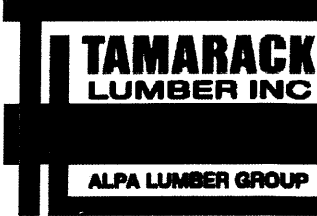


Town of Innisfil Certified Model
10/24/2018 10:45:35 AM kbayley

Products				
PlotID	Length	Product	Plies	Net Qty
J1	8-00-00	9 1/2" NI-40x	1	9
J2	16-00-00	11 7/8" NI-40x	1	9
J3	14-00-00	11 7/8" NI-40x	1	10
J3DJ	14-00-00	11 7/8" NI-40x	2	4
J4	12-00-00	11 7/8" NI-40x	1	37
J5	6-00-00	11 7/8" NI-40x	1	7
J6	4-00-00	11 7/8" NI-40x	1	2
J7	2-00-00	11 7/8" NI-40x	1	4
B7L	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B1	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H2	HUS1.81/10
9	H3	IUS2.56/9.5
1	H4	HGUS410
1	H4	HGUS410



FROM PLAN DATED: JAN 2018

BUILDER: BAYVIEW WELLINGTON

SITE: ALCONA SHORES

MODEL: TH-8C

ELEVATION: A

LOT:

CITY: INNISFIL

SALESMAN: M D

DESIGNER: CZ

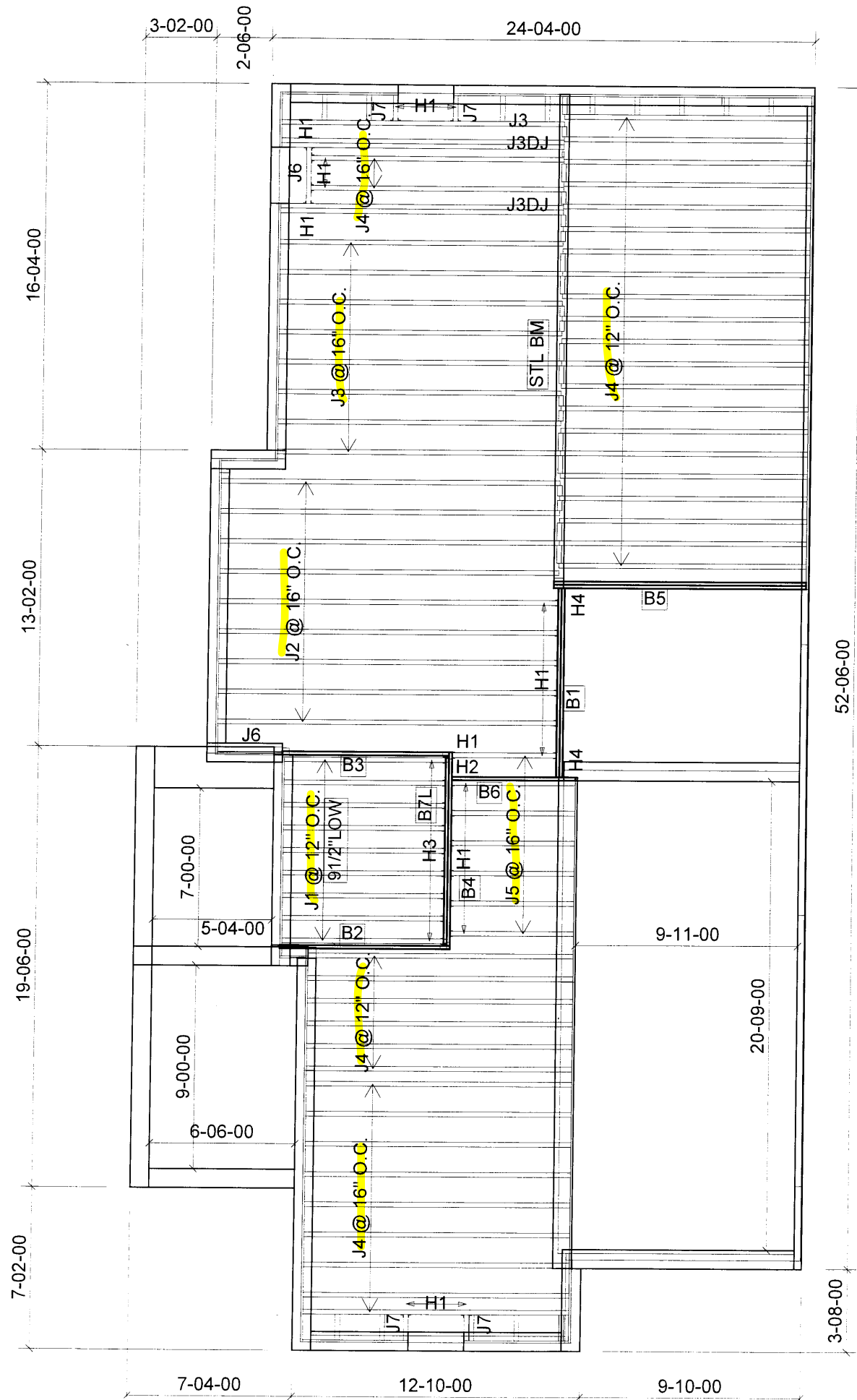
REVISION:

NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS. SEE
FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7, TABLES 1 & 2.
CERAMIC TILE APPLICATION AS PER
O.B.C 9.30.6.

LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 3/4" GLUED AND NAILED

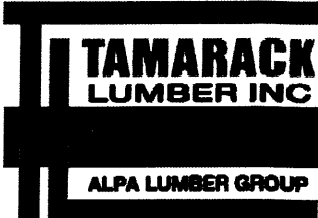
DATE: 31/07/2018

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	8-00-00	9 1/2" NI-40x	1	9
J2	16-00-00	11 7/8" NI-40x	1	9
J3	14-00-00	11 7/8" NI-40x	1	9
J3DJ	14-00-00	11 7/8" NI-40x	2	4
J4	12-00-00	11 7/8" NI-40x	1	38
J5	6-00-00	11 7/8" NI-40x	1	7
J6	4-00-00	11 7/8" NI-40x	1	2
J7	2-00-00	11 7/8" NI-40x	1	4
B7L	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B1	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H2	HUS1.81/10
9	H3	IUS2.56/9.5
1	H4	HGUS410
1	H4	HGUS410



FROM PLAN DATED: JAN 2018

BUILDER: BAYVIEW WELLINGTON

SITE: ALCONA SHORES

MODEL: TH-8C

ELEVATION: B

LOT:

CITY: INNISFIL

SALESMAN: M D

DESIGNER: CZ

REVISION:

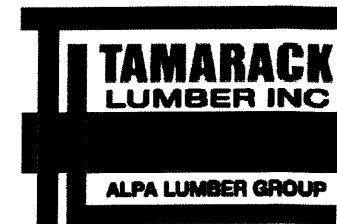
NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F REQ'D UNDER INTERIOR
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SEE FIGURES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7, TABLES 1 & 2.
CERAMIC TILE APPLICATION AS PER
O.B.C 9.30.6.

LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 31/07/2018

1st FLOOR

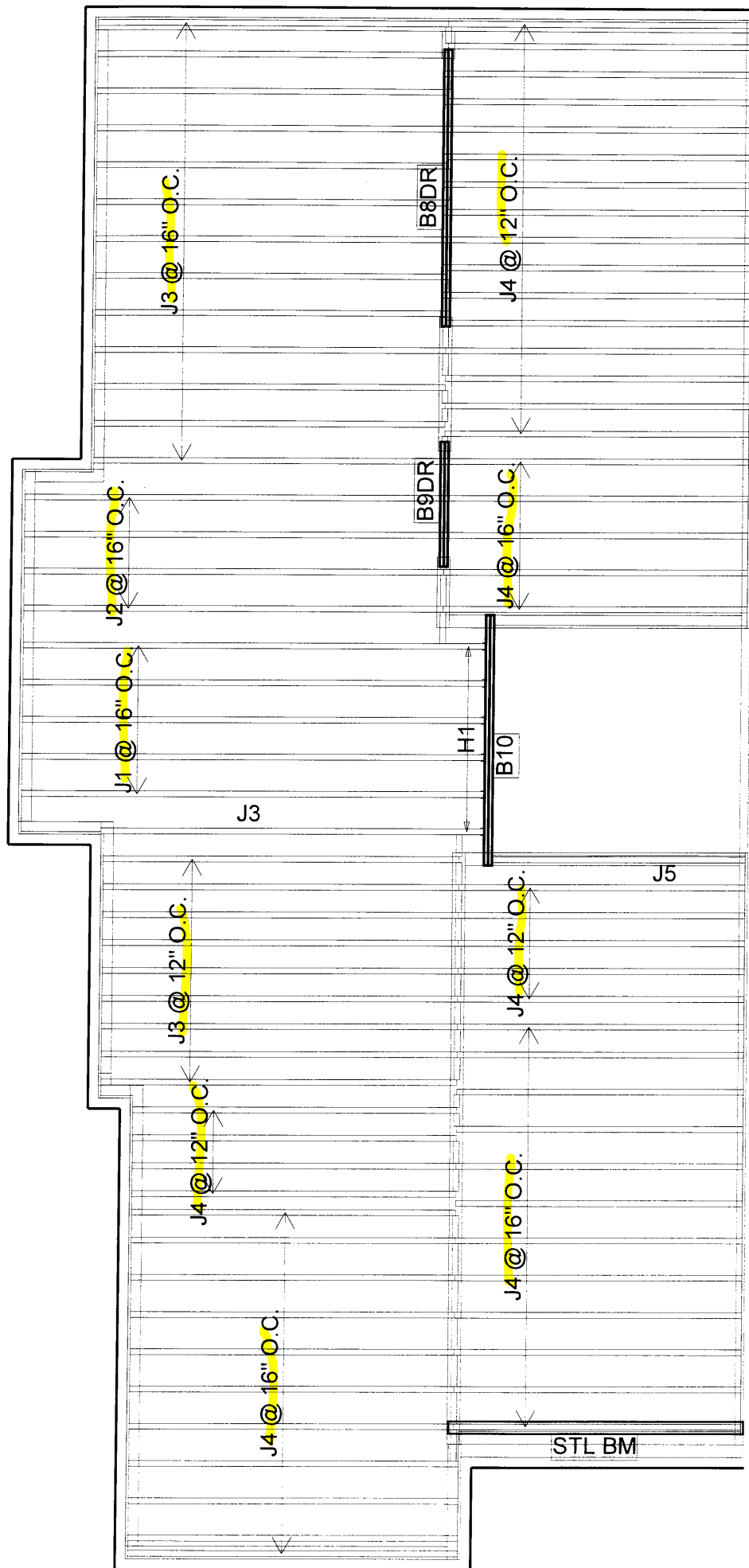


FROM PLAN DATED: JAN 2018
BUILDER: BAYVIEW WELLINGTON
SITE: ALCONA SHORES
MODEL: TH-8C
ELEVATION: A
LOT:
CITY: INNISFIL
SALESMAN: M D
DESIGNER: CZ
REVISION:

NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F. REQ'D UNDER INTERIOR
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MULTIPLE SQUASH BLOCKS REQ'D
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SEE FIGURE 7 TABLES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7 TABLES 1 & 2 OF THE
INSTALLATION GUIDE. CERAMIC TILE
APPLICATION AS PER O.B.C. 9.30.6
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 3/4" GLUED AND NAILED

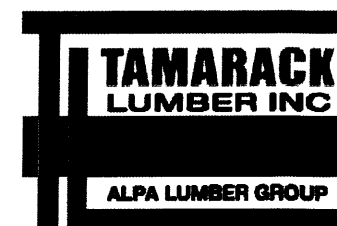
DATE: 31/07/2018

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	5
J2	16-00-00	11 7/8" NI-40x	1	4
J3	14-00-00	11 7/8" NI-40x	1	23
J4	12-00-00	11 7/8" NI-40x	1	53
J5	10-00-00	11 7/8" NI-40x	1	1
B8DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/11.88



FROM PLAN DATED: JAN 2018

BUILDER: BAYVIEW WELLINGTON

SITE: ALCONA SHORES

MODEL: TH-8C

ELEVATION: B

LOT:

CITY: INNISFIL

SALESMAN: M D

DESIGNER: CZ

REVISION:

NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F. REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS. SEE
FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURE 7 TABLES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7 TABLES 1 & 2 OF THE
INSTALLATION GUIDE. CERAMIC TILE
APPLICATION AS PER O.B.C. 9.30.6
LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

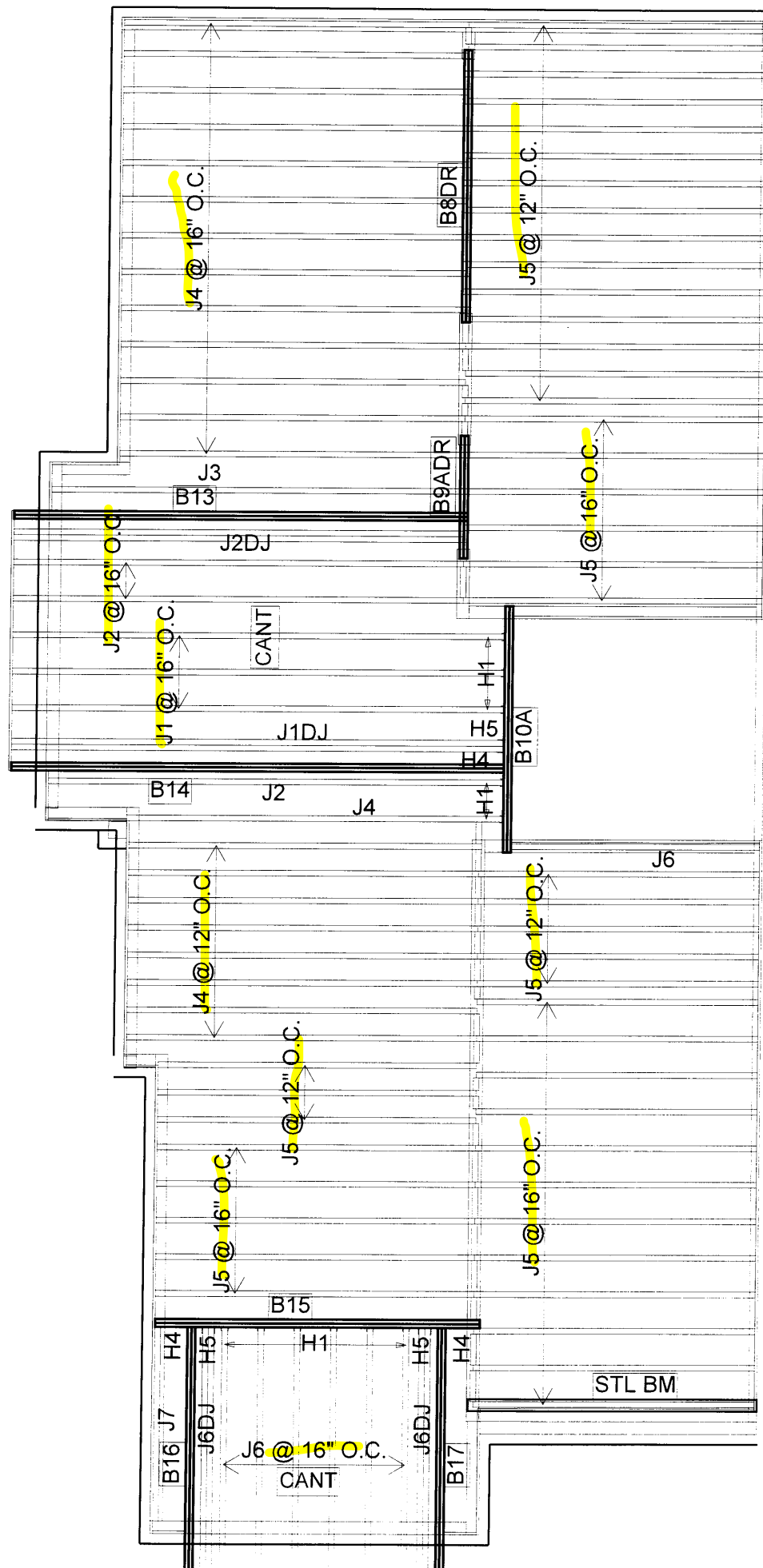
DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 31/07/2018

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	20-00-00	11 7/8" NI-40x	1	3
J1DJ	20-00-00	11 7/8" NI-40x	2	2
J2	18-00-00	11 7/8" NI-40x	1	3
J2DJ	18-00-00	11 7/8" NI-40x	2	2
J3	16-00-00	11 7/8" NI-40x	1	1
J4	14-00-00	11 7/8" NI-40x	1	22
J5	12-00-00	11 7/8" NI-40x	1	46
J6	10-00-00	11 7/8" NI-40x	1	7
J6DJ	10-00-00	11 7/8" NI-40x	2	4
J7	8-00-00	11 7/8" NI-40x	1	1
B8DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9ADR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B13	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B15	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B10A	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B16	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B17	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/11.88
3	H4	HGUS410
3	H5	HU310-2

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Apr. 30, 2018 17:05

PROJECT
J2-1ST FL.wwb

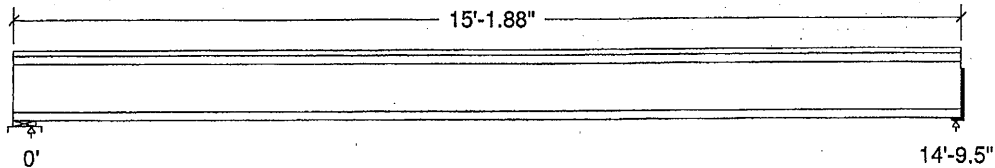
Design Check Calculation Sheet

Nordic Sizer – Canada 7.0

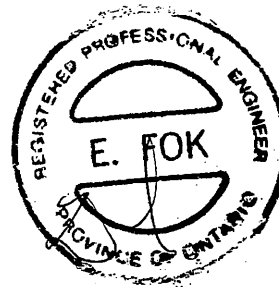
Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	197		197
Live	394		394
Factored:			
Total	838		838
Bearing:			
Resistance			2012
Joist	2336		-
Support	7735		-
Des ratio			0.42
Joist	0.36		-
Support	0.11		-
Load case	#2		#2
Length	4-3/8		1-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.15		-



Nordic 11-7/8" NI-40x Floor joist @ 16" o.c.

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Hanger;

Total length: 15'-1.88"; Clear span: 14'-7.73"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

DWG NO. TAM 4232-18H
STRUCTURAL
COMPONENT ONLY

T.18071543

Limit States Design using CSA-O86-09 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 838	Vr = 2336	lbs	Vf/Vr = 0.36
Moment(+)	Mf = 3100	Mr = 6255	lbs-ft	Mf/Mr = 0.50
Perm. Defl'n	0.07 = < L/999	0.49 = L/360	in	0.15
Live Defl'n	0.15 = < L/999	0.37 = L/480	in	0.40
Total Defl'n	0.22 = L/801	0.74 = L/240	in	0.30
Bare Defl'n	0.18 = < L/999	0.49 = L/360	in	0.36
Vibration	Lmax = 14'-9.5	Lv = 18'-1.3	ft	0.82
Defl'n	= 0.024	= 0.045	in	0.53

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

Moment(+) : LC #2 = 1.25D + 1.5L

Deflection: LC #1 = 1.0D (permanent)

LC #2 = 1.0D + 1.0L (live)

LC #2 = 1.0D + 1.0L (total)

LC #2 = 1.0D + 1.0L (bare joist)

Bearing : Support 1 - LC #2 = 1.25D + 1.5L

Support 2 - LC #2 = 1.25D + 1.5L

Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake
L=live (use, occupancy) Ls=live (storage, equipment) f=fire

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span

All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:Deflection: E_{leff} = 460e06 lb-in² K= 6.18e06 lbs

"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

- WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1
- Please verify that the default deflection limits are appropriate for your application.
- Refer to Nordic Structures technical documentation for installation guidelines and construction details.
- Nordic I-joists are listed in CCMC evaluation report 13032-R.
- Joists shall be laterally supported at supports and continuously along the compression edge.
- The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

CONFORMS TO OBC 2012

DWG NO. TAM 4232-1814
STRUCTURAL
COMPONENT ONLY

T.18071543(2)

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Apr. 30, 2018 17:07

PROJECT
J1-2ND FL.wwb

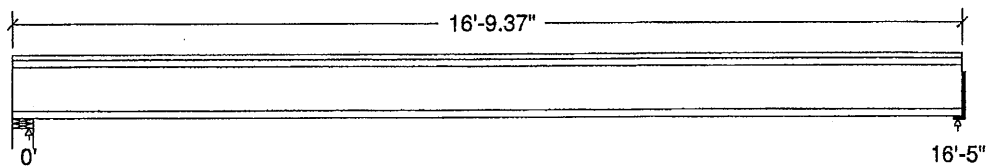
Design Check Calculation Sheet

Nordic Sizer - Canada 7.0

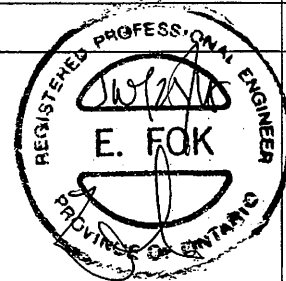
Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	219		219
Live	438		438
Factored:			
Total	930		930
Bearing:			
Resistance			
Joist	2336		2012
Support	7735		-
Des ratio			
Joist	0.40		0.46
Support	0.12		-
Load case	#2		#2
Length	4-3/8		1-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.15		-



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

Nordic 11-7/8" NI-40x Floor joist @ 16" o.c.

Supports: 1 - Lumber Wall, No.1/No.2; 2 - Hanger;

Total length: 16'-9.37"; Clear span: 16'-3.22"; 3/4" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

DWG NO. TAM 4233-18H
STRUCTURAL
COMPONENT ONLY

T.18071544

Limit States Design using CSA-O86-09 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 930	Vr = 2336	lbs	Vf/Vr = 0.40
Moment(+)	Mf = 3818	Mr = 6255	lbs-ft	Mf/Mr = 0.61
Perm. Defl'n	0.11 = < L/999	0.55 = L/360	in	0.20
Live Defl'n	0.22 = L/905	0.41 = L/480	in	0.53
Total Defl'n	0.33 = L/603	0.82 = L/240	in	0.40
Bare Defl'n	0.26 = L/749	0.55 = L/360	in	0.48
Vibration	Lmax = 16'-5	Lv = 18'-8.4	ft	0.88
Defl'n	= 0.027	= 0.039	in	0.68

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L
 Moment(+) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #2 = 1.0D + 1.0L (live)
 LC #2 = 1.0D + 1.0L (total)
 LC #2 = 1.0D + 1.0L (bare joist)

Bearing : Support 1 - LC #2 = 1.25D + 1.5L
 Support 2 - LC #2 = 1.25D + 1.5L

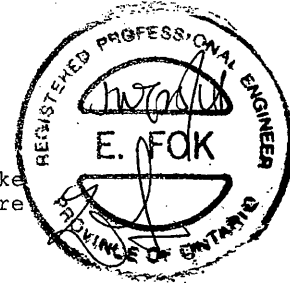
Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake
 L=live(use,occupancy) Ls=live(storage,equipment) f=fire

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: E_{eff} = 460e06 lb-in² K= 6.18e06 lbs

"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1 **CONFORMS TO OBC 2012**
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

DWG NO. TAM 4233-18 H
 STRUCTURAL
 COMPONENT ONLY

T. 18071544(2)

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLOOR FRAMING\Flush Beams\B1(i1039)**

BC CALC® Design Report

Dry | 1 span | No cant.

May 10, 2018 16:59:32

Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B1(i1039)

City, Province, Postal Code: INNISFIL

Specifier:

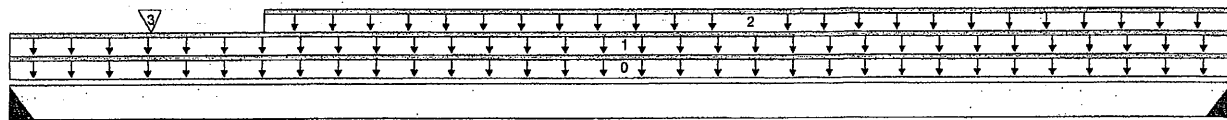
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



08-04-12
B0 Total Horizontal Product Length = 08-04-12 B1

Reaction Summary (Down / Uplift) (lbs)

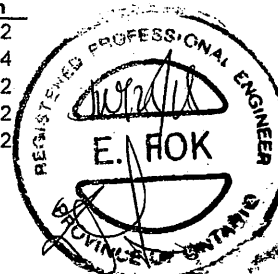
Bearing	Live	Dead	Snow	Wind
B0, 3"	1,943 / 0	1,022 / 0		
B1, 3"	2,282 / 0	1,192 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-04-12	12	120			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	08-04-12	240	154			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-08-12	08-04-12	310	65			n/a
3	J5(i1025)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	129				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9,263 ft-lbs	35,392 ft-lbs	26.2 %	1	04-00-12
End Shear	3,755 lbs	14,464 lbs	26.0 %	1	07-01-14
Total Load Deflection	L/999 (0.078")	n/a	n/a	4	04-02-12
Live Load Deflection	L/999 (0.051")	n/a	n/a	5	04-02-12
Max Defl.	0.078"	n/a	n/a	4	04-02-12
Span / Depth	8.1				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Hanger 3" x 3-1/2"	4,191 lbs	n/a	32.7 %	HGUS410
B1	Hanger 3" x 3-1/2"	4,912 lbs	n/a	38.3 %	HGUS410

Cautions

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

DWG NO. TAM 4234-1815
STRUCTURAL
COMPONENT ONLY

T. 18071545



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B1(i1039)****PASSED**

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

May 10, 2018 16:59:32

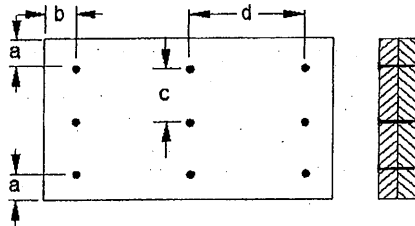
File name: TH-8C.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B1(i1039)

Specifier:

Designer: CZ

Company:

Connection Diagram

a minimum = 2"

c = 4"

b minimum = 3"

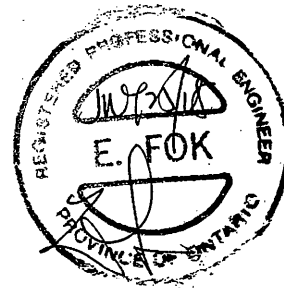
d = 6"

Calculated Side Load = 555.1 lb/ft

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

**Disclosure**

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DWG NO. TAM 4234-18H
STRUCTURAL
COMPONENT ONLY

T.18071545(2)

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLOOR FRAMING\Flush Beams\B2(i595)**

Dry | 1 span | No cant.

April 30, 2018 16:57:55

BC CALC® Design Report

Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B2(i595)

City, Province, Postal Code: INNISFIL

Specifier:

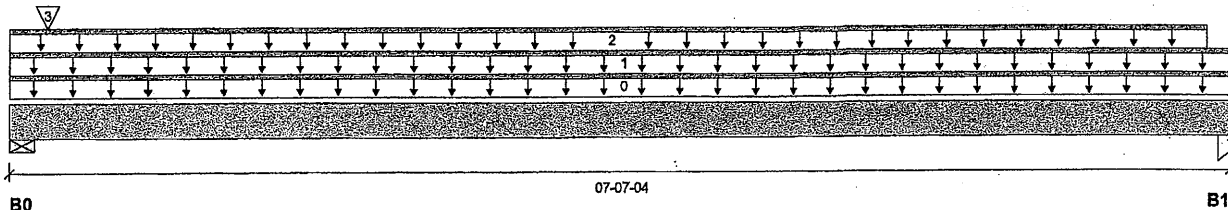
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 07-07-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,205 / 0	1,559 / 0		
B1, 5-1/4"	58 / 0	279 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-07-04	6				00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-07-04	60				n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-05-08	16	8			n/a
3	E6(i286)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	1,145	1,277			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	604 ft-lbs	11,502 ft-lbs	5.3 %	0	03-09-12
End Shear	245 lbs	4,701 lbs	5.2 %	0	01-05-06
Total Load Deflection	L/999 (0.009")	n/a	n/a	4	03-09-12
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	03-09-12
Max Defl.	0.009"	n/a	n/a	4	03-09-12
Span / Depth	6.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 1-3/4"	3,757 lbs	73.1 %	32.0 %	Unspecified
B1	Column 5-1/4" x 1-3/4"	391 lbs	8.1 %	5.4 %	Unspecified

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code : Part 9

CONFORMS TO OBC 2012**Disclosure**

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DWG NO. TAM 4235-18 H
STRUCTURAL
COMPONENT ONLY

T.18071546



Boise Cascade



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B3(i316)

Dry | 1 span | No cant.

April 30, 2018 16:57:55

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

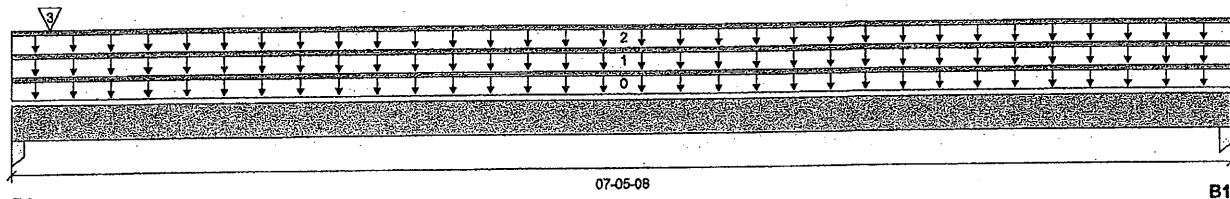
File name: TH-8C.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B3(i316)

Specifier:

Designer: CZ

Company:



Total Horizontal Product Length = 07-05-08

Reaction Summary (Down / Uplift) (lbs)

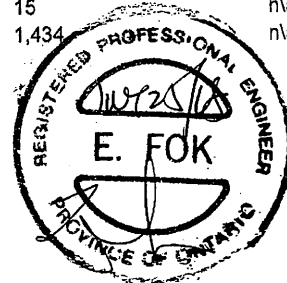
Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,462 / 0	1,735 / 0		
B1, 3-1/2"	112 / 0	302 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-05-08	6				00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-05-08		60			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-05-08	29	15			n/a
3	E6(i286)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	1,353	1,434			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	691 ft-lbs	11,502 ft-lbs	6.0 %	0	03-08-12
End Shear	276 lbs	4,701 lbs	5.9 %	0	01-03-06
Total Load Deflection	L/999 (0.012")	n/a	n/a	4	03-08-12
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	03-08-12
Max Defl.	0.012"	n/a	n/a	4	03-08-12
Span / Depth	7.1				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Column 3-1/2" x 1-3/4"	4,361 lbs	87.7 %	58.4 %	Unspecified
B1	Column 3-1/2" x 1-3/4"	423 lbs	13.1 %	8.7 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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DWG NO. TAM 4236-18H
 STRUCTURAL
 COMPONENT ONLY

T-18071547



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B4(i794)

Dry | 1 span | No cant.

April 30, 2018 16:57:55

BC CALC® Design Report
Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B4(i794)

City, Province, Postal Code: INNISFIL

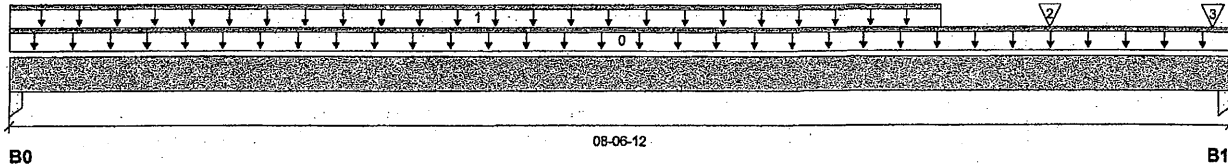
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	460 / 0	257 / 0		
B1, 3-1/2"	519 / 0	299 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-06-12	6				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	06-06-08	109	54			n/a
2	-	Conc. Pt. (lbs)	L	07-03-10	07-03-10	147	89			n/a
3	J5(i751)	Conc. Pt. (lbs)	L	08-05-04	08-05-04	118	59			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,017 ft-lbs	17,696 ft-lbs	11.4 %	1	04-06-08
End Shear	871 lbs	7,232 lbs	12.0 %	1	07-03-06
Total Load Deflection	L/999 (0.036")	n/a	n/a	4	04-02-08
Live Load Deflection	L/999 (0.023")	n/a	n/a	5	04-02-08
Max Defl.	0.036"	n/a	n/a	4	04-02-08
Span / Depth	8.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Column 1-3/4" x 1-3/4"	1,011 lbs	40.7 %	27.1 %	Unspecified
B1	Column 3-1/2" x 1-3/4"	1,152 lbs	23.2 %	15.4 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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DWG NO. TAM 4237-18H
STRUCTURAL
COMPONENT ONLY

7-18071548

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLOOR FRAMING\Flush Beams\B5(i572)**BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

April 30, 2018 16:57:55

Job name:

File name: TH-8C.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B5(i572)

City, Province, Postal Code: INNISFIL

Specifier:

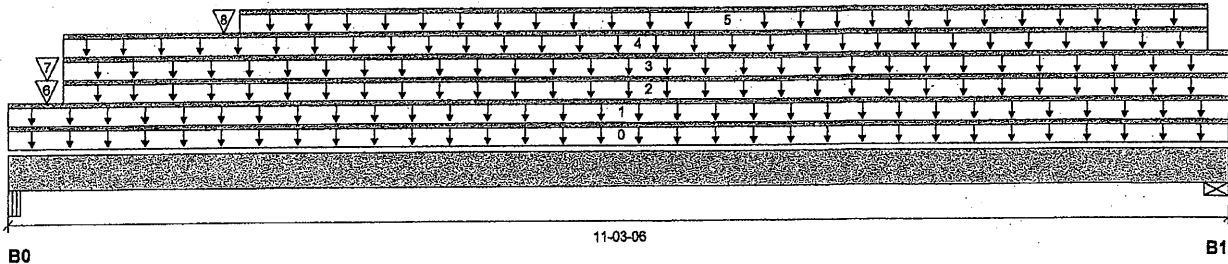
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 11-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	4,033 / 0	2,970 / 0		
B1, 2-3/8"	391 / 0	1,047 / 0		

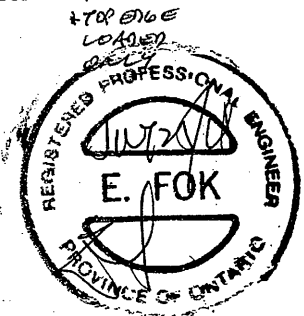
Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-06		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-03-06	10	5			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-06-00	11-03-06		60			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-06-00	11-03-06	6				n/a
4	12(i41)	Unf. Lin. (lb/ft)	L	00-06-00	11-01-00		81			n/a
5	12(i41)	Unf. Lin. (lb/ft)	L	02-01-08	11-01-00	13	10			n/a
6	-	Conc. Pt. (lbs)	L	00-04-03	00-04-03	2,515	1,342			n/a
7	STAIR	Conc. Pt. (lbs)	L	00-04-04	00-04-04	51				n/a
8	12(i41)	Conc. Pt. (lbs)	L	01-11-12	01-11-12	1,558	835			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	6,906 ft-lbs	35,392 ft-lbs	19.5 %	1	03-10-07
End Shear	4,151 lbs	14,464 lbs	28.7 %	1	01-05-02
Total Load Deflection	L/999 (0.11")	n/a	n/a	4	05-05-14
Live Load Deflection	L/999 (0.041")	n/a	n/a	5	05-02-14
Max Defl.	0.11"	n/a	n/a	4	05-05-14
Span / Depth	10.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Beam 5-1/4" x 3-1/2"	9,762 lbs	99.5 %	43.5 %	Unspecified
B1	Wall/Plate 2-3/8" x 3-1/2"	1,466 lbs	50.8 %	22.2 %	Unspecified

DWG NO. TAM 423B-18H
STRUCTURAL
COMPONENT ONLY

T-18071549



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B5(i572)**

Dry | 1 span | No cant.

PASSED

April 30, 2018 16:57:55

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-8C.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B5(i572)

Specifier:

Designer: CZ

Company:

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

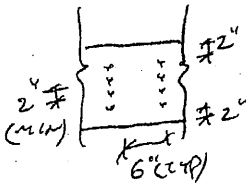
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

Concentrated side-load exceeds allowable magnitude for connection design. Please consult a technical representative or Professional Engineer for the design of the connection. *OK with NAILING*

PROVIDE 4 ROWS OF 3-1/2" ARDOX
SPIRAL NAILS @ 6" O/C FOR
MULTI-PLY NAILING. MAINTAIN
A MIN. 2" LUMBER EDGE / END
DISTANCE. DO NOT USE AIR NAILS.

**Disclosure**

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DWG NO. TAM 4238-18 H
STRUCTURAL
COMPONENT ONLY

T. 18071549(2)



Boise Cascade

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLOOR FRAMING\Flush Beams\B6(i1041)**

Dry | 1 span | No cant.

May 10, 2018 16:59:32

BC CALC® Design Report

Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 1ST.FLOOR.FRAMING\Flush Beams\B6(i1041)

City, Province, Postal Code: INNISFIL

Specifier:

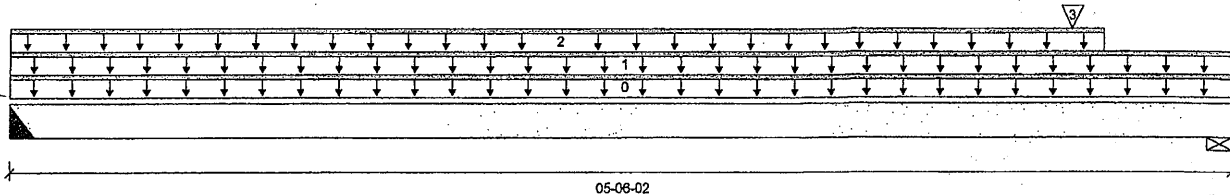
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 05-06-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	173 / 0	105 / 0		
B1, 6-1/8"	1,906 / 0	1,019 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-06-02		6			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-06-02	4	2			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-11-04	21	10			n/a
3	B1(i1039)	Conc. Pt. (lbs)	L	04-09-08	04-09-08	1,950	1,026			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,112 ft-lbs	17,696 ft-lbs	6.3 %	1	04-09-08
End Shear	783 lbs	7,232 lbs	10.8 %	1	04-00-02
Total Load Deflection	L/999 (0.006")	n/a	n/a	4	02-10-12
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	02-10-12
Max Defl.	0.006"	n/a	n/a	4	02-10-12
Span / Depth	5.0				

Bearing Supports

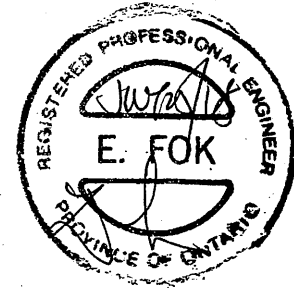
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Hanger 2" x 1-3/4"	391 lbs	n/a	9.2 %	HUS1.81/10
B1	Wall/Plate 6-1/8" x 1-3/4"	4,132 lbs	72.2 %	31.6 %	Unspecified

Cautions

Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Hanger Manufacturer: Unassigned
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012**Disclosure**

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 Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

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

DWG NO. TAM 4239-18H
 STRUCTURAL
 COMPONENT ONLY

T-18071550



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B7L(i757)

Dry | 1 span | No cant.

April 30, 2018 16:57:55

BC CALC® Design Report
Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B7L(i757)

City, Province, Postal Code: INNISFIL

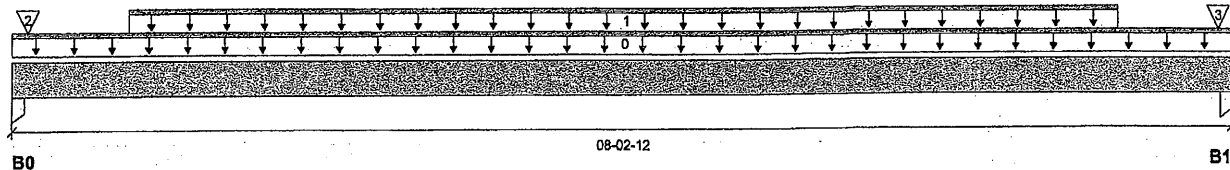
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 08-02-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	592 / 0	316 / 0		
B1, 2-3/8"	606 / 0	323 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-02-12		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-08	07-05-08	144	72			n/a
2	J1(i759)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	112	56			n/a
3	-	Conc. Pt. (lbs)	L	08-01-10	08-01-10	125	62			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2,477 ft-lbs	11,610 ft-lbs	21.3 %	1	04-01-08
End Shear	1,042 lbs	5,785 lbs	18.0 %	1	07-02-14
Total Load Deflection	L/999 (0.078")	n/a	n/a	4	04-01-08
Live Load Deflection	L/999 (0.051")	n/a	n/a	5	04-01-08
Max Defl.	0.078"	n/a	n/a	4	04-01-08
Span / Depth	10.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Column 2-3/8" x 1-3/4"	1,284 lbs	38.0 %	25.3 %	Unspecified
B1	Column 2-3/8" x 1-3/4"	1,313 lbs	38.9 %	25.9 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor: Normal Part code : Part 9

CONFORMS TO OBC2012

Disclosure

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Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC1®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

DWG NO. TAM 4240-18H
STRUCTURAL
COMPONENT ONLY

T.18071551



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

2ND FLOOR FRAMING\Dropped Beams\B8DR(i1082)

PASSED

BC CALC® Design Report

Dry | 1 span | No cant.

May 10, 2018 16:59:55

Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 2ND FLOOR FRAMING\Dropped Beams\B8DR(i1082)

City, Province, Postal Code: INNISFIL

Specifier:

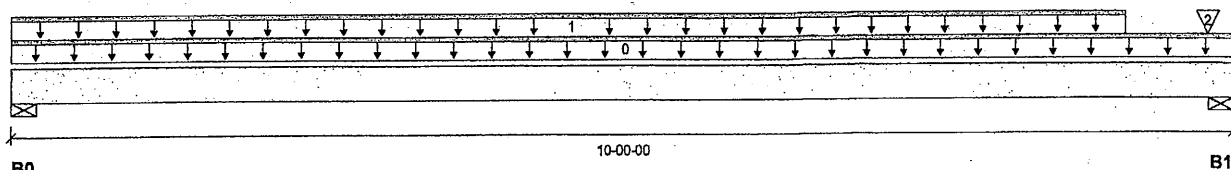
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,438 / 0	1,269 / 0		
B1, 4"	2,516 / 0	1,307 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-00-00	10				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	09-01-08	479	240			n/a
2	-	Conc. Pt. (lbs)	L	09-09-08	09-09-08	579	289			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	11,207 ft-lbs	23,220 ft-lbs	48.3 %	1	04-06-08
End Shear	4,165 lbs	11,571 lbs	36.0 %	1	08-10-08
Total Load Deflection	L/446 (0.255")	n/a	53.9 %	4	04-11-08
Live Load Deflection	L/678 (0.167")	n/a	53.1 %	5	04-11-08
Max Defl.	0.255"	n/a	n/a	4	04-11-08
Span / Depth	11.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 4" x 3-1/2"	5,243 lbs	46.1 %	30.7 %	Unspecified
B1	Wall/Plate 4" x 3-1/2"	5,408 lbs	47.6 %	31.7 %	Unspecified

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume unbraced length of Top: 00-02-09, Bottom: 00-02-09.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.



DWG NO. TAM 4241-184
STRUCTURAL
COMPONENT ONLY

T. 18071552



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING\Dropped Beams\B8DR(i1082)

PASSED

BC CALC® Design Report
Build 6215

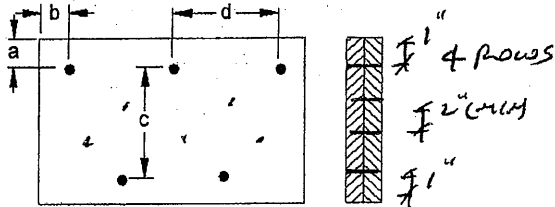
Dry | 1 span | No cant.

May 10, 2018 16:59:55

Job name:
Address:
City, Province, Postal Code: INNISFIL
Customer:
Code reports: CCMC 12472-R

File name: TH-8C.mmdl
Description: 2ND FLOOR FRAMING\Dropped Beams\B8DR(i1082)
Specifier:
Designer: CZ
Company:

Connection Diagram



a minimum = 1"
b minimum = 3"
c = 1-1/2"
d = 6"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



Disclosure

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DWG NO. TAM 4241-811
STRUCTURAL
COMPONENT ONLY

T.18071552(2)



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

PASSED

2ND FLOOR FRAMING\Dropped Beams\B9DR(i1045)

Dry | 1 span | No cant.

May 10, 2018 16:59:55

BC CALC® Design Report

Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 2ND FLOOR FRAMING\Dropped Beams\B9DR(i1045)

City, Province, Postal Code: INNISFIL

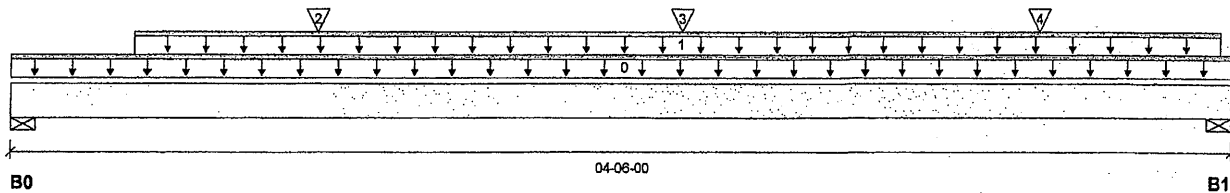
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 04-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	921 / 0	482 / 0		
B1, 4"	1,087 / 0	565 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-06-00	10	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-08	04-05-08	219	110			n/a
2	J2(i1049)	Conc. Pt. (lbs)	L	01-01-08	01-01-08	400	200			n/a
3	J2(i1057)	Conc. Pt. (lbs)	L	02-05-08	02-05-08	399	199			n/a
4	J3(i1056)	Conc. Pt. (lbs)	L	03-09-08	03-09-08	333	167			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,342 ft-lbs	23,220 ft-lbs	10.1 %	1	02-05-08
End Shear	1,970 lbs	11,571 lbs	17.0 %	1	01-01-08
Total Load Deflection	L/999 (0.009")	n/a	n/a	4	02-03-00
Live Load Deflection	L/999 (0.006")	n/a	n/a	5	02-03-00
Max Defl.	0.009"	n/a	n/a	4	02-03-00
Span / Depth	5.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 4" x 3-1/2"	1,984 lbs	17.5 %	11.6 %	Unspecified
B1	Wall/Plate 4" x 3-1/2"	2,337 lbs	20.6 %	13.7 %	Unspecified

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume unbraced length of Top: 00-04-02, Bottom: 00-04-02.

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

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

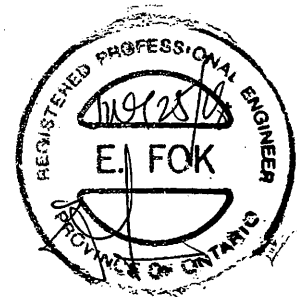
Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.



DWG NO. TAM 4242-8H
STRUCTURAL
COMPONENT ONLY

T. 18071553



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING\Dropped Beams\B9DR(i1045)

PASSED

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

May 10, 2018 16:59:55

File name: TH-8C.mmdl

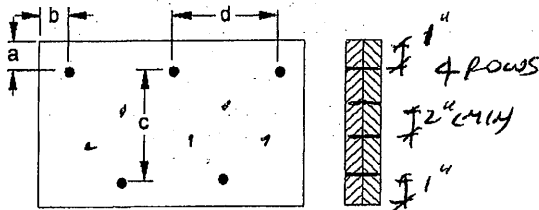
Description: 2ND FLOOR FRAMING\Dropped Beams\B9DR(i1045)

Specifier:

Designer: CZ

Company:

Connection Diagram



a minimum = 1"
b minimum = 3"

c = 1-1/2"
d = 6"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



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STRUCTURAL COMPONENT ONLY

T-18071553(2)



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

PASSED

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

May 10, 2018 16:59:13

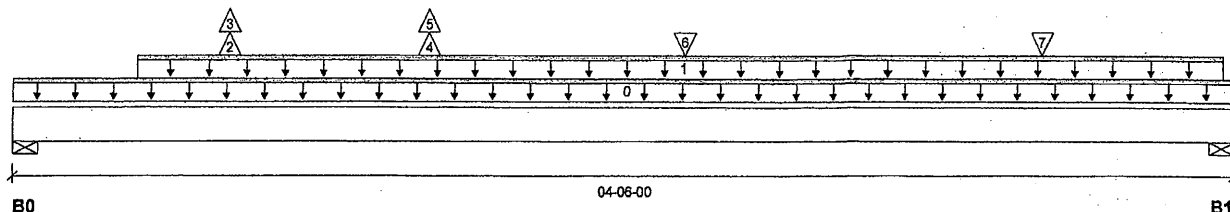
File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Dro...d Beams\B9ADR(i1784)

Specifier:

Designer: CZ

Company:



Reaction Summary (Down / Uplift) (lbs)

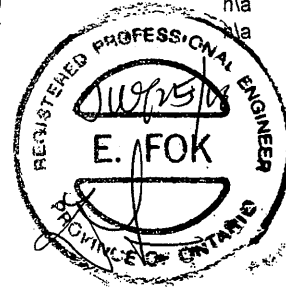
Bearing	Live	Dead	Snow	Wind
B0, 4"	980 / 19	547 / 0	0 / 53	
B1, 4"	1,082 / 4	586 / 0	0 / 11	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-06-00		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-08	04-05-08	219	110			n/a
2	J2DJ(i1790)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	262	107	-49		n/a
3	J2DJ(i1790)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	-17				n/a
4	B13(i1772)	Conc. Pt. (lbs)	L	01-06-04	01-06-04	251	208	-15		n/a
5	B13(i1772)	Conc. Pt. (lbs)	L	01-06-04	01-06-04	-6				n/a
6	J3(i1775)	Conc. Pt. (lbs)	L	02-05-08	02-05-08	340	170			n/a
7	J4(i1782)	Conc. Pt. (lbs)	L	03-09-08	03-09-08	333	167			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2,374 ft-lbs	23,220 ft-lbs	10.2 %	21	02-05-08
End Shear	1,919 lbs	11,571 lbs	16.6 %	21	01-01-08
Total Load Deflection	L/999 (0.009")	n/a	n/a	56	02-03-01
Live Load Deflection	L/999 (0.006")	n/a	n/a	83	02-03-01
Max Defl.	0.009"	n/a	n/a	56	02-03-01
Span / Depth	5.0				



Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 4" x 3-1/2"	2,154 lbs	19.0 %	12.6 %	Unspecified
B1	Wall/Plate 4" x 3-1/2"	2,355 lbs	20.7 %	13.8 %	Unspecified

DWG NO. TAM 4243-18 H
STRUCTURAL
COMPONENT ONLY

T-18071554



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING\Dropped Beams\B9ADR(i1784)

PASSED

BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

May 10, 2018 16:59:13

Job name:
Address:
City, Province, Postal Code: INNISFIL
Customer:
Code reports: CCMC 12472-R

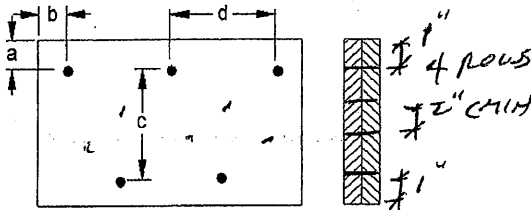
File name: TH-8C ELB.mmdl
Description: 2ND FLOOR FRAMING\Dro...d Beams\B9ADR(i1784)
Specifier:
Designer: CZ
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume unbraced length of Top: 00-03-04, Bottom: 00-03-04.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Member has no side loads.

CONFORMS TO OBC 2012

Connection Diagram



a minimum = 1"
b minimum = 3"
c = 1-1/2"
d = 6"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Member has no side loads.
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



Disclosure

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T-18071554(2)



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B10A(i1471)

BC CALC® Design Report

Dry | 1 span | No cant.

May 10, 2018 16:59:13

Build 6215

Job name:

File name: TH-8C ELB.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B10A(i1471)

City, Province, Postal Code: INNISFIL

Specifier:

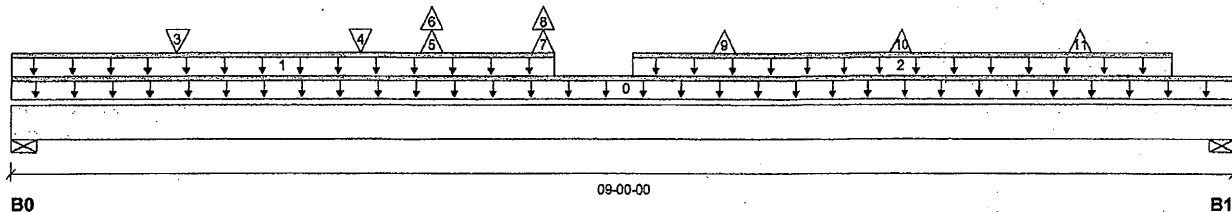
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

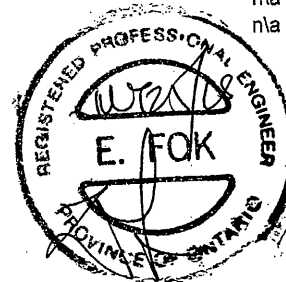
Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	2,055 / 16	1,125 / 0	0 / 35	
B1, 5-1/2"	1,573 / 18	840 / 0	0 / 23	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-00-00	12				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-06-08	08-06-08	344	164			n/a
3	J4(i1650)	Conc. Pt. (lbs)	L	01-02-08	01-02-08	371	186			n/a
4	J2(i1498)	Conc. Pt. (lbs)	L	02-06-08	02-06-08	317	162			n/a
5	B14(i1674)	Conc. Pt. (lbs)	L	03-00-12	03-00-12	230	204	-14		n/a
6	B14(i1674)	Conc. Pt. (lbs)	L	03-00-12	03-00-12	-6				n/a
7	J1DJ(i1490)	Conc. Pt. (lbs)	L	03-10-08	03-10-08	370	163	-44		n/a
8	J1DJ(i1490)	Conc. Pt. (lbs)	L	03-10-08	03-10-08	-16				n/a
9	J1(i1523)	Conc. Pt. (lbs)	L	05-02-08	05-02-08	-4				n/a
10	J1(i1515)	Conc. Pt. (lbs)	L	06-06-08	06-06-08	-4				n/a
11	J1(i1497)	Conc. Pt. (lbs)	L	07-10-08	07-10-08	-4				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8,168 ft-lbs	35,392 ft-lbs	23.1 %	21	03-10-08
End Shear	3,530 lbs	14,464 lbs	24.4 %	21	01-05-08
Total Load Deflection	L/999 (0.071")	n/a	n/a	56	04-05-02
Live Load Deflection	L/999 (0.046")	n/a	n/a	83	04-05-02
Max Defl.	0.071"	n/a	n/a	56	04-05-02
Span / Depth	8.3				

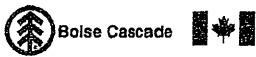


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	4,489 lbs	43.7 %	19.1 %	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	3,409 lbs	33.2 %	14.5 %	Unspecified

DWG NO. TAM 4244-18 H
STRUCTURAL
COMPONENT ONLY

T.18071555



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

2ND FLOOR FRAMING\Flush Beams\B10A(11471)

PASSED

BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

May 10, 2018 16:59:13

Job name:
Address:
City, Province, Postal Code: INNISFIL
Customer:
Code reports: CCMC 12472-R

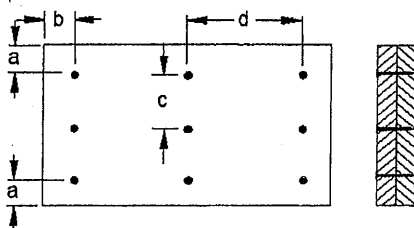
File name: TH-8C ELB.mrdl
Description: 2ND FLOOR FRAMING\Flush Beams\B10A(11471)
Specifier:
Designer: CZ
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

CONFORMS TO OBC 2012

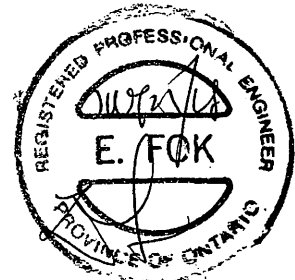
Connection Diagram



a minimum = 2"
b minimum = 3"
c = 4"
d = 12"

Calculated Side Load = 621.6 lb/ft
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



Disclosure

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

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC1®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®, DWG NO. TAM 424418H
STRUCTURAL COMPONENT ONLY

T. 18071555(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B10(i398)**

BC CALC® Design Report

Dry | 1 span | No cant.

April 30, 2018 16:57:55

Build 6215

Job name:

File name: TH-8C.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B10(i398)

City, Province, Postal Code: INNISFIL

Specifier:

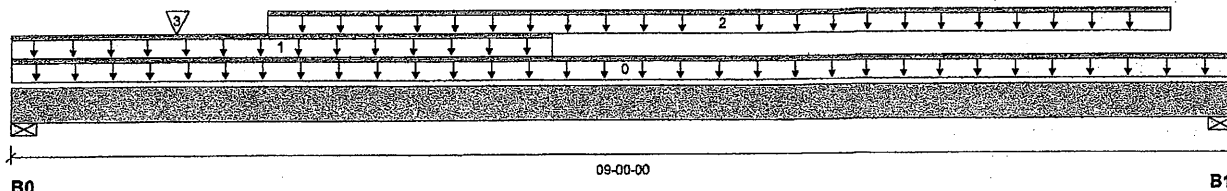
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	2,048 / 0	1,081 / 0		
B1, 5-1/2"	1,561 / 0	837 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-00-00	12				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-08	08-06-08	340	171			n/a
3	J3(i404)	Conc. Pt. (lbs)	L	01-02-08	01-02-08	371	185			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8,036 ft-lbs	35,392 ft-lbs	22.7 %	1	03-10-08
End Shear	3,464 lbs	14,464 lbs	24.0 %	1	01-05-06
Total Load Deflection	L/999 (0.07")	n/a	n/a	4	04-05-02
Live Load Deflection	L/999 (0.045")	n/a	n/a	5	04-05-02
Max Defl.	0.07"	n/a	n/a	4	04-05-02
Span / Depth	8.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	4,423 lbs	43.0 %	18.8 %	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	3,387 lbs	32.9 %	14.4 %	Unspecified

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

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

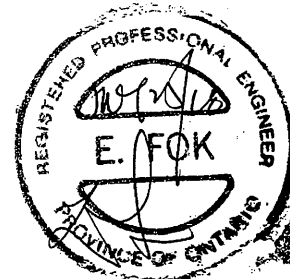
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.



DWG NO. TAM 4245.18
STRUCTURAL
COMPONENT ONLY

T.18071556



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED**BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

April 30, 2018 16:57:55

Job name:

File name: TH-8C.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B10(i398)

City, Province, Postal Code: INNISFIL

Specifier:

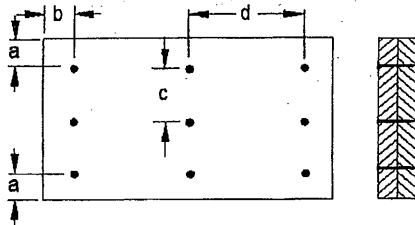
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

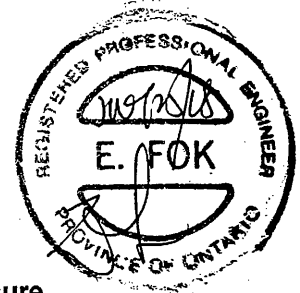
Company:

Connection Diagrama minimum = 2"
b minimum = 3"c = 4"
d = 12"

Calculated Side Load = 624.7 lb/ft

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL**Disclosure**

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

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

DWG NO. TAM 4245-18
STRUCTURAL
COMPONENT ONLY

T-18071556(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B13(i1377)**

BC CALC® Design Report

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

Build 6215

Job name:

File name: TH-8C ELB.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B13(i1377)

City, Province, Postal Code: INNISFIL

Specifier:

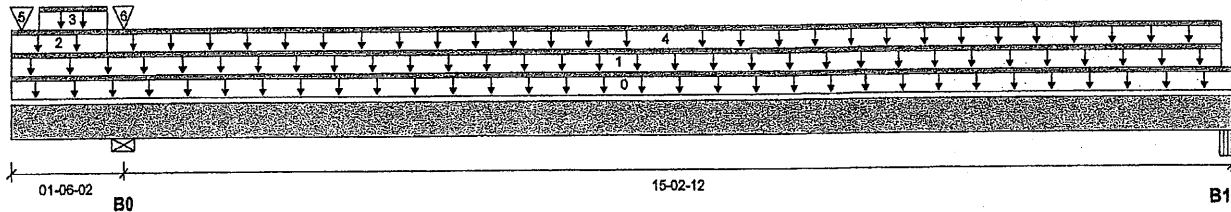
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 16-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	356 / 0	470 / 0	194 / 0	
B1, 3-1/2"	253 / 5	208 / 0	0 / 10	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-08-14		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-07-02	15	7			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-03-06	6				n/a
3	E30(i821)	Unf. Lin. (lb/ft)	L	00-04-06	01-03-06	33	104	90		n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-03-06	16-07-02	19	9			n/a
5	E31(i823)	Conc. Pt. (lbs)	L	00-01-10	00-01-10	24	61	66		n/a
6	E44(i1176)	Conc. Pt. (lbs)	L	01-06-02	01-06-02	13	49	35		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,307 ft-lbs	35,392 ft-lbs	6.5 %	45	09-03-00
Neg. Moment	-480 ft-lbs	-35,392 ft-lbs	1.4 %	49	01-06-02
End Shear	539 lbs	14,464 lbs	3.7 %	45	15-05-08
Cont. Shear	567 lbs	14,464 lbs	3.9 %	13	02-08-12
Total Load Deflection	L/999 (0.068")	n/a	n/a	108	09-00-10
Live Load Deflection	L/999 (0.039")	n/a	n/a	160	09-00-10
Total Neg. Defl.	2xL/1,998 (-0.021")	n/a	n/a	108	00-00-00
Max Defl.	0.068"	n/a	n/a	108	09-00-10
Span / Depth	15.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	1,219 lbs	11.9 %	5.2 %	Unspecified
B1	Beam 3-1/2" x 3-1/2"	639 lbs	4.8 %	4.3 %	Unspecified



DWG NO. TAM 4/24/6.8H
STRUCTURAL
COMPONENT ONLY

T. 18071557



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B13(I1377)**

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B13(I1377)

Specifier:

Designer: CZ

Company:

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

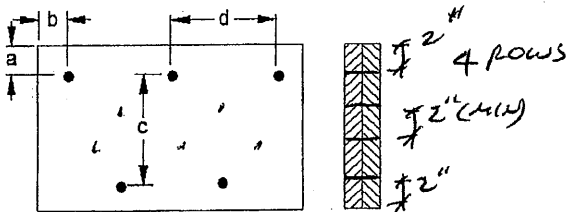
CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

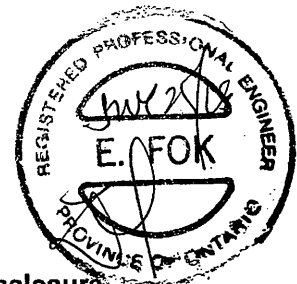
Member has no side loads.

Connection Diagrama minimum = 2"
b minimum = 3"c = 7-7/8"
d = 12"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL**Disclosure**

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

DWG NO. TAM 4446184
STRUCTURAL
COMPONENT ONLY

7-18071557(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B14(i1336)**

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

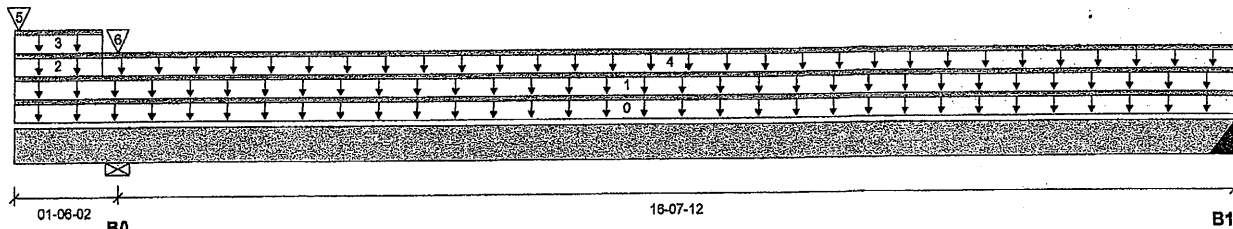
File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B14(i1336)

Specifier:

Designer: CZ

Company:

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	331 / 0	481 / 0	203 / 0	
B1, 2"	223 / 5	200 / 0	0 / 10	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	18-01-14	12				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-01-14	16	8			n/a
2	E32(i822)	Unf. Lin. (lb/ft)	L	00-00-00	01-03-06	31	110	86		n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-03-06	6				n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-03-06	18-01-14	10	5			n/a
5	-	Conc. Pt. (lbs)	L	00-00-11	00-00-11	15	36	52		n/a
6	E19(i387)	Conc. Pt. (lbs)	L	01-06-02	01-06-02	10	46	28		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,329 ft-lbs	35,392 ft-lbs	6.6 %	45	10-00-03
Neg. Moment	-553 ft-lbs	-35,392 ft-lbs	1.6 %	49	01-06-02
End Shear	527 lbs	14,464 lbs	3.6 %	45	17-00-00
Cont. Shear	558 lbs	14,464 lbs	3.9 %	13	02-08-12
Total Load Deflection	L/999 (0.084")	n/a	n/a	108	09-09-08
Live Load Deflection	L/999 (0.046")	n/a	n/a	160	09-09-08
Total Neg. Defl.	2xL/1,998 (-0.023")	n/a	n/a	108	00-00-00
Max Defl.	0.084"	n/a	n/a	108	09-09-08
Span / Depth	16.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	1,199 lbs	11.7 %	5.1 %	Unspecified
B1	Hanger 2" x 3-1/2"	585 lbs	n/a	6.9 %	HGUS410

Cautions

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWG NO. TAM 4247-18H
STRUCTURAL
COMPONENT ONLY

7-18071558



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B14(i1336)**

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B14(i1336)

Specifier:

Designer: CZ

Company:

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

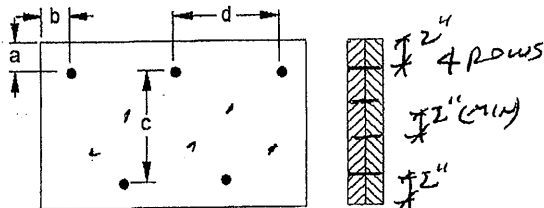
CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connection Diagrama minimum = 2"
b minimum = 3"c = 7-7/8"
d = 12"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL**Disclosure**

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DWG NO. TAM 4247-18 H
STRUCTURAL
COMPONENT ONLY

T-18071558(2)



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B15(i1367)

Dry | 1 span | No cant.

May 1, 2018 09:14:28

BC CALC® Design Report

Build 6215

Job name:

File name: TH-8C ELB.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B15(i1367)

City, Province, Postal Code: INNISFIL

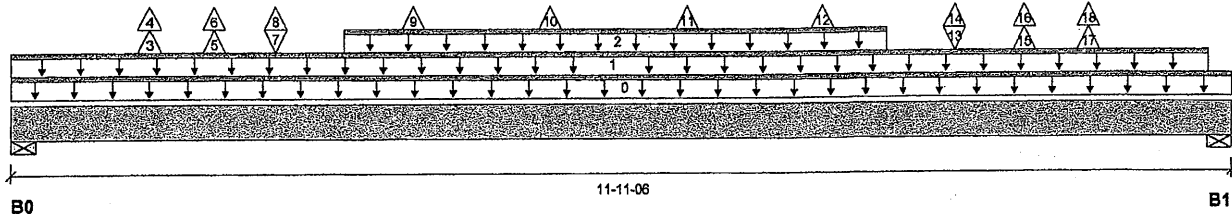
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	910 / 71	446 / 0	0 / 108	
B1, 5-1/2"	855 / 71	419 / 0	0 / 107	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-11-06		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-08-10	22	11			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	03-02-14	08-06-14	151	60			n/a
3	B16(i1210)	Conc. Pt. (lbs)	L	01-04-02	01-04-02	141	93	-22		n/a
4	B16(i1210)	Conc. Pt. (lbs)	L	01-04-02	01-04-02	-10				n/a
5	J6DJ(i1256)	Conc. Pt. (lbs)	L	01-11-10	01-11-10	93		-87		n/a
6	J6DJ(i1256)	Conc. Pt. (lbs)	L	01-11-10	01-11-10	-36				n/a
7	J6(i1224)	Conc. Pt. (lbs)	L	02-06-14	02-06-14	147	57			n/a
8	J6(i1224)	Conc. Pt. (lbs)	L	02-06-14	02-06-14	-7				n/a
9	J6(i1202)	Conc. Pt. (lbs)	L	03-10-14	03-10-14	-9				n/a
10	J6(i1231)	Conc. Pt. (lbs)	L	05-02-14	05-02-14	-9				n/a
11	J6(i1249)	Conc. Pt. (lbs)	L	06-06-14	06-06-14	-9				n/a
12	J6(i1370)	Conc. Pt. (lbs)	L	07-10-14	07-10-14	-9				n/a
13	J6(i1403)	Conc. Pt. (lbs)	L	09-02-14	09-02-14	153	59			n/a
14	J6(i1403)	Conc. Pt. (lbs)	L	09-02-14	09-02-14	-7				n/a
15	J6DJ(i1260)	Conc. Pt. (lbs)	L	09-11-02	09-11-02	100		-85		n/a
16	J6DJ(i1260)	Conc. Pt. (lbs)	L	09-11-02	09-11-02	-36				n/a
17	B17(i1225)	Conc. Pt. (lbs)	L	10-06-10	10-06-10	70	57			n/a
18	B17(i1225)	Conc. Pt. (lbs)	L	10-06-10	10-06-10	-10				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5,613 ft-lbs	35,392 ft-lbs	15.9 %	21	05-08-14
End Shear	1,837 lbs	14,464 lbs	12.7 %	21	01-04-04
Total Load Deflection	L/999 (0.092")	n/a	n/a	56	05-10-14
Live Load Deflection	L/999 (0.063")	n/a	n/a	83	05-10-14
Max Defl.	0.092"	n/a	n/a	56	05-10-14
Span / Depth	11.4				

Bearing Supports

	Dlm. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 4-3/8" x 3-1/2"	1,923 lbs	23.5 %	10.3 %	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	1,807 lbs	17.6 %	7.7 %	Unspecified



DWG NO. TAM 424B.84
STRUCTURAL
COMPONENT ONLY

T-18071559



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B15(i1367)

Dry | 1 span | No cant.

May 1, 2018 09:14:28

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B15(i1367)

Specifier:

Designer: CZ

Company:

Notes

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

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

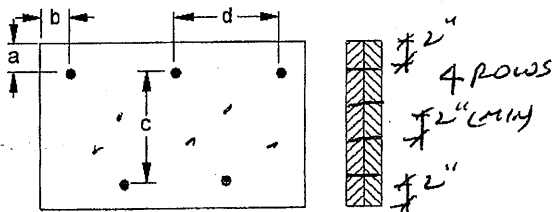
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connection Diagram



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 12"

Calculated Side Load = 214.8 lb/ft

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are:

Nails

3-1/2" ARDOX SPIRAL



Disclosure

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

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

DWG NO. TAM
STRUCTURAL
COMPONENT ONLY

T. 18071559(2)

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B16(i1210)**

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

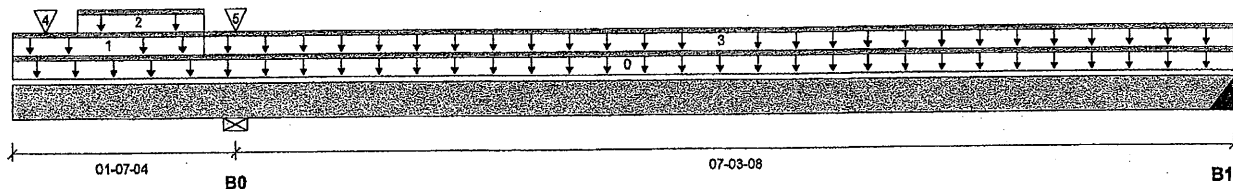
File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B16(i1210)

Specifier:

Designer: CZ

Company:



Total Horizontal Product Length = 08-10-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	240 / 0	371 / 0	200 / 0	
B1, 2"	138 / 11	90 / 0	0 / 21	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-10-12		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-04-08	15	8			n/a
2	E33(i868)	Unf. Lin. (lb/ft)	L	00-05-08	01-04-08	33	104	90		n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-04-08	08-10-12	37	19			n/a
4	E34(i866)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	26	58	70		n/a
5	E23(i392)	Conc. Pt. (lbs)	L	01-07-04	01-07-04	9	46	26		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	506 ft-lbs	35,392 ft-lbs	1.4 %	33	05-06-05
Neg. Moment	-482 ft-lbs	-35,392 ft-lbs	1.4 %	38	01-07-04
End Shear	210 lbs	14,464 lbs	1.5 %	33	07-08-14
Cont. Shear	465 lbs	14,464 lbs	3.2 %	38	00-04-10
Total Load Deflection	L/999 (0.003")	n/a	n/a	80	05-04-06
Live Load Deflection	L/999 (0.002")	n/a	n/a	118	05-02-08
Total Neg. Defl.	2xL/1,998 (-0.002")	n/a	n/a	80	00-00-00
Max Defl.	0.003"	n/a	n/a	80	05-04-06
Span / Depth	7.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	923 lbs	9.0 %	3.9 %	Unspecified
B1	Hanger 2" x 3-1/2"	319 lbs	n/a	3.7 %	HGUS410

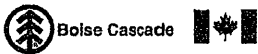
Cautions

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWG NO. TAM 4249-18 H
STRUCTURAL
COMPONENT ONLY

T-18071560



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

PASSED

BC CALC® Design Report
Build 6215

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

Job name:
Address:
City, Province, Postal Code: INNISFIL
Customer:
Code reports: CCMC 12472-R

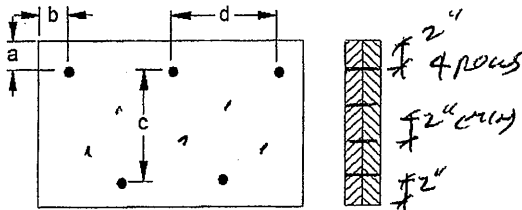
File name: TH-8C ELB.mmdl
Description: 2ND FLOOR FRAMING\Flush Beams\B16(i1210)
Specifier:
Designer: CZ
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9
Cantilevers require sheathed bottom flanges; blocking at cantilever support and closure at ends.
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Member has no side loads.

CONFORMS TO OBC 2012

Connection Diagram



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 12"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Member has no side loads.
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



Disclosure

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DWG NO. TAM 4249-18
STRUCTURAL
COMPONENT ONLY

T.18071560(2)

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED**BC CALC® Design Report
Build 6215

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

Job name:

File name: TH-8C ELB.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B17(i1225)

City, Province, Postal Code: INNISFIL

Specifier:

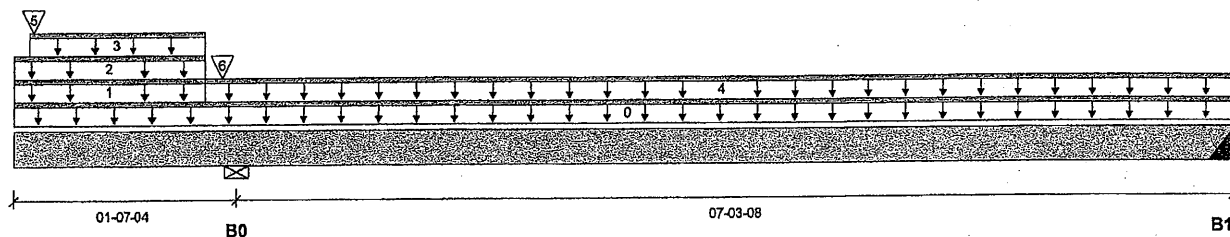
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 08-10-12

Reaction Summary (Down / Uplift) (lbs)

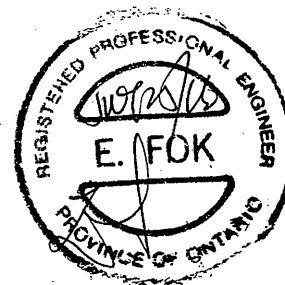
Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	212 / 0	366 / 0	196 / 0	
B1, 2"	68 / 12	52 / 0	0 / 21	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-10-12		12			00-00-00
1	E35(i867)	Unf. Lin. (lb/ft)	L	00-00-00	01-04-08		81			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-04-08	15	8			n/a
3	E35(i867)	Unf. Lin. (lb/ft)	L	00-01-05	01-04-08	33	30	90		n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-04-08	08-10-12	18	9			n/a
5	-	Conc. Pt. (lbs)	L	00-01-10	00-01-10	12	15	37		n/a
6	-	Conc. Pt. (lbs)	L	01-06-00	01-06-00	54	67	24		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	242 ft-lbs	35,392 ft-lbs	0.7 %	33	05-09-02
Neg. Moment	-506 ft-lbs	-35,392 ft-lbs	1.4 %	37	01-07-04
End Shear	105 lbs	14,464 lbs	0.7 %	33	07-08-14
Cont. Shear	189 lbs	14,464 lbs	1.3 %	1	02-09-14
Total Load Deflection	2xL/1,998 (0.002")	n/a	n/a	102	00-00-00
Live Load Deflection	2xL/1,998 (0.002")	n/a	n/a	140	00-00-00
Total Neg. Defl.	L/999 (-0.001")	n/a	n/a	102	03-11-05
Max Defl.	0.001"	n/a	n/a	80	05-06-05
Span / Depth	7.3				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	873 lbs	8.5 %	3.7 %	Unspecified
B1	Hanger 2" x 3-1/2"	167 lbs	n/a	2.0 %	HGUS410

Cautions

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

DWG NO. TAM 4250-84
STRUCTURAL
COMPONENT ONLY

T.18071561



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B17(i1225)

Dry | 2 spans | L cant.

May 1, 2018 09:14:28

BC CALC® Design Report
Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-8C ELB.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B17(i1225)

Specifier:

Designer: CZ

Company:

Notes

Design meets User specified (2xL/240) Total load deflection criteria.

Design meets User specified (2xL/360) Live load deflection criteria.

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

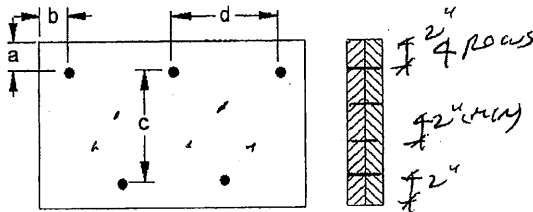
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

CONFORMS TO OBC 2012

Connection Diagram



a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 12"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: 16a Nails

3-1/2" ARDOX SPIRAL



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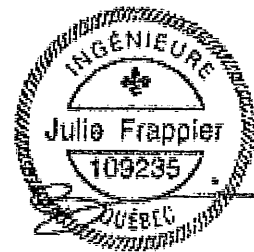
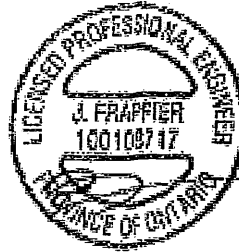
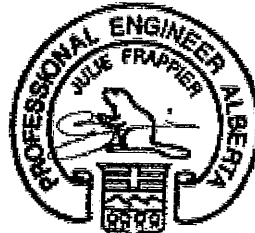
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DWG NO. TAM 4250-BH
STRUCTURAL
COMPONENT ONLY

T.18071561(C2)

Maximum Floor Spans

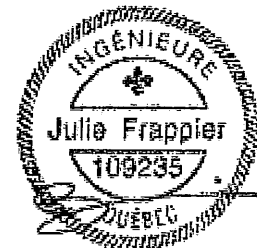
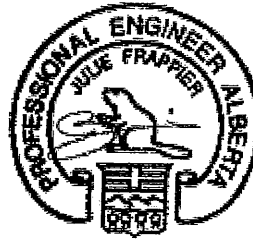
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



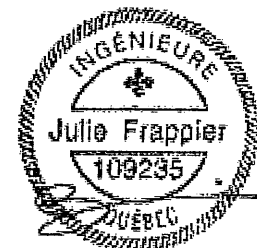
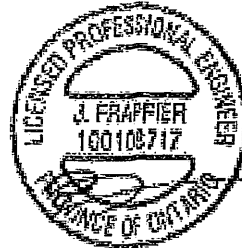
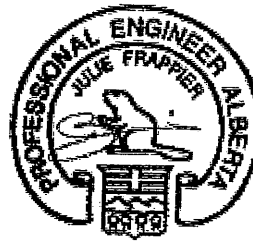
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



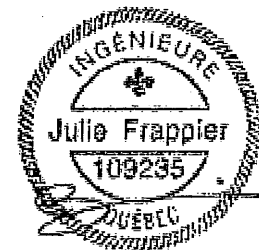
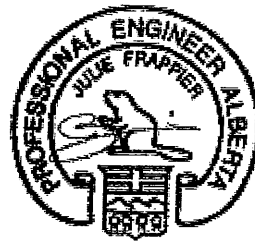
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 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'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-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	15'-7"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	17'-9"	16'-1"	15'-1"	N/A	17'-9"	16'-1"	15'-1"	N/A
	NI-60	18'-1"	16'-4"	15'-4"	N/A	18'-1"	16'-4"	15'-4"	N/A
	NI-70	19'-2"	17'-10"	16'-9"	N/A	19'-7"	17'-10"	16'-9"	N/A
	NI-80	19'-5"	18'-0"	17'-1"	N/A	19'-10"	18'-3"	17'-1"	N/A
11-7/8"	NI-20	18'-9"	17'-0"	16'-0"	N/A	18'-9"	17'-0"	16'-0"	N/A
	NI-40x	21'-0"	19'-3"	17'-9"	N/A	21'-3"	19'-3"	17'-9"	N/A
	NI-60	21'-4"	19'-8"	18'-5"	N/A	21'-8"	19'-8"	18'-5"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-4"	20'-0"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-5"	N/A
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	NI-40x	23'-7"	21'-5"	19'-6"	N/A	24'-1"	21'-5"	19'-6"	N/A
	NI-60	24'-0"	22'-3"	21'-0"	N/A	24'-8"	22'-5"	21'-0"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-9"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	24'-10"	23'-4"	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 30 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/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

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

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

1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 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/480 and a total load deflection limit of L/240.

2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

3. Minimum bearing length shall be 1-3/4 inches for the end bearings.

4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.

5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.

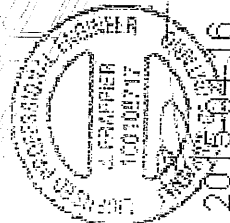
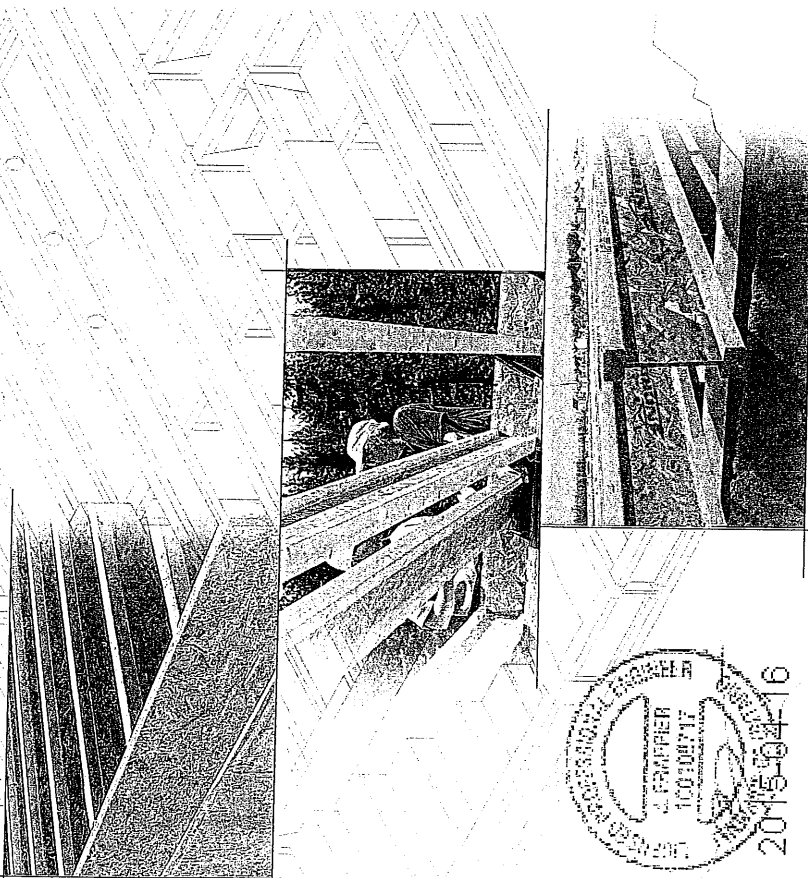
6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



NORDIC

ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



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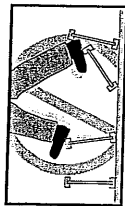
WARNING

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.

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.



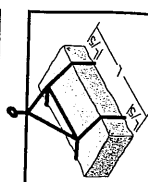
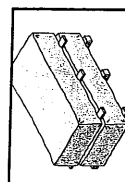
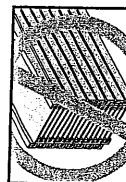
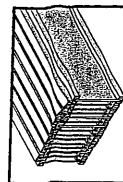
Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



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

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flatwise.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



MAXIMUM FLOOR SPANS

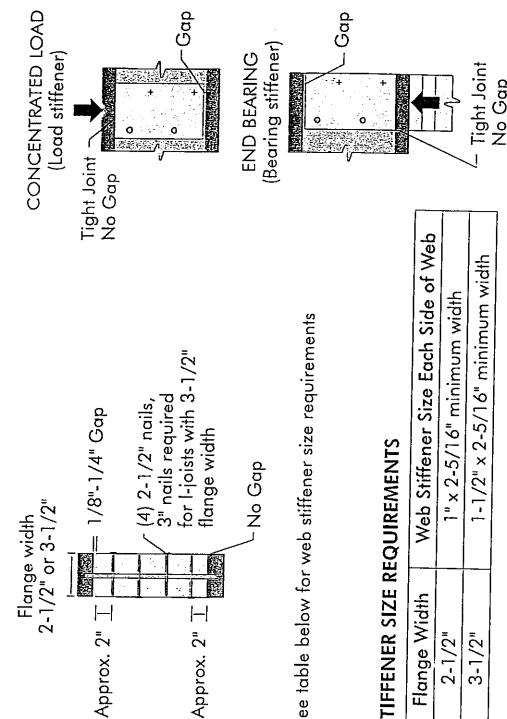
- Maximum **clear** spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-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 O86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

WEB STIFFENERS

RECOMMENDATIONS:

- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found of the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
 - A **bearing stiffener** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
 - A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.
- SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

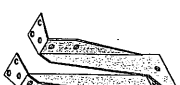


MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS
SIMPLE AND MULTIPLE SPANS

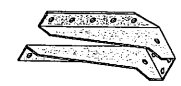
Joist Depth	Joist Series	Simple spans			Multiple spans		
		On centre spacing			On centre spacing		
		12"	16"	19.2"	12"	16"	19.2"
9-1/2"	NI-20	15-1"	14-2"	13-9"	16-3"	15-4"	14-7"
	NI-40x	16-1"	15-2"	14-8"	17-5"	16-5"	15-10"
	NI-60	16-3"	15-4"	14-10"	17-7"	16-7"	16-0"
	NI-70	17-1"	16-1"	15-6"	18-7"	17-4"	16-1"
	NI-80	17-3"	16-3"	15-8"	18-10"	17-6"	16-10"
	NI-20	16-11"	15-5"	15-9"	17-6"	16-11"	17-0"
	NI-40x	18-1"	17-0"	16-5"	18-4"	17-3"	16-8"
	NI-60	18-4"	17-3"	16-8"	20-0"	18-6"	17-7"
11-7/8"	NI-70	19-6"	18-0"	17-4"	20-3"	18-9"	18-1"
	NI-80	19-9"	18-3"	17-6"	21-6"	19-11"	19-0"
	NI-90	20-2"	18-7"	17-10"	21-9"	19-3"	19-4"
	NI-20	20-4"	18-9"	17-11"	22-3"	20-7"	19-8"
	NI-40x	20-1"	18-7"	17-11"	22-2"	20-6"	19-11"
	NI-60	20-5"	18-11"	17-10"	22-7"	20-11"	19-4"
	NI-70	21-7"	20-0"	19-1"	23-10"	20-1"	20-1"
	NI-80	21-11"	20-3"	19-4"	23-1"	21-1"	21-2"
14"	NI-90	22-5"	20-8"	19-9"	24-3"	22-5"	21-5"
	NI-20	22-7"	20-11"	20-0"	24-9"	22-10"	21-10"
	NI-40x	22-3"	20-8"	19-9"	24-7"	22-9"	22-2"
	NI-60	23-6"	21-9"	20-9"	26-0"	24-0"	23-0"
	NI-70	23-11"	22-1"	21-1"	26-5"	24-5"	23-4"
	NI-80	24-5"	22-6"	21-5"	27-1"	25-1"	24-10"
	NI-90	24-8"	22-9"	21-9"	27-3"	25-2"	24-0"
	NI-20	25-0"	23-1"	22-0"	28-0"	26-0"	25-0"

CCMC EVALUATION REPORT 13032-R

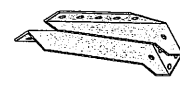
I-JOIST HANGERS

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

Top Mount

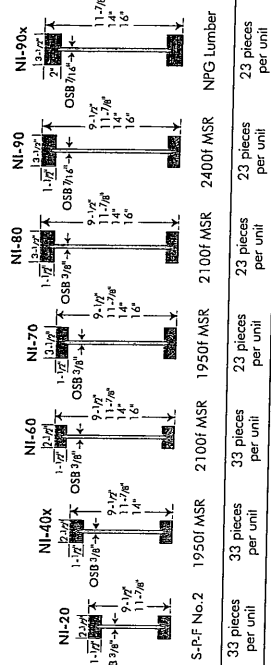


Face Mount



Skewed

NORDIC I-JOIST SERIES

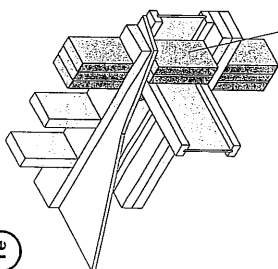


Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

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



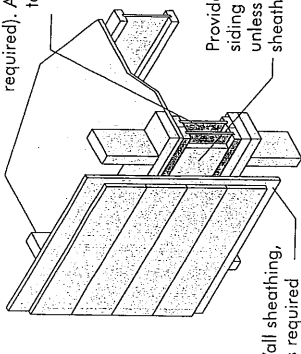
1e



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

1f

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

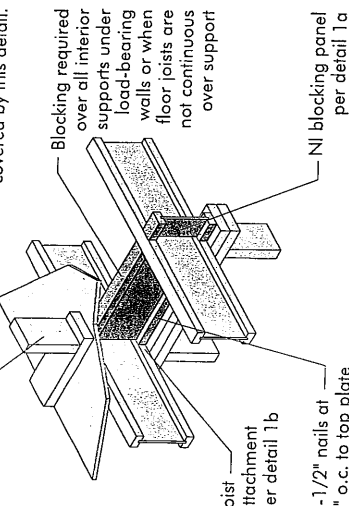


Provide backer for siding attachment unless available sheathing is used.

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

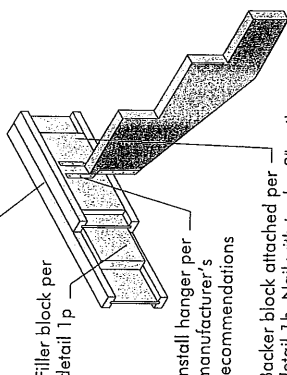
1g

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



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.

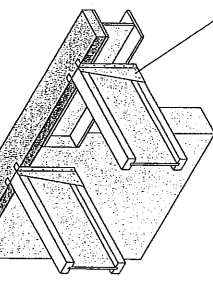


Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible.

Maximum support capacity = 1,620 lbs.

1k

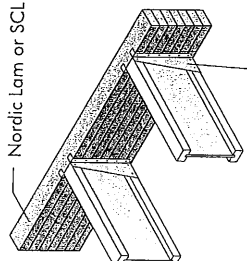
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.



Top-mount hanger installed per manufacturer's recommendations

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

1j

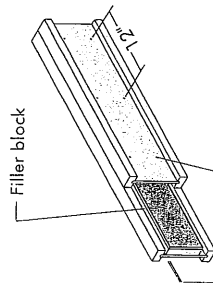


Top- or face-mount hanger installed per manufacturer's recommendations

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

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

1p



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

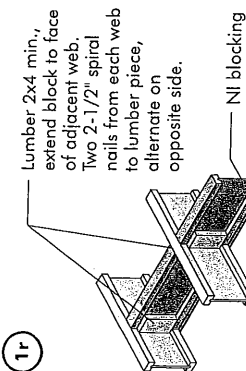
Notes:

1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. Nail joists together with two rows of 3" nails at 12 inches o.c. (clinch when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
5. 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

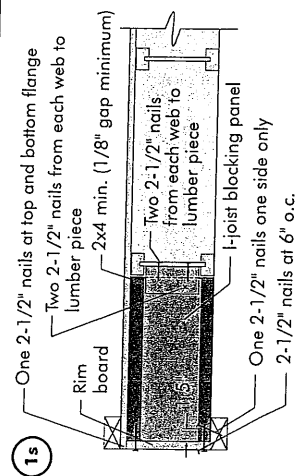
Flange Size	Joist Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2"	2-1/8" x 6"
	11-7/8"	2-1/8" x 8"
	14"	2-1/8" x 10"
	16"	2-1/8" x 12"
3-1/2" x 1-1/2"	9-1/2"	3" x 6"
	11-7/8"	3" x 8"
	14"	3" x 10"
	16"	3" x 12"
3-1/2" x 2"	11-7/8"	3" x 7"
	14"	3" x 9"
	16"	3" x 11"

1r



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.

1s

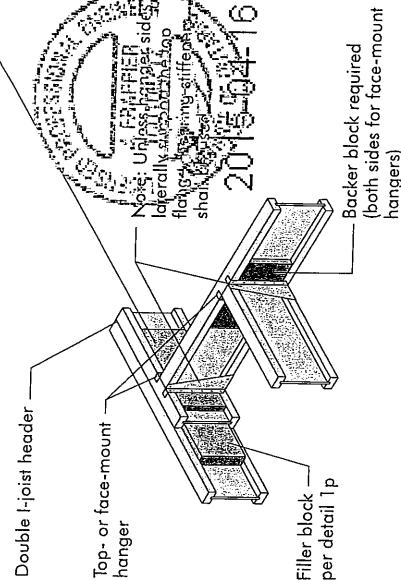


Notes:

- 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.

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.



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

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O347 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".

INSTALLING NORDIC I-JOISTS

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

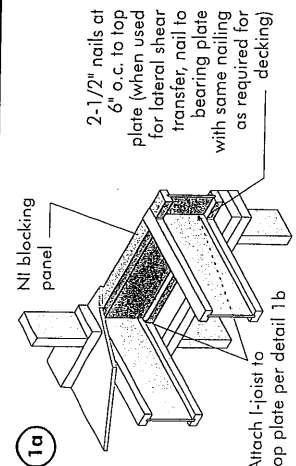
- Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
- Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
- For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.

12. Due to shrinkage, common framing lumber set on edge **may never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.

13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.

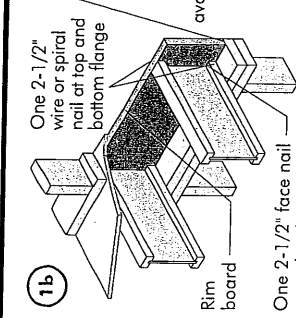
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.

15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.



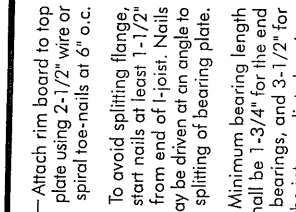
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

*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.



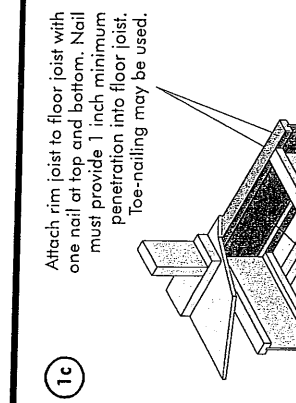
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*The uniform vertical load is limited to a rim board depth of 1.6 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



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



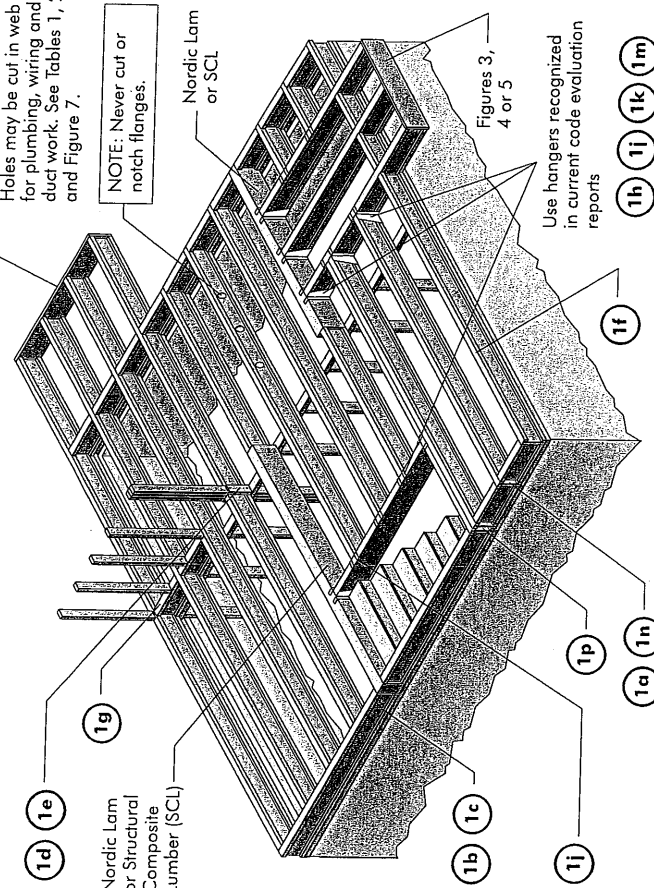
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*The uniform vertical load is limited to a rim board depth of 1.6 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

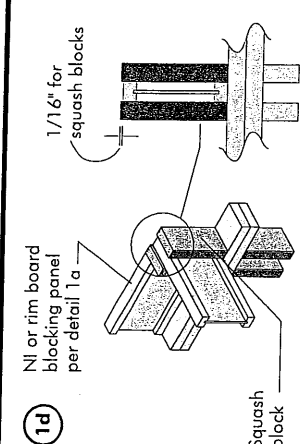
FIGURE 1

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.

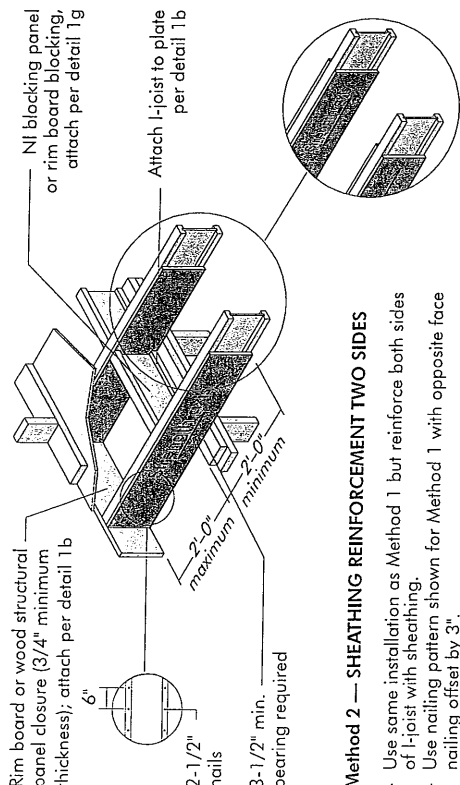


Pair of Squash Blocks	Maximum Factored Vertical Pair of Squash Blocks (lbs)
3-1/2" wide	5,500
5-1/2" wide	8,500
7-1/2" wide	11,500

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

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

Alternate Method 2 — DOUBLE I-JOIST

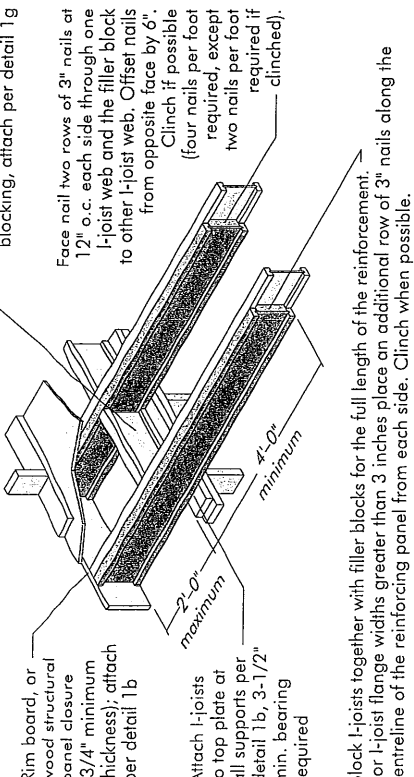
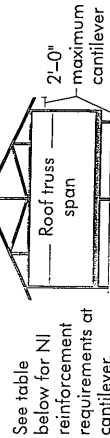


FIGURE 4 (continued)



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

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	LL = 30 psf, DL = 15 psf					LL = 40 psf, DL = 15 psf					LL = 50 psf, DL = 15 psf				
		JOIST SPACING (in.)					JOIST SPACING (in.)					JOIST SPACING (in.)				
		12	16	19.2	24		12	16	19.2	24		12	16	19.2	24	
9-1/2"	26	Z	Z	1	2		N	1	2	X		N	2	X	X	
	28	Z	Z	1	1		N	1	2	X		N	2	X	X	
	30	Z	Z	1	1		N	1	2	X		N	2	X	X	
	32	Z	Z	1	2		N	2	X	X		N	2	X	X	
	34	Z	Z	1	2		N	2	X	X		N	2	X	X	
11-7/8"	26	Z	Z	1	2		N	2	X	X		N	2	X	X	
	28	Z	Z	1	1		N	1	2	X		N	2	X	X	
	30	Z	Z	1	1		N	1	2	X		N	2	X	X	
	32	Z	Z	1	1		N	1	2	X		N	2	X	X	
	34	Z	Z	1	2		N	2	X	X		N	2	X	X	
14"	26	Z	Z	1	2		N	2	X	X		N	2	X	X	
	28	Z	Z	1	1		N	1	2	X		N	2	X	X	
	30	Z	Z	1	1		N	1	2	X		N	2	X	X	
	32	Z	Z	1	1		N	1	2	X		N	2	X	X	
	34	Z	Z	1	2		N	2	X	X		N	2	X	X	
16"	26	Z	Z	1	2		N	2	X	X		N	2	X	X	
	28	Z	Z	1	1		N	1	2	X		N	2	X	X	
	30	Z	Z	1	1		N	1	2	X		N	2	X	X	
	32	Z	Z	1	1		N	1	2	X		N	2	X	X	
	34	Z	Z	1	2		N	2	X	X		N	2	X	X	
18"	26	Z	Z	1	2		N	2	X	X		N	2	X	X	
	28	Z	Z	1	1		N	1	2	X		N	2	X	X	
	30	Z	Z	1	1		N	1	2	X		N	2	X	X	
	32	Z	Z	1	1		N	1	2	X		N	2	X	X	
	34	Z	Z	1	2		N	2	X	X		N	2	X	X	

1. N = No reinforcement required.

2. Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.

3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.

4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam.

5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

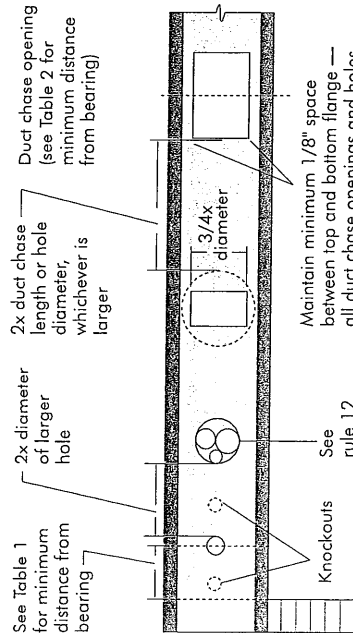
WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

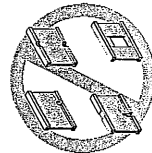
FIGURE 7

FIELD-CUT HOLE LOCATOR



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

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



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

Holes in webs should be cut with a sharp saw.

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

TABLE 1

LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)															Span adjustment Factor
		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"										13-6"
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"										14-9"
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"										15-7"
	NI-70	2-3"	3-4"	4-9"	6-3"	8-0"	8-4"										15-7"
11-7/8"	NI-80	2-3"	3-6"	5-0"	6-6"	8-2"	8-8"										15-9"
	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"							15-9"
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-5"	7-0"	8-4"							15-6"
	NI-60	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"							18-9"
14"	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"							17-5"
	NI-70	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"							17-7"
	NI-90	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"									17-11"
	NI-90x	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"									18-0"
16"	NI-40x	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	8-3"	10-2"						17-11"
	NI-60	0-7"	0-8"	1-3"	3-6"	5-0"	5-5"	7-2"	8-8"	10-4"	12-0"	13-9"	15-6"	17-11"	18-0"		18-2"
	NI-70	0-8"	1-0"	1-3"	3-6"	5-0"	5-5"	7-2"	8-8"	10-4"	12-0"	13-9"	15-6"	17-11"	18-0"		19-2"
	NI-80	0-10"	1-0"	1-3"	3-6"	5-0"	5-5"	7-2"	8-8"	10-4"	12-0"	13-9"	15-6"	17-11"	18-0"		19-5"
16"	NI-90	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"	11-4"	12-11"				19-9"
	NI-90x	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"						20-0"
	NI-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-4"	6-4"	7-0"	8-3"	9-8"	10-2"	12-2"	13-9"	19-10"
	NI-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-4"	14-0"	15-6"	20-10"	20-10"
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"	21-2"
	NI-90	0-7"	0-8"	0-8"	1-9"	3-3"	3-8"	4-6"	6-5"	7-5"	8-0"	9-10"	11-9"	13-9"	15-4"	21-4"	21-4"
	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"			21-10"
	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"			21-10"

Above table may be used for:

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

OPTIONAL:

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

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

Where:

Reduced =

Actual =

SAF =

D =

- Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft).
- The actual measured span distance between the inside faces of supports (ft).
- Span Adjustment Factor given in this table.
- The minimum distance from the inside face of any support to centre of hole from this table.
- If $\frac{\text{Actual } D \times D}{\text{SAF}}$ is greater than 1, use 1 in the above calculation for $\frac{\text{Actual } D \times D}{\text{SAF}}$.

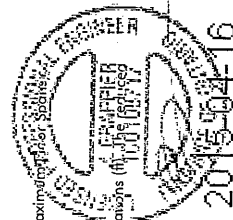


TABLE 2

DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)											
		Duct chase length (in.)											
9-1/2"	N120	8	10	12	14	16	18	20	22	24			
	N140x	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-5"	7'-1"	7'-5"	7'-1"	7'-5"	
	N160	5'-3"	5'-8"	6'-2"	6'-5"	6'-10"	7'-3"	7'-5"	7'-8"	8'-2"	8'-3"	8'-6"	
	N180	5'-11"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-3"	7'-6"	8'-1"	8'-4"	8'-6"	
11-7/8"	N120	8	10	12	14	16	18	20	22	24			
	N140x	5'-9"	6'-3"	6'-6"	7'-1"	7'-5"	7'-9"	8'-3"	8'-9"	9'-4"	9'-4"	9'-4"	
	N160	7'-3"	7'-8"	8'-0"	8'-5"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-9"	10'-9"	
	N180	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-1"	10'-4"	10'-9"	10'-9"	
14"	N120	8	10	12	14	16	18	20	22	24			
	N140x	7'-5"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-8"	10'-8"	10'-8"	
	N160	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	11'-2"	12'-0"	12'-8"	12'-8"	
	N180	8'-9"	8'-3"	8'-8"	9'-10"	10'-6"	11'-1"	11'-6"	12'-0"	12'-6"	13'-0"	13'-0"	
16"	N120	8	10	12	14	16	18	20	22	24			
	N140x	9'-2"	9'-8"	10'-0"	10'-5"	10'-7"	11'-1"	11'-5"	11'-9"	12'-4"	12'-6"	12'-6"	
	N160	9'-2"	9'-8"	10'-0"	10'-5"	10'-7"	11'-1"	11'-5"	11'-9"	12'-4"	12'-6"	12'-6"	
	N180	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-5"	13'-0"	13'-2"	14'-0"	14'-10"	14'-10"	
16"	N120	8	10	12	14	16	18	20	22	24			
	N140x	10'-4"	10'-9"	11'-0"	11'-4"	11'-10"	12'-9"	13'-6"	14'-1"	14'-5"	14'-5"	14'-5"	
	N160	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-1"	14'-5"	14'-5"	14'-5"	
	N180	11'-1"	11'-5"	11'-10"	12'-4"	12'-10"	13'-5"	13'-9"	14'-4"	14'-8"	14'-8"	14'-8"	

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

2. Duct chase opening location distance is measured from inside face of supports to centre of opening.

3. The above table is based on simple-span joists only. For other applications, contact your local distributor.

4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

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

5a) SHEATHING REINFORCEMENT

Provide full depth blocking between joists over support (not shown)

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.

5b) SET-BACK DETAIL

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

Notes:

- Provide full depth blocking between joists over support (not shown for clarity)
- Attach I-joist to plate at all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.

5c) SET-BACK CONNECTION

Vertical solid sawn blocks (2x6 S-P-F No. 2 or better) nailed through joist web and web of girder using 2-1/2" nails.

Alternate for opposite side.

Notes:

- Verify girder joist capacity if the back span exceeds the joist spacing.
- Attach double I-joist per detail 1p, if required.

FIGURE 5 (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.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)									
		LL = 30 psf, DL = 15 psf					LL = 40 psf, DL = 15 psf				
		JOIST SPACING (in.)					JOIST SPACING (in.)				
		12	16	19.2	24		12	16	19.2	24	
9'-1/2"	26	1	X	X	X	2	2	X	X	X	2
	28	1	X	X	X	2	2	X	X	X	2
	30	1	X	X	X	2	2	X	X	X	2
	32	2	X	X	X	2	2	X	X	X	2
	34	2	X	X	X	2	2	X	X	X	2
11'-7/8"	26	2	X	X	X	2	2	X	X	X	2
	28	2	X	X	X	2	2	X	X	X	2
	30	2	X	X	X	2	2	X	X	X	2
	32	2	X	X	X	2	2	X	X	X	2
	34	2	X	X	X	2	2	X	X	X	2
14"	26	2	X	X	X	2	2	X	X	X	2
	28	2	X	X	X	2	2	X	X	X	2
	30	2	X	X	X	2	2	X	X	X	2
	32	2	X	X	X	2	2	X	X	X	2
	34	2	X	X	X	2	2	X	X	X	2
16"	26	2	X	X	X	2	2	X	X	X	2
	28	2	X	X	X	2	2	X	X	X	2
	30	2	X	X	X	2	2	X	X	X	2
	32	2	X	X	X	2	2	X	X	X	2
	34	2	X	X	X	2	2	X	X	X	2

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

INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
2. Snap a chalk line across the I-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 tapped 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 I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-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 I-joist flanges.
8. Tap the second row of panels into place, using a block to protect groove edges.
9. Stagger end joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 2-1/2" common nail to assure accurate and consistent spacing.)
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.)	Nail Size and Type				Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Interm. Supports	Edges	
16	5/8	2"	1-3/4"	2"		6"	12"
20	5/8	2"	1-3/4"	2"		6"	12"
24	3/4	2"	1-3/4"	2"		6"	12"

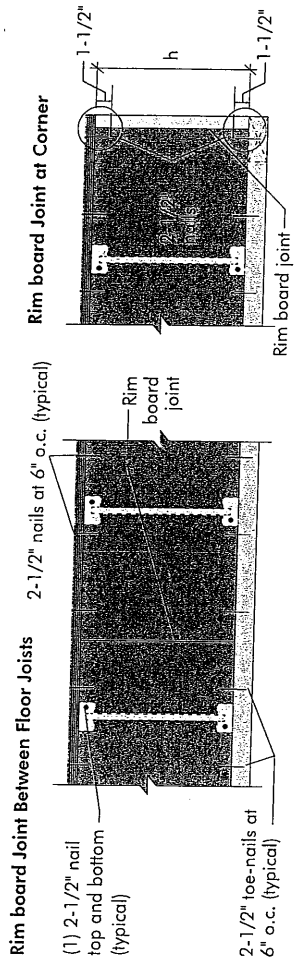
1. Fasteners of sheathing and subflooring shall conform to the above table.
2. Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
3. Flooring screws shall not be less than 1/8-inch in diameter.
4. Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
5. Use only adhesives conforming to CAN/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.

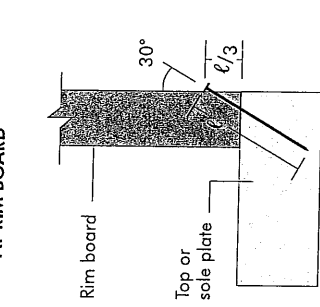
IMPORTANT NOTE:
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

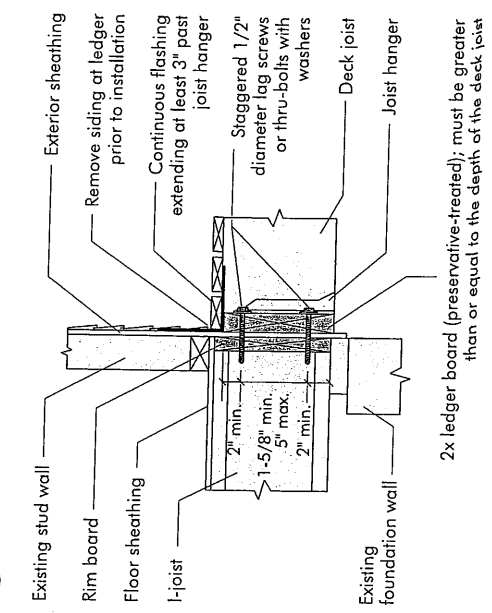
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT




8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL





PRODUCT WARRANTY

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

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