32	0.16	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

## User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS



S-129707

BC CALC® Design Report



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

May-04-15

Build 3272

Job Name:

40297

File Name: 253784.bcc

Address:

Huntington &amp; Nashville

Description: Designs\15

City, Province, Postal Code: Kleinburg, ON

Specifier: 42-2

Customer:

Gold Park

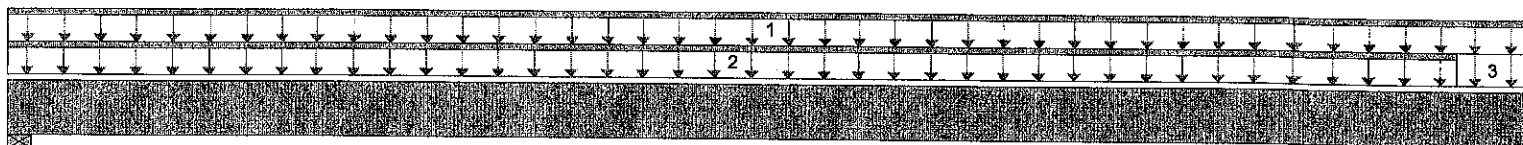
Designer: LA

Code reports:

CCMC 12472-R

Company: ALPA ROOF TRUSSES INC

Misc:



B0

13-08-00

B1

Total Horizontal Product Length = 13-08-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	185 / 0	512 / 0		
B1, 3-1/2"	268 / 0	542 / 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	13-08-00	0	60			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	13-00-00	27	10			n/a
3		Unf. Area (lb/ft²)	L	13-00-00	13-08-00	40	15			03-10-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,287 ft-lbs	8,258 ft-lbs	0.28	0	06-10-00
End Shear	638 lbs	3,761 lbs	0.17	0	12-07-00
Total Load Defl.	L/566 (0.28")	0.66"	0.42	4	06-10-00
Live Load Defl.	L/999 (0.075")	n/a	n/a	5	06-10-00
Max Defl.	0.28"	1"	0.28	4	06-10-00
Span / Depth	16.7	n/a	n/a		00-00-00

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

**Bearing Supports**

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	716 lbs	0.29	0.15	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	759 lbs	0.31	0.16	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

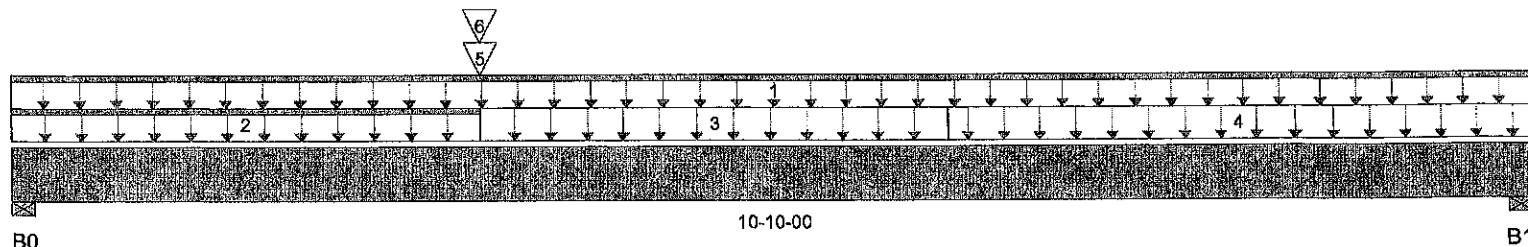
NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ / O.C., STAGGERED IN TWO ROWS





Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\16  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



Total Horizontal Product Length = 10-10-00

## Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	824 / 0	444 / 0		
B1, 3-1/2"	840 / 0	393 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	10-10-00	20	10			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	03-04-00	20	10			n/a
3		Unf. Area (lb/ft^2)	L	03-04-00	06-08-00	40	15			01-01-00
4		Unf. Area (lb/ft^2)	L	06-08-00	10-10-00	40	15			03-03-08
5		Conc. Pt. (lbs)	L	03-04-00	03-04-00	448	185			n/a
6		Conc. Pt. (lbs)	L	03-04-00	03-04-00	239	198			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,053 ft-lbs	12,704 ft-lbs	0.4	1	03-04-00
End Shear	1,691 lbs	5,785 lbs	0.29	1	01-01-00
Total Load Defl.	L/464 (0.268")	0.519"	0.52	4	05-02-08
Live Load Defl.	L/702 (0.177")	0.346"	0.51	5	05-03-12
Max Defl.	0.268"	1"	0.27	4	05-02-08
Span / Depth	13.1	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,790 lbs	0.47	0.24	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,751 lbs	0.46	0.23	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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

## User Notes



S.129709



Build 3272

Job Name:

40297

Address:

Huntington &amp; Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253784.bcc

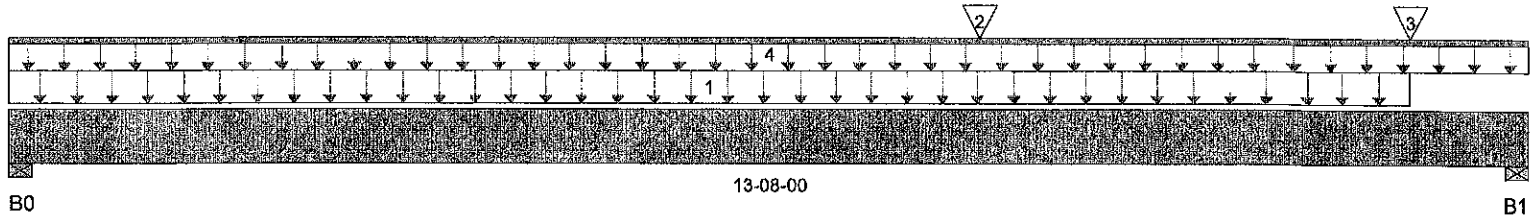
Description: Designs\18

Specifier: 42-2

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 13-08-00

## Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,641 / 0	1,122 / 0		
B1, 3-1/2"	2,251 / 0	1,479 / 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	12-07-00	40	20			05-04-00
2		Conc. Pt. (lbs)	L	08-09-00	08-09-00	384	273			n/a
3		Conc. Pt. (lbs)	L	12-07-00	12-07-00	824	444			n/a
4		Unf. Lin. (lb/ft)	L	00-00-00	13-08-00	0	30			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,980 ft-lbs	25,408 ft-lbs	0.55	1	07-08-01
End Shear	5,172 lbs	11,571 lbs	0.45	1	12-07-00
Total Load Defl.	L/253 (0.625")	0.66"	0.95	4	06-11-07
Live Load Defl.	L/426 (0.372")	0.44"	0.85	5	06-11-07
Max Defl.	0.625"	1"	0.63	4	06-11-07
Span / Depth	16.7	n/a	n/a		00-00-00

## Bearing Supports

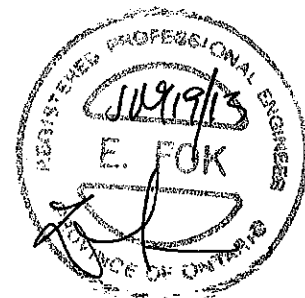
B0	Wall/Plate	3-1/2" x 3-1/2"	3,865 lbs	0.51	0.26	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5,225 lbs	0.69	0.35	Spruce Pine Fir

## 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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

## User Notes

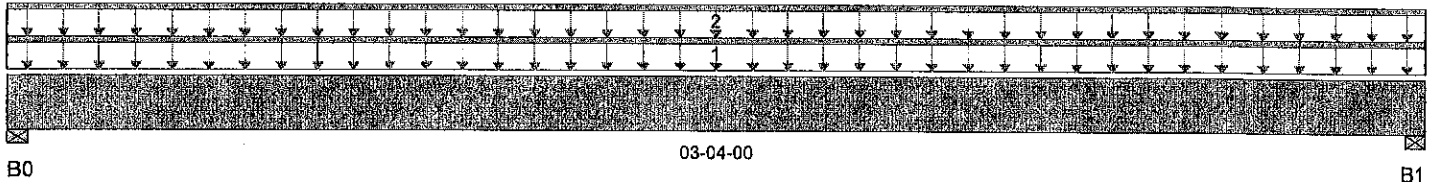
NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ 12" O.C., STAGGERED IN TWO ROWS



**BC CALC® Design Report**


Build 3272  
 Job Name: 40297  
 Address: Huntington & Nashville  
 City, Province, Postal Code: Kleinburg, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File Name: 253784.bcc  
 Description: Designs\19  
 Specifier: 42-2  
 Designer: LA  
 Company: ALPA ROOF TRUSSES INC  
 Misc:



Total Horizontal Product Length = 03-04-00

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	90 / 0	141 / 0		
B1, 3-1/2"	90 / 0	141 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	03-04-00	27	70			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	03-04-00	27	10			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	193 ft-lbs	12,704 ft-lbs	0.02	1	01-08-00
End Shear	109 lbs	5,785 lbs	0.02	1	01-01-00
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	01-08-00
Live Load Defl.	L/999 (0")	n/a	n/a	5	01-08-00
Max Defl.	0.001"	n/a	n/a	4	01-08-00
Span / Depth	3.6	n/a	n/a		00-00-00

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

**Bearing Supports**

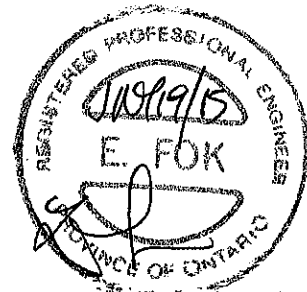
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	312 lbs	0.08	0.04	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	312 lbs	0.08	0.04	Spruce Pine Fir

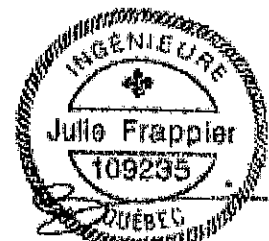
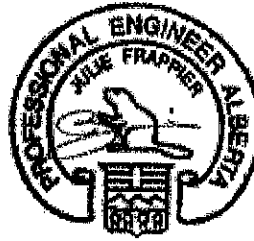
**Notes**

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 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4  
 Deflections less than 1/8" were ignored in the results.

**User Notes**

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS  
 @ O.C., STAGGERED IN TWO ROWS





## Maximum Floor Spans

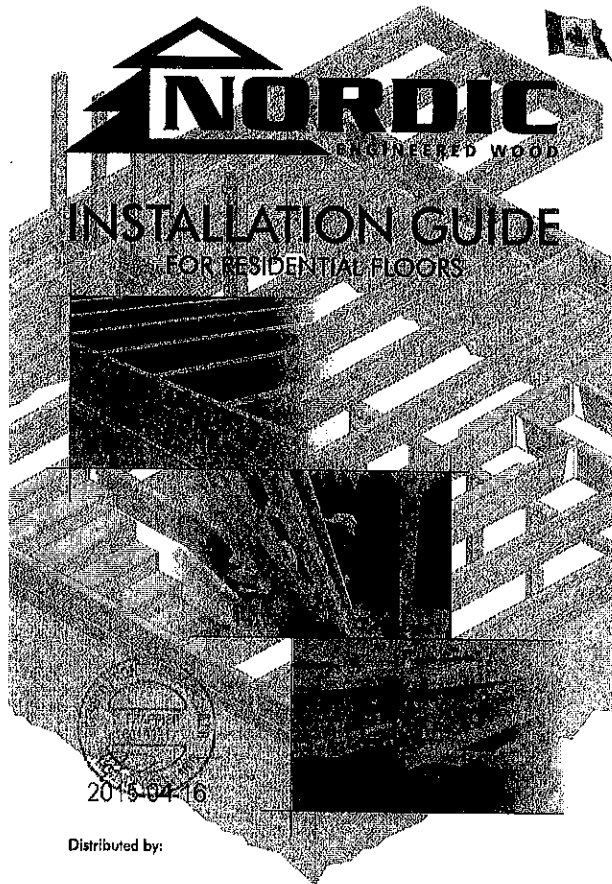
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/360 Deflection Limit  
5/8" OSB G&N Sheathing

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
	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
14"	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
	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
16"	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'-9"	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
	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
14"	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
	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
16"	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, and NBC 2010.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



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## SAFETY AND CONSTRUCTION PRECAUTIONS

### WARNING

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



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



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

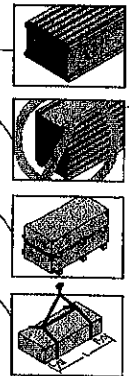
### Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at 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 center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
  - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

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.

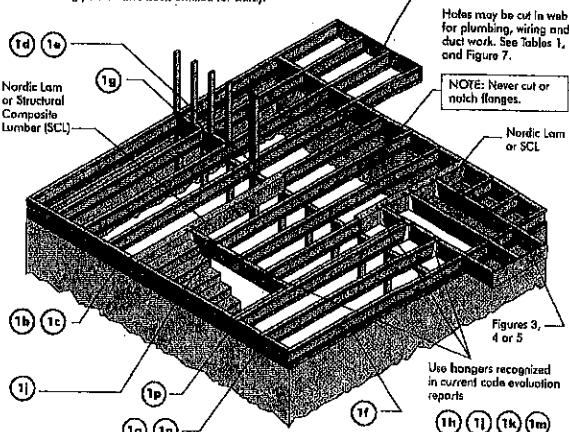


## INSTALLING NORDIC I-JOISTS

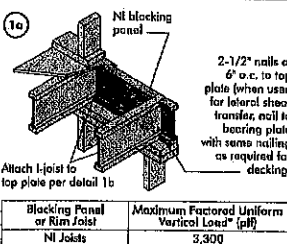
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple spans must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist and end 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-joist, 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

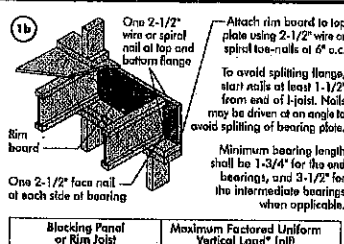
Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.



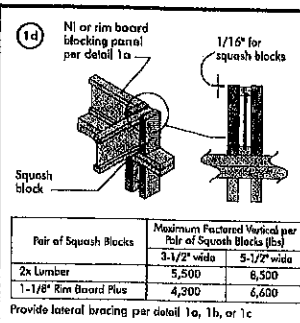
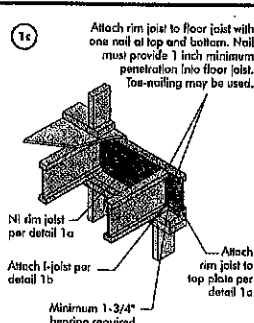
All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



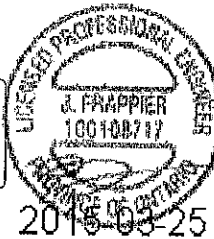
\*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



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



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



Joist Series	NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90	NI-90x
5-F No.2	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
1950f MSR	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
2100f MSR	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
1950f MSR	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
2100f MSR	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
2400f MSR	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
NPG Lumber	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"	1-1/2" x 2-1/2"
33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit

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:

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

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the 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 are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

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

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	12	12-3/4
9-1/2"	NI-20	0-7"	1'-6"	2'-10"	4'-3"	5'-8"	6'-0"	---	---	---	---	---	---	---	---	---
	NI-40x	0-7"	1'-6"	3'-0"	4'-4"	6'-0"	6'-4"	---	---	---	---	---	---	---	---	---
	NI-60	1'-3"	2'-6"	4'-0"	5'-4"	7'-0"	7'-5"	---	---	---	---	---	---	---	---	---
	NI-70	2'-0"	3'-4"	4'-9"	6'-3"	8'-0"	8'-4"	---	---	---	---	---	---	---	---	---
	NI-80	2'-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-8"	---	---	---	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1'-0"	2'-4"	3'-8"	4'-0"	5'-0"	6'-6"	7'-9"	---	---	---	---	---	---
	NI-40x	0-7"	0-8"	1'-3"	2'-8"	4'-0"	4'-4"	5'-8"	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-90	0-7"	0-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	---	---	---	---	---	---
	NI-90x	0-7"	0-8"	0-9"	2'-5"	4'-4"	4'-9"	6'-3"	---	---	---	---	---	---	---	---
	NI-40x	0-7"	0-8"	0-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	---	---	---
	NI-60	0-7"	0-8"	1'-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"	---	---	---
16"	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"	---	---	---
	NI-90	0-7"	0-8"	0-10"	2'-5"	4'-0"	4'-5"	5'-9"	7'-5"	8'-8"	9'-4"	11'-4"	12'-11"	---	---	---
	NI-90x	0-7"	0-8"	0-8"	2'-0"	3'-9"	4'-2"	5'-5"	7'-3"	8'-5"	9'-2"	---	---	---	---	---
	NI-60	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"	12'-2"	13'-9"
	NI-70	0-7"	1'-0"	2'-3"	3'-6"	4'-10"	5'-3"	6'-3"	7'-8"	8'-6"	9'-2"	10'-8"	12'-0"	12'-4"	14'-0"	15'-6"
16"	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"	14'-5"	16'-0"
	NI-90	0-7"	0-8"	0-8"	1'-9"	3'-3"	3'-8"	4'-9"	6'-5"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"	13'-9"	15'-4"
	NI-90x	0-7"	0-8"	0-9"	2'-0"	3'-6"	4'-0"	5'-0"	6'-9"	7'-9"	8'-4"	10'-2"	11'-6"	12'-0"	---	---
	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---	---	---	---

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

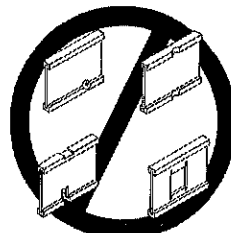
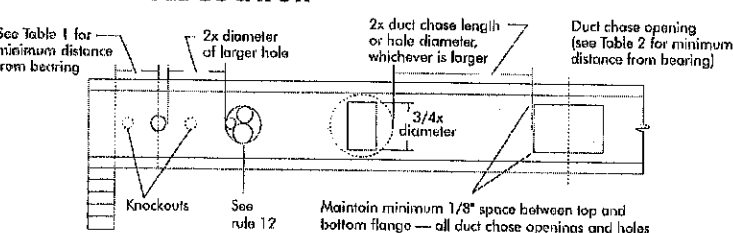
TABLE 2  
DUCT CHASE OPENING SIZES AND LOCATIONS

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	26	28	
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-6"	7'-1"	7'-5"			
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"			
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	8'-3"	8'-9"			
	NI-70	5'-1"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-6"	8'-1"	8'-4"			
11-7/8"	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"			
	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'-5"	9'-9"	10'-3"	11'-0"			
14"	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"			
	NI-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"			
	NI-90x	7'-7"	8'-1"	8'-5"	8'-10"	9'-4"	9'-8"	10'-2"	10'-8"	11'-2"			
16"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	12'-0"	12'-8"			
	NI-60	8'-9"	9'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	12'-3"	13'-0"			
	NI-70	8'-7"	9'-1"	9'-5"	9'-10"	10'-4"	10'-9"	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"			
18"	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"			
	NI-90x	9'-4"	9'-9"	10'-3"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-2"			
	NI-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	14'-1"	14'-10"			
	NI-70	10'-1"	10'-5"	11'-0"	11'-4"	11'-10"	12'-3"	12'-8"	13'-3"	14'-0"			
20"	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"			
	NI-90	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14-2"	14'-10"			
	NI-90x	11'-1"	11'-5"	11'-10"	12'-4"	12'-10"	13'-2"	13'-9"	14-4"	15'-2"			

- 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, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
- 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 preformed holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

Holes in webs should be cut with a sharp saw.

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

## 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 shathed, 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:

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

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



## PRODUCT WARRANTY

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

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



**1a**

Ni blocking panel

Blocking Panel or Rim Joist

Maximum Factored Uniform Vertical Load\* (plf)

Ni Joists	3,300
-----------	-------

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

Attach 1-joist to top plate per detail 1b

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

**1b**

Rim board

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

Blocking Panel or Rim Joist

Maximum Factored Uniform Vertical Load\* (plf)

1-1/8" Rim Board Plus	8,090
-----------------------	-------

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

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

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

To avoid splitting flange, start nails at least 1-1/2" from end of 1-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

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

**1d**

Ni or rim board blocking panel per detail 1a

Squash block

Pair of Squash Blocks

Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)

2x Lumber	3-1/2" wide	5,500	5-1/2" wide	8,500
1-1/8" Rim Board Plus	3-1/2" wide	4,300	5-1/2" wide	6,600

Provide lateral bracing per detail 1a or 1b

**1e**

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

**1g**

Joist attachment per detail 1b

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

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

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

Ni blocking panel per detail 1a

**1h**

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

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

Flange Width	Material Thickness Required*	Minimum Depth**
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-C325 or CAN/CSA-C437 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".

**1i**

Top- or face-mount hanger

Double 1-joist header

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

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

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

**1j**

Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

**1k**

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

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

Top-mount hanger installed per manufacturer's recommendations

**1m**

Multiple 1-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double 1-joist capacity to support concentrated loads.

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

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

**1n**

Do not bevel-cut joist beyond inside face of wall

Attach 1-joist per detail 1b

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

**1r**

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

Ni blocking panel

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

**1p**

FILLER BLOCK REQUIREMENTS FOR DOUBLE 1-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

**NOTES:**

- Support back of 1-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 1-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double 1-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 lb/ft. Verify double 1-joist capacity.

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

**1s**

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

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

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

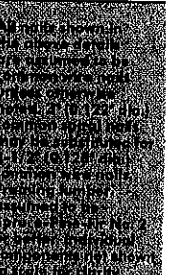
1-joist blocking panel

One 2-1/2" nail one side only

1.5" gap between joists

**NOTES:**

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



## WEB STIFFENERS

### RECOMMENDATIONS:

- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the 1-joist properties table found in the 1-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the 1-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

**CONCENTRATED LOAD (Load stiffener)**

**END BEARING (Bearing stiffener)**

**STIFFENER SIZE REQUIREMENTS**

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

See the adjacent table for web stiffener size requirements

## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

**Method 1 — SHEATHING REINFORCEMENT ONE SIDE**

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

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

Attach 1-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

**Method 2 — SHEATHING REINFORCEMENT TWO SIDES**

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

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

Attach 1-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

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

**RIM BOARD INSTALLATION DETAILS**

**8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT**

**Rim Board Joint Between Floor Joists**

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

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

1-1/2" gap between joists

**Rim Board Joint at Corner**

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

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

1-1/2" gap between joists

**Rim board joint**

**Top or sole plate**

**30°**

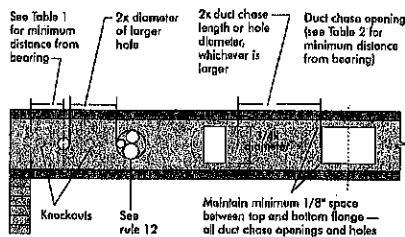
**1/3**

## WEB HOLES

### RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joint flange.
- 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.
- 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 cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

FIGURE 7  
FIELD-CUT HOLE LOCATOR



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

Knockouts are preformed holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter and are spaced 15 inches on centre along the length of the I-joint. 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-joint.

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.)												Span adjustment Factor
		2	3	4	5	6	8	10	12	14	16	18	20	
10	200	10	12	14	16	18	20	22	24	26	28	30	32	1.0
12	240	12	14	16	18	20	22	24	26	28	30	32	34	1.0
14	280	14	16	18	20	22	24	26	28	30	32	34	36	1.0
16	320	16	18	20	22	24	26	28	30	32	34	36	38	1.0
18	360	18	20	22	24	26	28	30	32	34	36	38	40	1.0
20	400	20	22	24	26	28	30	32	34	36	38	40	42	1.0
22	440	22	24	26	28	30	32	34	36	38	40	42	44	1.0
24	480	24	26	28	30	32	34	36	38	40	42	44	46	1.0
26	520	26	28	30	32	34	36	38	40	42	44	46	48	1.0
28	560	28	30	32	34	36	38	40	42	44	46	48	50	1.0
30	600	30	32	34	36	38	40	42	44	46	48	50	52	1.0
32	640	32	34	36	38	40	42	44	46	48	50	52	54	1.0
34	680	34	36	38	40	42	44	46	48	50	52	54	56	1.0
36	720	36	38	40	42	44	46	48	50	52	54	56	58	1.0
38	760	38	40	42	44	46	48	50	52	54	56	58	60	1.0
40	800	40	42	44	46	48	50	52	54	56	58	60	62	1.0
42	840	42	44	46	48	50	52	54	56	58	60	62	64	1.0
44	880	44	46	48	50	52	54	56	58	60	62	64	66	1.0
46	920	46	48	50	52	54	56	58	60	62	64	66	68	1.0
48	960	48	50	52	54	56	58	60	62	64	66	68	70	1.0
50	1000	50	52	54	56	58	60	62	64	66	68	70	72	1.0

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

#### OPTIONAL:

The above table is based on the I-joints used at their maximum span. If the I-joints are placed at less than their full maximum span (see Maximum Span Table) as given above may be reduced as follows:

$$D_{reduced} = \frac{L_{actual}}{L_{max}} \times D$$

Where:

$D_{reduced}$  =

Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span application.

$L_{actual}$  =

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

$SAF$  =

Span Adjustment Factor given in this table.

$D$  =

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

If actual is greater than 1, use 1 in the above calculation for  $L_{actual}$ .

SAF

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 (ft-in.)											
		6	10	12	14	16	18	20	22	24	26	28	30
10	200	10	12	14	16	18	20	22	24	26	28	30	32
12	240	12	14	16	18	20	22	24	26	28	30	32	34
14	280	14	16	18	20	22	24	26	28	30	32	34	36
16	320	16	18	20	22	24	26	28	30	32	34	36	38
18	360	18	20	22	24	26	28	30	32	34	36	38	40
20	400	20	22	24	26	28	30	32	34	36	38	40	42
22	440	22	24	26	28	30	32	34	36	38	40	42	44
24	480	24	26	28	30	32	34	36	38	40	42	44	46
26	520	26	28	30	32	34	36	38	40	42	44	46	48
28	560	28	30	32	34	36	38	40	42	44	46	48	50
30	600	30	32	34	36	38	40	42	44	46	48	50	52
32	640	32	34	36	38	40	42	44	46	48	50	52	54
34	680	34	36	38	40	42	44	46	48	50	52	54	56
36	720	36	38	40	42	44	46	48	50	52	54	56	58
38	760	38	40	42	44	46	48	50	52	54	56	58	60
40	800	40	42	44	46	48	50	52	54	56	58	60	62
42	840	42	44	46	48	50	52	54	56	58	60	62	64
44	880	44	46	48	50	52	54	56	58	60	62	64	66
46	920	46	48	50	52	54	56	58	60	62	64	66	68
48	960	48	50	52	54	56	58	60	62	64	66	68	70
50	1000	50	52	54	56	58	60	62	64	66	68	70	72

- Above table may be used for I-joint 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, contact your local distributor.
- Distances are based on uniformly loaded joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

## INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water, or ice from I-joint flanges before gluing.
- Snap a chalk line across the I-joints four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a black and sledgehammer.
- Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joint. Apply glue in a winding pattern on wide areas, such as with double I-joints.
- Apply two lines of glue on I-joints where panel ends butt to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joint flanges.
- Top 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 at all edges, including T&G edges, is recommended. (Use a spacer tool or an 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<sup>(1)</sup>

Maximum Joist Spacing (ft.)	Minimum Panel Thickness (in.)	Condition: With or Without Spiral Nails	Nail Size and Type: Ring Threaded Nails or Screws	Staples	Edges: Edge Joists	Interior: Interior Joists
2	5/8	2"	1-3/4"	2"	6"	12"
2	5/8	2"	1-3/4"	2"	6"	12"
2	5/8	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 flange.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
- Use only adhesives conforming to CAN/CGSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glue; check with panel manufacturer.

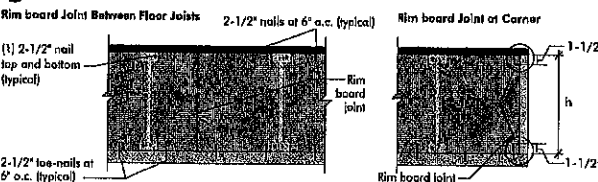
Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

#### IMPORTANT NOTE:

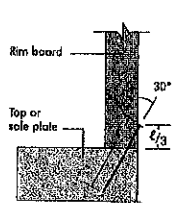
Floor sheathing must be field glued to the I-joint flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joint spans must be verified with your local distributor.

## RIM BOARD INSTALLATION DETAILS

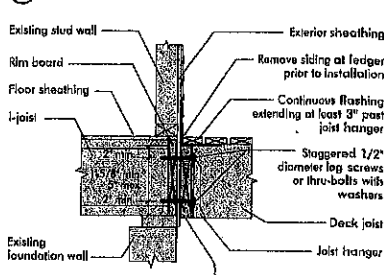
### (8a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



### (8b) TOE-NAIL CONNECTION AT RIM BOARD

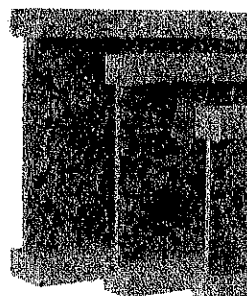
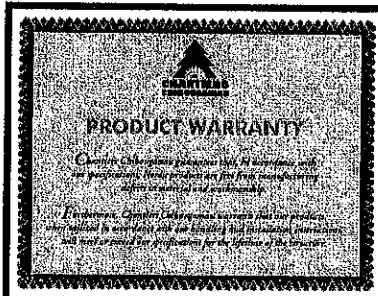


### (8c) 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL

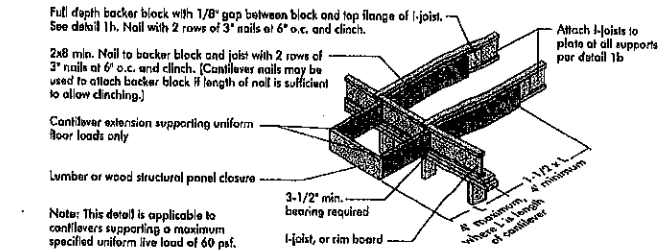


2x ledger board (pressure-treated); must be greater than or equal to the depth of the deck joist

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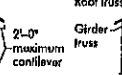
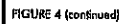
**3a I-JOIST CANTILEVER DETAIL FOR BALCONIES (No Wall Load)**



**4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE**



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



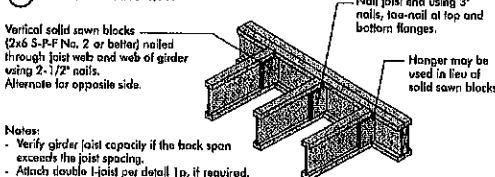
Roof truss span

For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

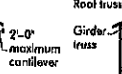
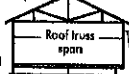
### **CANTILEVER REINFORCEMENT METHODS ALLOWED**

<p>1. N = No reinforcement required.</p> <p>2. N = Reinforced with 3/4" wood structural panel on both sides.</p> <p>3. N = Reinforced with 1/2" wood structural panel on one side, or double 1/4" plywood.</p> <p>4. X = 1/2" deeper joist or closer spacing.</p> <p>5. Maximum span for dead load, and 80 psf floor load, and 80 psf wind load. Wind load is based on 30" minimum wind window or closer openings.</p>	<p>For larger openings, or multiple 30" wide openings spaced less than 6'-0", additional joists beneath the opening's scribe must be provided.</p> <p>3. Table applies to joists 12" to 24" or that meet the floor span requirements for a design live load of 40 psf and a dead load and a live load deflection limit of 1/480. Use 12" or less requirements for lesser spacing.</p> <p>4. For conventional roof construction using a ridge truss, the Roof Truss Span column is equivalent to the distance between supporting walls and the ridge beam. When a Level Deck is used for the floor, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.</p> <p>5. Cantilevered joists supporting girder trusses over beams may require additional bracing.</p>
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**5a SHEATHING REINFORCEMENT**



## FIGURE 5 (continued)



Roof truss span

For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

### BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

1. N = No reinforcement required.	For larger openings, or multiple 3'-0" width openings spaced less than 12'-0" apart, additional joists beneath the opening's cripla must also be required.	4. For conventional roof construction using a ridge beam, the Roof Truss Span column above the supporting wall must be placed above the supporting wall and the ridge beam.
2. N = Reinforced with 3/4" wood structural joist or joists.	3. For openings 3'-0" to 24'-0" wide, the floor span requirements for a design live load of 40 psf read dead load of 15 psf, and a live load deflection limit of L/480. Use 1/2" x 6" requirements for lesser spacing.	5. The roof is framed using a ridge beam. The Roof Truss Span column must be placed a distance between the supporting walls as if it was a truss.
3. N = Reinforced with 3/4" wood structural joist or joists.		6. Conventional joists supporting gable trusses or roof beams may require additional joists.
4. N = Try a deeper joist or closer spacing.		
5. Maximum design dead load be: 15 psf roof and load on roof load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door opening.		

## MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to single-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-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGSB-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 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 C86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

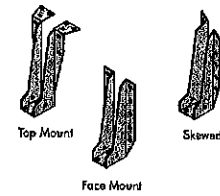
## MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans On centre spacing				Multiple spans On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
12"	NI-20	10'-0"	12'-0"	14'-0"	16'-0"	10'-0"	12'-0"	14'-0"	16'-0"
16"	NI-40	12'-0"	14'-0"	16'-0"	18'-0"	12'-0"	14'-0"	16'-0"	18'-0"
19.2"	NI-60	14'-0"	16'-0"	18'-0"	20'-0"	14'-0"	16'-0"	18'-0"	20'-0"
24"	NI-80	16'-0"	18'-0"	20'-0"	22'-0"	16'-0"	18'-0"	20'-0"	22'-0"
30"	NI-100	18'-0"	20'-0"	22'-0"	24'-0"	18'-0"	20'-0"	22'-0"	24'-0"
36"	NI-120	20'-0"	22'-0"	24'-0"	26'-0"	20'-0"	22'-0"	24'-0"	26'-0"
42"	NI-140	22'-0"	24'-0"	26'-0"	28'-0"	22'-0"	24'-0"	26'-0"	28'-0"
48"	NI-160	24'-0"	26'-0"	28'-0"	30'-0"	24'-0"	26'-0"	28'-0"	30'-0"
54"	NI-180	26'-0"	28'-0"	30'-0"	32'-0"	26'-0"	28'-0"	30'-0"	32'-0"
60"	NI-200	28'-0"	30'-0"	32'-0"	34'-0"	28'-0"	30'-0"	32'-0"	34'-0"

CCMC EVALUATION REPORT 1-2015-R

## I-JOIST HANGERS

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



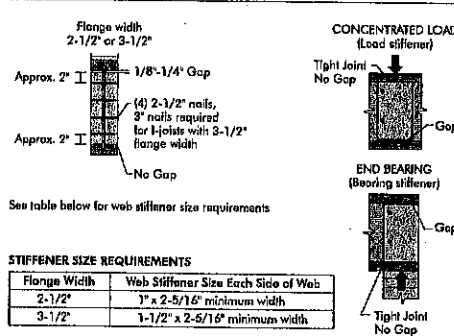
## WEB STIFFENERS

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2  
WEB STIFFENER INSTALLATION DETAILS



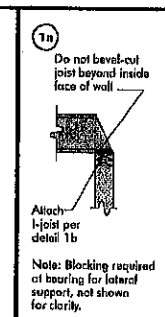
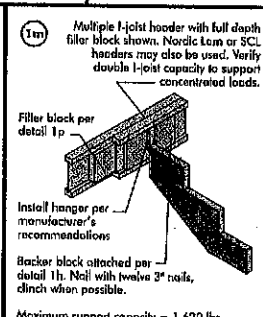
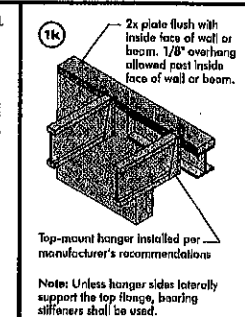
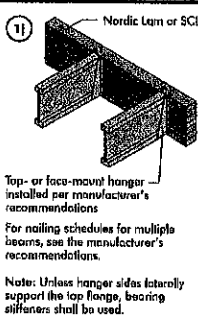
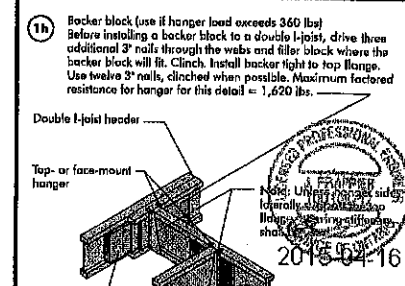
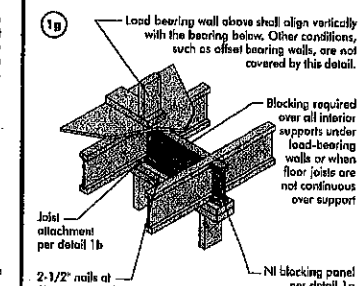
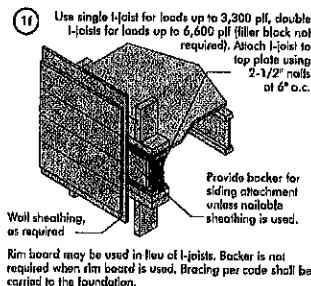
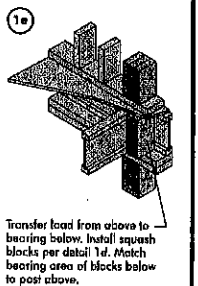
## NORDIC I-JOIST SERIES

NI-20	NI-40	NI-60	NI-80	NI-100	NI-120	NI-140	NI-160	NI-180	NI-200
5-PF No. 2	1900F MSR	2100F MSR	1900F MSR	2100F MSR	2400F MSR	2400F MSR	2400F MSR	2400F MSR	NFG Lumber
33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit

Chantiers Chibougamau 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 the raw log 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.

2015-04-16



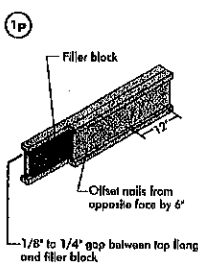
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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

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-C095 or CAN/CSA-C0437 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".



Notes:

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

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" 11-7/8" 14" 16"	2-1/8" x 6" 2-1/8" x 8" 2-1/8" x 10" 2-1/8" x 12"
3-1/2" x 1-1/2"	9-1/2" 11-7/8" 14" 16"	3" x 6" 3" x 8" 3" x 10" 3" x 12"
3-1/2" x 2"	11-7/8" 14" 16"	3" x 7" 3" x 9" 3" x 11"

