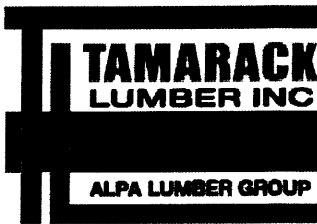


Town of Innisfil Certified Model
10/23/2018 3:11:04 PM kbayley

Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-40x	1	12
J2DJ	20-00-00	11 7/8" NI-40x	2	2
J2	14-00-00	11 7/8" NI-40x	1	1
J3	12-00-00	11 7/8" NI-40x	1	8
J4	8-00-00	11 7/8" NI-40x	1	5
J5	2-00-00	11 7/8" NI-40x	1	4
J6	20-00-00	11 7/8" NI-80	1	19
B2	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B1	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B5	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
10	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
2	H2	HUS1.81/10
1	H2	HUS1.81/10

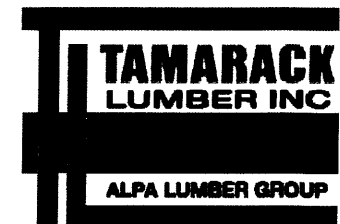


FROM PLAN DATED: JAN 2018
BUILDER: BAYVIEW WELLINGTON
SITE: ALCONA SHORES
MODEL: TH-3
ELEVATION: A,B
LOT:
CITY: INNISFIL
SALESMAN: M D
DESIGNER: CZ
REVISION:

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 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



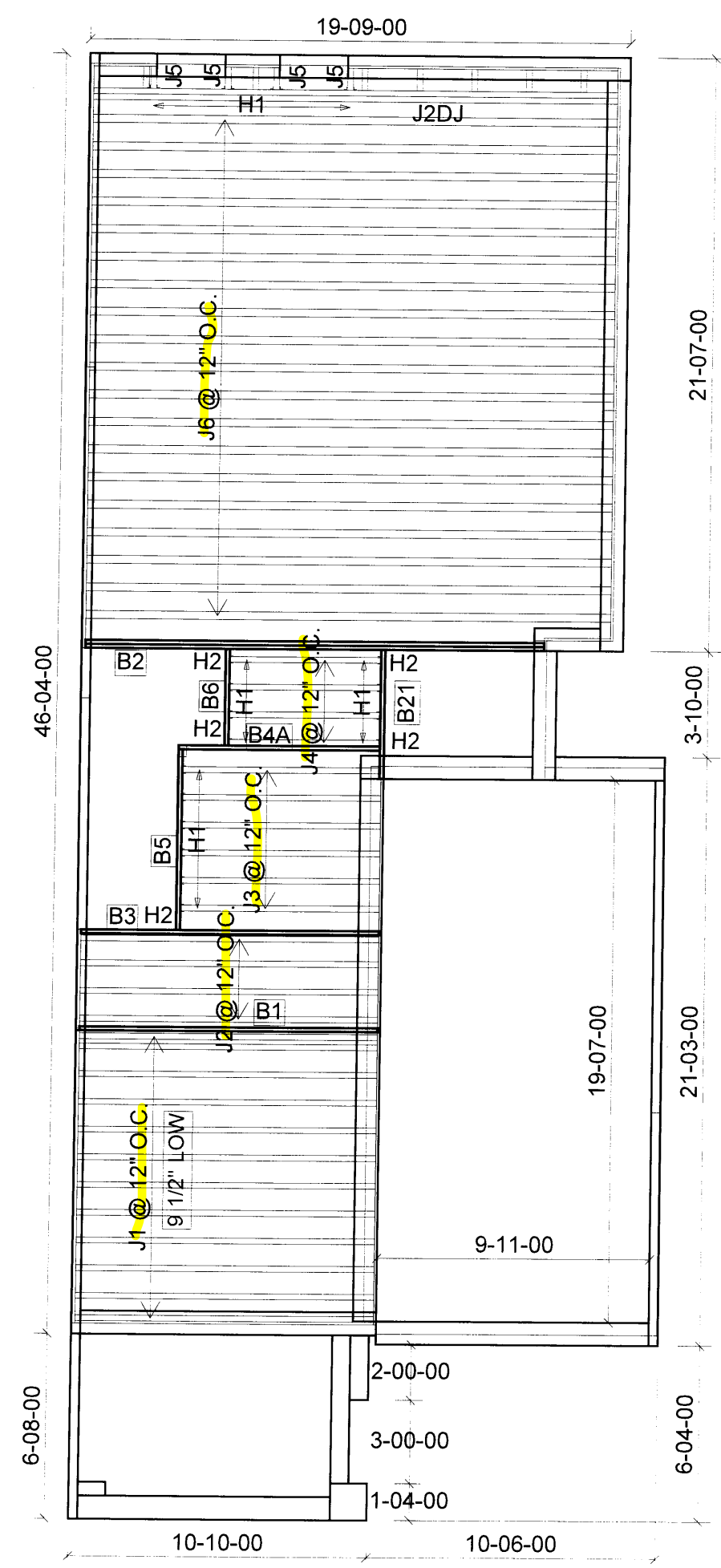
FROM PLAN DATED: JAN 2018
BUILDER: BAYVIEW WELLINGTON
SITE: ALCONA SHORES
MODEL: TH-3
ELEVATION: A,B
LOT:
CITY: INNISFIL
SALESMAN: M D
DESIGNER: CZ
REVISION:

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
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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

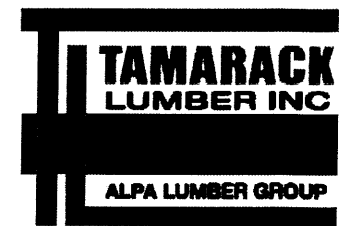
1st FLOOR

SUNKEN



Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-40x	1	12
J2DJ	20-00-00	11 7/8" NI-40x	2	2
J2	12-00-00	11 7/8" NI-40x	1	4
J3	8-00-00	11 7/8" NI-40x	1	6
J4	6-00-00	11 7/8" NI-40x	1	4
J5	2-00-00	11 7/8" NI-40x	1	4
J6	20-00-00	11 7/8" NI-80	1	19
B2	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B4A	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B5	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B21	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
3	H2	HUS1.81/10
2	H2	HUS1.81/10



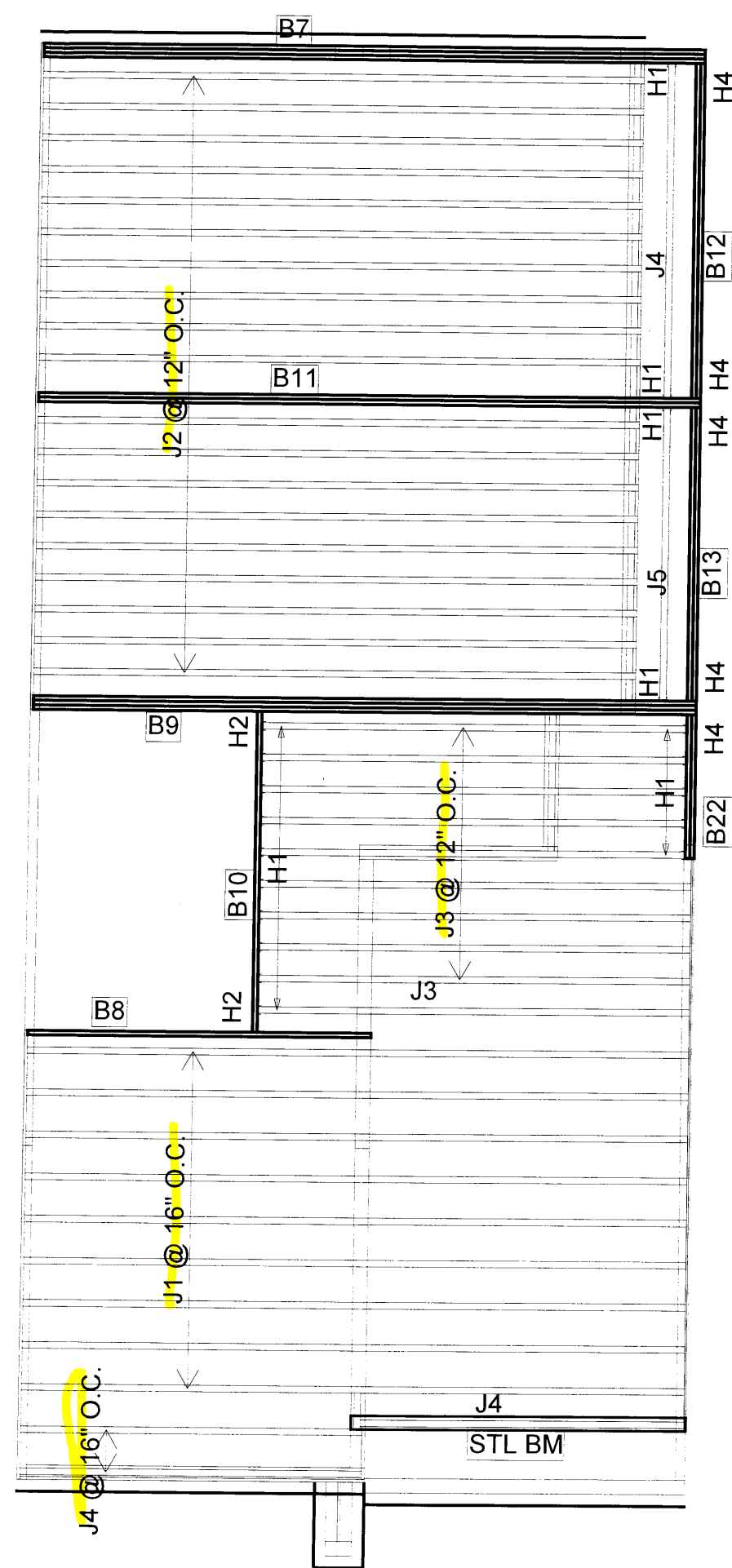
FROM PLAN DATED: JAN 2018
BUILDER: BAYVIEW WELLINGTON
SITE: ALCONA SHORES
MODEL: TH-3
ELEVATION: A
LOT:
CITY: INNISFIL
SALESMAN: M D
DESIGNER: CZ
REVISION:

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.
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I-JOIST BLOCKING ALONG BEARING
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SEE FIGURE 7 TABLES 4 & 5 FOR
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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

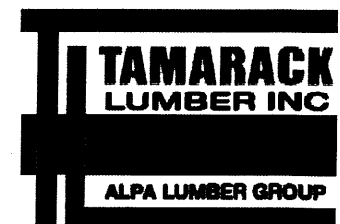
DATE: 31/07/2018

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	22-00-00	11 7/8" NI-40x	1	9
J2	20-00-00	11 7/8" NI-40x	1	19
J3	14-00-00	11 7/8" NI-40x	1	10
J4	12-00-00	11 7/8" NI-40x	1	4
J5	10-00-00	11 7/8" NI-40x	1	1
B11	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B9	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B10	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B12	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B13	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B22	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
10	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	HUS1.81/10
2	H4	HUC410
3	H4	HUC410

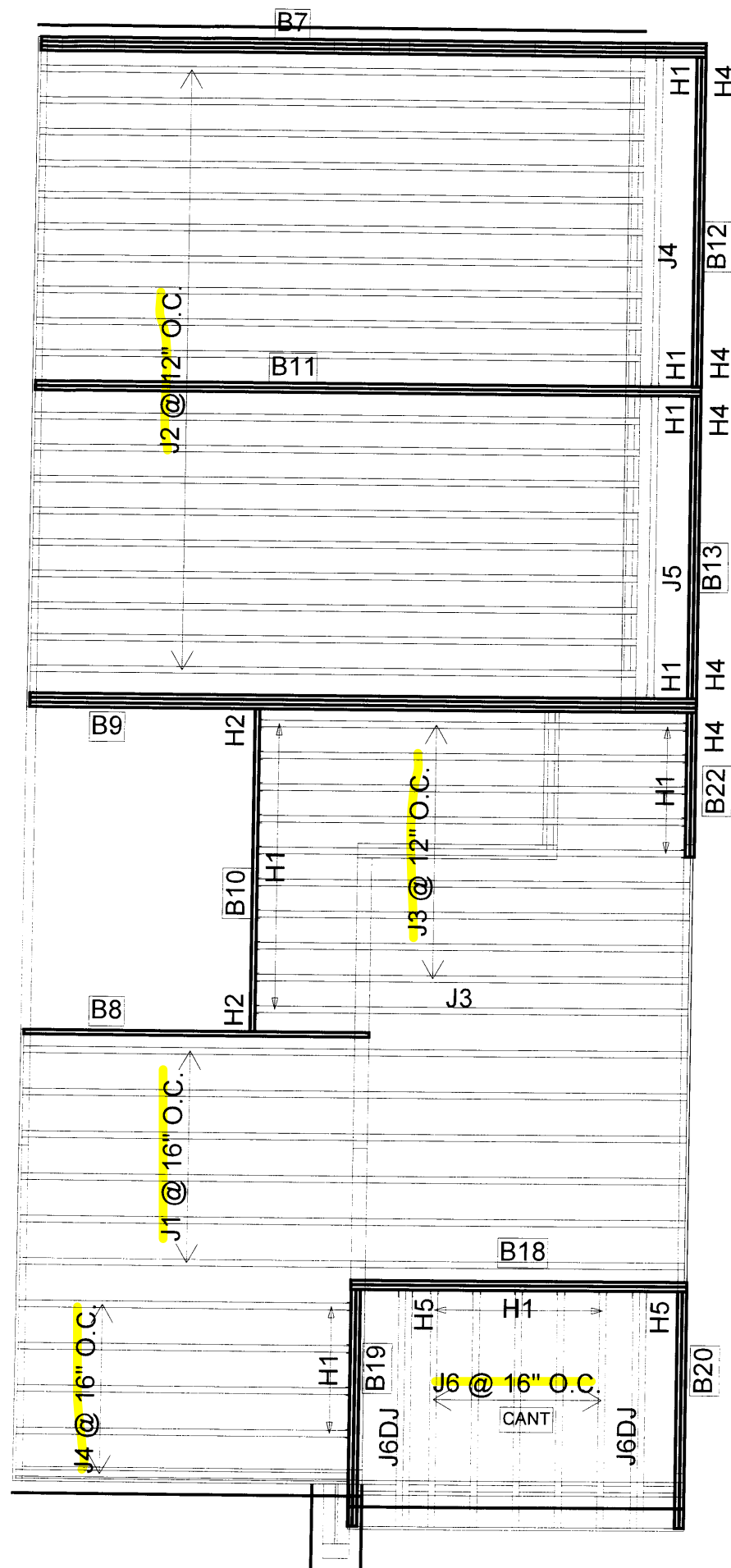


FROM PLAN DATED: JAN 2018
BUILDER: BAYVIEW WELLINGTON
SITE: ALCONA SHORES
MODEL: TH-3
ELEVATION: B
LOT:
CITY: INNISFIL
SALESMAN: M D
DESIGNER: CZ
REVISION:

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
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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	22-00-00	11 7/8" NI-40x	1	6
J2	20-00-00	11 7/8" NI-40x	1	19
J3	14-00-00	11 7/8" NI-40x	1	10
J4	12-00-00	11 7/8" NI-40x	1	6
J5	10-00-00	11 7/8" NI-40x	1	1
J6	8-00-00	11 7/8" NI-40x	1	5
J6DJ	8-00-00	11 7/8" NI-40x	2	4
B11	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B9	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B10	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B12	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B18	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B13	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B19	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B20	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B22	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
10	H1	IUS2.56/11.88
16	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	HUS1.81/10
2	H4	HUC410
3	H4	HUC410
2	H5	HU310-2

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Apr. 23, 2018 13:44

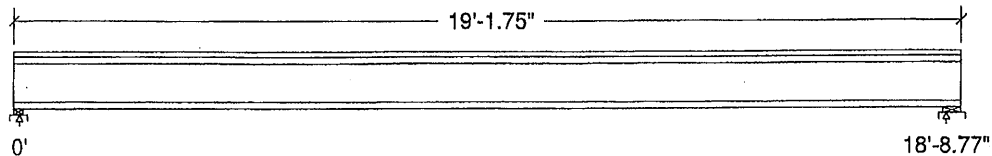
PROJECT
J7-1ST FL.wwb

Design Check Calculation Sheet Nordic Sizer – Canada 7.0

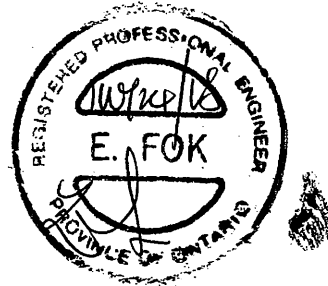
Loads:

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	187		187
Live	375		375
Factored:			
Total	796		796
Bearing:			
Resistance			
Joist	2186		2336
Support	5559		10829
Des ratio			
Joist	0.36		0.34
Support	0.14		0.07
Load case	#2		#2
Length	2-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.09		1.15



Nordic 11-7/8" NI-80 Floor joist @ 12" o.c.

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

Total length: 19'-1.75"; Clear span: 18'-6.99"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V_f = 796$	$V_r = 2336$	lbs	$V_f/V_r = 0.34$
Moment(+)	$M_f = 3728$	$M_r = 11609$	lbs-ft	$M_f/M_r = 0.32$
Perm. Defl'n	$0.10 = < L/999$	$0.62 = L/360$	in	0.16
Live Defl'n	$0.20 = < L/999$	$0.47 = L/480$	in	0.44
Total Defl'n	$0.31 = L/733$	$0.94 = L/240$	in	0.33
Bare Defl'n	$0.23 = L/978$	$0.62 = L/360$	in	0.37
Vibration	$L_{max} = 18'-8.8$	$L_v = 21'-2.7$	ft	0.88
Defl'n	$= 0.025$	$= 0.034$	in	0.74

DWG NO. TAM 4297-18
STRUCTURAL
COMPONENT ONLY

7-18071409

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#2
EI	547.1 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

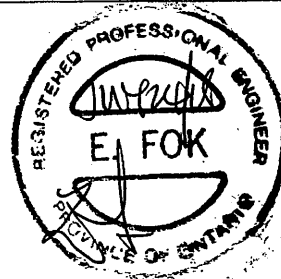
All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:Deflection: E_{ieff} = 625e06 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
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.

CONFORMS TO OBC 2012

DWG NO. TAM 4297-18 15
STRUCTURAL
COMPONENT ONLY

T.18071409(2)

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
May 9, 2018 16:07

PROJECT
J1-2ND FL.wwb

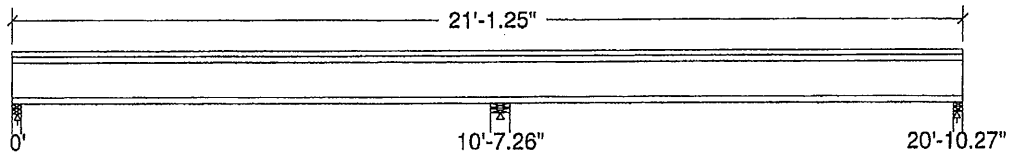
Design Check Calculation Sheet

Nordic Sizer – Canada 7.0

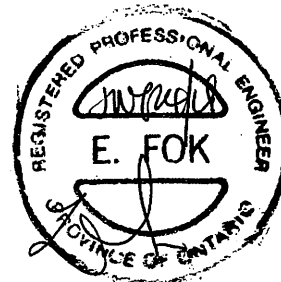
Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area	No		20.00	psf
Load2	Live	Full Area	Yes		40.00	psf

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



Unfactored:					
Dead	107		348		101
Live	247		695		240
Factored:					
Total	504		1478		486
Bearing:					
Resistance					
Joist	2099		5373		2099
Support	3971		8840		3971
Des ratio					
Joist	0.24		0.27		0.23
Support	0.13		0.17		0.12
Load case	#4		#2		#5
Length	2-3/8		5		2-3/8
Min req'd	1-3/4		3-1/2		1-3/4
Stiffener	No		No		No
KD	1.00		1.00		1.00
KB support	1.00		1.00		1.00
fcp sup	769		769		769
Kzcp sup	1.09		1.15		1.09



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: All - Lumber Wall, No.1/No.2

Total length: 21'-1.25"; Clear span: 10'-3.87", 9'-11.62"; 3/4" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

DWG NO. TAM 4290-18 15
STRUCTURAL
COMPONENT ONLY

T-18071410

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 746	Vr = 2336	lbs	Vf/Vr = 0.32
Moment(+)	Mf = 1122	Mr = 6255	lbs-ft	Mf/Mr = 0.18
Moment(-)	Mf = 1542	Mr = 6255	lbs-ft	Mf/Mr = 0.25
Perm. Defl'n	0.01 = < L/999	0.35 = L/360	in	0.03
Live Defl'n	0.03 = < L/999	0.27 = L/480	in	0.12
Total Defl'n	0.04 = < L/999	0.53 = L/240	in	0.08
Bare Defl'n	0.04 = < L/999	0.35 = L/360	in	0.10
Vibration	Lmax = 10'-7.3	Lv = 20'-8.5	ft	0.51
Defl'n	= 0.009	= 0.069	in	0.13

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	-	-	-	#4
Mr-	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#4

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L
 Moment(+): LC #4 = 1.25D + 1.5L (pattern: L₋)
 Moment(-): LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #4 = 1.0D + 1.0L (pattern: L₋) (live)
 LC #4 = 1.0D + 1.0L (pattern: L₋) (total)
 LC #4 = 1.0D + 1.0L (pattern: L₋) (bare joist)

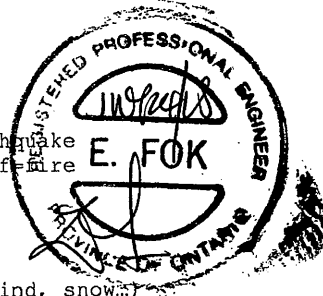
Bearing : Support 1 - LC #4 = 1.25D + 1.5L (pattern: L₋)
 Support 2 - LC #2 = 1.25D + 1.5L
 Support 3 - LC #5 = 1.25D + 1.5L (pattern: L₋)

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
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 4298-84
 STRUCTURAL
 COMPONENT ONLY

T-18071410(2)



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B1(i3152)

Dry | 1 span | No cant.

May 9, 2018 17:14:11

BC CALC® Design Report

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B1(i3152)

City, Province, Postal Code: INNISFIL

Specifier:

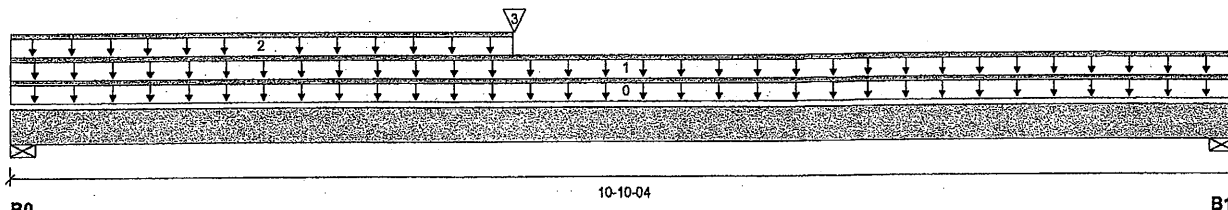
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-10-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	47 / 0	268 / 0		
B1, 4-3/8"	45 / 0	108 / 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	10-10-04	6				00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-10-04	7	4			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	04-05-00		60			n/a
3	STAIR	Conc. Pt. (lbs)	L	04-05-02	04-05-02	15	7			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	670 ft-lbs	11,502 ft-lbs	5.8 %	0	03-09-11
End Shear	259 lbs	4,701 lbs	5.5 %	0	01-02-04
Total Load Deflection	L/999 (0.023")	n/a	n/a	4	05-00-12
Live Load Deflection	L/999 (0.005")	n/a	n/a	5	05-02-10
Max Defl.	0.023"	n/a	n/a	4	05-00-12
Span / Depth	10.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-3/8" x 1-3/4"	375 lbs	26.0 %	11.4 %	Unspecified
B1	Wall/Plate 4-3/8" x 1-3/4"	152 lbs	5.7 %	2.5 %	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 4299-18 H
STRUCTURAL
COMPONENT ONLY

T-18071411



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B2(i3141)

BC CALC® Design Report

Dry | 1 span | No cant.

May 9, 2018 17:15:00

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B2(i3141)

City, Province, Postal Code: INNISFIL

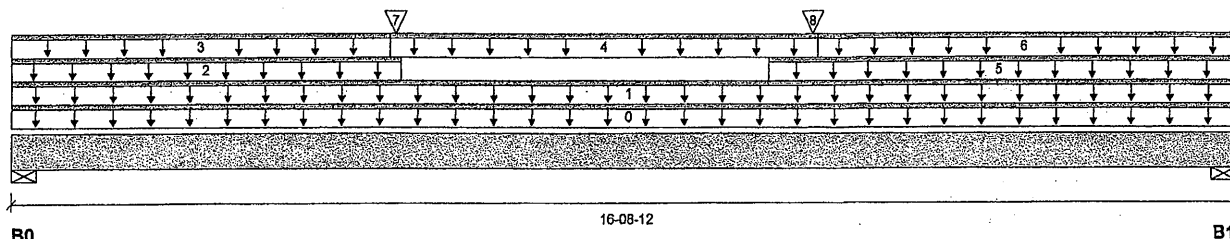
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 16-08-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	810 / 0	855 / 0		
B1, 4-3/8"	718 / 0	841 / 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	16-08-12		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-08-12	21	11			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	05-03-02		60			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-01-06	6	3			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	05-01-06	10-11-06	5	3			n/a
5	WALL	Unf. Lin. (lb/ft)	L	10-03-02	16-08-12		60			n/a
6	FC1 Floor Material	Unf. Lin. (lb/ft)	L	10-11-06	16-08-12	6	3			n/a
7	B6(i3049)	Conc. Pt. (lbs)	L	05-02-04	05-02-04	630	326			n/a
8	B2(i3057)	Conc. Pt. (lbs)	L	10-10-08	10-10-08	447	240			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9,735 ft-lbs	35,392 ft-lbs	27.5 %	1	07-05-06
End Shear	2,109 lbs	14,464 lbs	14.6 %	1	01-02-04
Total Load Deflection	L/551 (0.355")	n/a	43.6 %	4	08-02-12
Live Load Deflection	L/1,048 (0.187")	n/a	34.4 %	5	08-02-12
Max Defl.	0.355"	n/a	n/a	4	08-02-12
Span / Depth	16.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-3/8" x 3-1/2"	2,284 lbs	51.5 %	22.5 %	Unspecified
B1	Wall/Plate 4-3/8" x 3-1/2"	2,128 lbs	26.0 %	11.4 %	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 4300-1811
STRUCTURAL
COMPONENT ONLY

T-18071412



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B2(i3141)**

Dry | 1 span | No cant.

PASSED

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

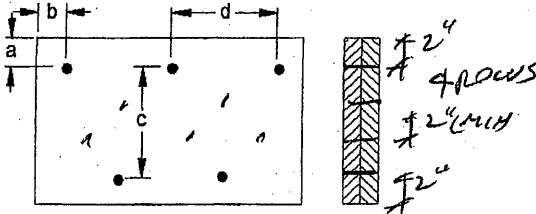
Description: 1ST FLOOR FRAMING\Flush Beams\B2(i3141)

Specifier:

Designer: CZ

Company:

May 9, 2018 17:15:00

Connection Diagram

a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 6"

Calculated Side Load = 138.9 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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DWG NO. TAM 4300
STRUCTURAL
COMPONENT ONLY

T-180714(2)(2)



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

PASSED

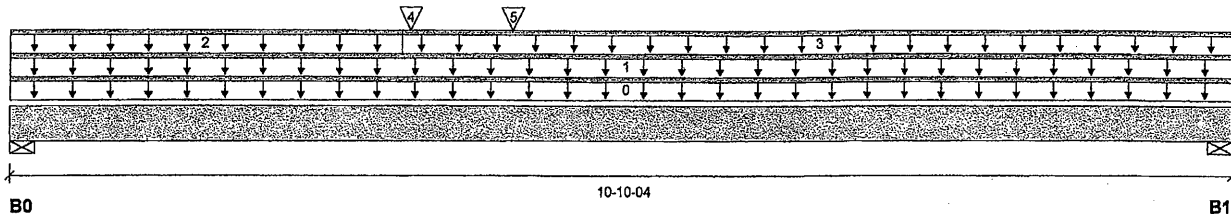
BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

May 9, 2018 17:15:53

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

File name: TH-3EL B.mmdl
Description: 1ST FLOOR FRAMING\Flush Beams\B3(i3048)
Specifier:
Designer: CZ
Company:



Total Horizontal Product Length = 10-10-04

Reaction Summary (Down / Uplift) (lbs)

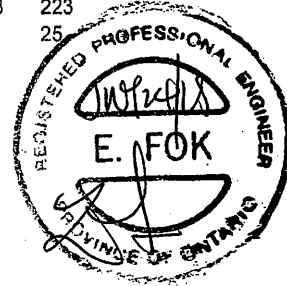
Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	410 / 0	250 / 0		
B1, 4-3/8"	293 / 0	186 / 0		

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	10-10-04	6				00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-10-04	11	6			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-05-06	3				n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-05-06	10-10-04	16	8			n/a
4	B5(i3059)	Conc. Pt. (lbs)	L	03-06-04	03-06-04	408	223			n/a
5	STAIR	Conc. Pt. (lbs)	L	04-05-02	04-05-02	50	25			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,911 ft-lbs	17,696 ft-lbs	16.4 %	1	03-06-04
End Shear	884 lbs	7,232 lbs	12.2 %	1	01-02-04
Total Load Deflection	L/999 (0.073")	n/a	n/a	4	05-00-12
Live Load Deflection	L/999 (0.046")	n/a	n/a	5	05-00-12
Max Defl.	0.073"	n/a	n/a	4	05-00-12
Span / Depth	10.5				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-3/8" x 1-3/4"	928 lbs	41.8 %	18.3 %	Unspecified
B1	Wall/Plate 4-3/8" x 1-3/4"	673 lbs	16.5 %	7.2 %	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

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DWG NO. TAM 4301-18 H
STRUCTURAL
COMPONENT ONLY

T-18671413



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

PASSED

BC CALC® Design Report

Dry | 1 span | No cant.

April 25, 2018 15:52:46

Build 6215

Job name:

File name: TH-3.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B4(i2410)

City, Province, Postal Code: INNISFIL

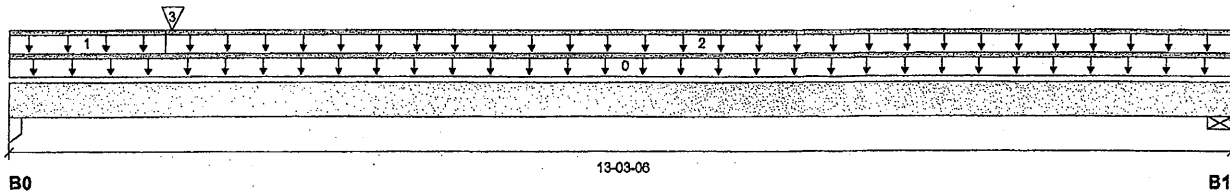
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 13-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	807 / 0	452 / 0		
B1, 4-3/8"	265 / 0	174 / 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	13-03-06	6	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-08-00	12	6			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	01-08-00	13-03-06	27	13			n/a
3	B6(i2411)	Conc. Pt. (lbs)	L	01-08-14	01-08-14	741	381			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,759 ft-lbs	17,696 ft-lbs	15.6 %	1	03-07-13
End Shear	1,732 lbs	7,232 lbs	23.9 %	1	01-03-06
Total Load Deflection	L/999 (0.116")	n/a	n/a	4	06-02-06
Live Load Deflection	L/999 (0.072")	n/a	n/a	5	06-00-07
Max Defl.	0.116"	n/a	n/a	4	06-02-06
Span / Depth	12.9				

Bearing Supports

			Demand/Resistance Support	Demand/Resistance Member		
Bearing Supports	Dim. (LxW)	Demand			Material	
B0	Column	3-1/2" x 1-3/4"	1,776 lbs	36.0 %	24.0 %	Unspecified
B1	Wall/Plate	4-3/8" x 1-3/4"	615 lbs	15.0 %	6.6 %	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

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DWG NO. TAM 4302-18 H
STRUCTURAL
COMPONENT ONLY

T-18071414



Boise Cascade



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B4A(i2514)

Dry | 1 span | No cant.

April 25, 2018 15:53:56

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

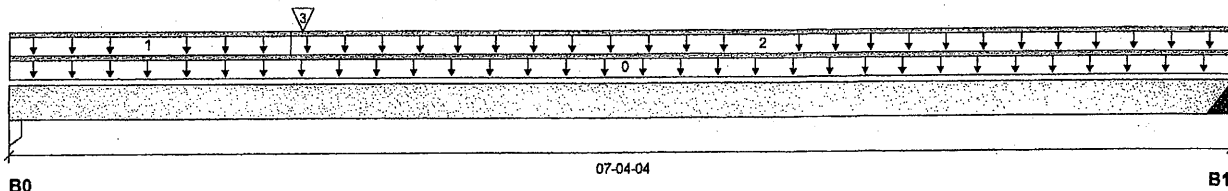
File name: TH-3EL B.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B4A(i2514)

Specifier:

Designer: CZ

Company:



Total Horizontal Product Length = 07-04-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	536 / 0	299 / 0		
B1, 2"	220 / 0	134 / 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	07-04-04	6	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-08-00	12	6			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	01-08-00	07-04-04	27	13			n/a
3	B6(i2530)	Conc. Pt. (lbs)	L	01-08-14	01-08-14	583	302			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,729 ft-lbs	17,696 ft-lbs	9.8 %	1	01-08-14
End Shear	1,133 lbs	7,232 lbs	15.7 %	1	01-03-06
Total Load Deflection	L/999 (0.019")	n/a	n/a	4	03-04-15
Live Load Deflection	L/999 (0.012")	n/a	n/a	5	03-04-15
Max Defl.	0.019"	n/a	n/a	4	03-04-15
Span / Depth	7.1				

Bearing Supports

Bearing Supports			Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Column	3-1/2" x 1-3/4"	1,177 lbs	23.9 %	15.9 %	Unspecified	
B1	Hanger	2" x 1-3/4"	497 lbs	n/a	11.6 %	Hanger	

Cautions

Hanger model Hanger was not found. 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



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DWG NO. TAM 4303-18
STRUCTURAL
COMPONENT ONLY

T-18021415



Single 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 25, 2018 15:52:46

Job name:

File name: TH-3.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B5(i2413)

City, Province, Postal Code: INNISFIL

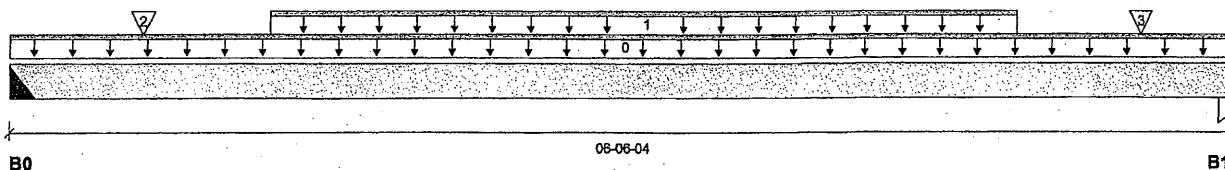
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	424 / 0	231 / 0		
B1, 3-5/16"	543 / 0	292 / 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	06-06-04	6				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	05-04-08	145	73			n/a
2	J5(i1181)	Conc. Pt. (lbs)	L	00-08-08	00-08-08	154	77			n/a
3	J3(i2416)	Conc. Pt. (lbs)	L	06-00-08	06-00-08	231	116			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,562 ft-lbs	17,696 ft-lbs	8.8 %	1	03-04-08
End Shear	780 lbs	7,232 lbs	10.8 %	1	05-03-01
Total Load Deflection	L/999 (0.015")	n/a	n/a	4	03-02-08
Live Load Deflection	L/999 (0.01")	n/a	n/a	5	03-02-08
Max Defl.	0.015"	n/a	n/a	4	03-02-08
Span / Depth	6.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Hanger 2" x 1-3/4"	925 lbs	n/a	21.7 %	HUS1.81/10
B1	Column 3-5/16" x 1-3/4"	1,179 lbs	25.1 %	16.7 %	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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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®.

DWG NO. TAM 4304 -811
STRUCTURAL
COMPONENT ONLY

T-18071416



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B6(i2411)

BC CALC® Design Report

Dry | 1 span | No cant.

April 25, 2018 15:52:46

Build 6215

Job name:

File name: TH-3.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B6(i2411)

City, Province, Postal Code: INNISFIL

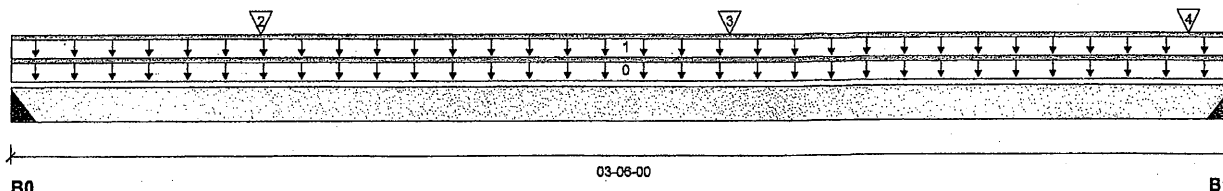
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

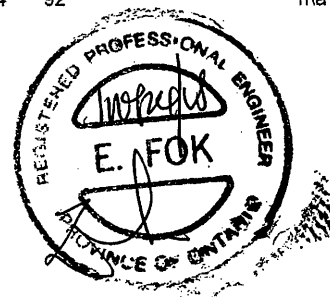
Bearing	Live	Dead	Snow	Wind
B0, 2"	745 / 0	383 / 0		
B1, 2"	828 / 0	424 / 0		

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	03-06-00	6				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	240	120			n/a
2	J4(i2412)	Conc. Pt. (lbs)	L	00-08-08	00-08-08	243	121			n/a
3	J4(i2414)	Conc. Pt. (lbs)	L	02-00-08	02-00-08	306	153			n/a
4	J4(i2415)	Conc. Pt. (lbs)	L	03-04-08	03-04-08	184	92			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,329 ft-lbs	17,696 ft-lbs	7.5 %	1	02-00-08
End Shear	782 lbs	7,232 lbs	10.8 %	1	02-04-02
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	01-09-03
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-09-03
Max Defl.	0.004"	n/a	n/a	4	01-09-03
Span / Depth	3.3				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Hanger 2" x 1-3/4"	1,597 lbs	n/a	37.4 %	HUS1.81/10
B1	Hanger 2" x 1-3/4"	1,772 lbs	n/a	41.5 %	HUS1.81/10

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

DWG NO. TAM 4305-18
STRUCTURAL
COMPONENT ONLY

718071417



Boise Cascade



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B7(i2768)

Dry | 3 spans | R cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports:

CCMC 12472-R

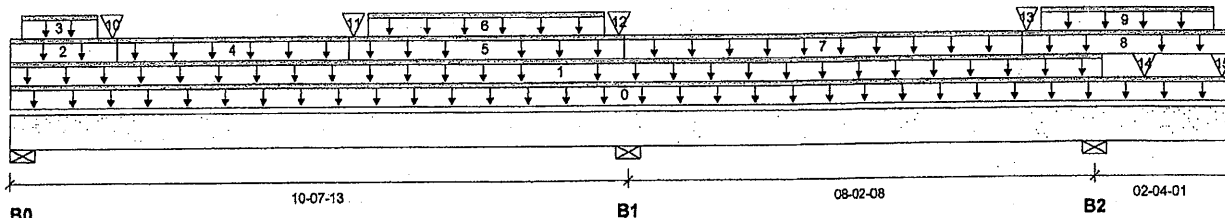
File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B7(i2768)

Specifier:

Designer: CZ

Company:



Total Horizontal Product Length = 21-02-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 8-3/8"	1,313 / 34	1,997 / 0	6,522 / 0	
B1, 10-1/2"	2,802 / 0	3,957 / 0	13,868 / 0	
B2, 9-3/16"	2,518 / 0	3,443 / 0	9,301 / 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	21-02-06		18			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-11-13	20	10			n/a
2	E16(i153)	Unf. Lin. (lb/ft)	L	00-00-00	01-09-14		81			n/a
3	E16(i153)	Unf. Lin. (lb/ft)	L	00-02-06	01-05-14	239	304	1,329		n/a
4	E27(i174)	Unf. Lin. (lb/ft)	L	01-09-14	05-09-14		61			n/a
5	E26(i173)	Unf. Lin. (lb/ft)	L	05-09-14	10-06-14		81			n/a
6	E26(i173)	Unf. Lin. (lb/ft)	L	06-01-14	10-02-14	239	304	1,329		n/a
7	E28(i175)	Unf. Lin. (lb/ft)	L	10-06-14	17-06-14		61			n/a
8	E29(i176)	Unf. Lin. (lb/ft)	L	17-06-14	21-02-06		81			n/a
9	E29(i176)	Unf. Lin. (lb/ft)	L	17-10-14	20-10-14	239	304	1,329		n/a
10	E16(i153)	Conc. Pt. (lbs)	L	01-08-14	01-08-14	562	729	3,128		n/a
11	E26(i173)	Conc. Pt. (lbs)	L	05-10-14	05-10-14	553	717	3,074		n/a
12	E26(i173)	Conc. Pt. (lbs)	L	10-05-14	10-05-14	919	1,192	5,110		n/a
13	E29(i176)	Conc. Pt. (lbs)	L	17-07-14	17-07-14	913	1,185	5,079		n/a
14	J4(i2877)	Conc. Pt. (lbs)	L	19-08-10	19-08-10	319	160			n/a
15	B12(i2835)	Conc. Pt. (lbs)	L	21-00-10	21-00-10	336	640	596		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	24,016 ft-lbs	55,212 ft-lbs	43.5 %	122	05-10-14
Neg. Moment	-19,678 ft-lbs	-55,212 ft-lbs	35.6 %	139	10-07-13
End Shear	11,203 lbs	21,696 lbs	51.6 %	122	01-08-04
Cont. Shear	11,242 lbs	21,696 lbs	51.8 %	139	09-02-11
Total Load Deflection	L/667 (0.18")	n/a	36.0 %	290	05-06-14
Live Load Deflection	L/853 (0.141")	n/a	42.2 %	394	05-06-14
Total Neg. Defl.	L/999 (-0.065")	n/a	n/a	290	14-02-05
Max Defl.	0.18"	n/a	n/a	290	05-06-14
Span / Depth	10.1				

*TOP EDGE
CORNER,
ONLY

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 8-3/8" x 5-1/4"	12,936 lbs	55.3 %	24.2 %	Unspecified
B1	Wall/Plate 10-1/2" x 5-1/4"	27,149 lbs	92.2 %	40.4 %	Unspecified
B2	Wall/Plate 9-3/16" x 5-1/4"	19,514 lbs	76.0 %	33.3 %	Unspecified

DWG NO. TAM 4306-18H
STRUCTURAL
COMPONENT ONLY

T-18071418



Boise Cascade

**Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B7(i2768)**

Dry | 3 spans | R cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B7(i2768)

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.

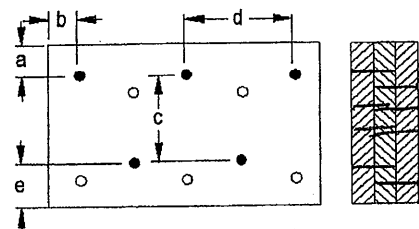
CONFORMS TO OBC 2012

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.

Nailing schedule applies to both sides of the member.

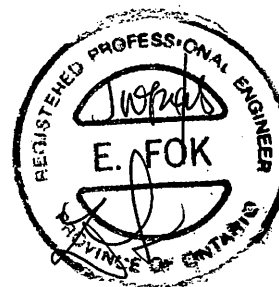
Connection Diagrama minimum = 1"
b minimum = 3"c = 8-7/8"
d = 8"
e minimum = 2"

Calculated Side Load = 119.8 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.

Nailing schedule applies to both sides of the member.

Connectors are: Nails

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

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC1®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®, DWG NO. TAM 430618 H/P/M
STRUCTURAL
COMPONENT ONLY

T-18071418(2)



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B8(i3177)

BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

May 9, 2018 17:16:17

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B8(i3177)

City, Province, Postal Code: INNISFIL

Specifier:

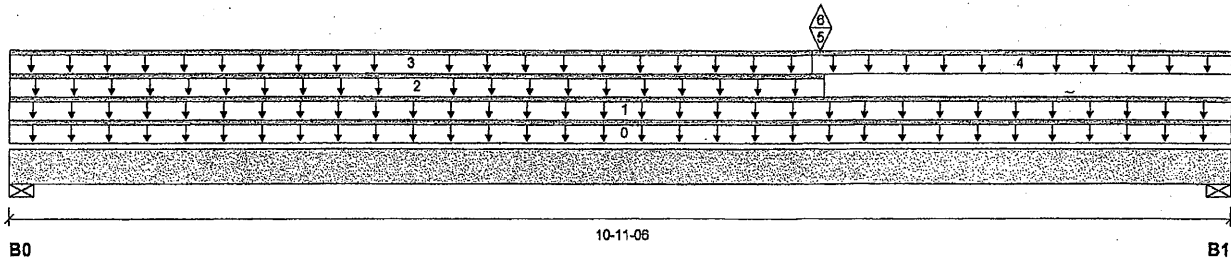
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-11-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	265 / 144	392 / 0		
B1, 5-1/2"	511 / 306	304 / 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	10-11-06	6	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-11-06	11	6			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-03-03		60			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-01-14	3	1			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	07-01-14	10-11-06	16	8			n/a
5	B10(i3178)	Conc. Pt. (lbs)	L	07-02-12	07-02-12	575	94			n/a
6	B10(i3178)	Conc. Pt. (lbs)	L	07-02-12	07-02-12	-450				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,370 ft-lbs	17,696 ft-lbs	19.0 %	1	07-02-12
Neg. Moment	-738 ft-lbs	-17,696 ft-lbs	4.2 %	4	07-02-12
End Shear	1,053 lbs	7,232 lbs	14.6 %	1	09-06-00
Total Load Deflection	L/999 (0.089")	n/a	n/a	6	05-06-13
Live Load Deflection	L/999 (0.049")	n/a	n/a	8	05-09-01
Max Defl.	0.089"	n/a	n/a	6	05-06-13
Span / Depth	10.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-3/8" x 1-3/4"	888 lbs	40.0 %	17.5 %	Unspecified
B1	Wall/Plate 5-1/2" x 1-3/4"	1,146 lbs	22.3 %	9.8 %	Unspecified
B1	Uplift	186 lbs			

Cautions

Uplift of 186 lbs found at span 1 - Right. (Simpson 1-H2-54 @ B1)



DWG NO. TAM 4307
STRUCTURAL
COMPONENT ONLY

T.18071419



Boise Cascade

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B8(i3177)**

Dry | 1 span | No cant.

May 9, 2018 17:16:17

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B8(i3177)

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.

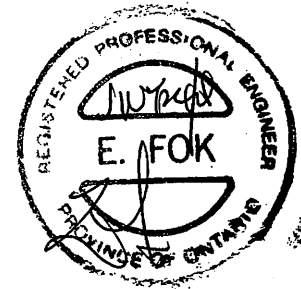
Calculations assume member is fully braced.

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.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012**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 4307
STRUCTURAL
COMPONENT ONLY

T-18071419(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B9(i2837)**

Dry | 2 spans | R cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

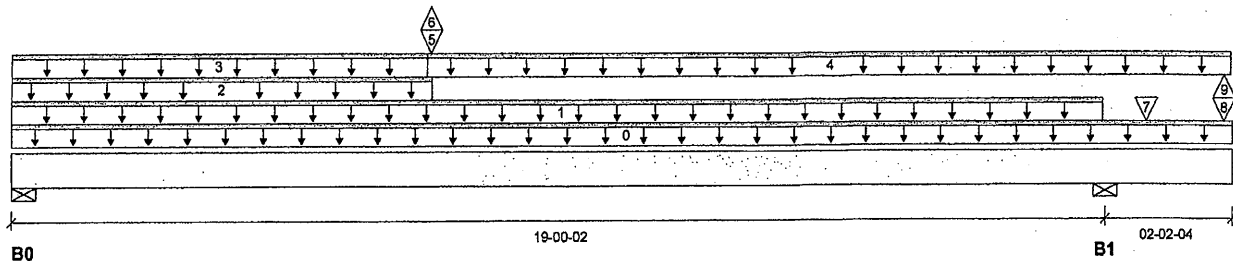
File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B9(i2837)

Specifier:

Designer: CZ

Company:

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

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	848 / 183	750 / 0	0 / 90	
B1, 5-1/2"	1,545 / 229	1,618 / 0	923 / 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	21-02-06		12			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-11-09	21	11			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-02-14		60			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-01-14	6	3			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	07-01-14	21-01-15	5	3			n/a
5	B10(i2864)	Conc. Pt. (lbs)	L	07-02-12	07-02-12	921	405			n/a
6	B10(i2864)	Conc. Pt. (lbs)	L	07-02-12	07-02-12	-175				n/a
7	J5(i2858)	Conc. Pt. (lbs)	L	19-08-10	19-08-10	283	141			n/a
8	-	Conc. Pt. (lbs)	L	21-00-10	21-00-10	569	872	833		n/a
9	-	Conc. Pt. (lbs)	L	21-00-10	21-00-10	-147				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11,821 ft-lbs	35,392 ft-lbs	33.4 %	43	07-02-12
Neg. Moment	-5,640 ft-lbs	-35,392 ft-lbs	15.9 %	49	19-00-02
End Shear	2,035 lbs	14,464 lbs	14.1 %	43	01-02-04
Cont. Shear	2,803 lbs	14,464 lbs	19.4 %	49	20-02-12
Total Load Deflection	L/506 (0.447")	n/a	47.4 %	102	08-10-09
Live Load Deflection	L/756 (0.3")	n/a	47.6 %	151	09-02-08
Total Neg. Defl.	2xL/408 (-0.129")	n/a	58.8 %	102	21-02-06
Max Defl.	0.447"	n/a	n/a	102	08-10-09
Span / Depth	19.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-3/8" x 3-1/2"	2,210 lbs	49.8 %	21.8 %	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	4,802 lbs	46.7 %	20.4 %	Unspecified



DWG NO. TAM 4300-18H
STRUCTURAL
COMPONENT ONLY

T'18071420



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B9(i2837)**

Dry | 2 spans | R cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B9(i2837)

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.

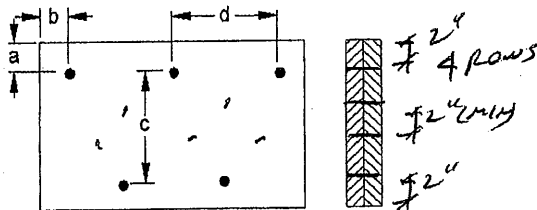
Design based on Dry Service Condition.

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.

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

Calculated Side Load = 109.7 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: 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 4308-18
STRUCTURAL
COMPONENT ONLY

T-18671420(2)



Boise Cascade



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

PASSEDBC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

May 9, 2018 17:08:52

Job name:

File name: TH-3.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B10(i3014)

City, Province, Postal Code: INNISFIL

Specifier:

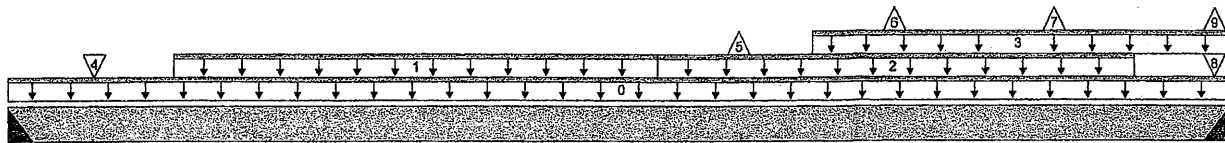
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



B0 10-02-00 B1

Total Horizontal Product Length = 10-02-00

Reaction Summary (Down / Uplift) (lbs)

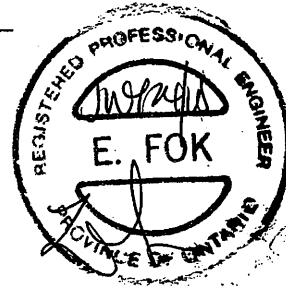
Bearing	Live	Dead	Snow	Wind
B0, 2"	1,376 / 3	718 / 0		
B1, 2"	1,682 / 12	868 / 0		

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	10-02-00		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	05-04-08	279	139			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	05-04-08	09-04-08	160	79			n/a
3	STAIR	Unf. Lin. (lb/ft)	L	06-08-00	10-02-00	240	120			n/a
4	J3(i2911)	Conc. Pt. (lbs)	L	00-08-08	00-08-08	335	168			n/a
5	J3(i2868)	Conc. Pt. (lbs)	L	06-00-08	06-00-08	-4				n/a
6	J3(i2869)	Conc. Pt. (lbs)	L	07-04-08	07-04-08	-4				n/a
7	J3(i2930)	Conc. Pt. (lbs)	L	08-08-08	08-08-08	-4				n/a
8	J3(i2945)	Conc. Pt. (lbs)	L	10-00-08	10-00-08	128	63			n/a
9	J3(i2945)	Conc. Pt. (lbs)	L	10-00-08	10-00-08	-3				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	7,538 ft-lbs	17,696 ft-lbs	42.6 %	1	04-08-08
End Shear	2,739 lbs	7,232 lbs	37.9 %	1	09-00-02
Total Load Deflection	L/608 (0.197")	n/a	39.5 %	6	05-00-08
Live Load Deflection	L/924 (0.129")	n/a	39.0 %	8	05-00-08
Max Defl.	0.197"	n/a	n/a	6	05-00-08
Span / Depth	10.1				



Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Hanger 2" x 1-3/4"	2,961 lbs	n/a	69.3 %	HUS1.81/10
B1	Hanger 2" x 1-3/4"	3,608 lbs	n/a	84.5 %	HUS1.81/10

Cautions

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

DWG NO. TAM 4309-18H
STRUCTURAL
COMPONENT ONLY

T-18071421



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B10(i3014)

Dry | 1 span | No cant.

May 9, 2018 17:08:52

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B10(i3014)

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

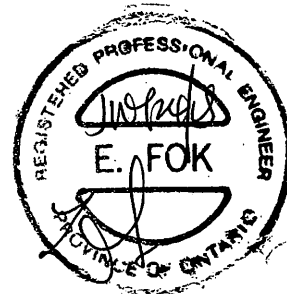
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



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 4209-18
STRUCTURAL
COMPONENT ONLY

T.18071421(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B11(i2844)**

BC CALC® Design Report

Dry | 2 spans | R cant.

May 4, 2018 14:27:47

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B11(i2844)

City, Province, Postal Code: INNISFIL

Specifier:

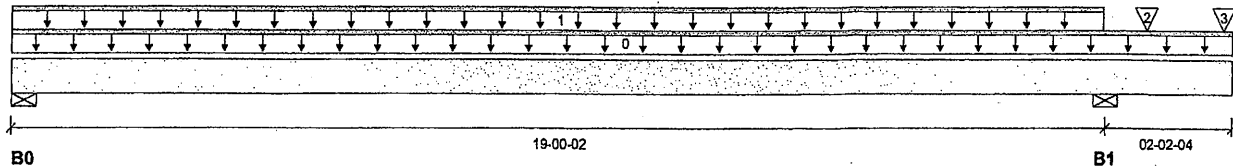
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 21-02-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	383 / 92	158 / 0	0 / 128	
B1, 5-1/2"	1,698 / 0	2,026 / 0	1,312 / 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	21-02-06		12			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-11-11	40	20			n/a
2	-	Conc. Pt. (lbs)	L	19-08-10	19-08-10	587	294			n/a
3	-	Conc. Pt. (lbs)	L	21-00-10	21-00-10	633	1,256	1,184		n/a

Controls Summary

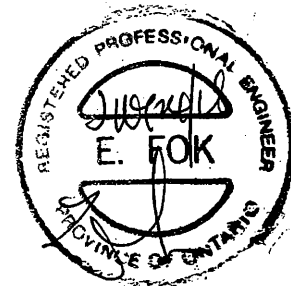
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,877 ft-lbs	35,392 ft-lbs	8.1 %	32	07-08-01
Neg. Moment	-7,989 ft-lbs	-35,392 ft-lbs	22.6 %	37	19-00-02
End Shear	653 lbs	14,464 lbs	4.5 %	32	01-02-04
Cont. Shear	4,002 lbs	14,464 lbs	27.7 %	37	20-02-12
Total Load Deflection	2xL/406 (0.129")	n/a	59.1 %	103	21-02-06
Live Load Deflection	L/1,708 (-0.133")	n/a	21.1 %	141	11-00-09
Total Neg. Defl.	L/1,447 (-0.157")	n/a	16.6 %	103	11-09-14
Max Defl.	-0.157"	n/a	n/a	103	11-09-14
Span / Depth	19.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-3/8" x 3-1/2"	772 lbs	17.4 %	7.6 %	Unspecified
B0	Uplift	95 lbs			
B1	Wall/Plate 5-1/2" x 3-1/2"	5,735 lbs	55.8 %	24.4 %	Unspecified

Cautions

Uplift of 95 lbs found at span 1 - Left. (SIMPSON 1-HZ-5A @ 30)

DWG NO. TAM 4310
STRUCTURAL
COMPONENT ONLY

T-18071422



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B11(i2844)**

BC CALC® Design Report

Dry | 2 spans | R cant.

May 4, 2018 14:27:47

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B11(i2844)

City, Province, Postal Code: INNISFIL

Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:

Notes

Design meets User specified (2xL/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.

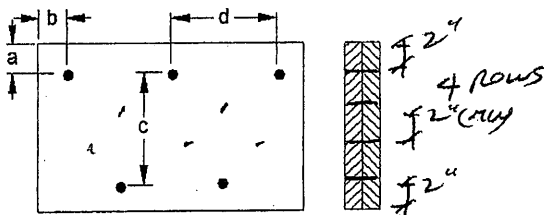
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

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.

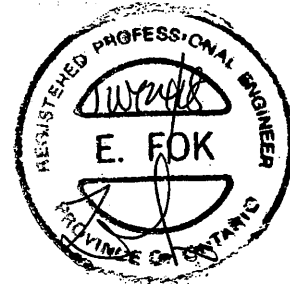
Connection Diagrama minimum = 2"
b minimum = 3"c = 7-7/8"
d = 8"

Calculated Side Load = 117.9 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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DWG NO. TAM 4310-1811
STRUCTURAL
COMPONENT ONLY

T.18071422(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B12(i2835)**

BC CALC® Design Report

Dry | 1 span | No cant.

May 4, 2018 14:27:47

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B12(i2835)

City, Province, Postal Code: INNISFIL

Specifier:

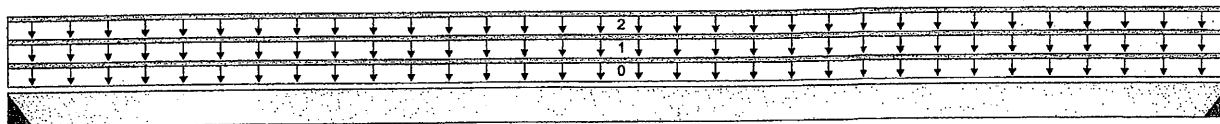
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



B0

10-05-08

B1

Total Horizontal Product Length = 10-05-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	323 / 0	634 / 0	596 / 0	
B1, 2"	323 / 0	634 / 0	596 / 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	10-05-08		12			00-00-00
1	E21(i158)	Unf. Lin. (lb/ft)	L	00-00-00	10-05-08	33	95	114		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-05-08	29	14			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4,642 ft-lbs	35,392 ft-lbs	13.1 %	13	05-02-12
End Shear	1,440 lbs	14,464 lbs	10.0 %	13	01-01-14
Total Load Deflection	L/999 (0.068")	n/a	n/a	45	05-02-12
Live Load Deflection	L/999 (0.037")	n/a	n/a	61	05-02-12
Max Defl.	0.068"	n/a	n/a	45	05-02-12
Span / Depth	10.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,848 lbs	n/a	21.6 %	HUC410
B1 Hanger	2" x 3-1/2"	1,848 lbs	n/a	21.6 %	HUC410

Cautions

Hanger model HUC410 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.

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

Member has no side loads.

CONFORMS TO OBC 2012

DWG NO. TAM 4311-8H
STRUCTURAL
COMPONENT ONLY

T-18071423



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B12(i2835)**

Dry | 1 span | No cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

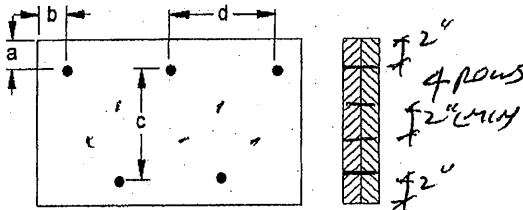
File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B12(i2835)

Specifier:

Designer: CZ

Company:

Connection Diagram

a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 12"

Member has no side loads.

Connectors are: 16d Nails

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

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DWG NO. TAM 4331-18H
STRUCTURAL
COMPONENT ONLY

T-18071423(2)



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B13(i2838)

BC CALC® Design Report

Dry | 1 span | No cant.

May 4, 2018 14:27:47

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B13(i2838)

City, Province, Postal Code: INNISFIL

Specifier:

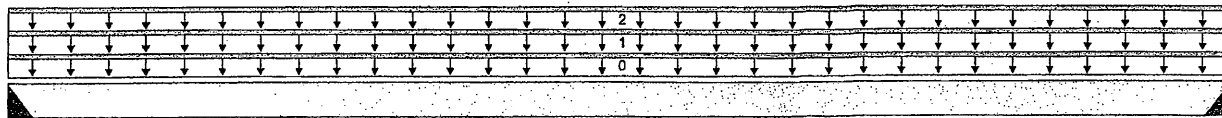
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



09-08-12
B0 Total Horizontal Product Length = 09-08-12 B1

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	301 / 0	590 / 0	555 / 0	
B1, 2"	301 / 0	590 / 0	555 / 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	09-08-12	12				00-00-00
1	E21(i158)	Unf. Lin. (lb/ft)	L	00-00-00	09-08-12	33	95	114		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-08-12	29	14			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,005 ft-lbs	35,392 ft-lbs	11.3 %	13	04-10-06
End Shear	1,311 lbs	14,464 lbs	9.1 %	13	01-01-14
Total Load Deflection	L/999 (0.05")	n/a	n/a	45	04-10-06
Live Load Deflection	L/999 (0.027")	n/a	n/a	61	04-10-06
Max Defl.	0.05"	n/a	n/a	45	04-10-06
Span / Depth	9.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Hanger 2" x 3-1/2"	1,719 lbs	n/a	20.1 %	HUC410
B1	Hanger 2" x 3-1/2"	1,720 lbs	n/a	20.1 %	HUC410

Cautions

Hanger model HUC410 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.

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

Member has no side loads.

CONFORMS TO OBC 2012



DWG NO. TAM 4312-1811
STRUCTURAL
COMPONENT ONLY

T.18071424



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B13(i2838)**

Dry | 1 span | No cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

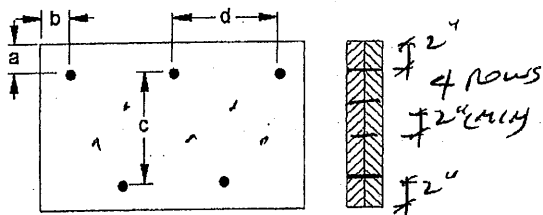
File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B13(i2838)

Specifier:

Designer: CZ

Company:

Connection Diagram

a minimum = 2"

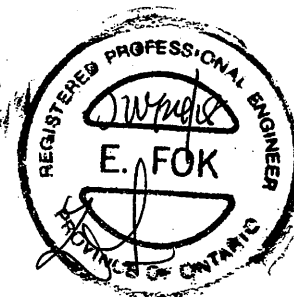
c = 7-7/8"

b minimum = 3"

d = 12"

Member has no side loads.

Connectors are: 16d r Nails

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

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 DWG NO. TAM 4312-18
 STRUCTURAL
 COMPONENT ONLY

T 18071424(2)



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B18(i2419)

BC CALC® Design Report

Dry | 1 span | No cant.

April 24, 2018 11:41:23

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B18(i2419)

City, Province, Postal Code: INNISFIL

Specifier:

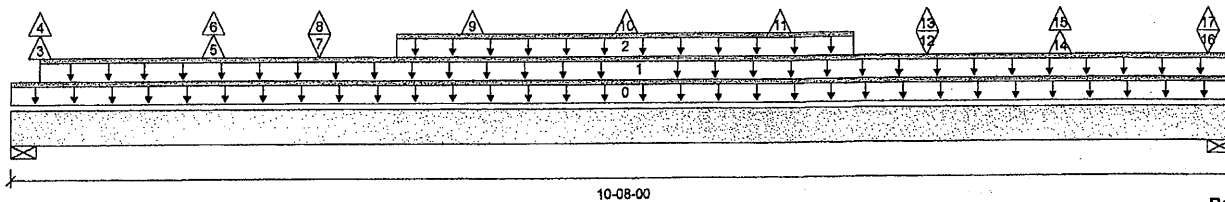
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,410 / 56	716 / 0	0 / 120	
B1, 3-1/2"	864 / 58	695 / 0	343 / 91	

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	10-08-00	12				00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-02-14	10-08-00	13	6			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	03-04-00	07-04-00	130	53			n/a
3	B19(i2486)	Conc. Pt. (lbs)	L	00-02-14	00-02-14	768	412	-31		n/a
4	B19(i2486)	Conc. Pt. (lbs)	L	00-02-14	00-02-14	-13				n/a
5	J5(i2420)	Conc. Pt. (lbs)	L	01-09-00	01-09-00	158	38	-90		n/a
6	J5(i2420)	Conc. Pt. (lbs)	L	01-09-00	01-09-00	-31				n/a
7	J4(i2425)	Conc. Pt. (lbs)	L	02-08-00	02-08-00	147	57			n/a
8	J4(i2425)	Conc. Pt. (lbs)	L	02-08-00	02-08-00	-4				n/a
9	J4(i2435)	Conc. Pt. (lbs)	L	04-00-00	04-00-00	-5				n/a
10	J4(i2408)	Conc. Pt. (lbs)	L	05-04-00	05-04-00	-5				n/a
11	J4(i2415)	Conc. Pt. (lbs)	L	06-08-00	06-08-00	-5				n/a
12	J4(i2409)	Conc. Pt. (lbs)	L	08-00-00	08-00-00	163	62			n/a
13	J4(i2409)	Conc. Pt. (lbs)	L	08-00-00	08-00-00	-5				n/a
14	J5(i2428)	Conc. Pt. (lbs)	L	09-02-00	09-02-00	160	38	-90		n/a
15	J5(i2428)	Conc. Pt. (lbs)	L	09-02-00	09-02-00	-31				n/a
16	-	Conc. Pt. (lbs)	L	10-05-07	10-05-07	212	395	343		n/a
17	-	Conc. Pt. (lbs)	L	10-05-07	10-05-07	-15				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,801 ft-lbs	35,392 ft-lbs	10.7 %	9	05-04-00
End Shear	1,288 lbs	14,464 lbs	8.9 %	9	01-05-06
Total Load Deflection	L/999 (0.049")	n/a	n/a	116	05-04-00
Live Load Deflection	L/999 (0.033")	n/a	n/a	168	05-04-00
Max Defl.	0.049"	n/a	n/a	116	05-04-00
Span / Depth	10.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	3,010 lbs	29.3 %	12.8 %	Unspecified
B1	Wall/Plate 3-1/2" x 3-1/2"	2,337 lbs	35.7 %	15.6 %	Unspecified



DWG NO. TAM 4313-18H
STRUCTURAL
COMPONENT ONLY

T.18071425



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B18(i2419)

BC CALC® Design Report

Dry | 1 span | No cant.

April 24, 2018 11:41:23

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B18(i2419)

City, Province, Postal Code: INNISFIL

Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

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.

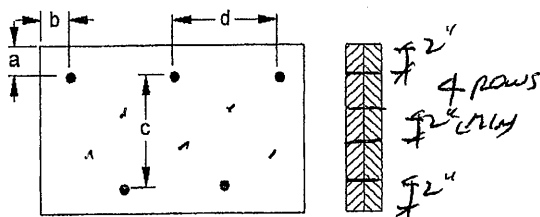
Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

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"

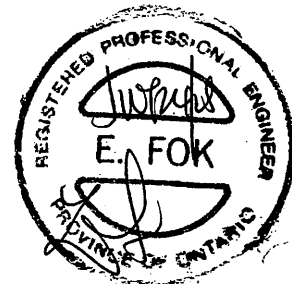
d = 6"

Calculated Side Load = 423.7 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

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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 431 3-18
STRUCTURAL
COMPONENT ONLY

T.18071425(2)



Boise Cascade



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B19(i3228)

Dry | 1 span | L cant.

May 9, 2018 17:16:51

BC CALC® Design Report

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B19(i3228)

City, Province, Postal Code: INNISFIL

Specifier:

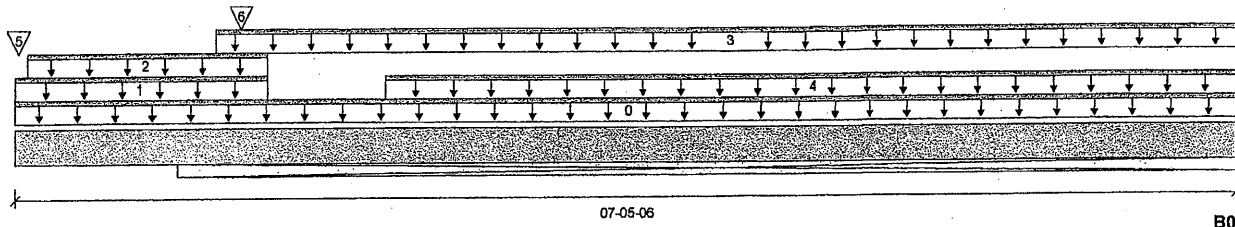
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 07-05-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 77-1/2"	2,867 / 0	2,832 / 0	8,398 / 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	07-05-06		12			00-00-00
1	E19(i156)	Unf. Lin. (lb/ft)	L	00-00-00	01-06-06		65			n/a
2	E19(i156)	Unf. Lin. (lb/ft)	L	00-00-14	01-06-06	33	30	114		n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	01-02-10	07-05-06	32	16			n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	02-02-14	07-05-06	219	109			n/a
5	FC3 Floor Material	Conc. Pt. (lbs)	L	00-00-04	00-00-04	34	54			n/a
6	E19(i156)	Conc. Pt. (lbs)	L	01-04-08	01-04-08	1,430	1,847	8,154		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	0 ft-lbs	35,392 ft-lbs	n/a	13	00-00-00
Neg. Moment	-352 ft-lbs	-35,392 ft-lbs	1.0 %	13	00-11-14
End Shear	517 lbs	14,464 lbs	3.6 %	13	-00-00-00
Total Load Deflection	2xL/1,998 (0")	n/a	n/a	45	00-00-00
Live Load Deflection	2xL/1,998 (0")	n/a	n/a	61	00-00-00
Span / Depth	1.0				
Dist. Load (B0)	348.60 lb/ft	57,645.00 lb/ft	0.6 %		

* TOP EDGE
LOADED
ONLY

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 77-1/2" x 3-1/2"	17,571 lbs	12.1 %	5.3 %	Unspecified

Notes

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

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

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

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.

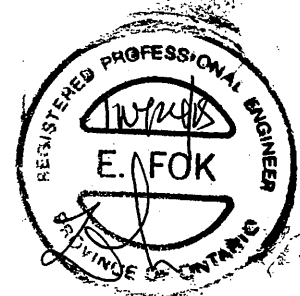
Design based on Dry Service Condition.

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.

DWG NO. TAM 4374-18H
STRUCTURAL
COMPONENT ONLY

T-18071426



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B19(i3228)

Dry | 1 span | L cant.

May 9, 2018 17:16:51

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

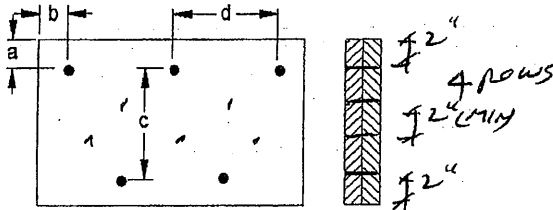
Description: 2ND FLOOR FRAMING\Flush Beams\B19(i3228)

Specifier:

Designer: CZ

Company:

Connection Diagram



a minimum = 2"
b minimum = 3"

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

Calculated Side Load = 324.9 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 4314-8H
STRUCTURAL
COMPONENT ONLY

T-18071426(2)



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B20(i3238)**

BC CALC® Design Report

Dry | 1 span | L cant.

May 9, 2018 17:16:51

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B20(i3238)

City, Province, Postal Code: INNISFIL

Specifier:

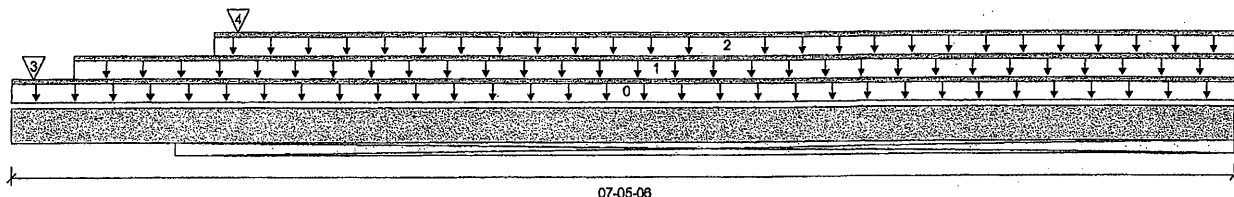
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



07-05-06

B0

Total Horizontal Product Length = 07-05-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 77-1/2"	1,906 / 0	2,808 / 0	9,086 / 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	07-05-06		12			00-00-00
1	E21(i158)	Unf. Lin. (lb/ft)	L	00-04-06	07-05-06	33	95	114		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	01-02-10	07-05-06	30	15			n/a
3	-	Conc. Pt. (lbs)	L	00-01-08	00-01-08	56	97	124		n/a
4	E21(i158)	Conc. Pt. (lbs)	L	01-04-06	01-04-06	1,430	1,847	8,154		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	0 ft-lbs	23,005 ft-lbs	n/a	0	00-00-00
Neg. Moment	-367 ft-lbs	-35,392 ft-lbs	1.0 %	13	00-11-14
End Shear	509 lbs	14,464 lbs	3.5 %	13	-00-00-00
Total Load Deflection	2xL/1,998 (0")	n/a	n/a	45	00-00-00
Live Load Deflection	2xL/1,998 (0")	n/a	n/a	61	00-00-00
Span / Depth	1.0				
Dist. Load (B0)	339.77 lb/ft	57,645.00 lb/ft	0.6 %		

* TOP EDGE
LOADED
ONLY**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 77-1/2" x 3-1/2"	18,092 lbs	12.5 %	5.5 %	Unspecified

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.

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

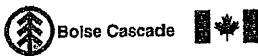
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

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.


 DWG NO. TAM 4315
 STRUCTURAL
 COMPONENT ONLY

T-18071427



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B20\I3238

Dry | 1 span | L cant.

May 9, 2018 17:16:51

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

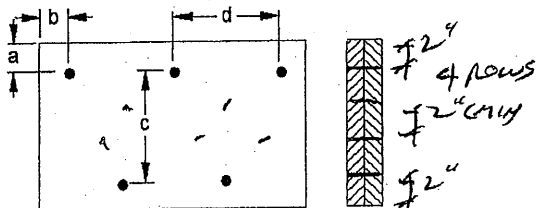
Description: 2ND FLOOR FRAMING\Flush Beams\B20\I3238

Specifier:

Designer: CZ

Company:

Connection Diagram



a minimum = 2"
b minimum = 3"

c = 7-7/8"
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 4315
STRUCTURAL
COMPONENT ONLY

T-18071429(2)



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B21(i2564)

Dry | 1 span | No cant.

April 25, 2018 15:53:56

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

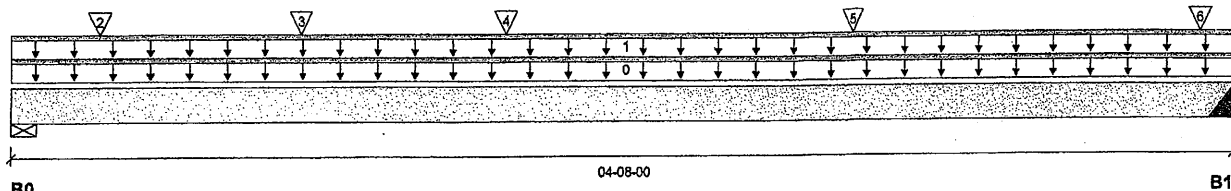
File name: TH-3EL B.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B21(i2564)

Specifier:

Designer: CZ

Company:



Total Horizontal Product Length = 04-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	646 / 0	863 / 0		
B1, 2"	459 / 0	247 / 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	04-08-00	6				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	04-08-00	80	40			n/a
2	-	Conc. Pt. (lbs)	L	00-03-15	00-03-15	142	577			n/a
3	B4(i2514)	Conc. Pt. (lbs)	L	01-01-02	01-01-02	216	132			n/a
4	J5(i2517)	Conc. Pt. (lbs)	L	01-10-08	01-10-08	123	62			n/a
5	J5(i2490)	Conc. Pt. (lbs)	L	03-02-08	03-02-08	156	78			n/a
6	J5(i2457)	Conc. Pt. (lbs)	L	04-06-08	04-06-08	94	47			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,017 ft-lbs	17,696 ft-lbs	5.7 %	1	02-00-08
End Shear	709 lbs	7,232 lbs	9.8 %	1	01-05-08
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	02-05-00
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-05-00
Max Defl.	0.005"	n/a	n/a	4	02-05-00
Span / Depth	4.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 1-3/4"	2,048 lbs	39.8 %	17.4 %	Unspecified
B1	Hanger 2" x 1-3/4"	997 lbs	n/a	23.4 %	HUS1.81/10

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

DWG NO. TAM. 4316-18 H
STRUCTURAL
COMPONENT ONLY

T-1807428



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Flush Beams\B22(i2875)**

BC CALC® Design Report

Dry | 1 span | No cant.

May 4, 2018 14:27:47

Build 6215

Job name:

File name: TH-3EL B.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B22(i2875)

City, Province, Postal Code: INNISFIL

Specifier:

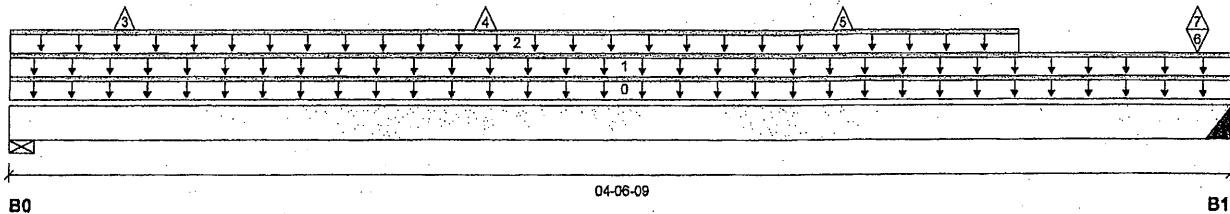
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 04-06-09

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-7/8"	307 / 176	278 / 0	268 / 0	
B1, 2"	272 / 152	258 / 0	250 / 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	04-06-09		12			00-00-00
1	E21(i158)	Unf. Lin. (lb/ft)	L	00-00-00	04-06-09	33	95	114		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	03-09-01	95	11			n/a
3	J3(i2868)	Conc. Pt. (lbs)	L	00-05-01	00-05-01	-91				n/a
4	J3(i2871)	Conc. Pt. (lbs)	L	01-09-01	01-09-01	-91				n/a
5	J3(i2870)	Conc. Pt. (lbs)	L	03-01-01	03-01-01	-91				n/a
6	J3(i2876)	Conc. Pt. (lbs)	L	04-05-01	04-05-01	72	8			n/a
7	J3(i2876)	Conc. Pt. (lbs)	L	04-05-01	04-05-01	-55				n/a

Controls Summary

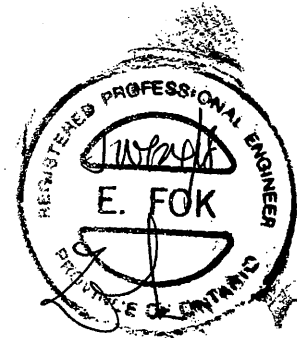
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	822 ft-lbs	35,392 ft-lbs	2.3 %	1	02-03-09
Neg. Moment	-8 ft-lbs	-35,392 ft-lbs	n/a	24	00-05-01
End Shear	459 lbs	14,464 lbs	3.2 %	1	03-04-11
Total Load Deflection	L/999 (0.002")	n/a	n/a	58	02-04-01
Live Load Deflection	L/999 (0.001")	n/a	n/a	85	02-04-01
Max Defl.	0.002"	n/a	n/a	58	02-04-01
Span / Depth	4.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-7/8" x 3-1/2"	943 lbs	13.1 %	5.7 %	Unspecified
B1	Hanger 2" x 3-1/2"	855 lbs	n/a	10.0 %	HUC410

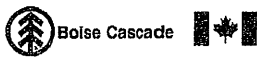
Cautions

Hanger model HUC410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWG NO. TAM 4317
STRUCTURAL
COMPONENT ONLY

T-18071429



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B22(i2875)

Dry | 1 span | No cant.

May 4, 2018 14:27:47

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: INNISFIL

Customer:

Code reports: CCMC 12472-R

File name: TH-3EL B.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B22(i2875)

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.

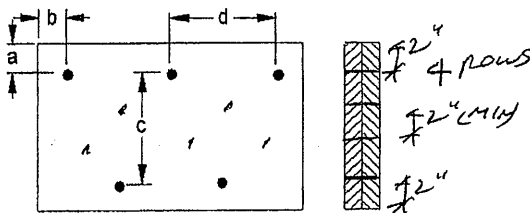
Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

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 = 6"

Calculated Side Load = 47.1 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:

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.

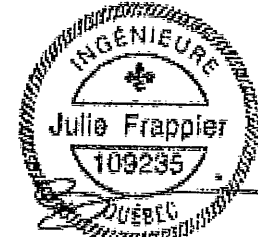
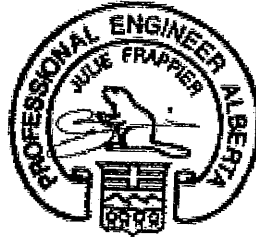
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

DWG NO. TAM 4317-A
STRUCTURAL
COMPONENT ONLY

T-18071429(C2)

Maximum Floor Spans

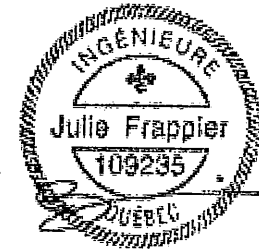
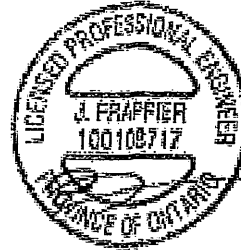
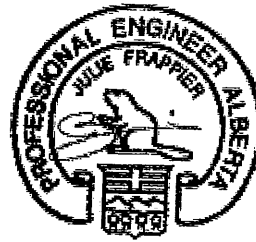
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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.



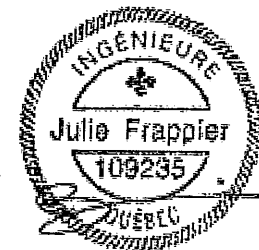
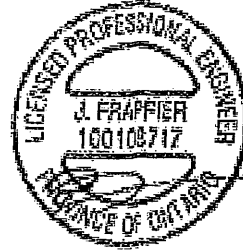
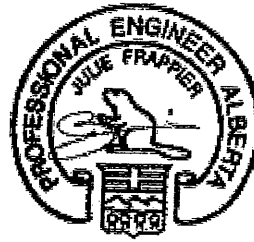
Maximum Floor Spans

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"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	NI-40x	21'-5"	19'-10"	18'-11"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
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	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"
14"	NI-90x	24'-3"	22'-6"	21'-6"	20'-4"	24'-8"	23'-0"	22'-0"	20'-9"
	NI-40x	24'-5"	22'-9"	21'-8"	19'-5"	25'-1"	23'-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"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
	NI-60	27'-3"	25'-5"	24'-2"	22'-10"	28'-0"	26'-2"	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.



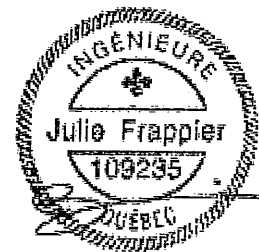
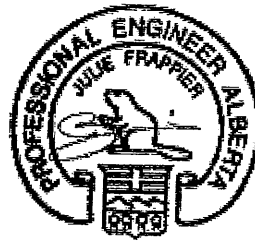
Maximum Floor Spans

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"

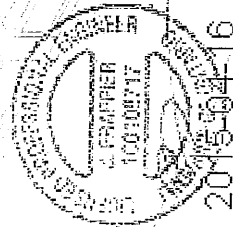
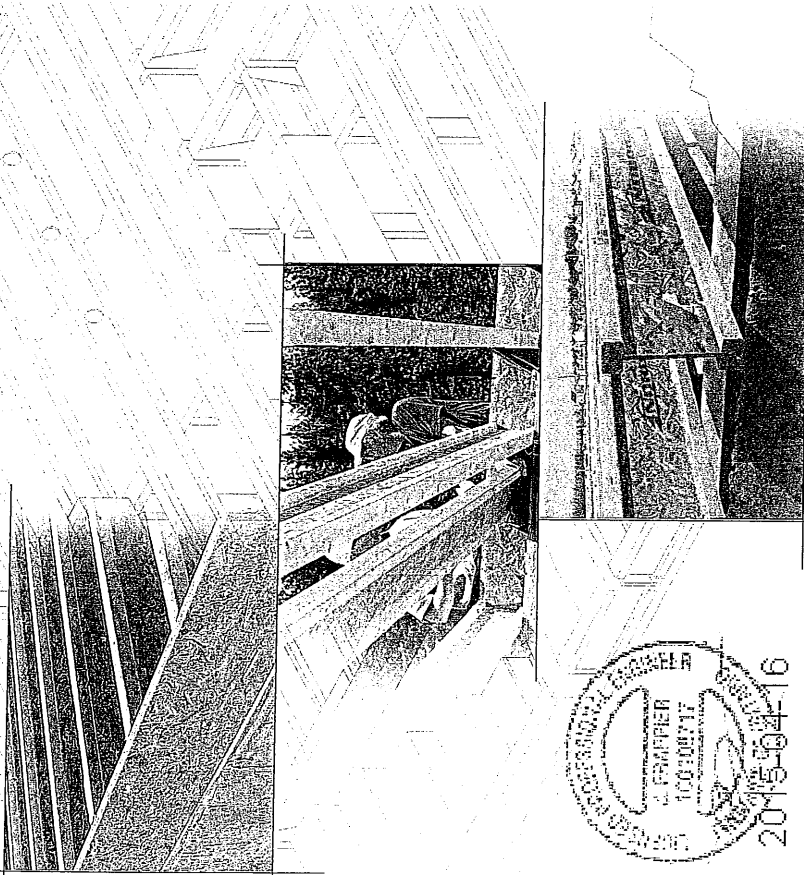
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load 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 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.



NORDIC

ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS

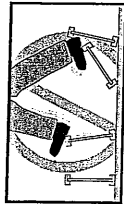
WARNING

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

Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-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.



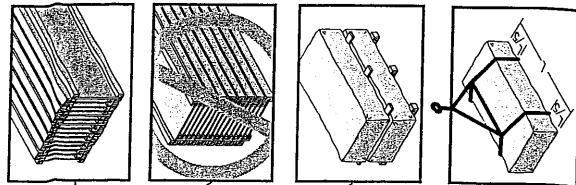
Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



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

- 1. 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.
- 2. 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.
- 3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate 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 uniform loads, an engineering analysis may be required based on the use of the design properties.
- 6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
- 7. SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

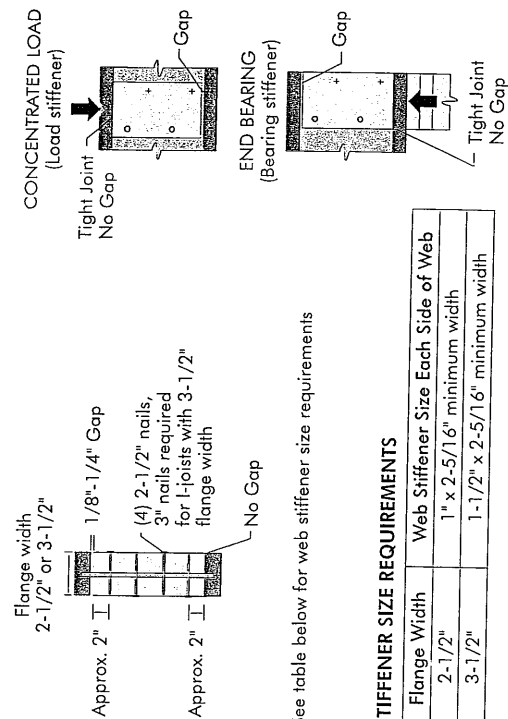
WEB STIFFENERS

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

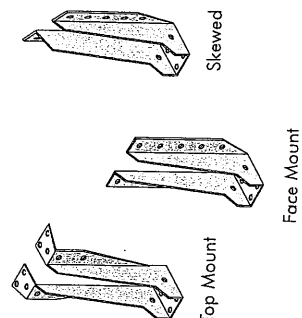


MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS
SIMPLE AND MULTIPLE SPANS

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

I-JOIST HANGERS

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



NORDIC I-JOIST SERIES

NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90	NI-90x
33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit
S-P-F No.2	1950F MSR	2100F MSR	1950F MSR	2100F MSR	2400F MSR	NPG Lumber

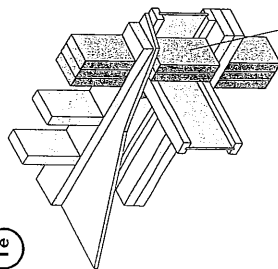
Technical drawings for each hanger type showing dimensions and nailing patterns. Dimensions include flange width (2-1/2" or 3-1/2"), hanger depth (9-1/2", 11-7/8", 14", 16"), and various spacing and nailing specifications.

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

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



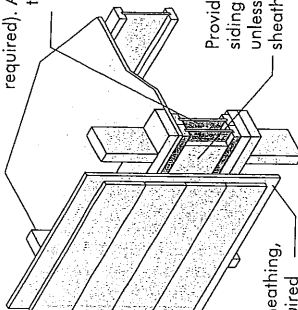
1e



Transfer load from above to bearing below. Install squash 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.



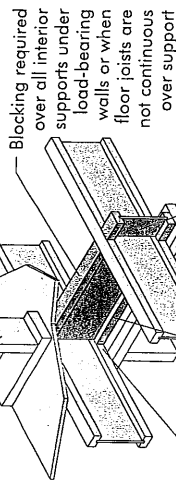
Wall sheathing, as required

Provide backer for siding attachment unless nailable 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.

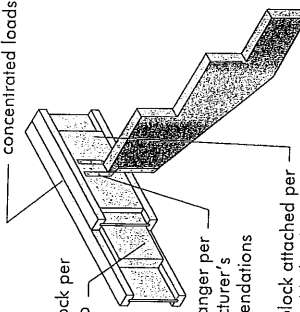


2-1/2" nails at 6" o.c. to top plate per detail 1a

NI blocking panel

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.



Filler block per detail 1p

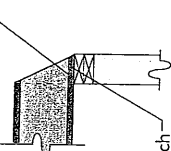
Install hanger per manufacturer's recommendations

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

Maximum support capacity = 1,620 lbs.

1n

Do not bevel-cut joist beyond inside face of wall



Attach I-joist per detail 1b

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

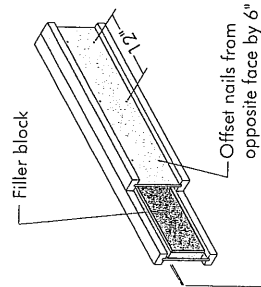
FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

Notes:

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

1p



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

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.

Double I-joist header

Top- or face-mount hanger

Filler block per detail 1p

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

Note: Unless hanger sides laterally support the top flange, a stiffener shall be used.

2015-04-16

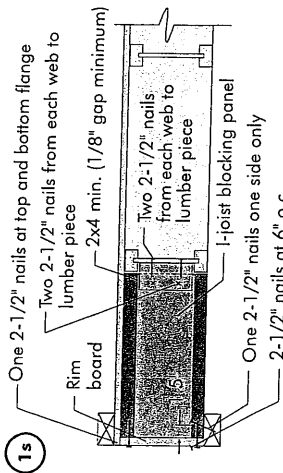
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

1s



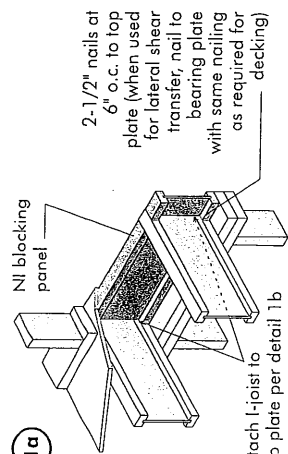
Notes:

- 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.

INSTALLING NORDIC I-JOISTS

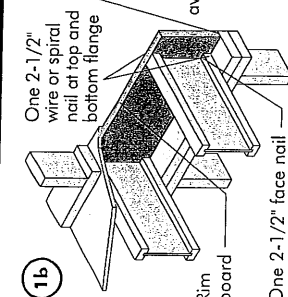
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true 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.

- Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
- 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.
- 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.
- 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.
- 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.
- Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.



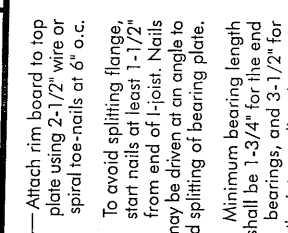
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

*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.



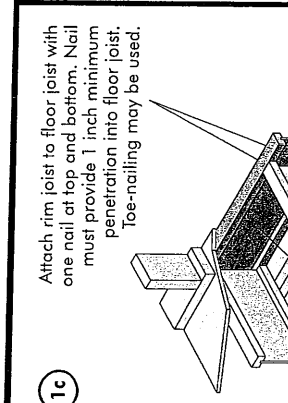
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



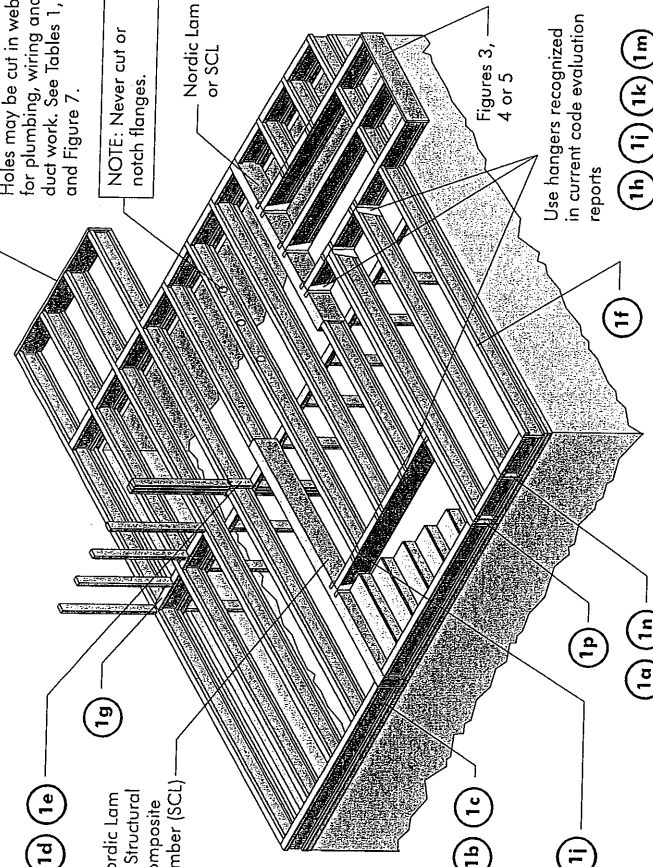
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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

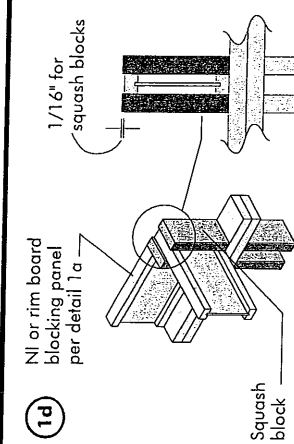
FIGURE 1

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.

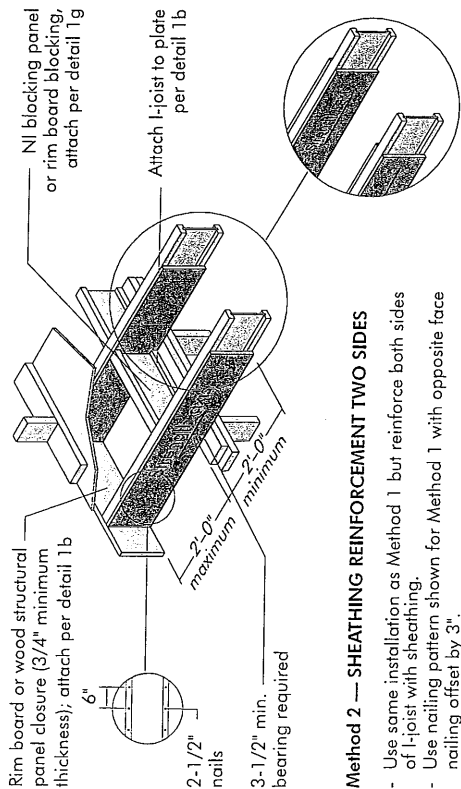


Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

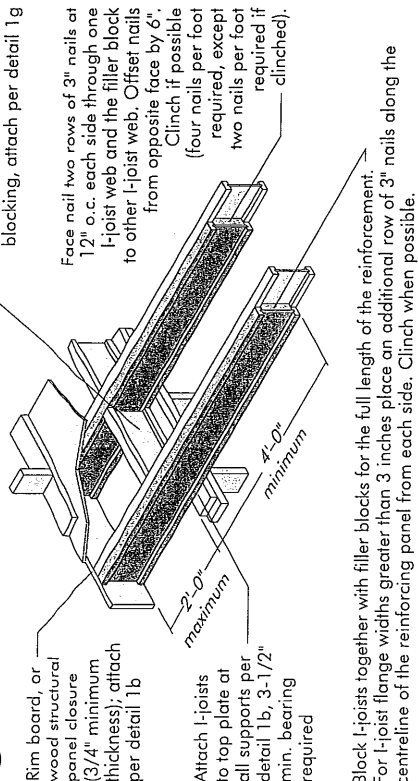


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- 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".

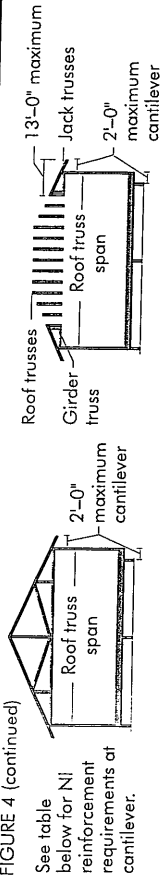
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

Alternate Method 2 — DOUBLE I-JOIST



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3" nails along the centreline of the reinforcing panel from each side. Clinch when possible.

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)	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	
9-11/2"	26	Z	Z	1	2		Z	Z	1	2	X
	28	Z	Z	1	X		Z	Z	1	X	X
	30	Z	Z	1	1		Z	Z	1	2	X
	32	Z	Z	1	2		Z	Z	2	X	X
	34	Z	Z	1	2		Z	Z	2	X	X
11-7/8"	26	Z	Z	1	2		Z	Z	1	2	X
	28	Z	Z	1	1		Z	Z	1	2	X
	30	Z	Z	1	1		Z	Z	1	2	X
	32	Z	Z	1	2		Z	Z	1	2	X
	34	Z	Z	1	2		Z	Z	1	2	X
14"	26	Z	Z	1	2		Z	Z	1	2	X
	28	Z	Z	1	1		Z	Z	1	2	X
	30	Z	Z	1	1		Z	Z	1	2	X
	32	Z	Z	1	2		Z	Z	1	2	X
	34	Z	Z	1	2		Z	Z	1	2	X
16"	26	Z	Z	1	2		Z	Z	1	2	X
	28	Z	Z	1	1		Z	Z	1	2	X
	30	Z	Z	1	1		Z	Z	1	2	X
	32	Z	Z	1	2		Z	Z	1	2	X
	34	Z	Z	1	2		Z	Z	1	2	X

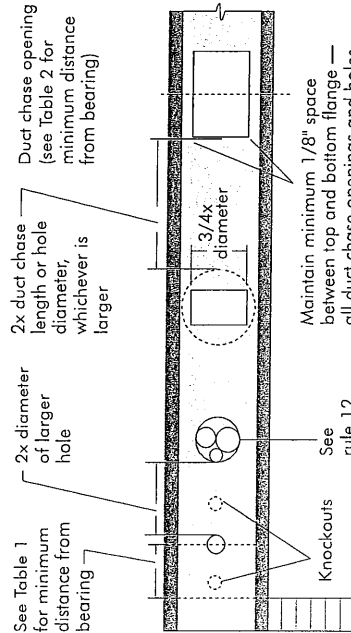
1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements 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. 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.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

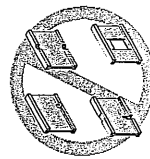
RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on center 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"	N1-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"										
	N1-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"										
	N1-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"										
	N1-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"										
	N1-80	2-3"	3-6"	5-0"	6-4"	8-2"	8-8"										
11-7/8"	N1-20	0-7"	0-8"	1-0"	2-4"	3-6"	4-0"	5-0"	6-6"	7-9"							
	N1-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-3"	7-0"	8-4"							
	N1-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-4"	7-3"	8-10"	10-0"							
	N1-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-5"	8-4"	10-0"	11-2"							
	N1-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"							
14"	N1-20	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"							
	N1-40x	0-7"	0-8"	0-9"	2-5"	4-10"	4-9"	6-3"									
	N1-60	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-8"	5-2"	6-0"	6-6"	8-3"	10-2"				
	N1-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-6"	8-9"	9-9"	10-4"	12-0"	11-9"				
	N1-80	0-10"	2-0"	3-4"	4-9"	6-2"	7-6"	9-0"	10-0"	10-8"	12-4"	13-5"	13-9"				
16"	N1-20	0-7"	0-8"	0-10"	2-5"	4-0"	4-5"	5-9"	7-5"	8-8"	9-4"	11-4"	12-11"				
	N1-40x	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"						
	N1-60	0-7"	0-8"	0-8"	1-6"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"	12-2"	13-9"		
	N1-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"	14-0"	15-6"		
	N1-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-9"	14-5"	16-0"		
18"	N1-20	0-7"	0-8"	0-8"	1-9"	3-3"	3-8"	4-9"	6-5"	7-5"	8-0"	9-10"	11-3"	11-9"	13-9"		
	N1-40x	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"	15-4"		

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

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

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 for I-joists) the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

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

Where:

$D_{reduced}$ = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft.)

L_{actual} = The actual measured span distance between the inside faces of supports (ft.)

L_{max} = Span Adjustment Factor given in this table.

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

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

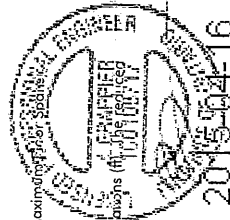


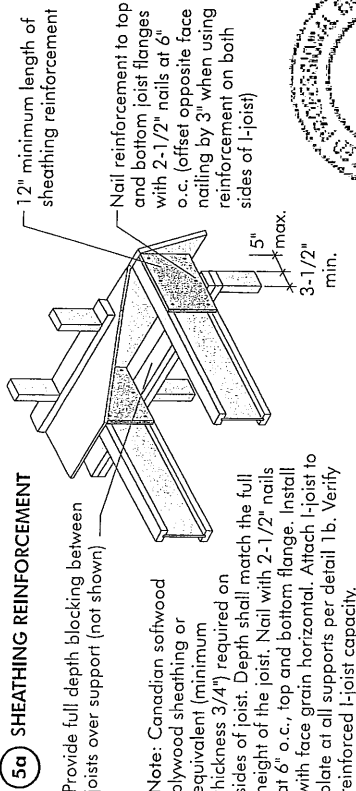
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft.-in.)										
		8	10	12	14	16	18	20	22	24	26	28
9-1/2"	N1-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---
	N1-40x	5-3"	5-8"	6-3"	6-8"	7-1"	7-5"	7-8"	8-2"	8-6"	---	---
	N1-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	7-8"	8-2"	8-6"	---	---
	N1-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-5"	7-8"	8-2"	---	---
	N1-80	5-3"	5-8"	6-0"	6-5"	6-10"	6-5"	6-8"	7-1"	7-5"	---	---
11-7/8"	N1-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	---	---
	N1-40x	6-8"	7-2"	7-6"	8-1"	8-5"	8-9"	9-3"	9-7"	10-1"	---	---
	N1-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-4"	9-8"	10-2"	10-6"	---	---
	N1-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-5"	9-9"	10-3"	---	---
	N1-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-6"	---	---
14"	N1-20	7-6"	7-7"	8-1"	8-4"	8-9"	9-2"	9-7"	10-1"	10-5"	---	---
	N1-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	11-7"	12-2"	---	---
	N1-60	8-7"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	---	---
	N1-70	8-7"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	---	---
	N1-80	9-0"	9-7"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	13-1"	---	---
16"	N1-20	10-4"	10-8"	11-2"	11-6"	12-1"	12-5"	12-9"	13-3"	13-7"	---	---
	N1-40x	10-4"	10-8"	11-2"	11-6"	12-1"	12-5"	12-9"	13-3"	13-7"	---	---
	N1-60	10-4"	10-8"	11-2"	11-6"	12-1"	12-5"	12-9"	13-3"	13-7"	---	---
	N1-70	10-4"	10-8"	11-2"	11-6"	12-1"	12-5"	12-9"	13-3"	13-7"	---	---
	N1-80	10-9"	11-3"	11-7"	12-1"	12-5"	12-9"	13-3"	13-7"	14-1"	---	---

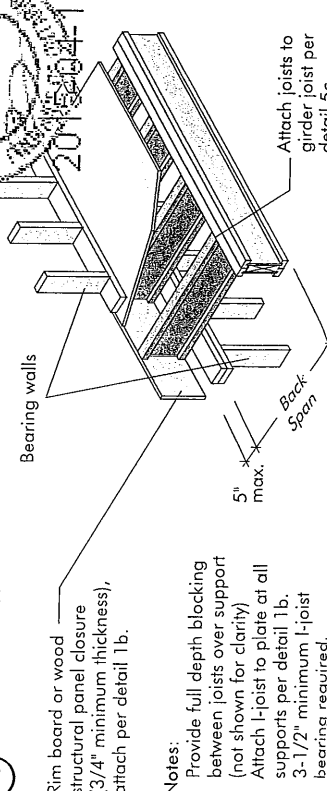
1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Duct chase opening location distance is measured from inside face of supports to centre of opening.
3. The above table is based on simple-span joists only. For other applications, contact your local distributor.
4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 13 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



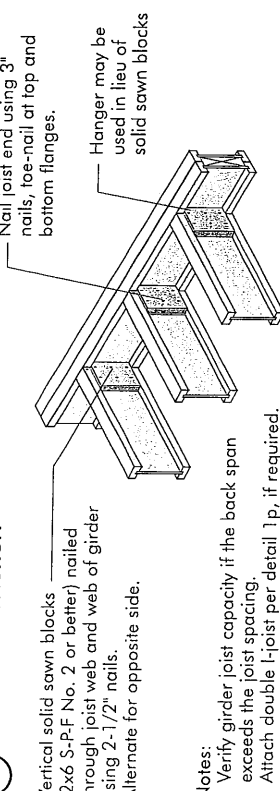
5b SET-BACK DETAIL



Notes:

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

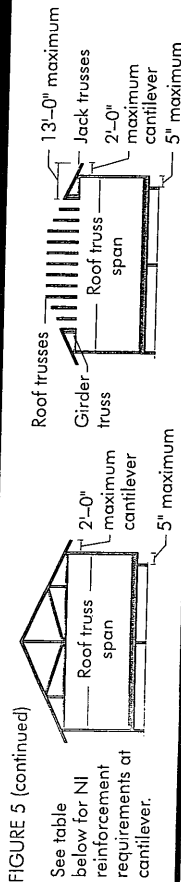
5c SET-BACK CONNECTION



Notes:

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

FIGURE 5 (continued)



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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	N	2	X	X	1	1	X	X	X	1
	30	N	2	X	X	1	1	X	X	X	1
	32	1	2	X	X	1	1	X	X	X	1
	34	1	2	X	X	2	2	X	X	X	2
14"	26	1	X	X	X	2	2	X	X	X	2
	28	1	X	X	X	2	2	X	X	X	2
	30	N	1	X	X	1	1	X	X	X	1
	32	N	2	X	X	1	1	X	X	X	1
	34	N	2	X	X	1	1	X	X	X	1
16"	26	1	X	X	X	2	2	X	X	X	2
	28	1	X	X	X	2	2	X	X	X	2
	30	N	1	X	X	1	1	X	X	X	1
	32	N	2	X	X	1	1	X	X	X	1
	34	N	2	X	X	1	1	X	X	X	1

1. N = No reinforcement required.

2 = NI reinforced with 3/4" wood structural panel on one side only.

2 = NI reinforced with 3/4" wood structural panel on both sides, or double l-joint.

X = Try a deeper joist or closer spacing.

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.

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.

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.

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.

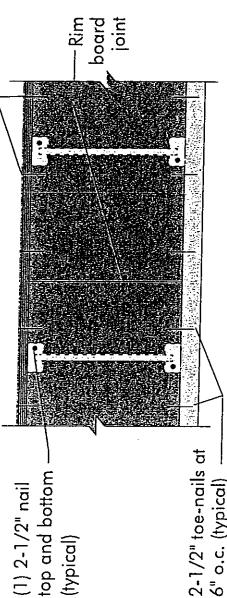
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

RIM BOARD INSTALLATION DETAILS

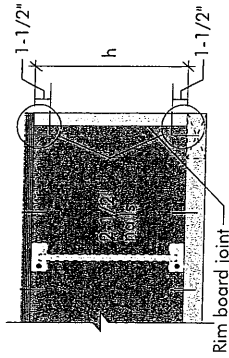
- 8b** TOE-NAIL CONNECTION
AT RIM BOARD

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim board joint Between Floor Joists

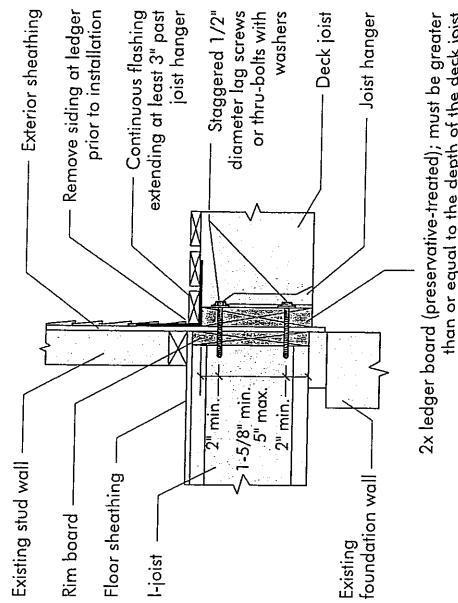
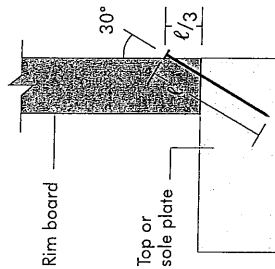


Rim board Joint at Corner



8c

8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



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



PRODUCT WARRANTY

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

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

IMPORTANT NOTE:

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.

FASTENERS FOR SHEATHING AND SUBFLOORING⁽¹⁾

Maximum Fast Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing at Fasteners
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	
16	5/8	2"	1-3/4"	2"	6"
20	5/8	2"	1-3/4"	2"	6"
24	3/4	2"	1-3/4"	2"	6"

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.

