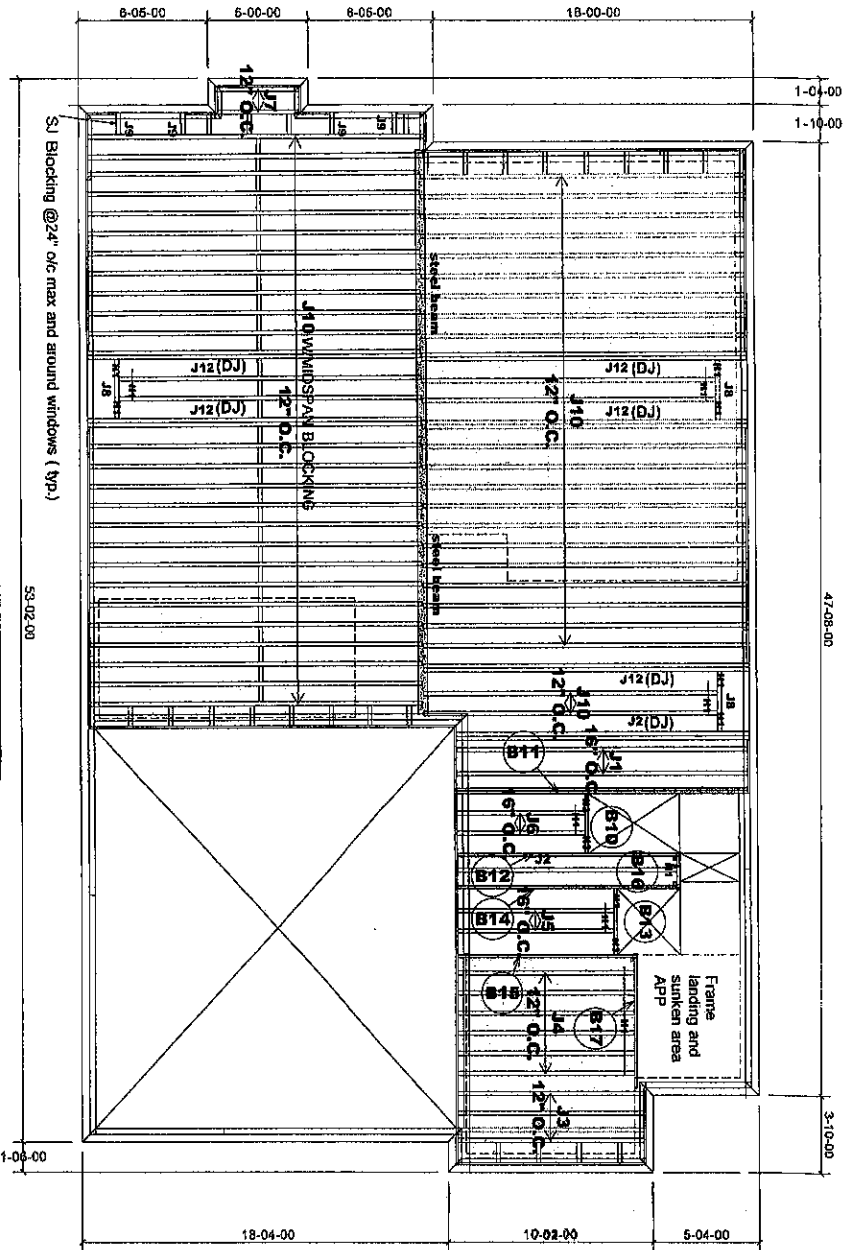




MODEL: 42-1
ELEVATION A

FIRST FLOOR FRAMING

OFFICE USE ONLY
ENGINEERED FROM
S 129713
S 129730

Do not scale - refer to architectural plans for dimensions

Product	Length	Product	Piles	Net Qty
J1	15-00-00	9 1/2" NI-20	1	2
J2	15-00-00	9 1/2" NI-20	2	2
J3	11-00-00	9 1/2" NI-20	1	1
J4	10-00-00	9 1/2" NI-20	1	4
J5	8-00-00	9 1/2" NI-20	1	6
J6	8-00-00	9 1/2" NI-20	1	2
J7	5-00-00	9 1/2" NI-20	1	2
J8	3-00-00	9 1/2" NI-20	1	3
J9	2-00-00	9 1/2" NI-20	1	4
J10	17-00-00	9 1/2" NI-40x	1	51
J11	17-00-00	9 1/2" NI-40x	2	10
J12	15-00-00	VERSALAM-10.2.0E	1	1
J13	12-00-00	VERSALAM-10.2.0E	1	1
J14	12-00-00	VERSALAM-10.2.0E	1	1
J15	9-00-00	VERSALAM-10.2.0E	1	1
J16	7-00-00	VERSALAM-10.2.0E	1	1
J17	4-00-00	VERSALAM-10.2.0E	1	1
J18	3-00-00	VERSALAM-10.2.0E	1	1
J19	2-00-00	VERSALAM-10.2.0E	1	1
J20	2-00-00	VERSALAM-10.2.0E	1	1

3/4" BLOCKING 64 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

HANGERS SCHEDULE

H1 - LT259
H3 - HUS1.8/1/10

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: 4029779712
File: 253783

Builder: Gold Park Homes
Project: Huntington & Nashville

Location: Kleinburg
Date: May 01/15

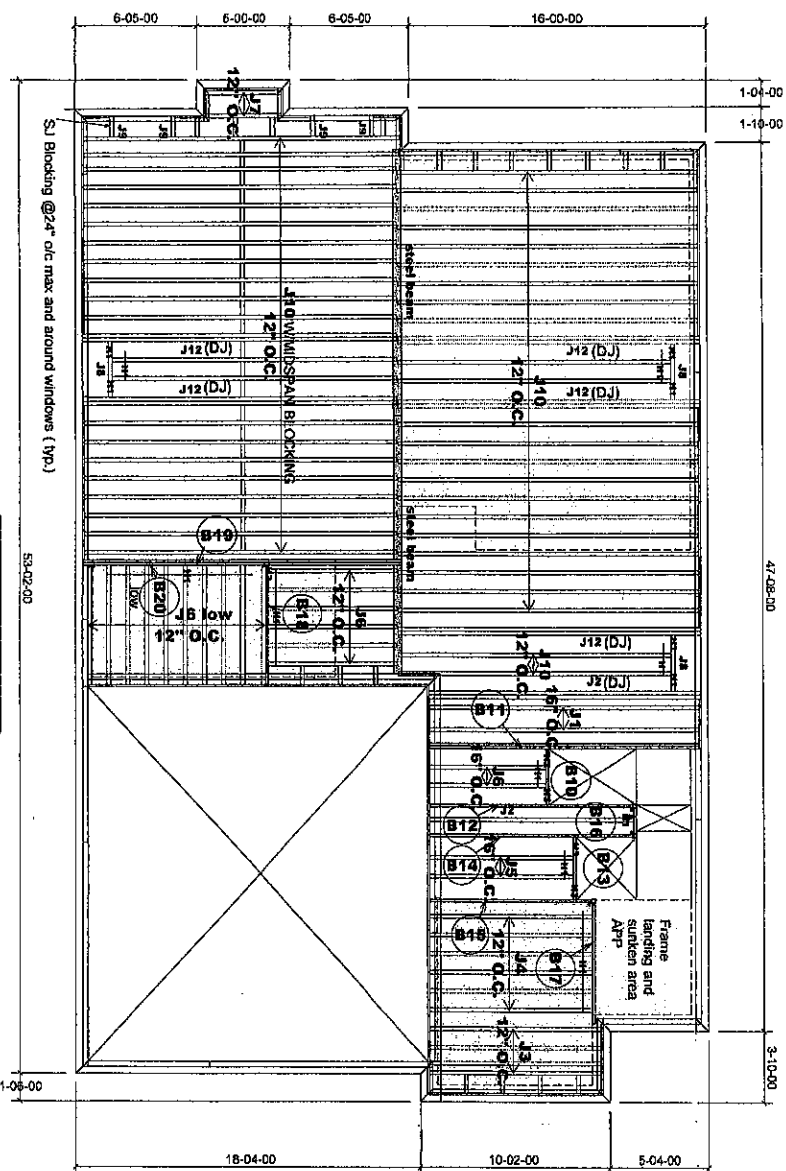
Designer: LA
Sheet: 1 of 8

Alpa Roof Trusses Inc.
Maple, Ontario
Salesperson: Derek
Home Lumber

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber

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\$-
\$-



Plant	Length	Products		Piles	Net Qty
		Product			
J1	15-00-00	9 1/2" N-20		1	2
J2	15-00-00	9 1/2" N-20		2	2
J2	11-00-00	9 1/2" N-20		1	1
J3	10-00-00	9 1/2" N-20		1	4
J4	9-00-00	9 1/2" N-20		1	6
J5	8-00-00	9 1/2" N-20		1	2
J6	7-00-00	9 1/2" N-20		1	18
J7	5-00-00	9 1/2" N-20		1	2
J8	3-00-00	9 1/2" N-20		1	3
J9	2-00-00	9 1/2" N-20		1	4
J10	17-00-00	9 1/2" N-40x		1	45
J12	17-00-00	9 1/2" N-40x		2	10
B12	18-00-00	VERSALAM-10 2.0E		2	2
B11	15-00-00	VERSALAM-10 2.0E		2	2
B14	12-00-00	VERSALAM-10 2.0E		1	1
B12	12-00-00	VERSALAM-10 2.0E		1	1
B20	10-00-00	VERSALAM-10 2.0E		1	1
B15	9-00-00	VERSALAM-10 2.0E		1	1
B17	7-00-00	VERSALAM-10 2.0E		1	1
B18	7-00-00	VERSALAM-10 2.0E		1	1
B13	4-00-00	VERSALAM-10 2.0E		1	1
B10	3-00-00	VERSALAM-10 2.0E		1	1
B16	2-00-00	VERSALAM-10 2.0E		1	1

9 1/2" BLOCKING 54 LF

APP - AS PER PLAN
BBO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED

PRIMBOARD

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

HANGERS SCHEDULE

H1-----LT259

H3-----HUS1.81/10

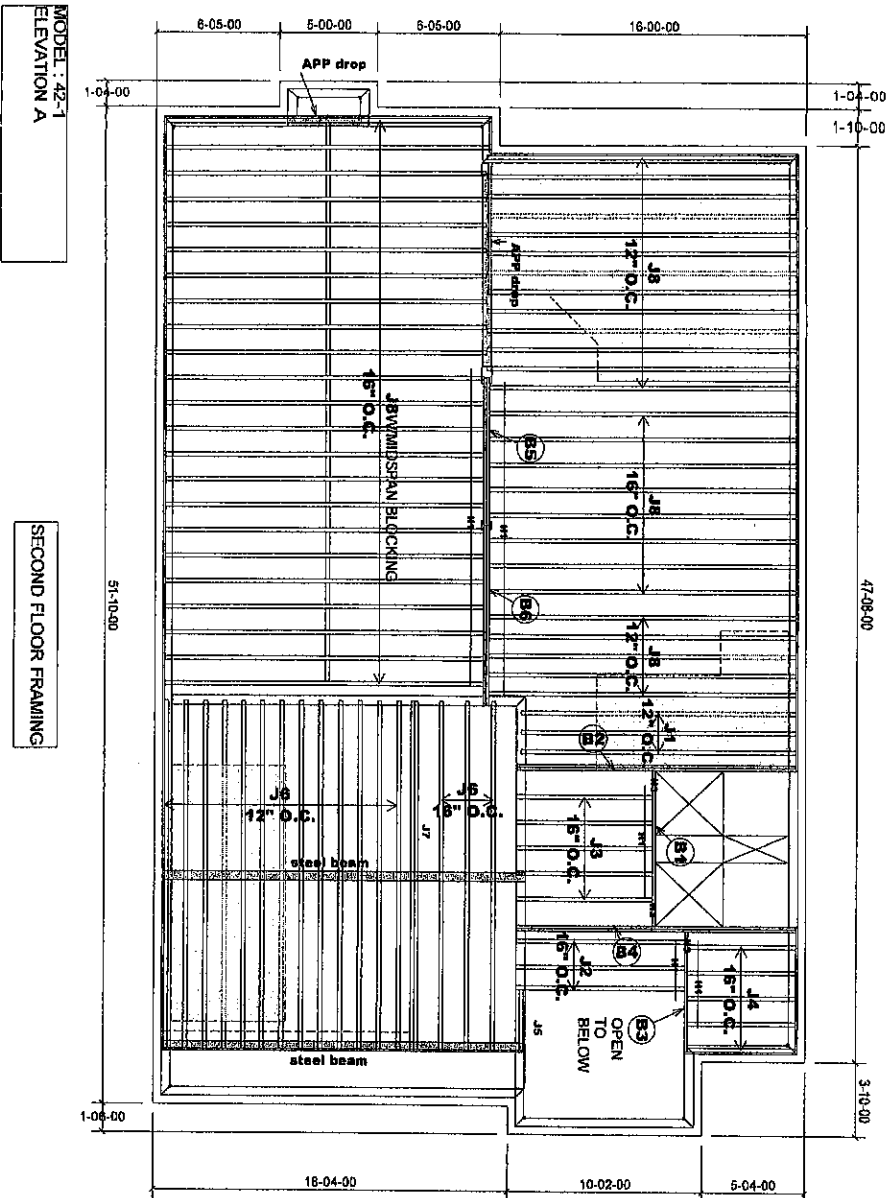
TILE AREA

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



Product	Plies	Net Qty
J1 15'-00-00 9 1/2" NI-20	1	3
J2 9'-00-00 9 1/2" NI-20	1	3
J3 8'-00-00 9 1/2" NI-20	1	5
J4 6'-00-00 9 1/2" NI-20	1	5
J5 4'-00-00 9 1/2" NI-20	1	1
J6 19'-00-00 9 1/2" NI-40x	1	16
J7 19'-00-00 9 1/2" NI-40x	2	2
J8 17'-00-00 9 1/2" NI-40x	1	49
B2 15'-00-00 VERSALAM-10 2.0E	2	2
B4 15'-00-00 VERSALAM-10 2.0E	2	2
B6 10'-00-00 VERSALAM-10 2.0E	2	2
B1 9'-00-00 VERSALAM-10 2.0E	1	1
B5 8'-00-00 VERSALAM-10 2.0E	2	2
B3 7'-00-00 VERSALAM-10 2.0E	1	1

9 1/2" BLOCKING 32 LF.

APP - AS PER PLAN
BRO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED

RIMBOARD

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

HANGERS SCHEDULE

H1 L7259

H3 HUS1.81/10



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

1-2x6 SPP#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 Q.B.C. 9.30.6

MODEL : 42-1
ELEVATION A

SECOND FLOOR FRAMING

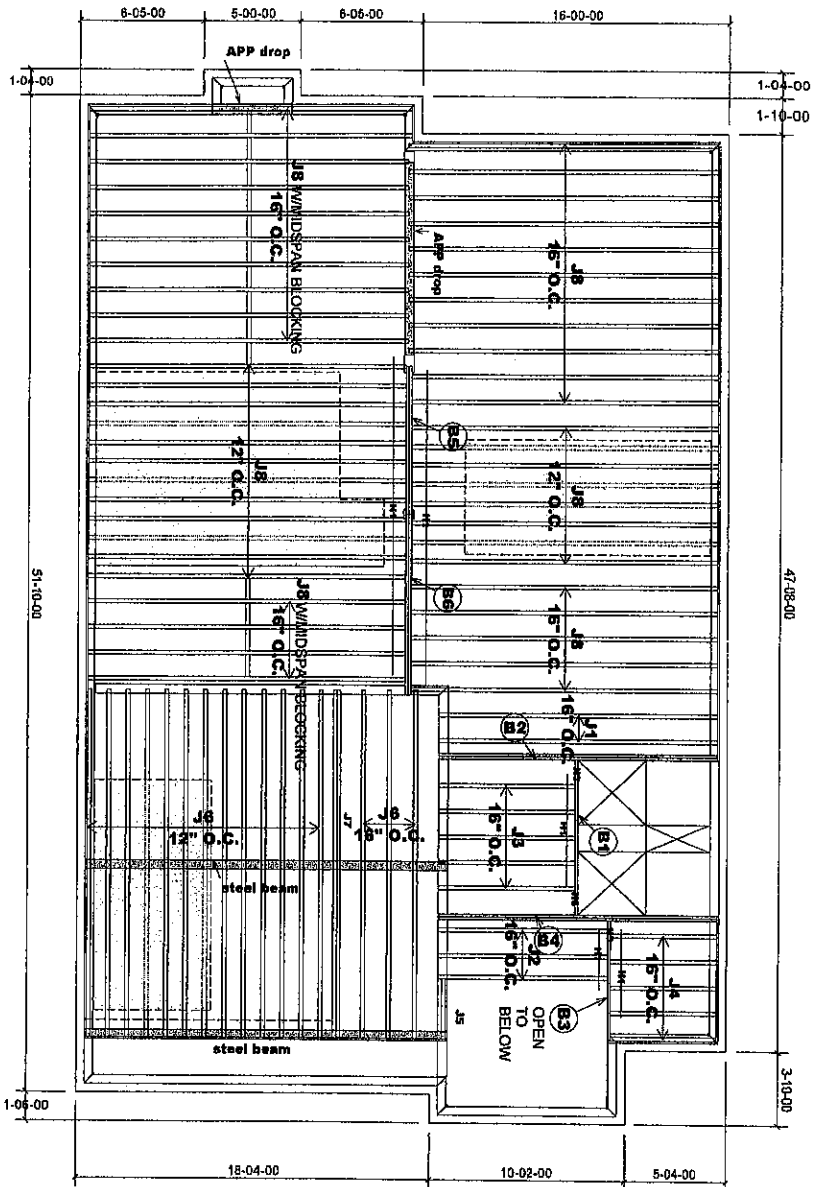
Do not scale - refer to architectural plans for dimensions

JT: 40297/79712
File: 253783

Builder: Gold Park Homes
Location: Kleinburg
Project: Huntington & Nashville
Date: May 01/15

Designer: LA
Sheet: 3 of 8

Alpha Roof Trusses Inc.
Maple, Ontario
Salesperson: Derek
Home Lumber



MODEL: 42-1
ELEVATION A
OPT. W/S BEDROOM

SECOND FLOOR FRAMING

Do not scale - refer to architectural plans for dimensions

ProdID	Length	Product	Pieces	Net Qty
J1	15'-00-00	9 1/2" NI-20	1	2
J2	9'-00-00	9 1/2" NI-20	1	3
J3	8'-00-00	9 1/2" NI-20	1	5
J4	6'-00-00	9 1/2" NI-20	1	5
J5	4'-00-00	9 1/2" NI-20	1	1
J6	19'-00-00	9 1/2" NI-40x	1	16
J7	19'-00-00	9 1/2" NI-40x	2	2
J8	17'-00-00	9 1/2" NI-40x	1	50
B2	15'-00-00	VERSALAM-10 2.0E	2	2
B4	15'-00-00	VERSALAM-10 2.0E	2	2
B6	10'-00-00	VERSALAM-10 2.0E	2	2
B1	9'-00-00	VERSALAM-10 2.0E	1	1
B5	8'-00-00	VERSALAM-10 2.0E	2	2
B3	7'-00-00	VERSALAM-10 2.0E	1	1

9 1/2" BLOCKING 32 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

HANGERS SCHEDULE

H1 - L17259
H3 - HUS1.81/10

TILE AREA

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

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

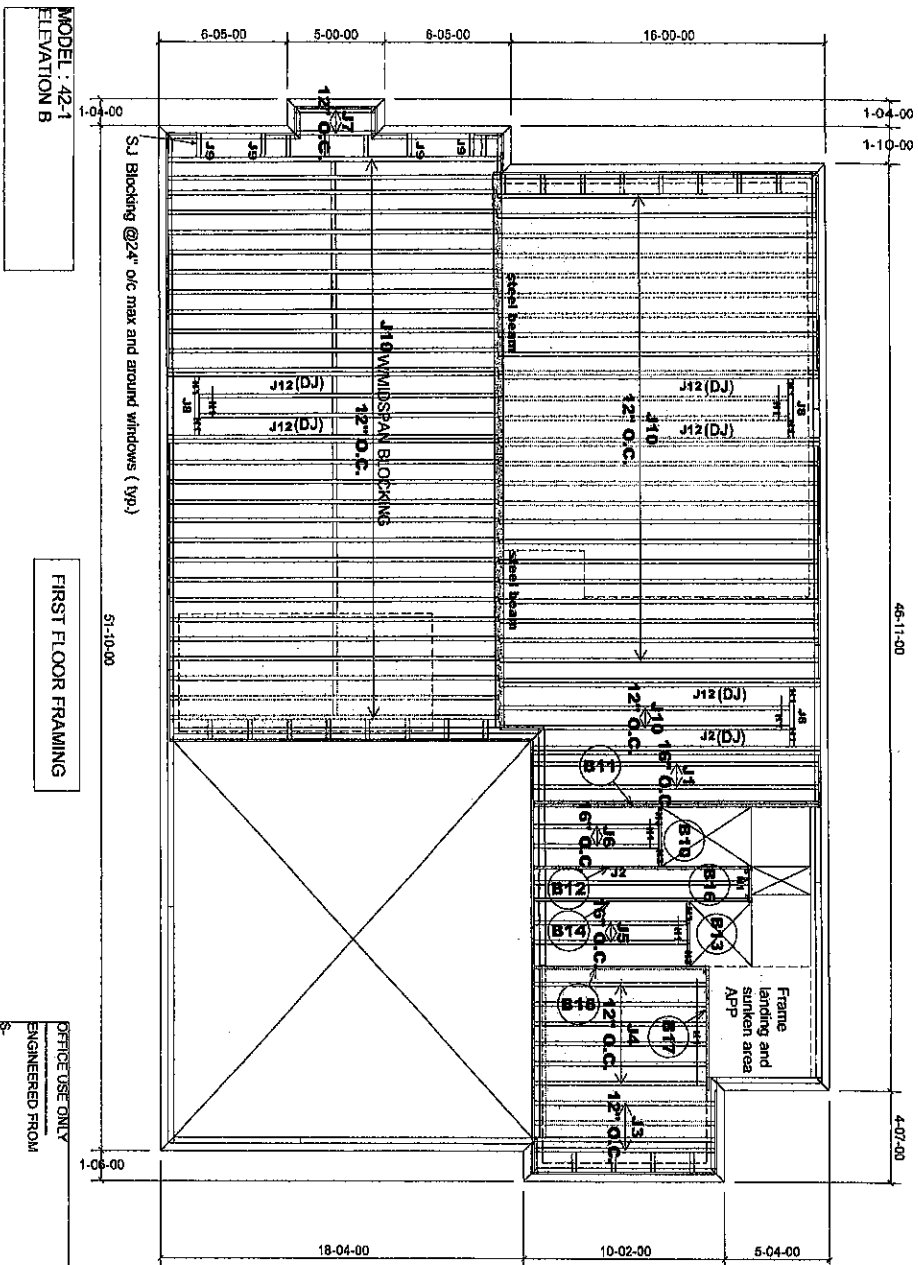
JT: 40297/79712
File: 253783

Builder: Gold Park Homes
Project: Huntington & Nashville

Location: Kleinburg
Date: May 01/15

Designer: LA
Sheet: 4 of 8

Alpa Roof Trusses Inc. Salesperson: Derek
Maple, Ontario Home Lumber



Do not scale - refer to architectural plans for dimensions

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S.

Product	Product	Piles	Net Qty
J1	15-00-00 9 1/2" NI-20	1	2
J2	15-00-00 9 1/2" NI-20	2	2
J3	11-00-00 9 1/2" NI-20	1	1
J4	10-00-00 9 1/2" NI-20	1	4
J5	8-00-00 9 1/2" NI-20	1	6
J6	7-00-00 9 1/2" NI-20	1	2
J7	5-00-00 9 1/2" NI-20	1	2
J8	3-00-00 9 1/2" NI-20	1	3
J9	2-00-00 9 1/2" NI-20	1	4
J10	17-00-00 9 1/2" NI-40x	1	51
J11	17-00-00 9 1/2" NI-40x	2	10
J12	15-00-00 VERSALAM-10 2.0E	1	1
B1	12-00-00 VERSALAM-10 2.0E	1	1
B2	12-00-00 VERSALAM-10 2.0E	1	1
B3	9-00-00 VERSALAM-10 2.0E	1	1
B4	6-00-00 VERSALAM-10 2.0E	1	1
B5	4-00-00 VERSALAM-10 2.0E	1	1
B6	2-00-00 VERSALAM-10 2.0E	1	1

3/4" BLOCKING 64 LF

APP - AS PER PLAN
SBO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED

RIMBOARD

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

HANGERS SCHEDULE

H1 - LT259
H3 - HUS1.81/10

TILE AREA

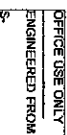
1-2x6 SPF#2 Squash Block req'd on one side of joists under interior load bearing wall

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: 4029779712 Builder: Gold Park Homes Location: Kleinburg Designer: LA Alpha Roof Trusses Inc. Salesperson: Derek
File: 253783 Project: Huntington & Nashville Date: May 01/15 Sheet 5 of 6 Maple, Ontario Home Lumber



1-2x6 SPF-42 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

PhotoID	Length	Products		Piles	Net Qty
		Product			
J1	15:00-00	9 1/2"	Ni-20	1	2
J2	15:00-00	9 1/2"	Ni-20	2	2
J2	11:00-00	9 1/2"	Ni-20	1	4
J3	10:00-00	9 1/2"	Ni-20	1	1
J4	9:00-00	9 1/2"	Ni-20	1	1
J5	8:00-00	9 1/2"	Ni-20	1	2
J6	7:00-00	9 1/2"	Ni-20	1	18
J7	5:00-00	9 1/2"	Ni-20	1	2
J8	3:00-00	9 1/2"	Ni-20	1	3
J9	2:00-00	9 1/2"	Ni-20	1	4
J10	17:00-00	9 1/2"	Ni-40x	1	45
J12	17:00-00	9 1/2"	Ni-40x	2	2
B19	17:00-00	VERSALAM-10.2.0E		2	10
B1	15:00-00	VERSALAM-10.2.0E		2	2
B12	12:00-00	VERSALAM-10.2.0E		1	1
B14	13:00-00	VERSALAM-10.2.0E		1	1
B20	10:00-00	VERSALAM-10.2.0E		1	1
B15	9:00-00	VERSALAM-10.2.0E		1	1
B18	7:00-00	VERSALAM-10.2.0E		1	1
B17	6:00-00	VERSALAM-10.2.0E		1	1
B13	4:00-00	VERSALAM-10.2.0E		1	1
B10	3:00-00	VERSALAM-10.2.0E		1	1
B16	2:00-00	VERSALAM-10.2.0E		1	1

APP - AS PER PLAN
BBO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED
RIMBOARD

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

HANGERS SCHEDULE

H1	LT259
H2	
H3	H1C4 84/40

TILE AREA

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

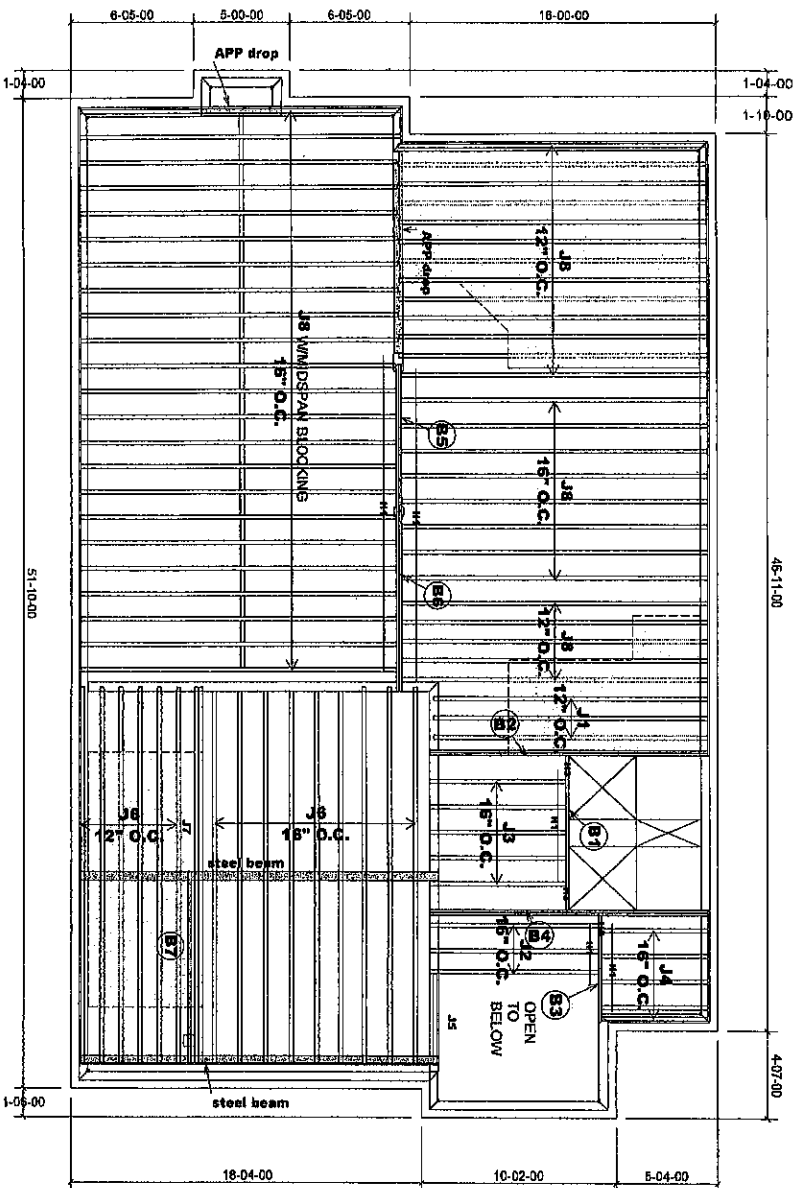
Multiple squash blocks are required under concentrated loads

Joists spacing under ceramic tile is 12"o/c

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

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber



MODEL: 42-1
ELEVATION B

SECOND FLOOR FRAMING

Do not scale - refer to architectural plans for dimensions

ProdID	Length	Product	Pieces	Net Qty
J1	15-00-00	9 1/2" NI-20	1	3
J2	9-00-00	9 1/2" NI-20	1	3
J3	8-00-00	9 1/2" NI-20	1	5
J4	6-00-00	9 1/2" NI-20	1	5
J5	5-00-00	9 1/2" NI-20	1	1
J6	20-00-00	9 1/2" NI-40x	1	15
J7	20-00-00	9 1/2" NI-40x	2	2
J8	17-00-00	9 1/2" NI-40x	1	49
B2	15-00-00	VERSALAM-10 2.0E	2	2
B4	15-00-00	VERSALAM-10 2.0E	2	2
B7	10-00-00	VERSALAM-10 2.0E	1	1
B6	10-00-00	VERSALAM-10 2.0E	2	2
B1	9-00-00	VERSALAM-10 2.0E	1	1
B5	8-00-00	VERSALAM-10 2.0E	2	2
B3	6-00-00	VERSALAM-10 2.0E	1	1

3/4" BLOCKING 32 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

FLANGERS SCHEDULE

H1 - LT259

H3 - HUS1.81/10

TILE AREA

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

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: 40297/79712
File: 253783

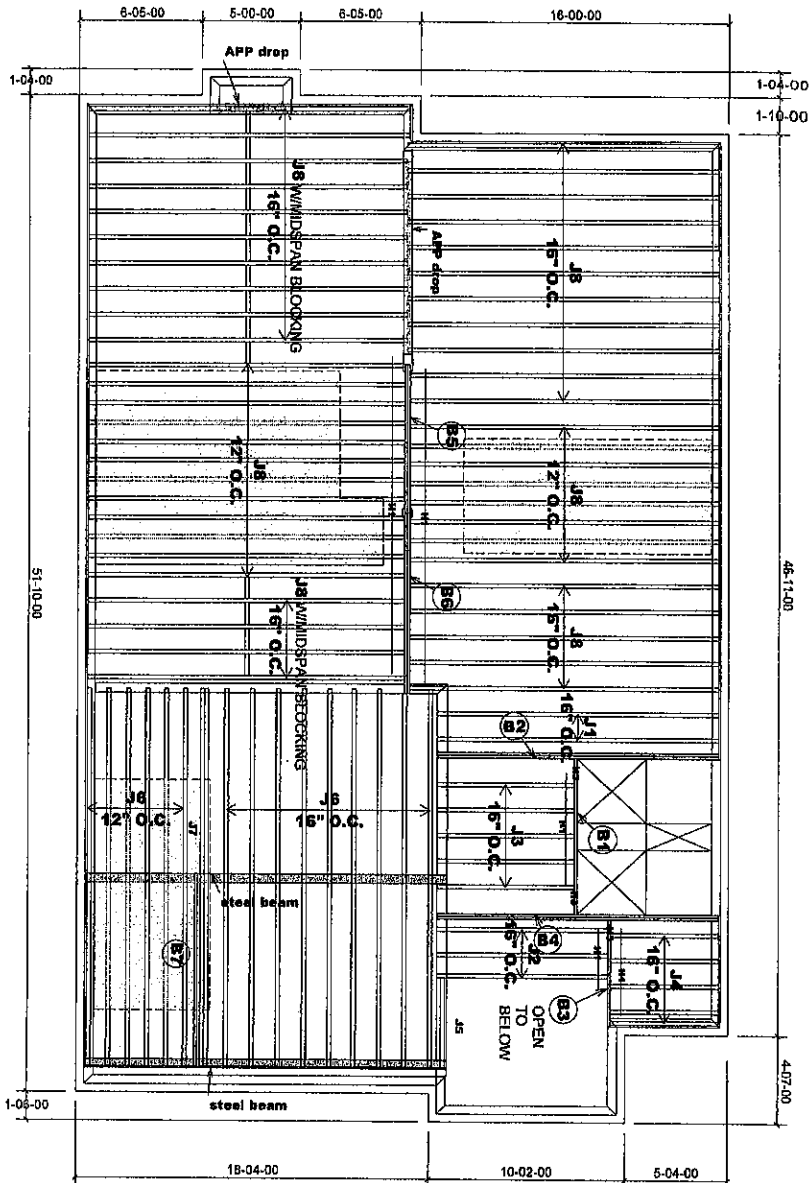
Builder: Gold Park Homes
Project: Huntington & Nashville
Location: Kleinburg
Date: May 01/15

Designer: LA
Sheet: 7 of 8
Alpa Roof Trusses Inc.
Maple, Ontario
Salesperson: Derek
Home Lumber

MODEL: 42-1
ELEVATION B
OPT. W/3 BEDROOM

SECOND FLOOR FRAMING

Do not scale - refer to architectural plans for dimensions



Products			
PicID	Length	Product	Piles Net Qty
J1	15-00-00	9 1/2" NI-20	1 2
J2	9-00-00	9 1/2" NI-20	1 3
J3	8-00-00	9 1/2" NI-20	1 3
J4	6-00-00	9 1/2" NI-20	1 5
J5	5-00-00	9 1/2" NI-20	1 1
J6	20-00-00	9 1/2" NI-40x	1 15
J7	20-00-00	9 1/2" NI-40x	2 2
J8	17-00-00	9 1/2" NI-40x	1 50
B2	15-00-00	VERSALAM-10 2.0E	2 2
B4	15-00-00	VERSALAM-10 2.0E	2 2
B7	10-00-00	VERSALAM-10 2.0E	1 1
B6	10-00-00	VERSALAM-10 2.0E	2 2
B1	9-00-00	VERSALAM-10 2.0E	1 1
B5	8-00-00	VERSALAM-10 2.0E	2 2
B3	6-00-00	VERSALAM-10 2.0E	1 1

9 1/2" BLOCKING 32 LF.

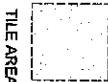
APP - AS PER PLAN
BBO - BEAM BY OTHERS

SUBFLOOR - 5/8" NAILED & GLUED
RIMBOARD

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

HANGERS SCHEDULE

H1 - L1259
H3 - HUS1.81/10



TILE AREA

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

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: 40297/79712
File: 253783

Builder: Gold Park Homes
Project: Huntingdon & Nashville
Location: Kleinburg
Date: May 01/15

Designer: LA
Sheet: 8 of 8
Alpha Roof Trusses Inc.
Maple, Ontario
Salesperson: Derek
Home Lumber

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

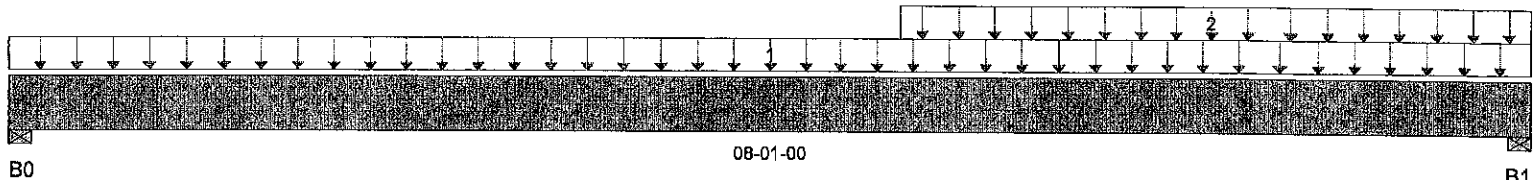
May-01-15

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: 253783.bcc
 Description: Designs\01
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



Total Horizontal Product Length = 08-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	611 / 0	249 / 0		
B1, 3-1/2"	759 / 0	304 / 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	08-01-00	40	15			03-06-00
2		Unf. Area (lb/ft^2)	L	04-09-00	08-01-00	40	15			01-09-08

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,401 ft-lbs	12,704 ft-lbs	0.19	1	04-04-14
End Shear	1,061 lbs	5,785 lbs	0.18	1	07-00-00
Total Load Defl.	L/999 (0.071")	n/a	n/a	4	04-00-12
Live Load Defl.	L/999 (0.05")	n/a	n/a	5	04-00-12
Max Defl.	0.071"	n/a	n/a	4	04-00-12
Span / Depth	9.6	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.

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

Bearing Supports

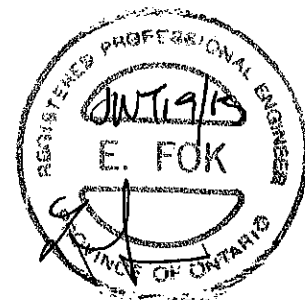
	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,227 lbs	0.33	0.16	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,519 lbs	0.4	0.2	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 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

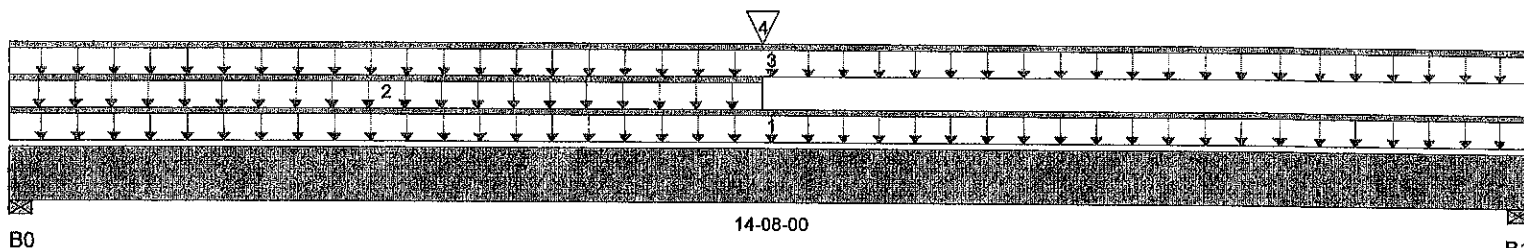


S.129713



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

File Name: 253783.bcc
 Description: Designs\02
 Specifier: 42-1
 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"	656 / 0	765 / 0		
B1, 3-1/2"	547 / 0	724 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	27	10			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	07-03-00	27	10			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	0	60			n/a
4		Conc. Pt. (lbs)	L	07-03-00	07-03-00	611	249			n/a

Controls Summary

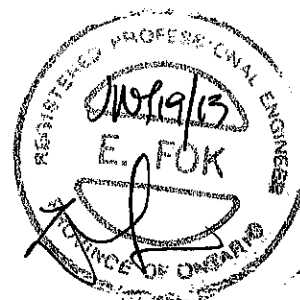
	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,554 ft-lbs	25,408 ft-lbs	0.34	1	07-03-00
End Shear	1,731 lbs	11,571 lbs	0.15	1	01-01-00
Total Load Defl.	L/420 (0.406")	0.71"	0.57	4	07-03-00
Live Load Defl.	L/853 (0.2")	0.474"	0.42	5	07-03-00
Max Defl.	0.406"	1"	0.41	4	07-03-00
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 3-1/2"	1,940 lbs	0.26	0.13	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,726 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 3/2" SPACED NAILS @ 12" O.C.,
 STAGGERED IN 2 ROWS

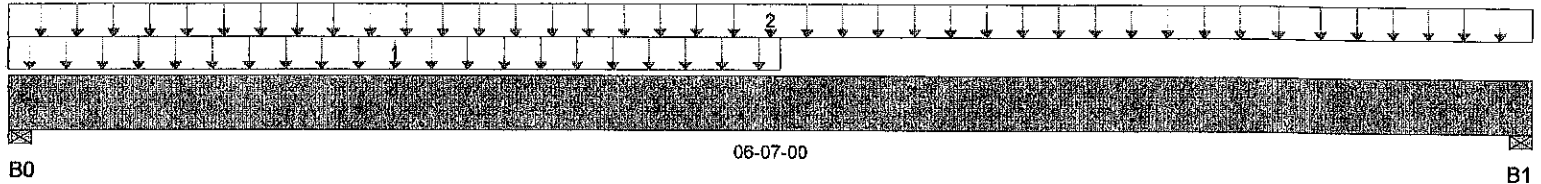
BC CALC® Design Report


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

May-01-15

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

File Name: 253783.bcc
 Description: Designs\03
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



Total Horizontal Product Length = 06-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	805 / 0	318 / 0		
B1, 3-1/2"	503 / 0	204 / 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	03-04-00	40	15			04-03-08
2		Unf. Area (lb/ft^2)	L	00-00-00	06-07-00	40	15			02-09-08

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,929 ft-lbs	12,704 ft-lbs	0.15	1	02-10-01
End Shear	993 lbs	5,785 lbs	0.17	1	01-01-00
Total Load Defl.	L/999 (0.035")	n/a	n/a	4	03-02-05
Live Load Defl.	L/999 (0.025")	n/a	n/a	5	03-02-05
Max Defl.	0.035"	n/a	n/a	4	03-02-05
Span / Depth	7.7	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"	1,604 lbs	0.43	0.21	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,009 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

Disclosure

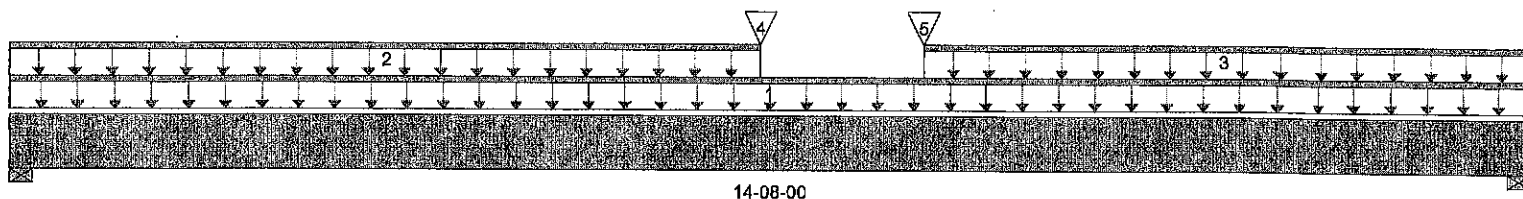
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current 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: 253783.bcc
 Description: Designs\04
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



B0

14-08-00

B1

Total Horizontal Product Length = 14-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,048 / 0	545 / 0		
B1, 3-1/2"	1,107 / 0	788 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	27	10			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	07-03-00	27	10			n/a
3		Unf. Lin. (lb/ft)	L	08-10-00	14-08-00	0	60			n/a
4		Conc. Pt. (lbs)	L	07-03-00	07-03-00	759	304			n/a
5		Conc. Pt. (lbs)	L	08-10-00	08-10-00	805	318			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	12,720 ft-lbs	25,408 ft-lbs	0.5	1	07-03-00
End Shear	2,494 lbs	11,571 lbs	0.22	1	13-07-00
Total Load Defl.	L/288 (0.593")	0.71"	0.83	4	07-05-06
Live Load Defl.	L/441 (0.386")	0.474"	0.82	5	07-05-06
Max Defl.	0.593"	1"	0.59	4	07-05-06
Span / Depth	17.9	n/a	n/a		00-00-00

Bearing Supports

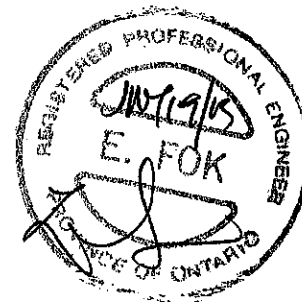
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	2,253 lbs	0.3	0.15	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	2,646 lbs	0.35	0.18	Spruce Pine Fir

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 END TO ANOTHER WITH 3/2" SPIRAL NAILS
 @ 12" O.C., STAGGERED IN 2 ROWS

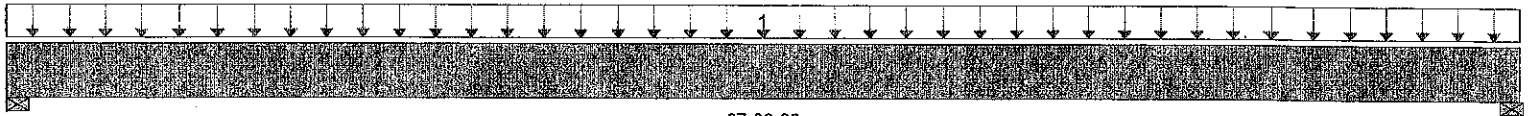


BC CALC® Design Report



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

File Name: 253783.bcc
Description: Designs\03
Specifier: 42-1
Designer: LA
Company: ALPA ROOF TRUSSES INC
Misc:



B0

07-09-00

B1

Total Horizontal Product Length = 07-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,532 / 0	987 / 0		
B1, 3"	2,505 / 0	977 / 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	07-09-00	40	15	1.00	1.15	16-03-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,683 ft-lbs	25,408 ft-lbs	0.34	1	03-10-08
End Shear	3,633 lbs	11,571 lbs	0.31	1	01-01-00
Total Load Defl.	L/999 (0.118")	n/a	n/a	4	03-10-08
Live Load Defl.	L/999 (0.085")	n/a	n/a	5	03-10-08
Max Defl.	0.118"	n/a	n/a	4	03-10-08
Span / Depth	9.3	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 3-1/2"	5,032 lbs	0.67	0.34	Spruce Pine Fir
B1 Wall/Plate	3" x 3-1/2"	4,979 lbs	0.77	0.39	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

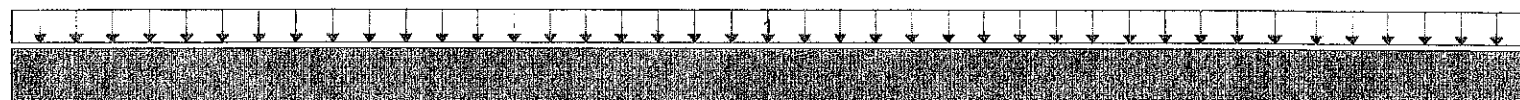


S-129717



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

File Name: 253783.bcc
 Description: Designs\04
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



B0 09-05-00 B1

Total Horizontal Product Length = 09-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3,074 / 0	1,198 / 0		
B1, 3"	3,047 / 0	1,188 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft ²)	L	00-00-00	09-05-00	40	15			16-03-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,078 ft-lbs	25,408 ft-lbs	0.51	1	04-08-08
End Shear	4,709 lbs	11,571 lbs	0.41	1	01-01-00
Total Load Defl.	L/405 (0.267")	0.45"	0.59	4	04-08-08
Live Load Defl.	L/563 (0.192")	0.3"	0.64	5	04-08-08
Max Defl.	0.267"	1"	0.27	4	04-08-08
Span / Depth	11.4	n/a	n/a		00-00-00

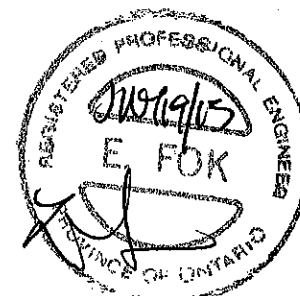
Bearing Supports	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	6,109 lbs	0.81	0.41	Spruce Pine Fir
B1 Wall/Plate	3" x 3-1/2"	6,055 lbs	0.94	0.47	Spruce Pine Fir

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



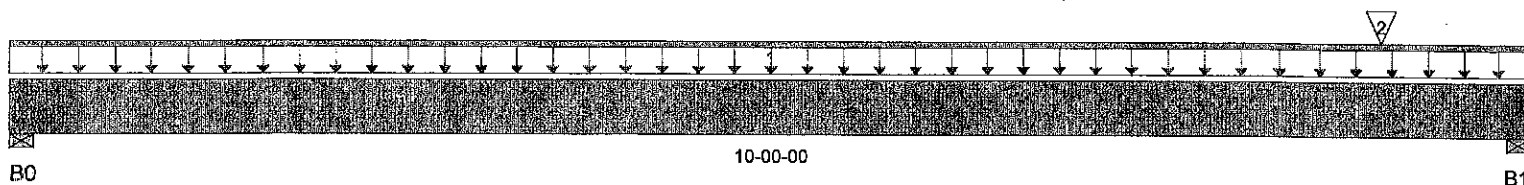
BC CALC® Design Report


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

May-01-15

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

File Name: 253783.bcc
 Description: Designs\07
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



Total Horizontal Product Length = 10-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	233 / 0	163 / 0	65 / 0	
B1, 3-1/2"	572 / 0	570 / 0	744 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	10-00-00	40	20			n/a
2		Conc. Pt. (lbs)	L	09-00-00	09-00-00	405	485	809		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,755 ft-lbs	12,704 ft-lbs	0.14	1	06-05-10
End Shear	1,846 lbs	5,785 lbs	0.32	5	08-11-00
Total Load Defl.	L/999 (0.086")	n/a	n/a	11	05-02-15
Live Load Defl.	L/999 (0.053")	n/a	n/a	15	05-02-15
Max Defl.	0.086"	n/a	n/a	11	05-02-15
Span / Depth	12.1	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"	586 lbs	0.16	0.08	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	2,114 lbs	0.56	0.28	Spruce Pine Fir

Notes

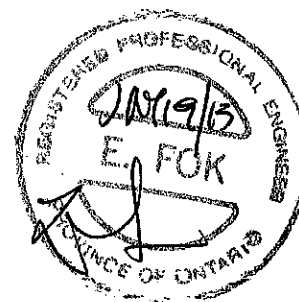
Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented 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.



S-129719



Build 3272

Job Name:

40297

Address:

Huntington & Nashville

City, Province, Postal Code: Kleinburg, ON

Customer:

Gold Park

Code reports:

CCMC 12472-R

File Name: 253783.bcc

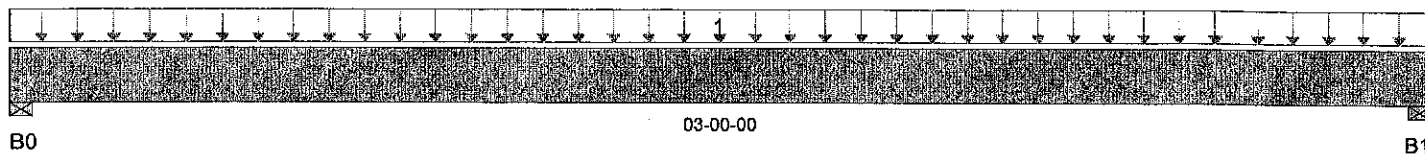
Description: Designs\10

Specifier: 42-1

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



Total Horizontal Product Length = 03-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	330 / 0	131 / 0		
B1, 3-1/2"	330 / 0	131 / 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	03-00-00	40	15	1.00	1.15	05-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	355 ft-lbs	12,704 ft-lbs	0.03	1	01-06-00
End Shear	183 lbs	5,785 lbs	0.03	1	01-01-00
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	01-06-00
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-06-00
Max Defl.	0.001"	n/a	n/a	4	01-06-00
Span / Depth	3.2	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"	659 lbs	0.17	0.09	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	659 lbs	0.17	0.09	Spruce Pine Fir

Notes

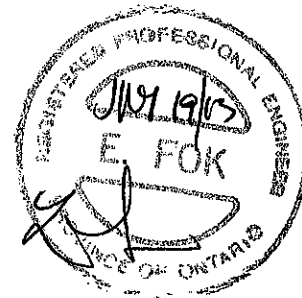
Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented 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

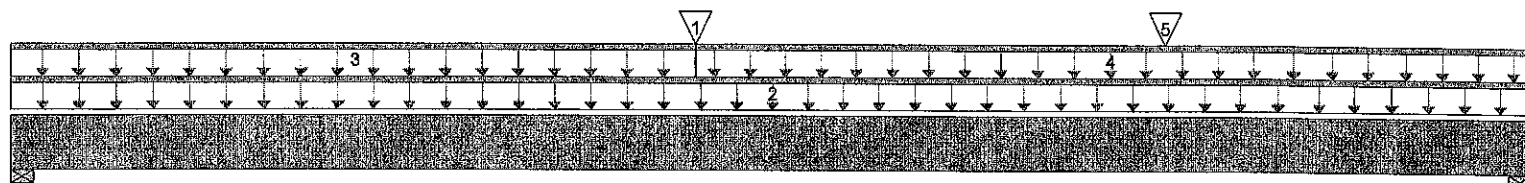
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Build 3272
 Job Name: 40297
 Address: Huntington & Nashville
 City, Province, Postal Code: Kleinburg, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 253783.bcc
 Description: Designs\11
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



B0

14-08-00

B1

Total Horizontal Product Length = 14-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	590 / 0	424 / 0		
B1, 3-1/2"	618 / 0	659 / 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	06-07-00	06-07-00	330	131			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	27	10			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	06-07-00	27	10			n/a
4		Unf. Lin. (lb/ft)	L	06-07-00	14-08-00	0	60			n/a
5		Conc. Pt. (lbs)	L	11-02-00	11-02-00	304	114			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,438 ft-lbs	25,408 ft-lbs	0.25	1	06-07-00
End Shear	1,599 lbs	11,571 lbs	0.14	1	13-07-00
Total Load Defl.	L/521 (0.327")	0.71"	0.46	4	07-05-05
Live Load Defl.	L/961 (0.177")	0.474"	0.37	5	07-03-10
Max Defl.	0.327"	1"	0.33	4	07-05-05
Span / Depth	17.9	n/a	n/a		00-00-00

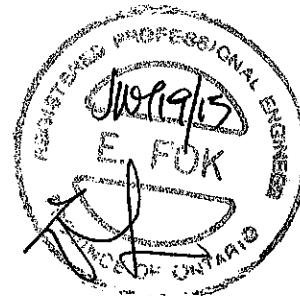
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,415 lbs	0.19	0.09	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,751 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.

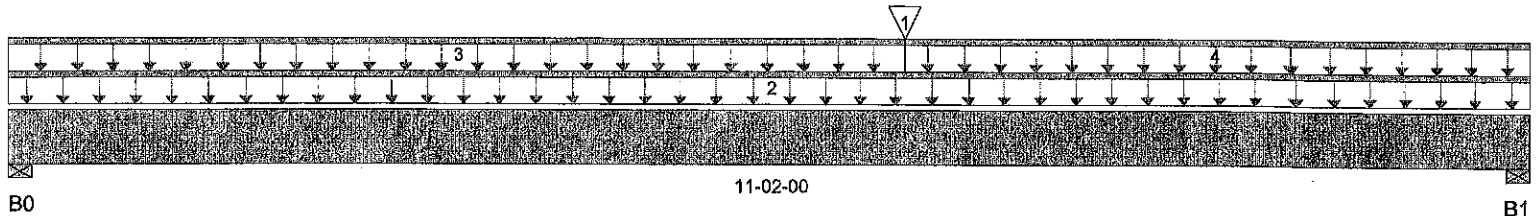
User Notes NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
 @ 12" O.C., STAGGERED IN 2 ROWS





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

File Name: 253783.bcc
 Description: Designs\12
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



Total Horizontal Product Length = 11-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	412 / 0	236 / 0		
B1, 3-1/2"	398 / 0	401 / 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	06-07-00	06-07-00	330	131			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	11-02-00	27	10			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	06-07-00	27	10			n/a
4		Unf. Lin. (lb/ft)	L	06-07-00	11-02-00	0	60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,375 ft-lbs	12,704 ft-lbs	0.27	1	06-07-00
End Shear	953 lbs	5,785 lbs	0.16	1	10-01-00
Total Load Defl.	L/712 (0.181")	0.535"	0.34	4	05-08-11
Live Load Defl.	L/999 (0.108")	n/a	n/a	5	05-08-11
Max Defl.	0.181"	1"	0.18	4	05-08-11
Span / Depth	13.5	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"	913 lbs	0.24	0.12	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,098 lbs	0.29	0.15	Spruce Pine Fir

Notes

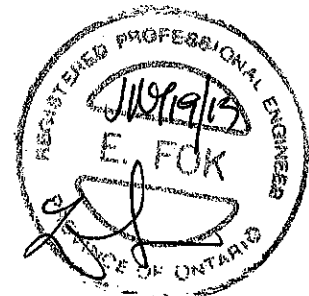
Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented 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

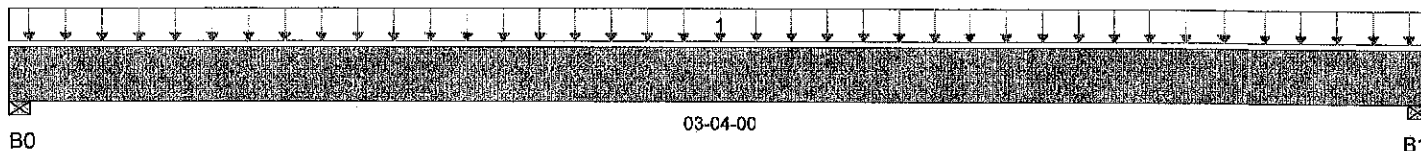
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Build 3272
 Job Name: 40297
 Address: Huntington & Nashville
 City, Province, Postal Code: Kleinburg, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File Name: 253783.bcc
 Description: Designs\13
 Specifier: 42-1
 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"	367 / 0	146 / 0		
B1, 3-1/2"	367 / 0	146 / 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	03-04-00	40	15			05-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	454 ft-lbs	12,704 ft-lbs	0.04	1	01-08-00
End Shear	256 lbs	5,785 lbs	0.04	1	01-01-00
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-08-00
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-08-00
Max Defl.	0.002"	n/a	n/a	4	01-08-00
Span / Depth	3.6	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"	732 lbs	0.19	0.1	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	732 lbs	0.19	0.1	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 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

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S-129723

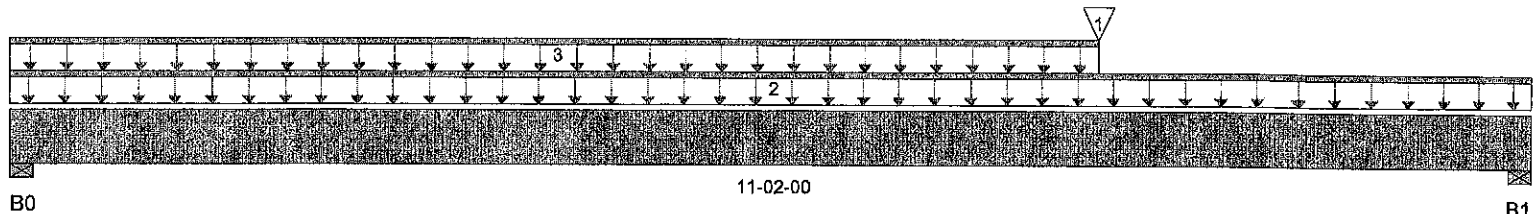
BC CALC® Design Report


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

May-01-15

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

File Name: 253783.bcc
 Description: Designs\14
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



Total Horizontal Product Length = 11-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	391 / 0	175 / 0		
B1, 3-1/2"	493 / 0	217 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.16	Trib.
1		Conc. Pt. (lbs)	L	08-00-00	08-00-00	367	146			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	11-02-00	27	10			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	27	10			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,711 ft-lbs	12,704 ft-lbs	0.21	1	07-01-10
End Shear	947 lbs	5,785 lbs	0.16	1	10-01-00
Total Load Defl.	L/839 (0.153")	0.535"	0.29	4	05-10-01
Live Load Defl.	L/999 (0.107")	n/a	n/a	5	05-10-01
Max Defl.	0.153"	1"	0.15	4	05-10-01
Span / Depth	13.5	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"	805 lbs	0.21	0.11	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,011 lbs	0.27	0.14	Spruce Pine Fir

Notes

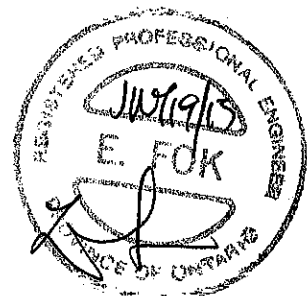
Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented 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

Disclosure

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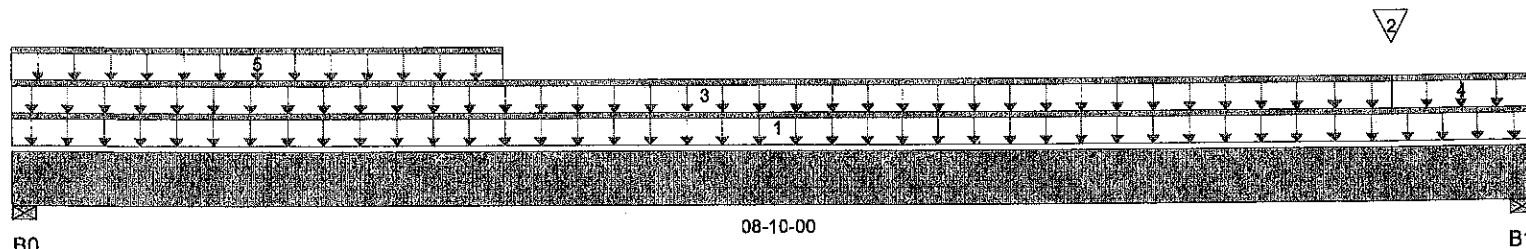
S-129724

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: 253783.bcc
Description: Designs\15
Specifier: 42-1
Designer: LA
Company: ALPA ROOF TRUSSES INC
Misc:



Total Horizontal Product Length = 08-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	233 / 0	267 / 0		
B1, 3-1/2"	526 / 0	310 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	08-10-00	20	10			n/a
2		Conc. Pt. (lbs)	L	08-00-00	08-00-00	367	146			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	27	10			n/a
4		Unf. Lin. (lb/ft)	L	08-00-00	08-10-00	0	60			n/a
5		Unf. Lin. (lb/ft)	L	00-00-00	02-10-00	0	60			n/a

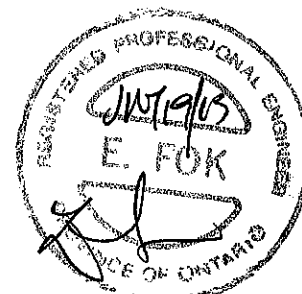
Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,243 ft-lbs	12,704 ft-lbs	0.1	1	04-08-02
End Shear	871 lbs	5,785 lbs	0.15	1	07-09-00
Total Load Defl.	L/999 (0.047")	n/a	n/a	4	04-05-06
Live Load Defl.	L/999 (0.027")	n/a	n/a	5	04-06-05
Max Defl.	0.047"	n/a	n/a	4	04-05-06
Span / Depth	10.6	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"	684 lbs	0.18	0.09	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,177 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.

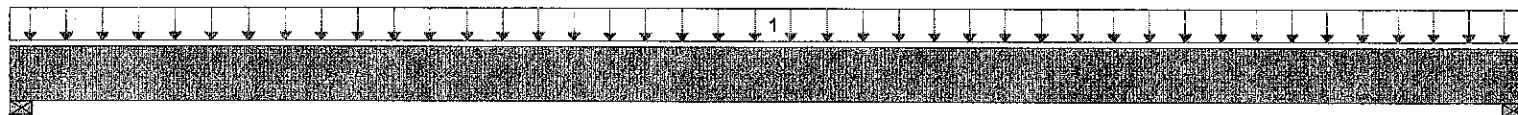


User Notes



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

File Name: 253783.bcc
 Description: Designs\18
 Specifier: 42-1
 Designer: LA
 Company: ALPA ROOF TRUSSES INC
 Misc:



B0

06-06-00

B1

Total Horizontal Product Length = 06-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	477 / 0	254 / 0		
B1, 3-1/2"	477 / 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. Area (lb/ft²)	L	00-00-00	06-06-00	40	20			03-08-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,450 ft-lbs	12,704 ft-lbs	0.11	1	03-03-00
End Shear	688 lbs	5,785 lbs	0.12	1	01-01-00
Total Load Defl.	L/999 (0.027")	n/a	n/a	4	03-03-00
Live Load Defl.	L/999 (0.018")	n/a	n/a	5	03-03-00
Max Defl.	0.027"	n/a	n/a	4	03-03-00
Span / Depth	7.6	n/a	n/a		00-00-00

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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"	1,032 lbs	0.27	0.14	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,032 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



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: 253783.bcc

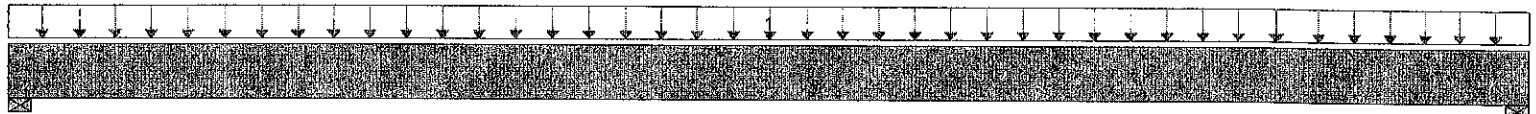
Description: Designs\20

Specifier: 42-1

Designer: LA

Company: ALPA ROOF TRUSSES INC

Misc:



B0

09-09-00

B1

Total Horizontal Product Length = 09-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	634 / 0	340 / 0		
B1, 3-1/2"	634 / 0	340 / 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	09-09-00	40	20	1.00	1.15	03-03-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,046 ft-lbs	12,704 ft-lbs	0.24	1	04-10-08
End Shear	1,070 lbs	5,785 lbs	0.18	1	01-01-00
Total Load Defl.	L/832 (0.134")	0.465"	0.29	4	04-10-08
Live Load Defl.	L/999 (0.087")	n/a	n/a	5	04-10-08
Max Defl.	0.134"	1"	0.13	4	04-10-08
Span / Depth	11.7	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"	1,376 lbs	0.37	0.18	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,376 lbs	0.37	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.
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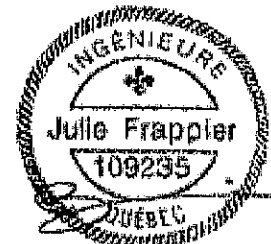
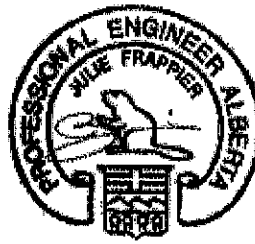
User Notes

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

Disclosure

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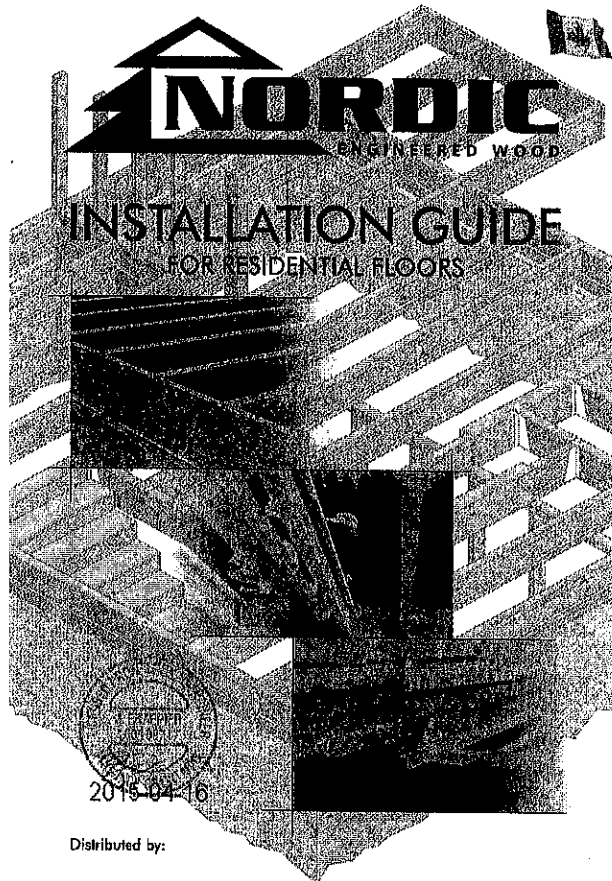
Maximum Floor Spans

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'-5"	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



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-joist 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 shathed.

Avoid Accidents by Following these Important Guidelines:

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

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

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 batwies.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.

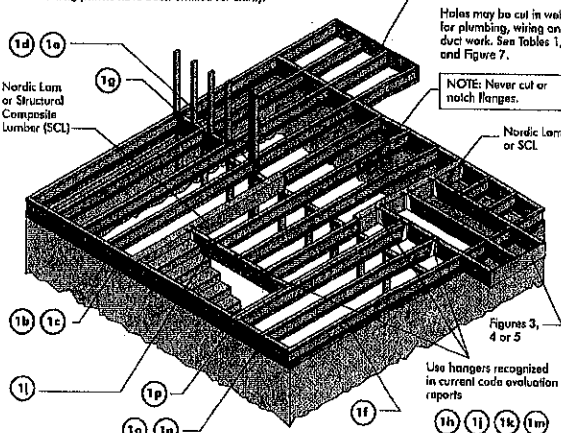


INSTALLING NORDIC I-JOISTS

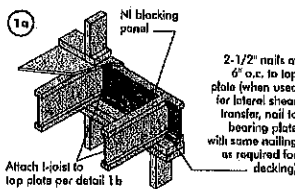
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true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

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

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

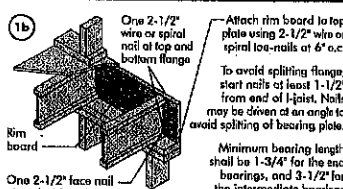


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



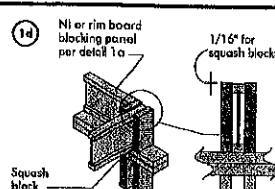
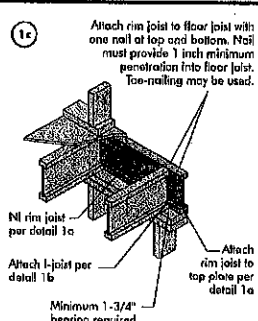
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

*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 banding member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (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 banding member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

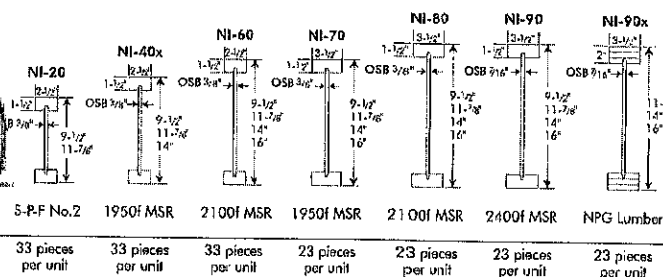
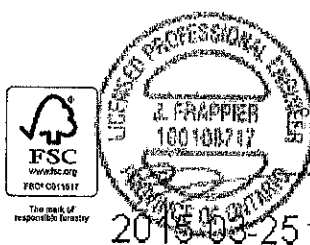


Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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



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



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

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

TABLE 1

LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)														
		Round Hole Diameter (in.)														
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	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'-0"	7'-9"	---	---	---	---	---	---
	NI-40x	0'-7"	0'-8"	1'-3"	2'-8"	4'-0"	4'-4"	5'-5"	7'-0"	8'-4"	---	---	---	---	---	---
	NI-60	0'-7"	1'-8"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	8'-10"	10'-0"	---	---	---	---	---	---
	NI-70	1'-3"	2'-6"	4'-0"	5'-4"	6'-9"	7'-2"	8'-4"	10'-0"	11'-2"	---	---	---	---	---	---
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-6"	10'-3"	11'-4"	---	---	---	---	---	---
14"	NI-90	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-7"	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'-0"
	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"	---	---

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

TABLE 2

DUCT CHASE OPENING SIZES AND LOCATIONS

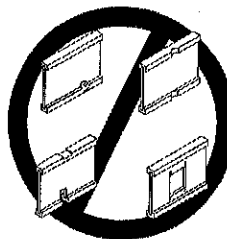
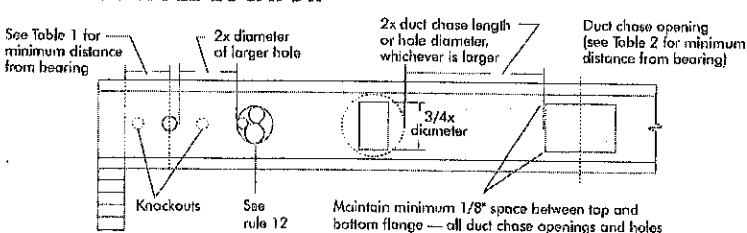
Simple Span Only

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

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

FIGURE 7

FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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



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

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



PRODUCT WARRANTY

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

Furthermore, Chantiers Chibouganau 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 I-joist to top plate per detail 1b

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

1b Rim board

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (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" face nail at each side of bearing

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

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

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

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

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

+ 1/16" for squash blocks

Squash block

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

1f 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 I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

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

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

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

** For face-mount hangers use not joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use not depth minus 4-1/4".

Top- or face-mount hanger

Double I-joist header

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

Filler block per detail 1p

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

For hanger capacity see hanger manufacturer's recommendations. Verify double I-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 I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

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

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

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

Attach I-joist per detail 1b

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

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

Flange Size	Not 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

I-joist blocking panel

One 2-1/2" nail one side only

NOTES:

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

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 2,870 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

Flange width 2-1/2" or 3-1/2"

Approx. 2" I

1/8"-1/4" Gap

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

No Gap

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

STIFFENER SIZE REQUIREMENTS

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

See the adjacent table for web stiffener size requirements

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

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

Attach I-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

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

RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

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

Rim board joint

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

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

Rim Board Joint at Corner

2-1/2" nails

Rim board joint

1-1/2"

1-1/2"

Rim board

Top or sole plate

30°

6/32"

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

OPTIONAL:

The above table is based on the joists used at their maximum span. If the joists are placed at less than their full maximum span (see Manufacturer's literature for details), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

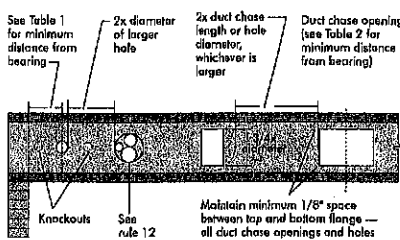
$$\text{Reduced} = \frac{\text{Actual} \times D}{\text{SAF}}$$

Where:

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



**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 pre-scored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 18 inches on centre along the length of the joist. Where possible, it is preferable to use knockouts instead of field-cut holes.



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

Holes in webs should be cut with a sharp saw.

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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24			
12													
14													
16													
18													
20													
22													
24													
26													
28													
30													
32													
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84													
86													
88													
90													
92													
94													
96													
98													
100													

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

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING⁽¹⁾

Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Common Wire or Steel Nail	Ring Threaded Nail	Staples	Maximum Spacing of Fasteners (ft.)	Minimum Spacing (ft.)
20	5/8	2"	1-3/4"	2"	6"	12"
24	5/8	2"	1-3/4"	2"	6"	12"
28	5/8	2"	1-3/4"	2"	6"	12"

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

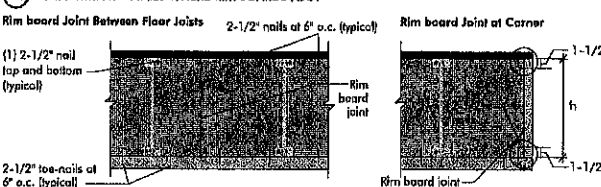
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

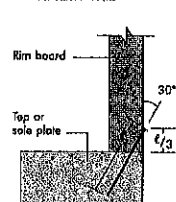
Floor sheathing must be field-glued to the joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

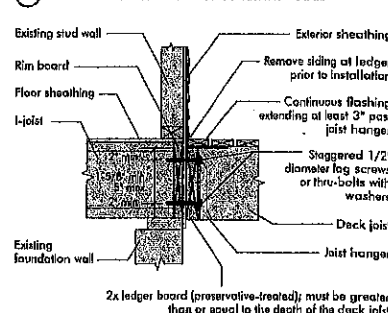
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



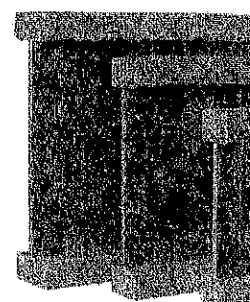
8b TOE-NAIL CONNECTION AT RIM BOARD



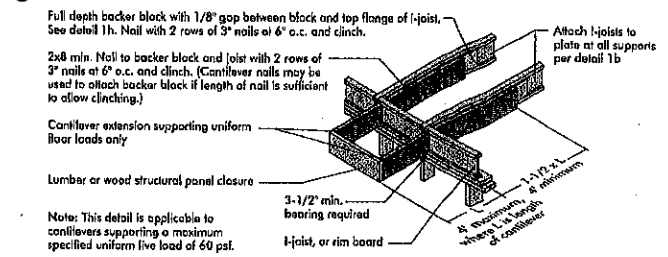
8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



2015-04-16



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



4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



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

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

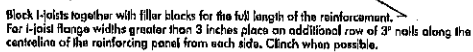
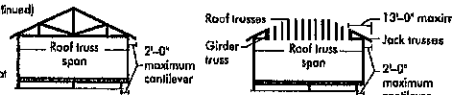


FIGURE 4 (continued)



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

[illegible]

- | | | |
|---|--|--|
| <p>1. N = No reinforcement required.</p> <p>2. N = N reinforced with 3/4" wood structural panel on one side only.</p> <p>3. N = N reinforced with 1/2" wood structural panel on both sides, or double 1/2-joint.</p> <p>4. N = N or deeper joint or closer spacing.</p> <p>5. N = N or deeper joint and 15 or more dead loads, 45 psf floor load level, and 80 psf wall load. Wall load is based on 3'-0" maximum width of window or other openings.</p> | <p>For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional plate beneath the opening's scribe shall be required.</p> <p>6. Table applies to joists 12" to 24" o.c. that meet the roof span requirements for a design live load of 20 psf and dead load of 10 psf and a live load deflection limit of L/480. Use 12" o.c. requirements for lapping.</p> | <p>7. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between supporting walls and the ridge beam.</p> <p>8. For a roof with a ridge beam and a floor board, the Roof Truss Span is equivalent to the distance between the supporting walls or it is a truss tie.</p> <p>9. Controversial joists supporting girder trusses or roof beams may require additional reinforcing.</p> |
|---|--|--|

(5a) SHEATHING REINFORCEMENT

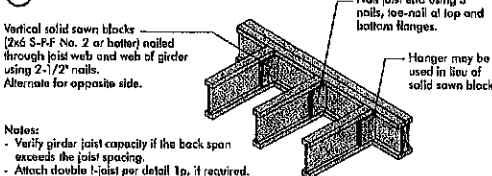
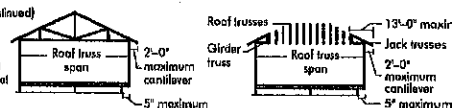


FIGURE 5 (continued)



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

[illegible]

1. N = No additional requirement.
2. N = N reinforced with 3/4" wood structural panel on one side only.
3. N = N reinforced with 3/4" wood structural panel on both sides and double clips.
4. X = To a deeper clip or closer spacing.
5. Maximum design load shall be: 15 psf roof load, 35 psf floor total load, and 80 psf total load on roof and 24" maximum width window or door openings.
6. For large openings, or multiple 3-0" width openings spaced less than 6'-0", additional clips may be required. The openings' cripple studs may be banded.
7. For openings with a height of 12' to 24" or less, the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a total deflection limit of 1/480, Use 12" o.c. requirements for lesser spans.
8. For conventional roof construction using a ridge beam, the roof truss Span column above is equivalent to the distance between the supporting wall and the ridge beam.
9. When the roof is framed using a ridge board, the Roof Truss Span column is the distance between the supporting walls as if a truss is used.
10. Reinforced clips supporting gable bushes or roof beams (rafters) shall be used.

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 CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- 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 C086-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

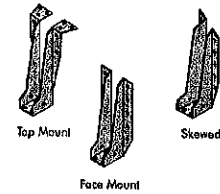
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
12"	NI-20	12'	10'	8'	6'	12'	10'	8'	6'
16"	NI-40	16'	14'	11'	9'	16'	14'	11'	9'
20"	NI-60	20'	18'	14'	12'	20'	18'	14'	12'
24"	NI-80	24'	22'	17'	15'	24'	22'	17'	15'
30"	NI-100	30'	28'	21'	18'	30'	28'	21'	18'
36"	NI-120	36'	34'	26'	22'	36'	34'	26'	22'
42"	NI-140	42'	40'	31'	26'	42'	40'	31'	26'
48"	NI-160	48'	46'	36'	30'	48'	46'	36'	30'
54"	NI-180	54'	52'	41'	34'	54'	52'	41'	34'
60"	NI-200	60'	58'	46'	38'	60'	58'	46'	38'

CCMC EVALUATION REPORT 13032-B

I-JOIST HANGERS

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



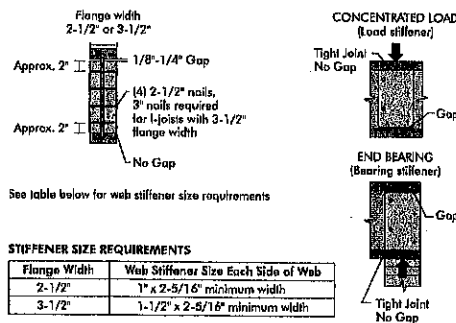
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than 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



STIFFENER SIZE REQUIREMENTS

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

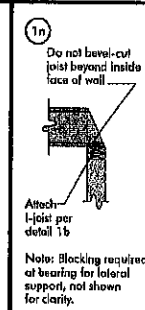
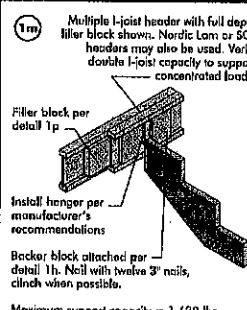
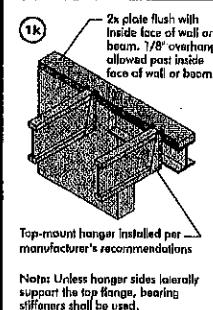
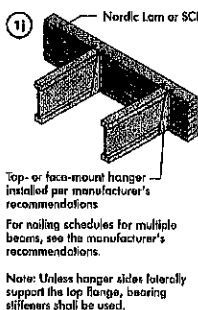
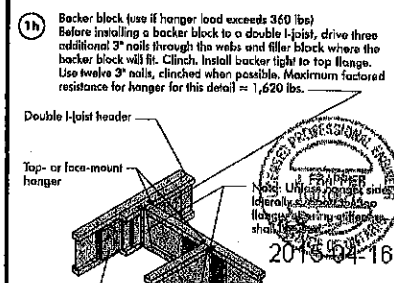
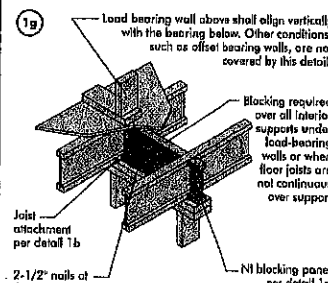
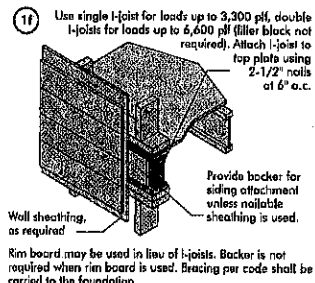
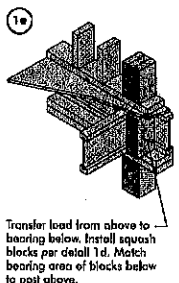
NORDIC I-JOIST SERIES

NI-20	NI-40	NI-60	NI-80	NI-100	NI-120	NI-140	NI-160	NI-180	NI-200
12"	16"	20"	24"	30"	36"	42"	48"	54"	60"
OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"	OSB 5/8"
1950 MSR	2100 MSR	2100 MSR	2100 MSR	2100 MSR	2400 MSR	2400 MSR	2400 MSR	2400 MSR	2400 MSR
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	33 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 forest to the finished product, reflects our commitment to quality.

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

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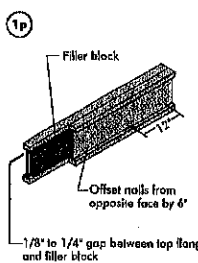


BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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-C082 or CAN/CSA-C087 Standard.

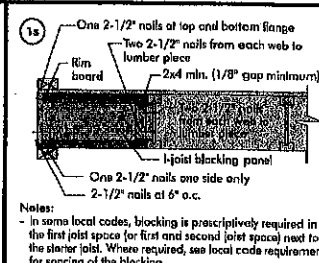
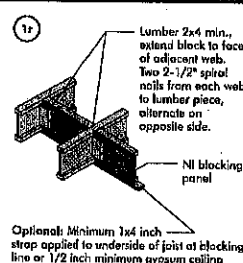
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



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



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