

FROM PLAN DATED:

BUILDER: GREENPARK

SITE: RUSSEL GARDENS

MODEL: ROSEWOOD 4

ELEVATION: 1,2,3

LOT:

CITY: WATERDOWN

SALESMAN: MD

DESIGNER: CZ

REVISION:

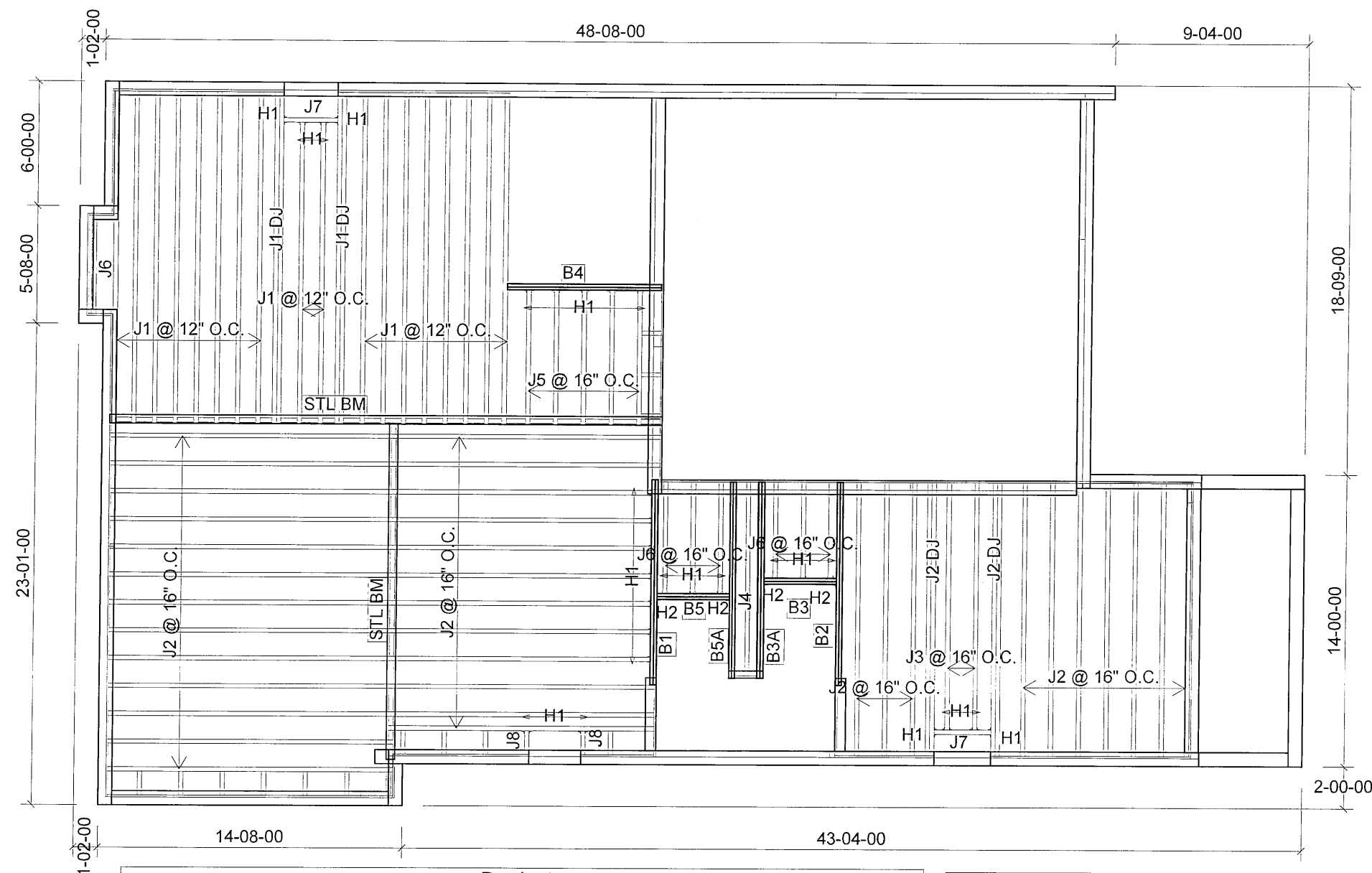
NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS. SEE
FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST 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: 21/08/2017

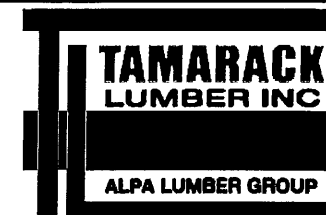
1st FLOOR

STANDARD AND WALK UP



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	18
J1 DJ	16-00-00	9 1/2" NI-40x	2	4
J2	14-00-00	9 1/2" NI-40x	1	35
J2 DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	2
J4	10-00-00	9 1/2" NI-40x	1	1
J5	8-00-00	9 1/2" NI-40x	1	5
J6	6-00-00	9 1/2" NI-40x	1	7
J7	4-00-00	9 1/2" NI-40x	1	2
J8	2-00-00	9 1/2" NI-40x	1	2
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3A	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5A	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
18	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H2	HGUS410



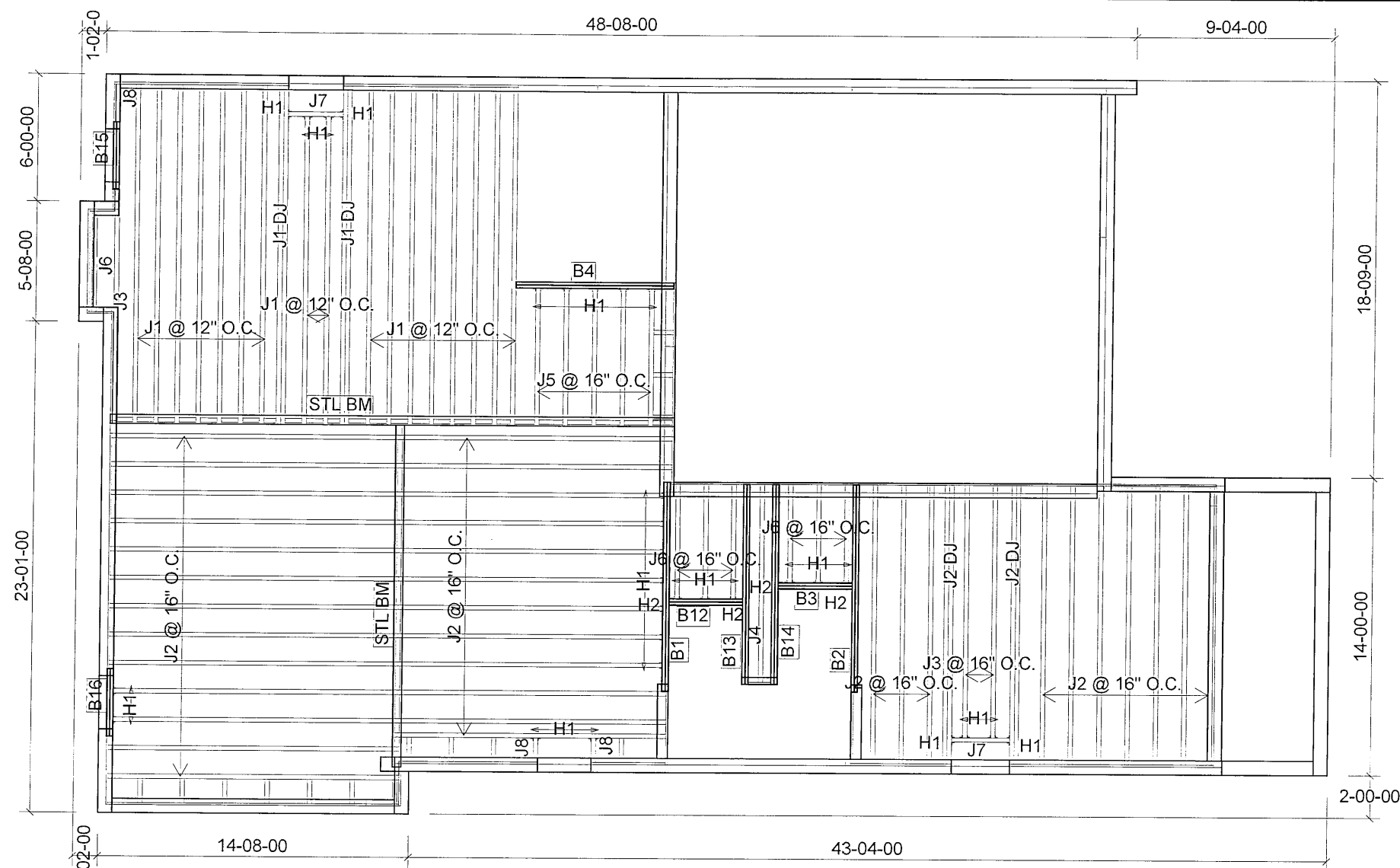
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MODEL: ROSEWOOD 4
ELEVATION: 1,2,3
LOT:
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SALESMAN: MD
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SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
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DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 21/08/2017

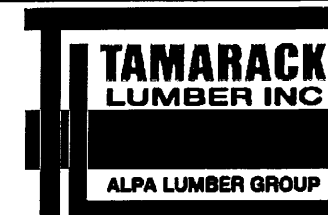
1st FLOOR

DECK



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	17
J1 DJ	16-00-00	9 1/2" NI-40x	2	4
J2	14-00-00	9 1/2" NI-40x	1	35
J2 DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	3
J4	10-00-00	9 1/2" NI-40x	1	1
J5	8-00-00	9 1/2" NI-40x	1	5
J6	6-00-00	9 1/2" NI-40x	1	7
J7	4-00-00	9 1/2" NI-40x	1	2
J8	2-00-00	9 1/2" NI-40x	1	3
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
20	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H2	HGUS410

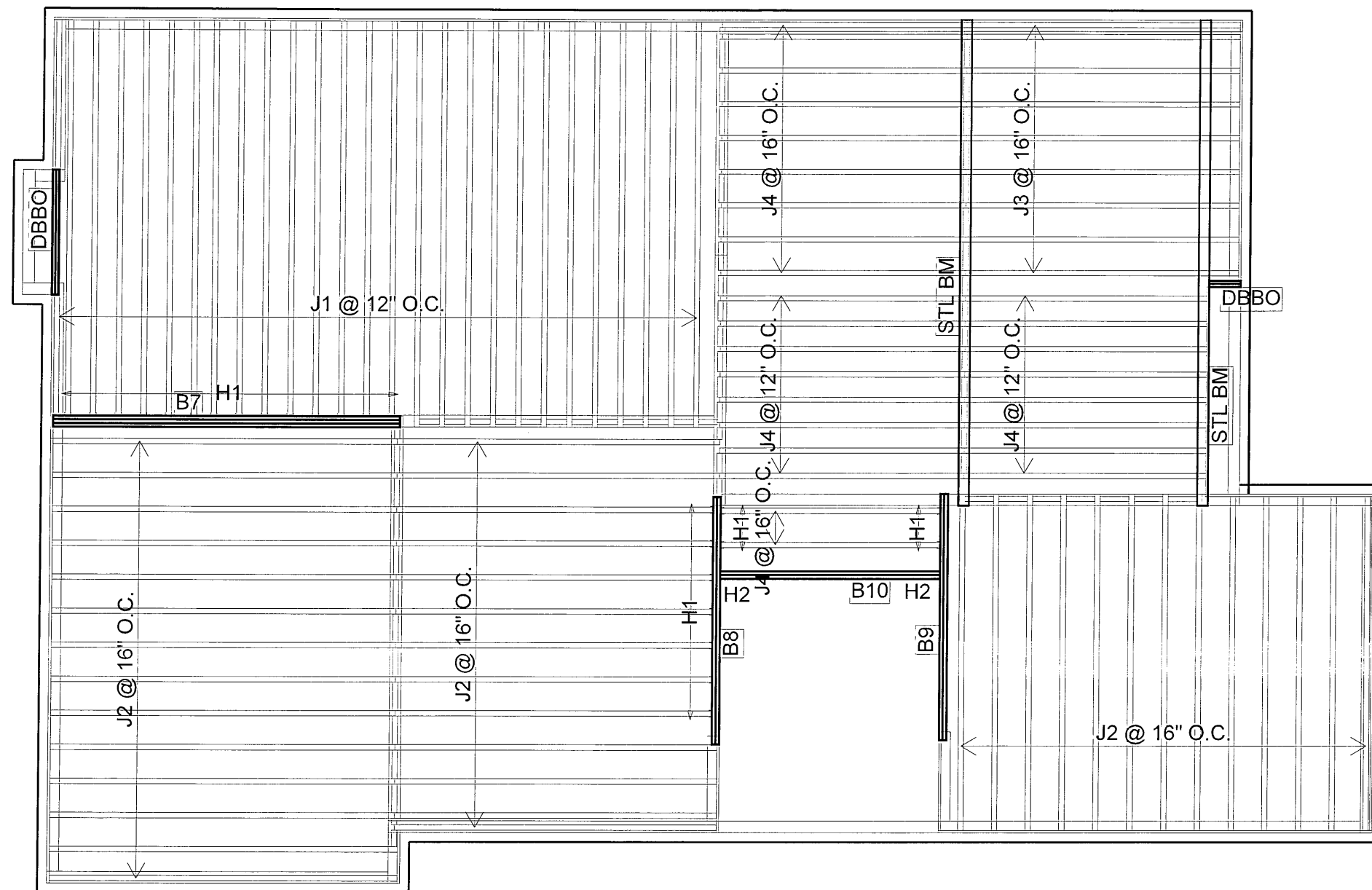


FROM PLAN DATED:
BUILDER: GREENPARK
SITE: RUSSEL GARDENS
MODEL: ROSEWOOD 4
ELEVATION: 1
LOT:
CITY: WATERDOWN
SALESMAN: MD
DESIGNER: CZ
REVISION:

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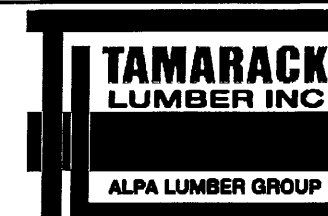
DATE: 21/08/2017

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	27
J2	14-00-00	9 1/2" NI-40x	1	40
J3	12-00-00	9 1/2" NI-40x	1	9
J4	10-00-00	9 1/2" NI-40x	1	27
B7	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B10	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
14	H1	IUS2.56/9.5
2	H2	HGUS410

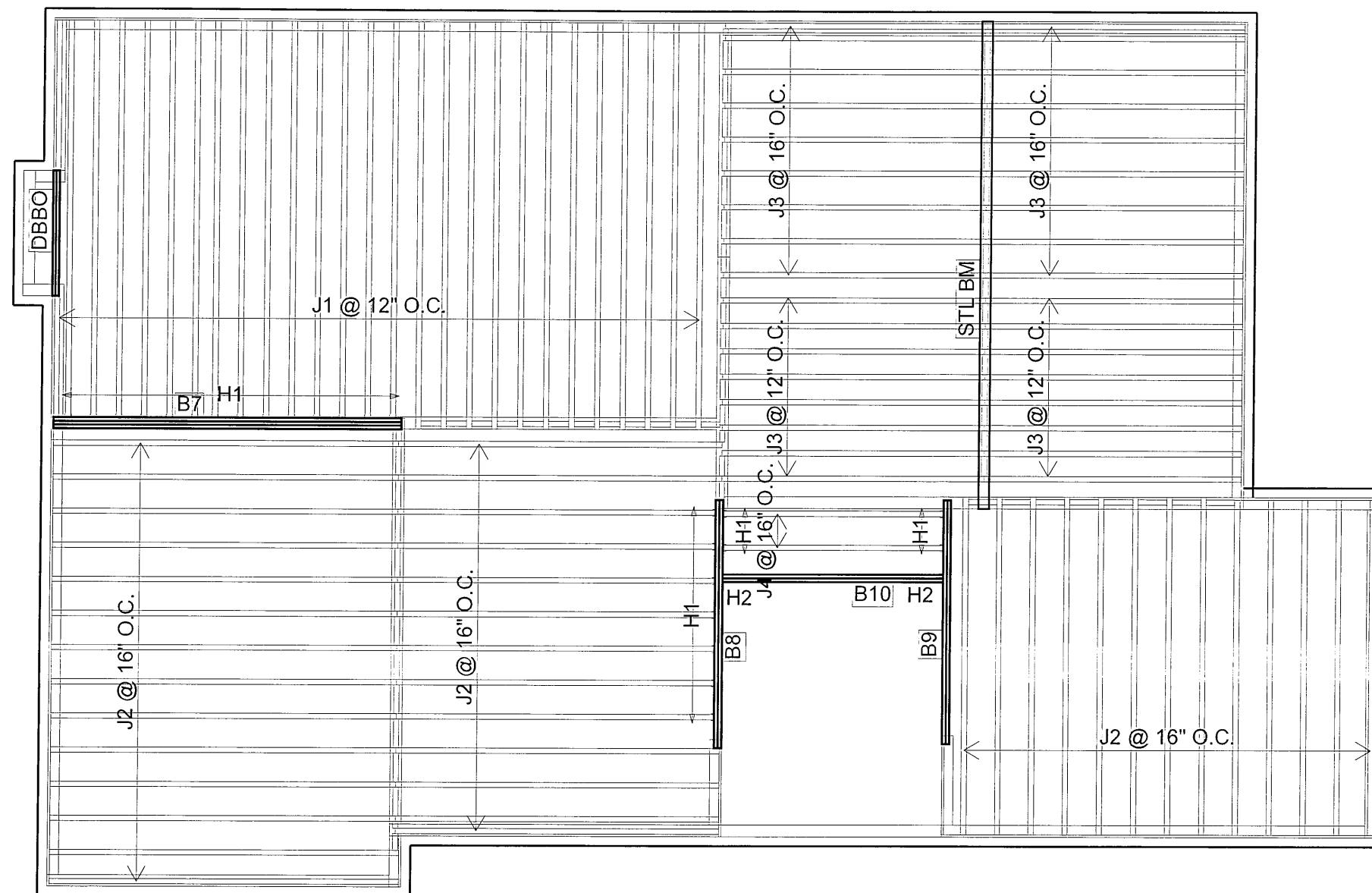


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MODEL: ROSEWOOD 4
ELEVATION: 2,3
LOT:
CITY: WATERDOWN
SALESMAN: MD
DESIGNER: CZ
REVISION:

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DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 21/08/2017

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	27
J2	14-00-00	9 1/2" NI-40x	1	40
J3	12-00-00	9 1/2" NI-40x	1	34
J4	10-00-00	9 1/2" NI-40x	1	2
B7	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B10	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
14	H1	IUS2.56/9.5
2	H2	HGUS410

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
May 17, 2017 15:12

PROJECT
GREENPARK
ROSEWOOD 4
WATERDOWN
J1-1ST FL-wwb

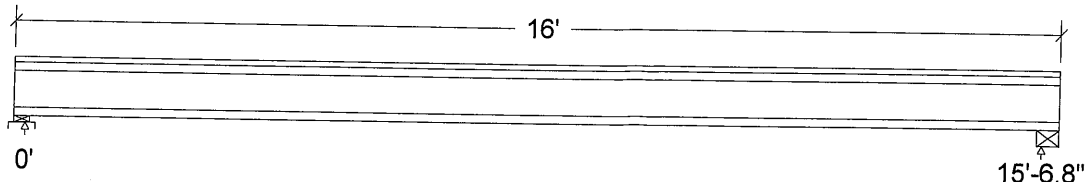
Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

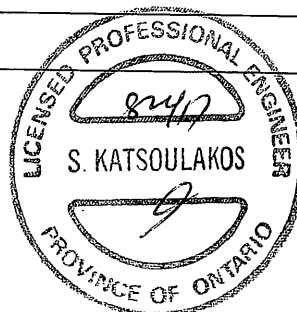
Loads:

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	156		156
Live	311		311
Factored:			
Total	661		661
Bearing:			
Resistance			
Joist	1876		1893
Support	4612		-
Des ratio			
Joist	0.35		0.35
Support	0.14		-
Load case	#2		#2
Length	3		4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.00		-



DWG NO. TAM 42749-17
STRUCTURAL
COMPONENT ONLY

96/12

Nordic Joist 9-1/2" NI-40x Floor joist @ 12" o.c.
Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;
Total length: 16'; 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	Vf = 661	Vr = 1895	lbs	Vf/Vr = 0.35
Moment(+)	Mf = 2574	Mr = 4824	lbs-ft	Mf/Mr = 0.53
Perm. Defl'n	0.11 = <L/999	0.52 = L/360	in	0.21
Live Defl'n	0.22 = L/838	0.39 = L/480	in	0.57
Total Defl'n	0.33 = L/559	0.78 = L/240	in	0.43
Bare Defl'n	0.27 = L/703	0.52 = L/360	in	0.51
Vibration	Lmax = 15'-7	Lv = 17'-2	ft	
Defl'n	= 0.031	= 0.042	in	0.73

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	4824	1.00	1.00	-	1.000	-	-	-	#2
EI	218.1 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 = 265e06 lb-in² K= 4.94e06 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 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 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 4249-17
 STRUCTURAL
 COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
May 17, 2017 16:18

PROJECT
GREENPARK
ROSEWOOD 4
WATERDOWN
J1-2ND FL-.www

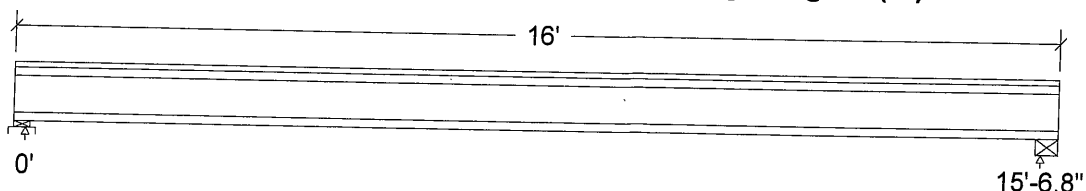
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Nordic Sizer – Canada 6.4

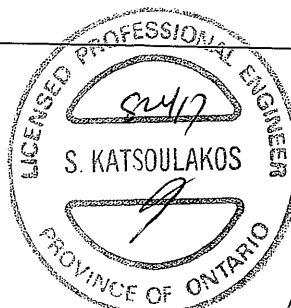
Loads:

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	156			156
Live	311			311
Factored:				
Total	661			661
Bearing:				
Resistance				
Joist	1876			1893
Support	4612			-
Des ratio				
Joist	0.35			0.35
Support	0.14			-
Load case	#2			#2
Length	3			4
Min req'd	1-3/4			1-3/4
Stiffener	No			No
Kd	1.00			1.00
KB support	1.00			-
fcp sup	769			-
Kzcp sup	1.00			-



DWG NO. TAM 4250-17
STRUCTURAL
COMPONENT ONLY

Nordic Joist 9-1/2" NI-40x Floor joist @ 12" o.c.

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;
Total length: 16'; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling
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	Vf = 661	Vr = 1895	lbs	Vf/Vr = 0.35
Moment (+)	Mf = 2574	Mr = 4824	lbs-ft	Mf/Mr = 0.53
Perm. Defl'n	0.11 = <L/999	0.52 = L/360	in	0.22
Live Defl'n	0.23 = L/819	0.39 = L/480	in	0.59
Total Defl'n	0.34 = L/546	0.78 = L/240	in	0.44
Bare Defl'n	0.27 = L/703	0.52 = L/360	in	0.51
Vibration	Lmax = 15'-7	Lv = 16'-9	ft	
Defl'n	= 0.033	= 0.042	in	0.80

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	4824	1.00	1.00	-	1.000	-	-	-	#2
EI	218.1 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} = 258e06 lb-in² K= 4.94e06 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 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 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.

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DWG NO. TAM 42252-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1281)

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

August 21, 2017 11:44:54

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

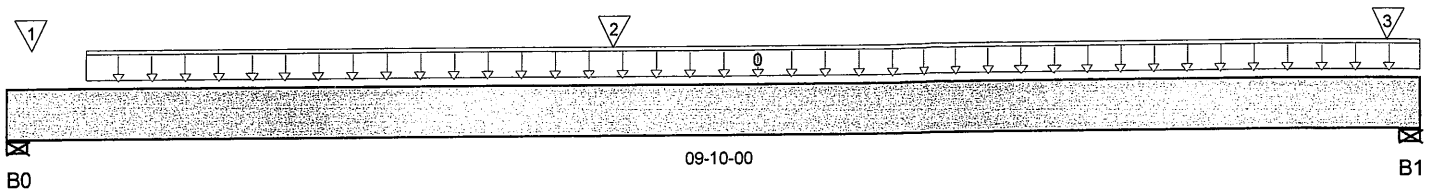
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i1281)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,803 / 0	1,810 / 0		
B1, 5-1/2"	3,504 / 0	2,049 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-08	09-10-00	256	128			n/a
1	8(i425)	Conc. Pt. (lbs)	L	00-02-00	00-02-00	1,339	1,022			n/a
2	B12(i1791)	Conc. Pt. (lbs)	L	04-02-06	04-02-06	606	320			n/a
3	2(i388)	Conc. Pt. (lbs)	L	09-07-04	09-07-04	1,928	1,207			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,760 ft-lbs	25,408 ft-lbs	34.5%	1	04-02-06
End Shear	3,167 lbs	11,571 lbs	27.4%	1	01-01-08
Total Load Defl.	L/620 (0.177")	0.458"	38.7%	4	04-09-15
Live Load Defl.	L/999 (0.116")	n/a	n/a	5	04-09-15
Max Defl.	0.177"	n/a	n/a	4	04-09-15
Span / Depth	11.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	6,466 lbs	32.6%	37.9%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	7,819 lbs	76.1%	33.3%	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

DWG NO. TAM 42757-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1281)

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

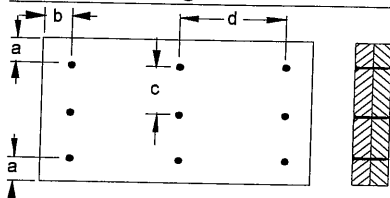
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i128

Specifier:

Designer: CZ

Company:

Msc:

Connection Diagram

a minimum = 2" c = 2-3/4"
 b minimum = 3" d = 4"

Calculated Side Load = 512.6 lb/ft

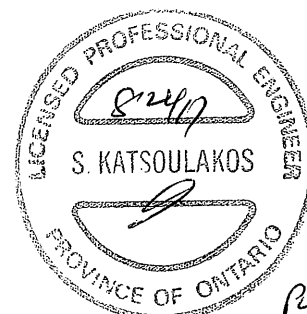
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 16d Nails

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

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

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DWG NO. YAM 4251-17
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

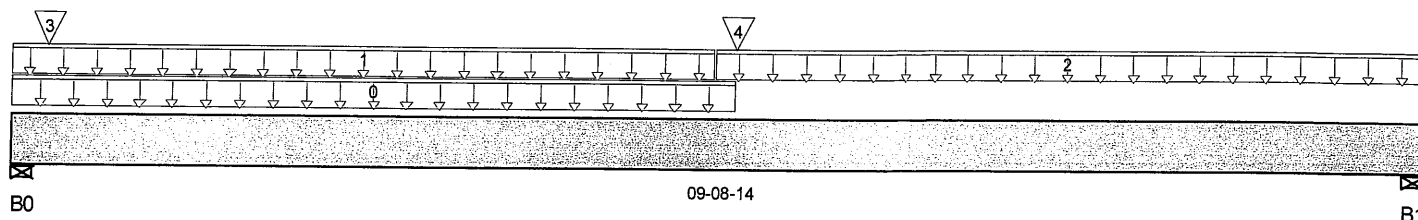
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i1283)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	661 / 0	884 / 0		
B1, 4-3/8"	428 / 0	342 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	04-11-12		60			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-10-00	21	10			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	04-10-00	09-08-14	27	13			n/a
3	7(i424)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	265	405			n/a
4	B3(i1347)	Conc. Pt. (lbs)	L	04-11-12	04-11-12	592	312			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,989 ft-lbs	25,408 ft-lbs	15.7%	1	04-11-12
End Shear	1,044 lbs	11,571 lbs	9%	1	01-01-08
Total Load Defl.	L/999 (0.074")	n/a	n/a	4	04-10-00
Live Load Defl.	L/999 (0.04")	n/a	n/a	5	04-10-14
Max Defl.	0.074"	n/a	n/a	4	04-10-00
Span / Depth	11.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 4" x 3-1/2"	2,096 lbs	10.6%	12.3%	Unspecified
B1	Wall/Plate 4-3/8" x 3-1/2"	1,069 lbs	13.1%	5.7%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



DWG NO. YAM 4252-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\Flush Beams\B2(i1283)

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

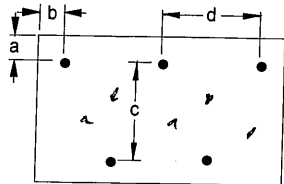
Description: Designs\Flush Beams\Basment\Flush Beams\B2(i1283)

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

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

Calculated Side Load = 131.2 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

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

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DWG NO. TAM 4252 17
 STRUCTURAL
 COMPONENT ONLY

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

August 21, 2017 11:44:54

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

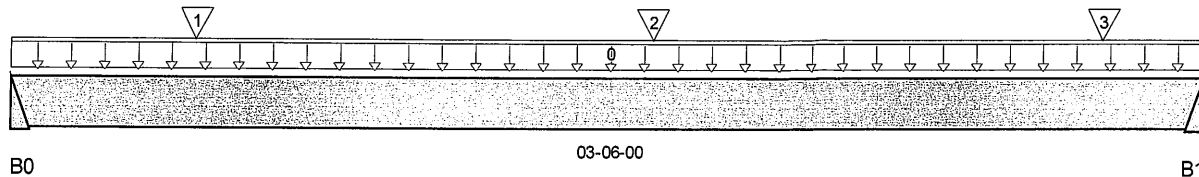
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1347)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	571 / 0	302 / 0		
B1	586 / 0	309 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	240	120			n/a
1	J6(i1424)	Conc. Pt. (lbs)	L	00-06-08	00-06-08	99	49			n/a
2	J6(i1395)	Conc. Pt. (lbs)	L	01-10-08	01-10-08	131	65			n/a
3	J6(i1303)	Conc. Pt. (lbs)	L	03-02-08	03-02-08	87	43			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	991 ft-lbs	25,408 ft-lbs	3.9%	1	01-10-08
End Shear	624 lbs	11,571 lbs	5.4%	1	00-11-08
Total Load Defl.	L/999 (0.003")	n/a	n/a	4	01-09-02
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	01-09-02
Max Defl.	0.003"	n/a	n/a	4	01-09-02
Span / Depth	4.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,234 lbs	n/a	14.5%	HGUS4 10
B1 Hanger	2" x 3-1/2"	1,265 lbs	n/a	14.8%	HGUS4 10

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

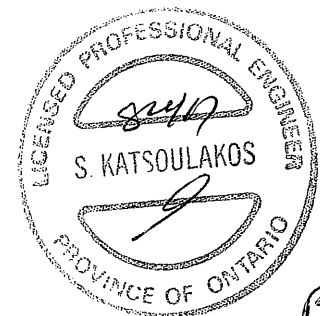
Resistance Factor phi has been applied to all presented results per CSA O86.

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



DWG NO. TAM 42753-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i1347)

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

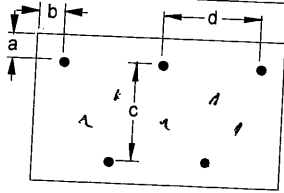
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1347

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

4 rows
2" dia
1"

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

Calculated Side Load = 191.9 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**

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

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2022
DWG NO. YAM 4253-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

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

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: WAT...WN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 25, 2018 13:41:19

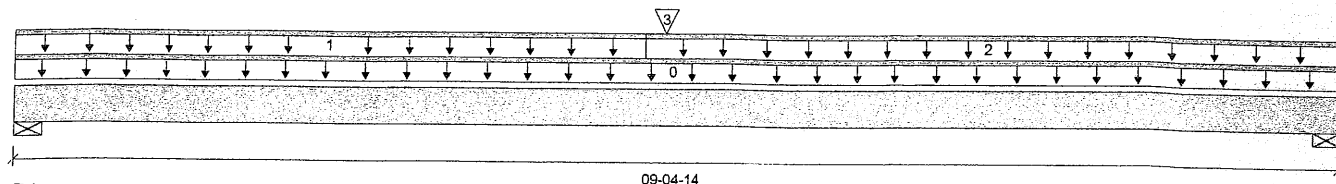
File name: ROSEWOOD 4 EL 1.mmdl

Description: Basement\Flush Beams\B3A(i1722)

Specifier:

Designer: CZ

Company:



B1

09-04-14

B2

Total Horizontal Product Length = 09-04-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	372 / 0	239 / 0		
B2, 4-3/8"	394 / 0	250 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-04-14	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-06-00	Top	16	8			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	04-06-00	09-04-14	Top	27	13			n/a
3	B3(i1686)	Conc. Pt. (lbs)	L	04-07-12	04-07-12	Top	564	298			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3,256 ft-lbs	23,220 ft-lbs	14.0 %	1	04-07-12
End Shear	825 lbs	11,571 lbs	7.1 %	1	08-03-00
Total Load Deflection	L/999 (0.054")	n/a	n/a	4	04-07-12
Live Load Deflection	L/999 (0.034")	n/a	n/a	5	04-07-12
Max Defl.	0.054"	n/a	n/a	4	04-07-12
Span / Depth	11.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	857 lbs	4.3 %	5.0 %	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	904 lbs	11.1 %	4.8 %	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.

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.

DWG NO. TAM T1800655 1/2
STRUCTURAL
COMPONENT ONLY



Boise Cascade

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

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: WAT...WN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 25, 2018 13:41:19

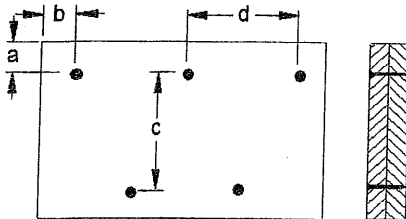
File name: ROSEWOOD 4 EL 1.mmdl

Description: Basement\Flush Beams\B3A(i1722)

Specifier:

Designer: CZ

Company:

Connection Diagram: Full Length of Member

a minimum = 2"
b minimum = 3"

c = 5-1/2"
d = 12"

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

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.

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DWG NO. TAM T1800655 3/2
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4(i1215)

BC CALC® Design Report



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

May 17, 2017 16:29:19

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD4-EL1.mmdl

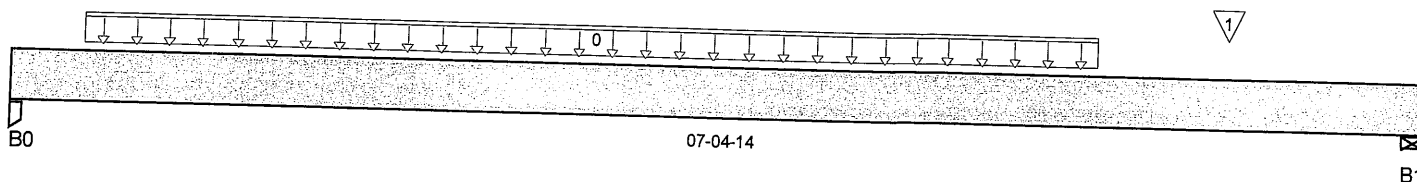
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i1215)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 07-04-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	448 / 0	257 / 0		
B1, 4-3/8"	449 / 0	258 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-08	05-08-08	1.00	0.65	1.00	1.15	
1	J6(i1183)	Conc. Pt. (lbs)	L	06-04-08	06-04-08	166	82			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,843 ft-lbs	25,408 ft-lbs	7.3%	1	03-08-08
End Shear	961 lbs	11,571 lbs	8.3%	1	01-01-00
Total Load Defl.	L/999 (0.022")	n/a	n/a	4	03-07-08
Live Load Defl.	L/999 (0.014")	n/a	n/a	5	03-07-08
Max Defl.	0.022"	n/a	n/a	4	03-07-08
Span / Depth	8.7	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 3-1/2"	994 lbs	10%	6.7%	Unspecified
B1 Wall/Plate	4-3/8" x 3-1/2"	996 lbs	12.2%	5.3%	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



DWG NO. TAM 42254-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4(i1215)

BC CALC® Design Report



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

May 17, 2017 16:29:19

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD4-EL1.mmdl

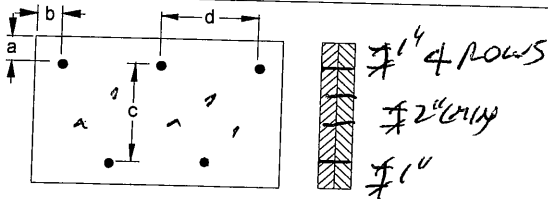
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i1215)

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

a minimum = 1" c = 2-1/2"
 b minimum = 3" d = 12"

Calculated Side Load = 256.6 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

Disclosure

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

Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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DWG NO. TAM 4254-17
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade

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

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: WAT...WN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 25, 2018 13:41:18

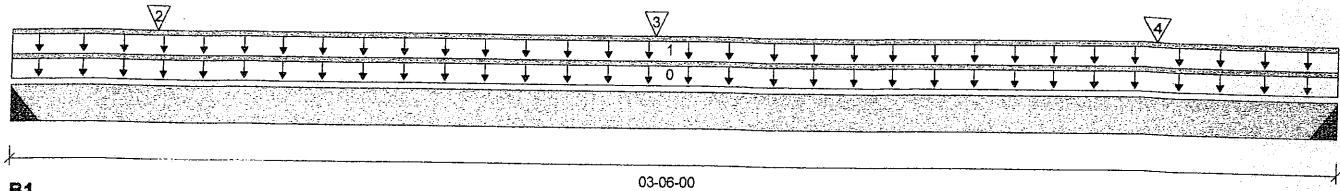
File name: ROSEWOOD 4 EL 1.mmdl

Description: Basment\Flush Beams\B5(i1661)

Specifier:

Designer: CZ

Company:



Total Horizontal Product Length = 03-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	605 / 0	319 / 0		
B2, 2"	600 / 0	317 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top	240	120			n/a
2	J6(i1660)	Conc. Pt. (lbs)	L	00-04-08	00-04-08	Top	105	52			n/a
3	J6(i1664)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	Top	151	75			n/a
4	J6(i1662)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	Top	109	55			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,041 ft-lbs	23,220 ft-lbs	4.5 %	1	01-08-08
End Shear	648 lbs	11,571 lbs	5.6 %	1	02-06-08
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-09-02
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-09-02
Max Defl.	0.003"	n/a	n/a	4	01-09-02
Span / Depth	4.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 3-1/2"	1,307 lbs	n/a	15.3 %	HGUS410
B2	Hanger 2" x 3-1/2"	1,295 lbs	n/a	15.2 %	HGUS410

Cautions

Header for the hanger HGUS410 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

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

Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.



DWG NO. TAM
STRUCTURAL
COMPONENT ONLY

T1800654 1/2



Boise Cascade

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

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: WAT...WN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 25, 2018 13:41:18

File name: ROSEWOOD 4 EL 1.mmdl

Description: Basement\Flush Beams\B5(i1661)

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.

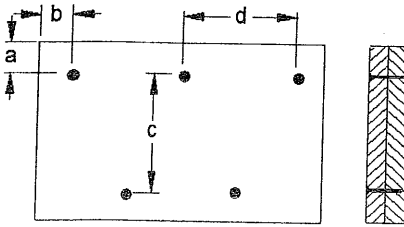
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

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: Full Length of Member

a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 12"

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

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 11400634 2/2
STRUCTURAL
COMPONENT ONLY



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

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 25, 2018 13:41:19

Build 6475

Job name:

File name: ROSEWOOD 4 EL 1.mmdl

Address:

Description: Basement\Flush Beams\B5A(i1659)

City, Province, Postal Code: WAT...WN

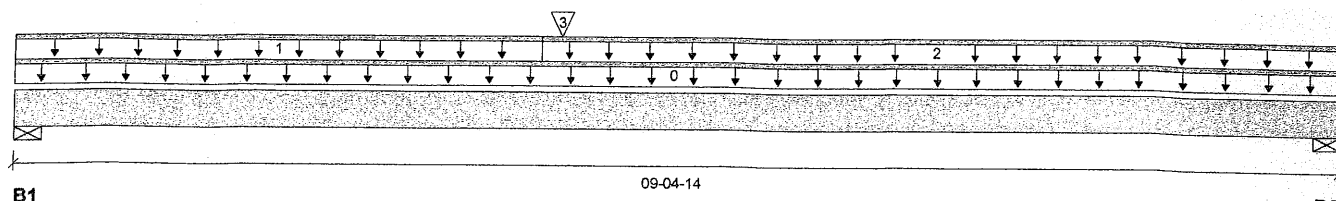
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-04-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	451 / 0	280 / 0		
B2, 4-3/8"	366 / 0	235 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-04-14	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-09-00	Top	17	9			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-09-00	09-04-14	Top	27	13			n/a
3	B5(i1661)	Conc. Pt. (lbs)	L	03-10-12	03-10-12	Top	600	317			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3,350 ft-lbs	23,220 ft-lbs	14.4 %	1	03-10-12
End Shear	971 lbs	11,571 lbs	8.4 %	1	01-01-08
Total Load Deflection	L/999 (0.056")	n/a	n/a	4	04-06-15
Live Load Deflection	L/999 (0.035")	n/a	n/a	5	04-05-05
Max Defl.	0.056"	n/a	n/a	4	04-06-15
Span / Depth	11.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	1,027 lbs	5.2 %	6.0 %	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	843 lbs	10.3 %	4.5 %	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

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.



1/2

DWG NO. TAM T1800653
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****Basment\Flush Beams\B5A(i1659)**

Dry | 1 span | No cant.

PASSED

June 25, 2018 13:41:19

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: WAT...WN

Customer:

Code reports: CCMC 12472-R

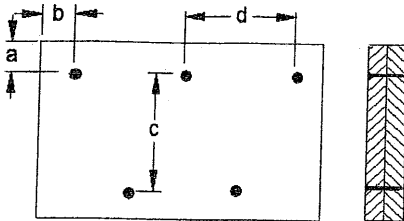
File name: ROSEWOOD 4 EL 1.mmdl

Description: Basment\Flush Beams\B5A(i1659)

Specifier:

Designer: CZ

Company:

Connection Diagram: Full Length of Member

a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 12"

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

Connectors are:

Nails

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

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DWG NO. TAM **T1800653**
STRUCTURAL
COMPONENT ONLY



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B7(i938)

BC CALC® Design Report



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

May 17, 2017 16:29:20

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD4-EL1.mmdl

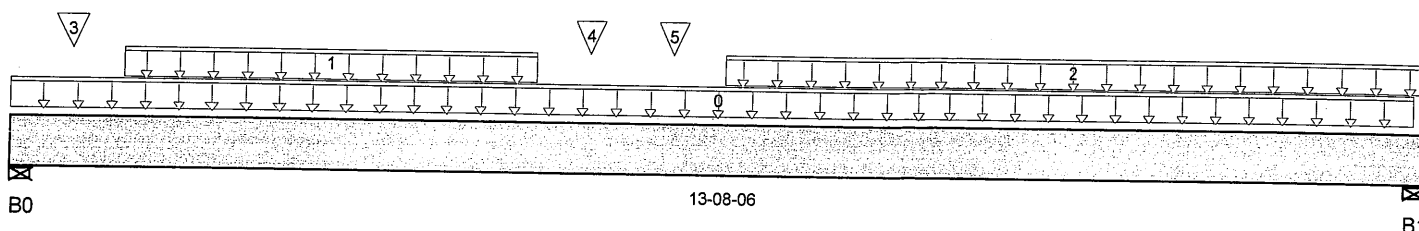
Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i938)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 13-08-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	2,158 / 0	1,177 / 0		
B1, 4"	2,304 / 0	1,251 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-07-02	16	8			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-00-14	05-00-14	314	157			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	06-10-06	13-08-06	322	161			n/a
3	J1(i928)	Conc. Pt. (lbs)	L	00-06-14	00-06-14	231	115			n/a
4	J1(i806)	Conc. Pt. (lbs)	L	05-06-14	05-06-14	282	141			n/a
5	J1(i988)	Conc. Pt. (lbs)	L	06-04-06	06-04-06	282	141			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	15,417 ft-lbs	39,636 ft-lbs	38.9%	1	06-10-06
End Shear	4,965 lbs	17,356 lbs	28.6%	1	12-06-14
Total Load Defl.	L/348 (0.452")	0.656"	68.9%	4	06-10-06
Live Load Defl.	L/538 (0.293")	0.437"	66.9%	5	06-10-06
Max Defl.	0.452"	n/a	n/a	4	06-10-06
Span / Depth	16.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 5-1/4"	4,708 lbs	38.4%	16.8%	Unspecified
B1 Wall/Plate	4" x 5-1/4"	5,019 lbs	44.8%	19.6%	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.

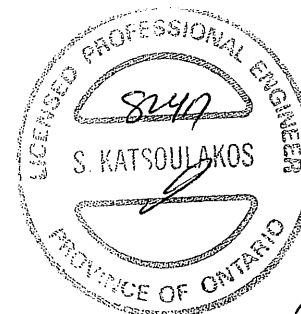
Resistance Factor phi has been applied to all presented results per CSA O86.

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

CONFORMS TO OBC 2012



DWG NO. TAM 42755-17
STRUCTURAL
COMPONENT ONLY



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B7(i938)

BC CALC® Design Report



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

May 17, 2017 16:29:20

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD4-EL1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i938)

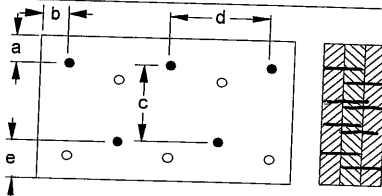
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



4 rows

a minimum = 1"

c = 6 1/2"

b minimum = 3"

d = 6"

e minimum = 3"

Calculated Side Load = 659.1 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. Nailing schedule applies to both sides of the member.

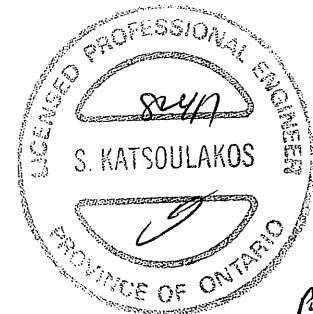
Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 42355-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B8(i1629)

BC CALC® Design Report



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

August 21, 2017 11:45:17

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

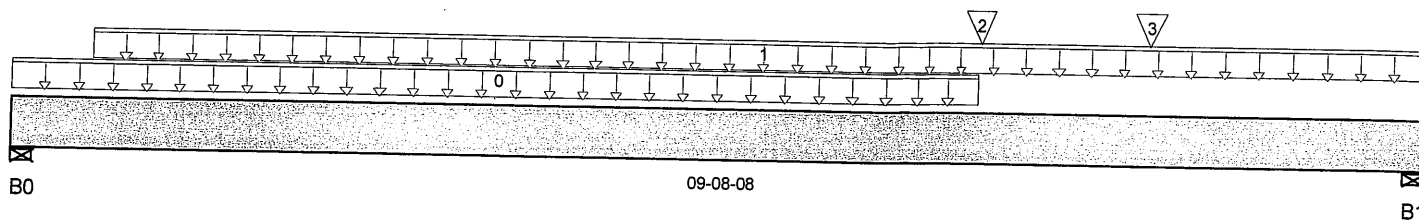
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i1629)

Specifier:

Designer: CZ

Company:

Misc:

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

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,246 / 0	948 / 0		
B1, 4"	1,915 / 0	1,165 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-07-12		60			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-08	09-08-08	286	143			n/a
2	B10(i1648)	Conc. Pt. (lbs)	L	06-07-12	06-07-12	285	184			n/a
3	J4(i1672)	Conc. Pt. (lbs)	L	07-10-00	07-10-00	235	118			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,052 ft-lbs	25,408 ft-lbs	31.7%	1	05-02-08
End Shear	3,373 lbs	11,571 lbs	29.1%	1	08-07-00
Total Load Defl.	L/634 (0.174")	0.458"	37.9%	4	04-10-08
Live Load Defl.	L/999 (0.102")	n/a	n/a	5	04-10-08
Max Defl.	0.174"	n/a	n/a	4	04-10-08
Span / Depth	11.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	3,053 lbs	40.8%	17.9%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	4,329 lbs	57.9%	25.3%	Unspecified

Notes

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

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

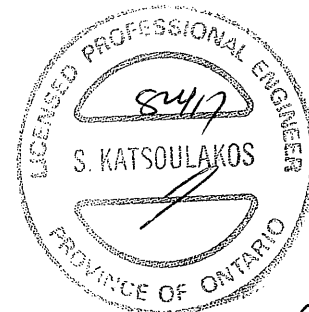
Calculations assume member is fully braced.

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 DBC 2012

DWG NO. YAM 4256-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B8(i1629)

BC CALC® Design Report



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

August 21, 2017 11:45:17

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

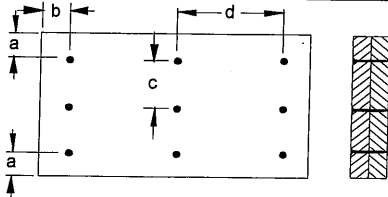
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i1629)

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

a minimum = 2" c = 2-3/4"
 b minimum = 3" d = 6"

Calculated Side Load = 521.6 lb/ft

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

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 425617
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:45:17

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

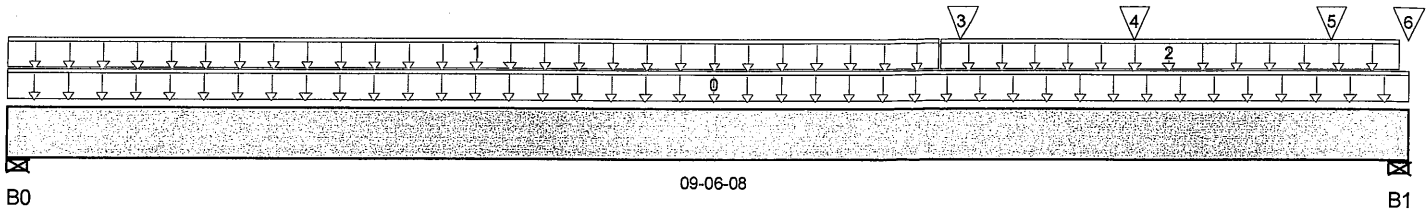
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i1489)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	377 / 0	534 / 0		
B1, 4"	1,067 / 0	895 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	09-06-08		60			n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-04-00	18	9			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	06-04-00	09-05-11	15	7			n/a
3	B10(i1648)	Conc. Pt. (lbs)	L	06-05-12	06-05-12	786	435			n/a
4	J4(i1672)	Conc. Pt. (lbs)	L	07-08-00	07-08-00	235	118			n/a
5	J4(i1686)	Conc. Pt. (lbs)	L	09-00-00	09-00-00	243	121			n/a
6	FC2 Floor Material	Conc. Pt. (lbs)	L	09-06-04	09-06-04	16				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,052 ft-lbs	25,408 ft-lbs	19.9%	1	06-05-12
End Shear	2,175 lbs	11,571 lbs	18.8%	1	08-05-00
Total Load Defl.	L/999 (0.092")	n/a	n/a	4	05-00-06
Live Load Defl.	L/999 (0.047")	n/a	n/a	5	05-02-05
Max Defl.	0.092"	n/a	n/a	4	05-00-06
Span / Depth	11.4	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	1,233 lbs	16.5%	7.2%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,719 lbs	36.4%	15.9%	Unspecified

Notes



DWONG, YAM 4275217
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i1489)

BC CALC® Design Report



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

August 21, 2017 11:45:17

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i1489)

Specifier:

Designer: CZ

Company:

Misc:

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.

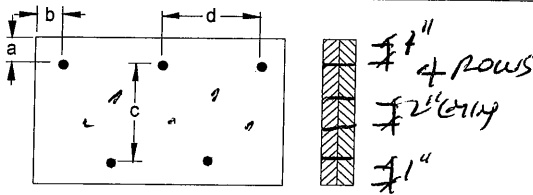
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO CBC 2012**Disclosure**

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Connection Diagram

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

Calculated Side Load = 287.0 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

DW0ND.YAM 4225717
STRUCTURAL
COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

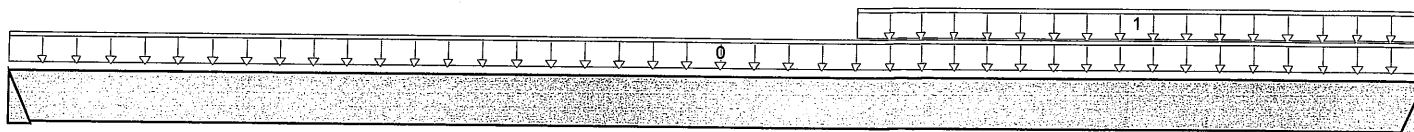
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i1648)

Specifier:

Designer: CZ

Company:

Misc:



B0

08-08-00

B1

Total Horizontal Product Length = 08-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	279 / 0	181 / 0		
B1	792 / 0	438 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-08-00	27	13			n/a
1	User Load	Unf. Lin. (lb/ft)	L	05-02-00	08-08-00	240	120			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,423 ft-lbs	25,408 ft-lbs	9.5%	1	05-07-12
End Shear	1,181 lbs	11,571 lbs	10.2%	1	07-08-08
Total Load Defl.	L/999 (0.04")	n/a	n/a	4	04-07-11
Live Load Defl.	L/999 (0.025")	n/a	n/a	5	04-08-07
Max Defl.	0.04"	n/a	n/a	4	04-07-11
Span / Depth	10.7	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	645 lbs	n/a	7.6%	HGUS4 10
B1 Hanger	2" x 3-1/2"	1,735 lbs	n/a	20.3%	HGUS4 10

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

 DWG NO. YAM 425B17
 STRUCTURAL
 COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i164

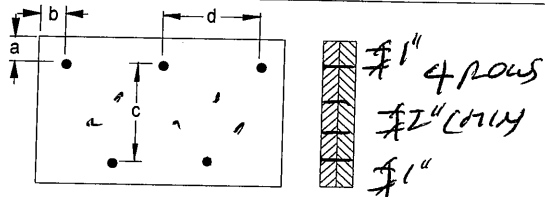
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1" c = 7-1/2"
b minimum = 3" d = 6"

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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

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DWG NO. YAM 42758 17
STRUCTURAL
COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

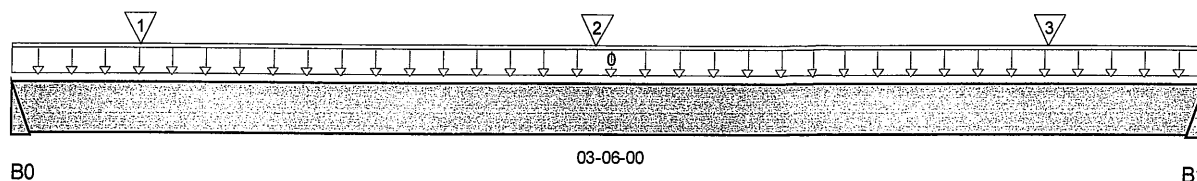
Description: Designs\Flush Beams\Basment\Flush Beams\B12(i1791

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	606 / 0	320 / 0		
B1	601 / 0	317 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	240	120			n/a
1	J6(i1377)	Conc. Pt. (lbs)	L	00-04-08	00-04-08	105	53			n/a
2	J6(i1297)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	152	76			n/a
3	J6(i1337)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	110	55			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,044 ft-lbs	25,408 ft-lbs	4.1%	1	01-08-08
End Shear	650 lbs	11,571 lbs	5.6%	1	02-06-08
Total Load Defl.	L/999 (0.003")	n/a	n/a	4	01-09-02
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	01-09-02
Max Defl.	0.003"	n/a	n/a	4	01-09-02
Span / Depth	4.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,310 lbs	n/a	15.3%	HGUS410
B1 Hanger	2" x 3-1/2"	1,298 lbs	n/a	15.2%	HGUS410

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



1026
DWG NO. TAM 42259-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B12(i1791)

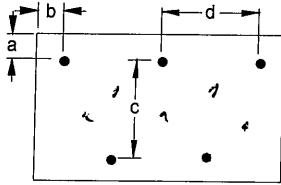
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



1" 4 rows
2" 4 rows
1"

a minimum = 1" c = 7-1/2"
b minimum = 3" d = 6"

Calculated Side Load = 223.0 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

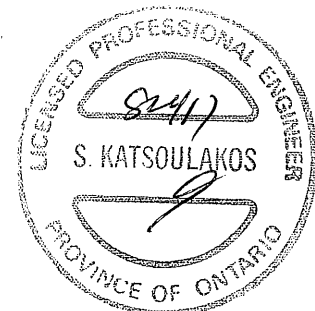
3 1/2" ARDOX SPIRAL

Disclosure

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

Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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DWG NO. TAM 42257-17
STRUCTURAL
COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

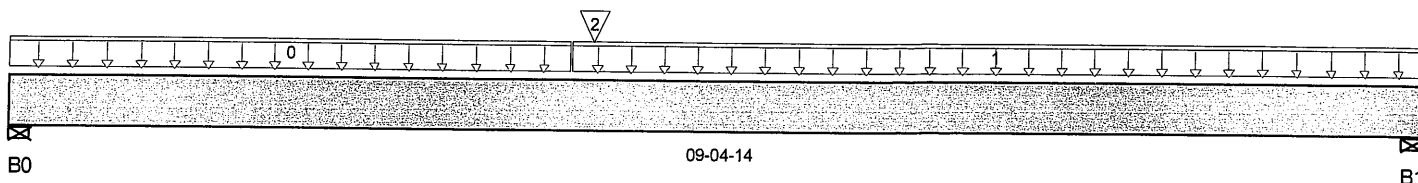
Description: Designs\Flush Beams\Basement\Flush Beams\B13(i1792

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-04-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	454 / 0	282 / 0		
B1, 4-3/8"	364 / 0	234 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-10	17	9			n/a
1	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	03-08-10	09-04-14	27	13			n/a
2	B12(i1791)	Conc. Pt. (lbs)	L	03-10-06	03-10-06	601	317			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,344 ft-lbs	25,408 ft-lbs	13.2%	1	03-10-06
End Shear	977 lbs	11,571 lbs	8.4%	1	01-01-08
Total Load Defl.	L/999 (0.056")	n/a	n/a	4	04-05-13
Live Load Defl.	L/999 (0.035")	n/a	n/a	5	04-05-13
Max Defl.	0.056"	n/a	n/a	4	04-05-13
Span / Depth	11.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	1,033 lbs	5.2%	6%	Unspecified
B1 Wall/Plate	4-3/8" x 3-1/2"	839 lbs	10.3%	4.5%	Unspecified

Notes

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

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

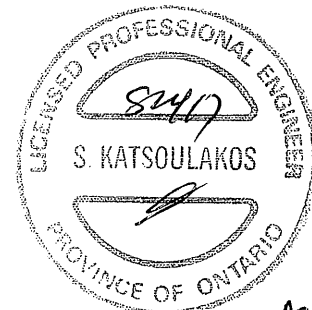
Calculations assume member is fully braced.

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


DWG NO. TAM 42760.17

**STRUCTURAL
COMPONENT ONLY**

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B13(i1792)

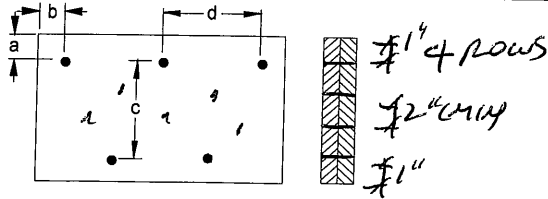
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 138.0 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.

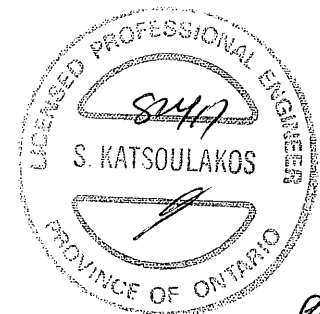
Connectors are: 3 1/2" ARDOX SPIRAL Nails

Disclosure

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Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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DWG NO. TAM 42760.17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

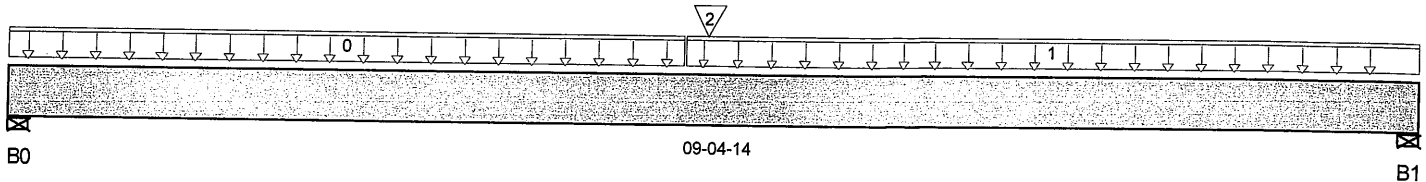
Description: Designs\Flush Beams\Basment\Flush Beams\B14(i1793

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-04-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	372 / 0	239 / 0		
B1, 4-3/8"	394 / 0	250 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 FloorMaterial	Unf. Lin. (lb/ft)	L	00-00-00	04-06-00	16	8			n/a
1	FC1 FloorMaterial	Unf. Lin. (lb/ft)	L	04-06-00	09-04-14	27	13			n/a
2	B3(i1347)	Conc. Pt. (lbs)	L	04-07-12	04-07-12	564	298			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,256 ft-lbs	25,408 ft-lbs	12.8%	1	04-07-12
End Shear	825 lbs	11,571 lbs	7.1%	1	08-03-00
Total Load Defl.	L/999 (0.054")	n/a	n/a	4	04-07-12
Live Load Defl.	L/999 (0.034")	n/a	n/a	5	04-07-12
Max Defl.	0.054"	n/a	n/a	4	04-07-12
Span / Depth	11.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 4" x 3-1/2"	857 lbs	4.3%	5%	Unspecified
B1	Wall/Plate 4-3/8" x 3-1/2"	904 lbs	11.1%	4.8%	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



102 L
DWG NO. TAM 42161-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:54

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B14(i1793)

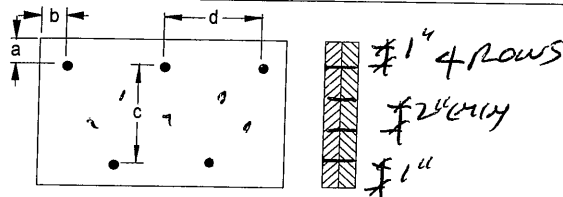
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 129.5 lb/ft

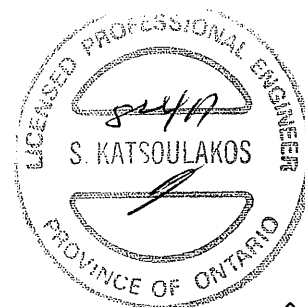
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 3 1/2" ARDOX SPIRAL Nails

Disclosure

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DWG NO. YAM 4261-17
STRUCTURAL
COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

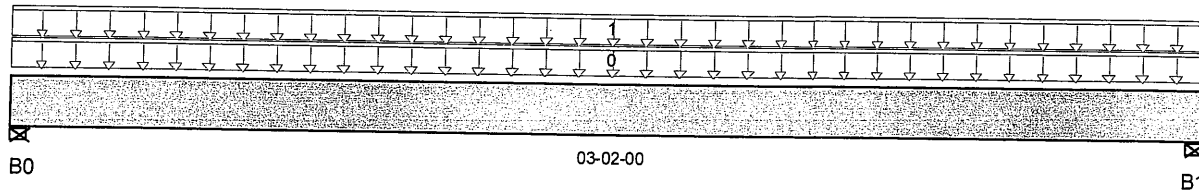
Description: Designs\Flush Beams\Basement\Flush Beams\B15(i1914

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	64 / 0	184 / 0		
B1, 4"	64 / 0	184 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	E5(i233)	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	17	95	1.00	1.15	n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	23	12			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	140 ft-lbs	16,515 ft-lbs	0.8%	0	01-07-00
End Shear	74 lbs	7,521 lbs	1%	0	01-01-08
Total Load Defl.	L/999 (0")	n/a	n/a	4	01-07-00
Live Load Defl.	L/999 (0")	n/a	n/a	5	01-07-00
Max Defl.	0"	n/a	n/a	4	01-07-00
Span / Depth	3.3	n/a	n/a		00-00-00

Bearing Supports

			Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports	Dim. (L x W)	Demand			
B0	Wall/Plate	4" x 3-1/2"	257 lbs	5.3%	2.3%
B1	Wall/Plate	4" x 3-1/2"	257 lbs	5.3%	2.3%
					Unspecified
					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



DWONG.TAM
42762-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:23

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B15(i19

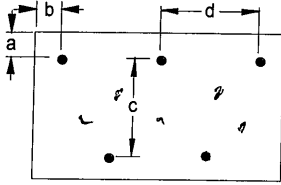
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDXX SPIRAL

Disclosure

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DWG NO. TAM 42762-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:23

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

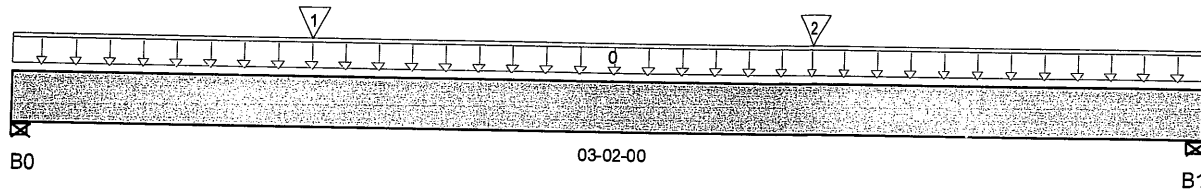
Description: Designs\Flush Beams\Basement\Flush Beams\B16(i1915

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	846 / 0	567 / 0		
B1, 4"	775 / 0	532 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0 E1(i237)	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	278	220			n/a
1 J2(i1420)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	370	185			n/a
2 J2(i1311)	Conc. Pt. (lbs)	L	02-01-08	02-01-08	370	185			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,119 ft-lbs	25,408 ft-lbs	4.4%	1	01-08-06
End Shear	952 lbs	11,571 lbs	8.2%	1	02-00-08
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-07-00
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-07-00
Max Defl.	0.002"	n/a	n/a	4	01-07-00
Span / Depth	3.3	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	1,977 lbs	26.4%	11.6%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	1,827 lbs	24.4%	10.7%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



DWG NO. TAM 426317
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



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

August 21, 2017 11:44:23

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 4 EL 2, 3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B16(i19

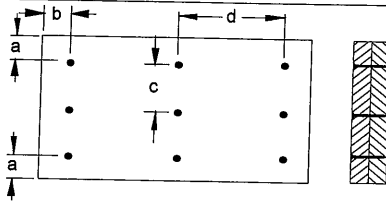
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 2" c = 2-3/4"
b minimum = 3" d = 6"

Calculated Side Load = 496.6 lb/ft

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

Connectors are: 16d ~~Sh~~er Nails

3 1/2" ARDOX SPIRAL

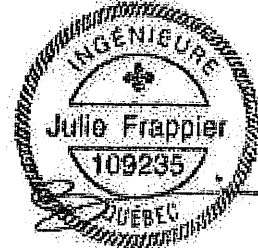
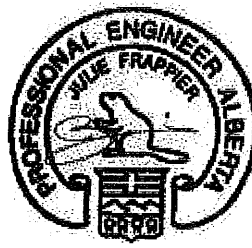
Disclosure

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

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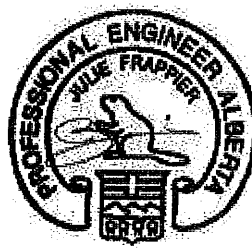
Maximum Floor Spans

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

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

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



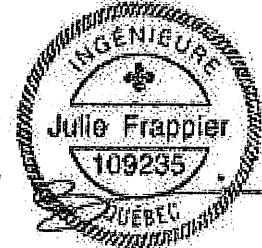
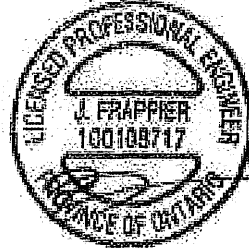
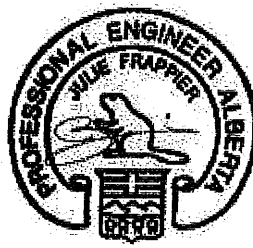
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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.



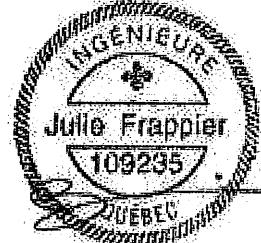
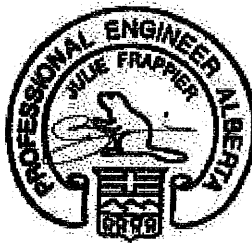
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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'-1"	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

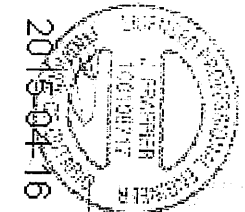
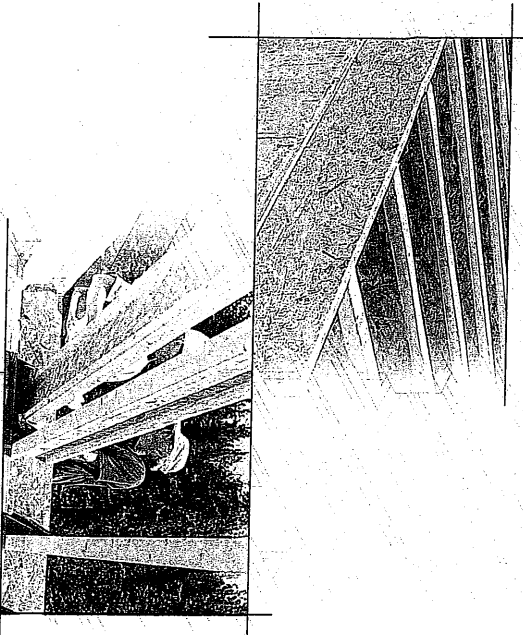
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	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"

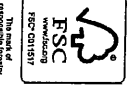
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load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



INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



N-C301 / November 2014

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

WARNING

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

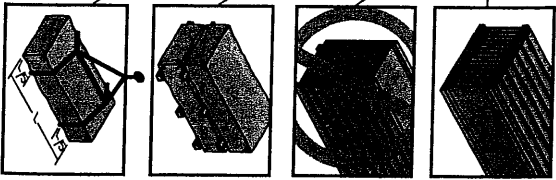
Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

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



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

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

Joist Depth	Joist Series	Simple spans				Multiple spans			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
12"	NI-20	17.2	15.2	14.8	14.5	12.4	11.4	11.0	10.7
12"	NI-24	15.2	13.2	12.8	12.5	10.4	9.4	9.0	8.7
12"	NI-30	13.2	11.2	10.8	10.5	8.4	7.4	7.0	6.7
12"	NI-36	11.2	9.2	8.8	8.5	6.4	5.4	5.0	4.7
12"	NI-42	9.2	7.2	6.8	6.5	4.4	3.4	3.0	2.7
12"	NI-48	7.2	5.2	4.8	4.5	3.4	2.4	2.0	1.7
16"	NI-20	20.4	18.4	18.0	17.7	14.4	13.4	13.0	12.7
16"	NI-24	18.4	16.4	16.0	15.7	12.4	11.4	11.0	10.7
16"	NI-30	16.4	14.4	14.0	13.7	10.4	9.4	9.0	8.7
16"	NI-36	14.4	12.4	12.0	11.7	8.4	7.4	7.0	6.7
16"	NI-42	12.4	10.4	10.0	9.7	6.4	5.4	5.0	4.7
16"	NI-48	10.4	8.4	8.0	7.7	4.4	3.4	3.0	2.7
19.2"	NI-20	22.4	20.4	20.0	19.7	16.4	15.4	15.0	14.7
19.2"	NI-24	20.4	18.4	18.0	17.7	14.4	13.4	13.0	12.7
19.2"	NI-30	18.4	16.4	16.0	15.7	12.4	11.4	11.0	10.7
19.2"	NI-36	16.4	14.4	14.0	13.7	10.4	9.4	9.0	8.7
19.2"	NI-42	14.4	12.4	12.0	11.7	8.4	7.4	7.0	6.7
19.2"	NI-48	12.4	10.4	10.0	9.7	6.4	5.4	5.0	4.7
24"	NI-20	24.4	22.4	22.0	21.7	18.4	17.4	17.0	16.7
24"	NI-24	22.4	20.4	20.0	19.7	16.4	15.4	15.0	14.7
24"	NI-30	20.4	18.4	18.0	17.7	14.4	13.4	13.0	12.7
24"	NI-36	18.4	16.4	16.0	15.7	12.4	11.4	11.0	10.7
24"	NI-42	16.4	14.4	14.0	13.7	10.4	9.4	9.0	8.7
24"	NI-48	14.4	12.4	12.0	11.7	8.4	7.4	7.0	6.7

CGAC EVALUATION REPORT 13032-R

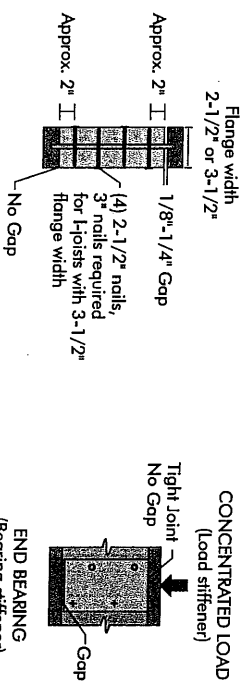
WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

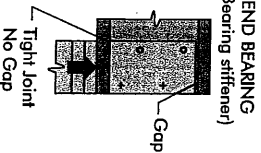
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



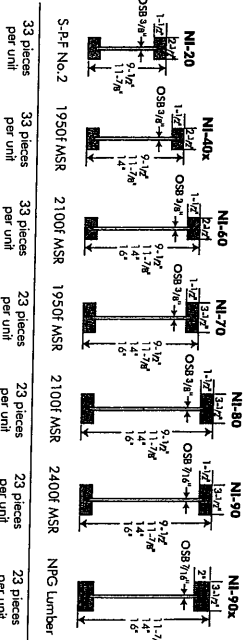
See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

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



NORDIC I-JOIST SERIES



S-F No. 2	1950F MSR	2100F MSR	1950F MSR	2100F MSR	2400F MSR	NRG lumber
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

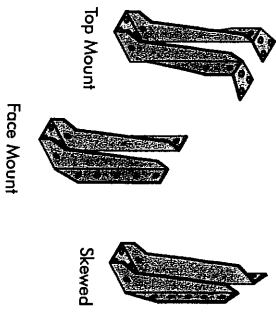
Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures through every phase of the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

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

2015-04-16

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.



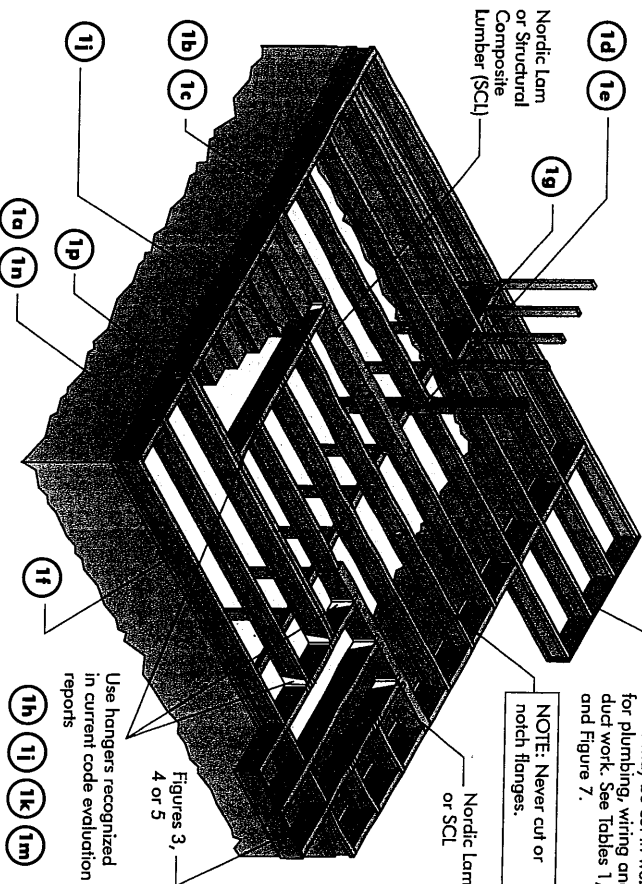
INSTALLING NORDIC I-JOISTS

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

2015-04-16

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.

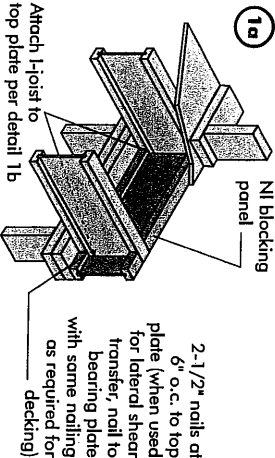


Figures 3, 4 or 5
Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.
NOTE: Never cut or notch flanges.

Use hangers recognized in current code evaluation reports

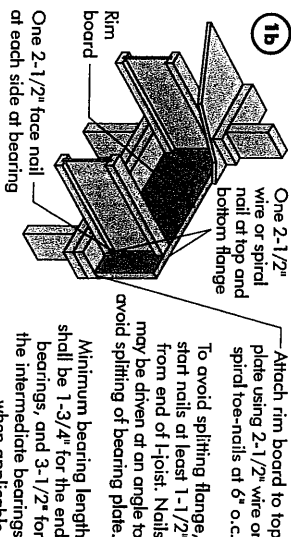
Figures 3, 4 or 5

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



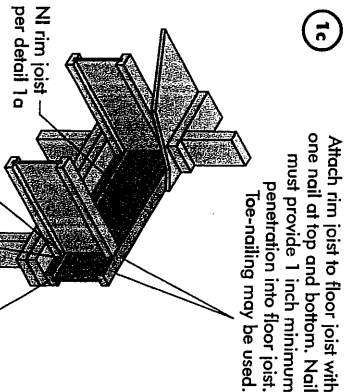
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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

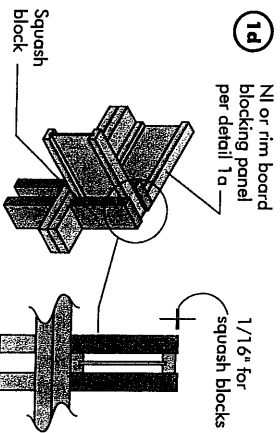


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*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.

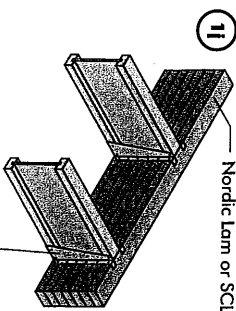
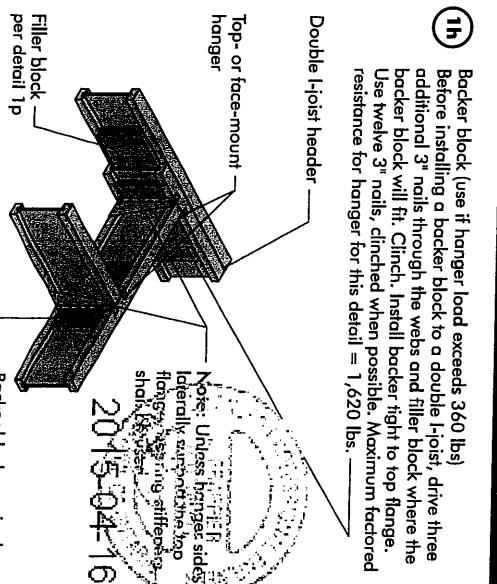
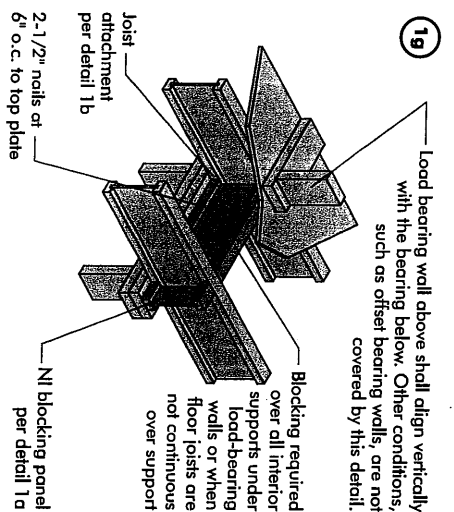
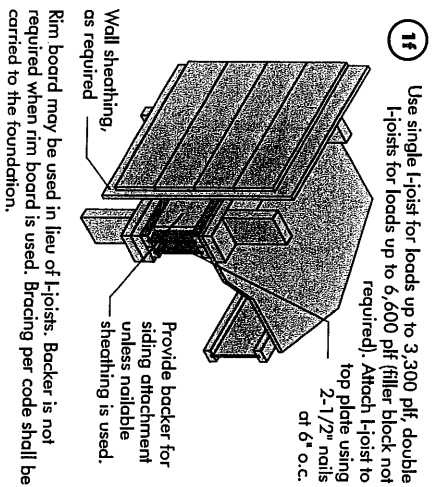
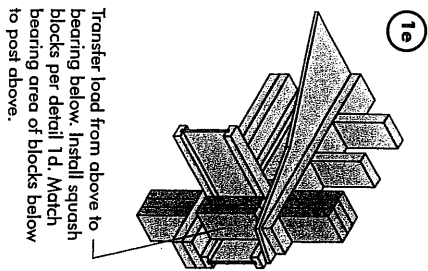


Attach I-joist per detail 1a
Attach I-joist to top plate per detail 1a
Minimum 1-3/4" bearing required



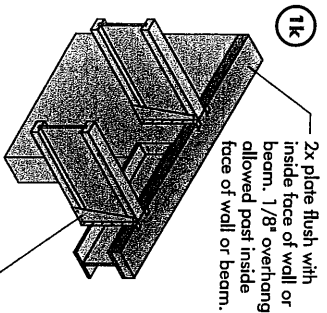
Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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

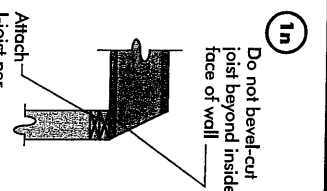
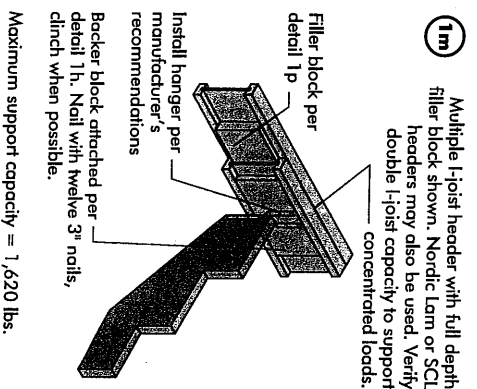


For nailing schedules for multiple beams, see the manufacturer's recommendations.

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



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

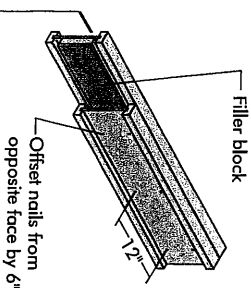


Note: Blocking required at bearing for lateral support, not shown for clarity.

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-Q325 or CAN/CSA-Q437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

1p

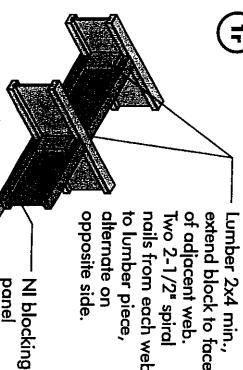


1/8" to 1/4" gap between top flange and filler block

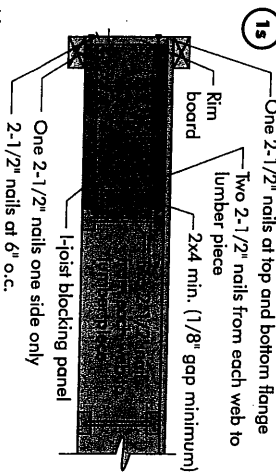
- Notes:
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
 2. Leave a 1/8" to 1/4" gap between top of filler block and bottom of top I-joist flange.
 3. Filler block is required between joists for full length of span.
 4. Nail joists together with two rows of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

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



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

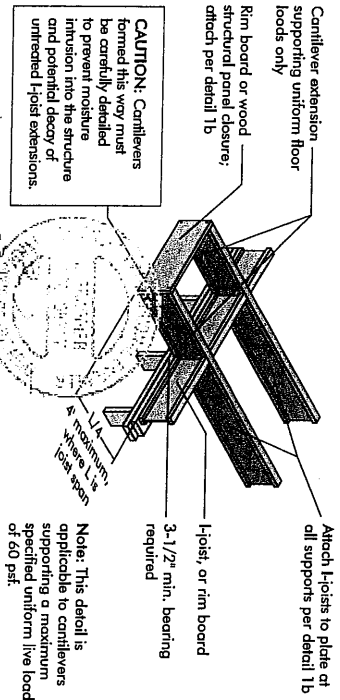


Notes:

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

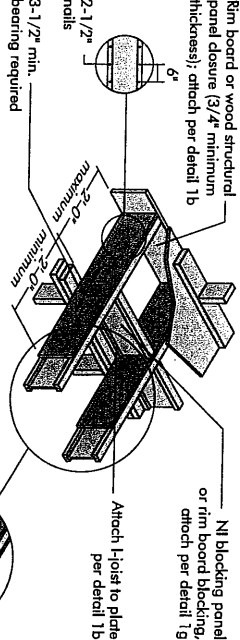
CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE

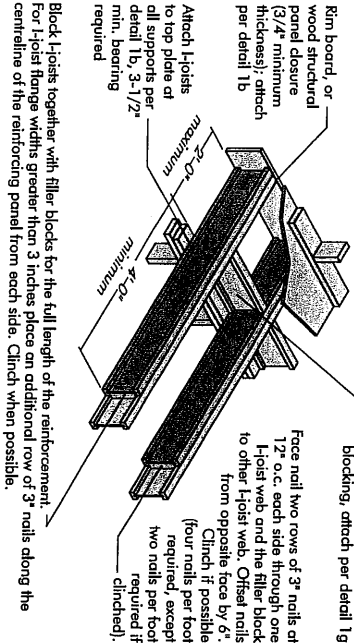


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- 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.

4b) Alternate Method 2 — DOUBLE I-JOIST



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

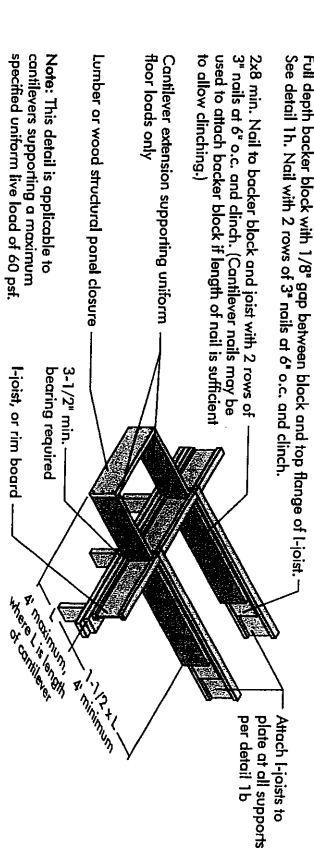
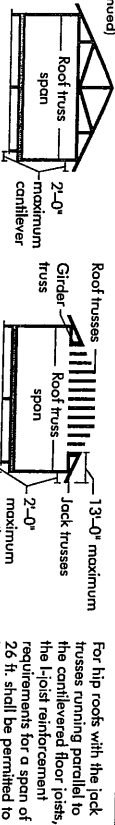


FIGURE 4 (continued)
See table below for N1 reinforcement requirements of cantilever.



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

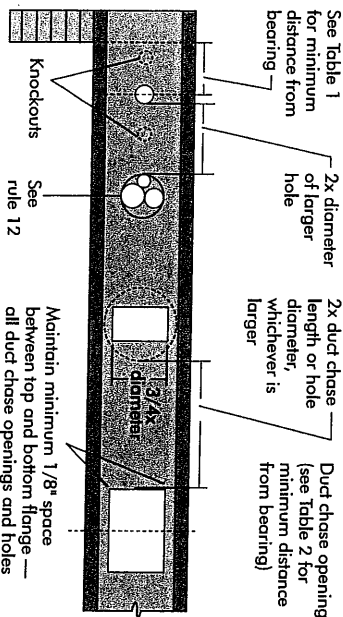
JOIST DEPTH (in.)	JOIST SPACING (in.)	ROOF LOADING (UNFACTORED)			
		LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	
12	12	12	12	12	
16	16	16	16	16	
19.2	19.2	19.2	19.2	19.2	
24	24	24	24	24	
30	30	30	30	30	
36	36	36	36	36	
42	42	42	42	42	
48	48	48	48	48	
54	54	54	54	54	
60	60	60	60	60	
66	66	66	66	66	
72	72	72	72	72	
78	78	78	78	78	
84	84	84	84	84	
90	90	90	90	90	
96	96	96	96	96	
102	102	102	102	102	
108	108	108	108	108	
114	114	114	114	114	
120	120	120	120	120	
126	126	126	126	126	
132	132	132	132	132	
138	138	138	138	138	
144	144	144	144	144	
150	150	150	150	150	
156	156	156	156	156	
162	162	162	162	162	
168	168	168	168	168	
174	174	174	174	174	
180	180	180	180	180	
186	186	186	186	186	
192	192	192	192	192	
198	198	198	198	198	
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216	216	216	216	216	
222	222	222	222	222	
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264	264	264	264	264	
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282	282	282	282	282	
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294	294	294	294	294	
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306	306	306	306	306	
312	312	312	312	312	
318	318	318	318	318	
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438	438	438	438	438	
444	444	444	444	444	
450	450	450	450	450	
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474	474	474	474	474	
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1602	1602	1602	1602	1602	
1608	1608	1608	1608	1608	
1614	1614	1614	1614</		

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 coniferated 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



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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)												Span adjustment Factor		
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4		11	12
12	2	10-1/2	11-1/2	12-1/2	13-1/2	14-1/2	15-1/2	16-1/2	17-1/2	18-1/2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2
16	2	11-1/2	12-1/2	13-1/2	14-1/2	15-1/2	16-1/2	17-1/2	18-1/2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2
20	2	12-1/2	13-1/2	14-1/2	15-1/2	16-1/2	17-1/2	18-1/2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2	26-1/2
24	2	13-1/2	14-1/2	15-1/2	16-1/2	17-1/2	18-1/2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2	26-1/2	27-1/2
30	2	15-1/2	16-1/2	17-1/2	18-1/2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2	26-1/2	27-1/2	28-1/2	29-1/2
36	2	17-1/2	18-1/2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2	26-1/2	27-1/2	28-1/2	29-1/2	30-1/2	31-1/2
42	2	19-1/2	20-1/2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2	26-1/2	27-1/2	28-1/2	29-1/2	30-1/2	31-1/2	32-1/2	33-1/2
48	2	21-1/2	22-1/2	23-1/2	24-1/2	25-1/2	26-1/2	27-1/2	28-1/2	29-1/2	30-1/2	31-1/2	32-1/2	33-1/2	34-1/2	35-1/2
60	2	25-1/2	26-1/2	27-1/2	28-1/2	29-1/2	30-1/2	31-1/2	32-1/2	33-1/2	34-1/2	35-1/2	36-1/2	37-1/2	38-1/2	39-1/2
72	2	29-1/2	30-1/2	31-1/2	32-1/2	33-1/2	34-1/2	35-1/2	36-1/2	37-1/2	38-1/2	39-1/2	40-1/2	41-1/2	42-1/2	43-1/2
84	2	33-1/2	34-1/2	35-1/2	36-1/2	37-1/2	38-1/2	39-1/2	40-1/2	41-1/2	42-1/2	43-1/2	44-1/2	45-1/2	46-1/2	47-1/2
96	2	37-1/2	38-1/2	39-1/2	40-1/2	41-1/2	42-1/2	43-1/2	44-1/2	45-1/2	46-1/2	47-1/2	48-1/2	49-1/2	50-1/2	51-1/2
108	2	41-1/2	42-1/2	43-1/2	44-1/2	45-1/2	46-1/2	47-1/2	48-1/2	49-1/2	50-1/2	51-1/2	52-1/2	53-1/2	54-1/2	55-1/2
120	2	45-1/2	46-1/2	47-1/2	48-1/2	49-1/2	50-1/2	51-1/2	52-1/2	53-1/2	54-1/2	55-1/2	56-1/2	57-1/2	58-1/2	59-1/2
144	2	53-1/2	54-1/2	55-1/2	56-1/2	57-1/2	58-1/2	59-1/2	60-1/2	61-1/2	62-1/2	63-1/2	64-1/2	65-1/2	66-1/2	67-1/2
168	2	61-1/2	62-1/2	63-1/2	64-1/2	65-1/2	66-1/2	67-1/2	68-1/2	69-1/2	70-1/2	71-1/2	72-1/2	73-1/2	74-1/2	75-1/2
192	2	69-1/2	70-1/2	71-1/2	72-1/2	73-1/2	74-1/2	75-1/2	76-1/2	77-1/2	78-1/2	79-1/2	80-1/2	81-1/2	82-1/2	83-1/2
216	2	77-1/2	78-1/2	79-1/2	80-1/2	81-1/2	82-1/2	83-1/2	84-1/2	85-1/2	86-1/2	87-1/2	88-1/2	89-1/2	90-1/2	91-1/2
240	2	85-1/2	86-1/2	87-1/2	88-1/2	89-1/2	90-1/2	91-1/2	92-1/2	93-1/2	94-1/2	95-1/2	96-1/2	97-1/2	98-1/2	99-1/2
264	2	93-1/2	94-1/2	95-1/2	96-1/2	97-1/2	98-1/2	99-1/2	100-1/2	101-1/2	102-1/2	103-1/2	104-1/2	105-1/2	106-1/2	107-1/2
288	2	101-1/2	102-1/2	103-1/2	104-1/2	105-1/2	106-1/2	107-1/2	108-1/2	109-1/2	110-1/2	111-1/2	112-1/2	113-1/2	114-1/2	115-1/2
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1056	2	357-1/2	358-1/2	359-1/2	360-1/2	361-1/2	362-1/2	363-1/2	364-1/2	365-1/2	366-1/2	367-1/2	368-1/2	369-1/2	370-1/2	371-1/2
1080	2	365-1/2	366-1/2	367-1/2	368-1/2	369-1/2	370-1/2	371-1/2	372-1/2	373-1/2	374-1/2	375-1/2	376-1/2	377-1/2	378-1/2	379-1/2
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1128	2	381-1/2	382-1/2	383-1/2	384-1/2	385-1/2	386-1/2	387-1/2	388-1/2	389-1/2	390-1/2	391-1/2	392-1/2	393-1/2	394-1/2	395-1/2
1152	2	389-1/2	390-1/2	391-1/2	392-1/2	393-1/2	394-1/2	395-1/2	396-1/2	397-1/2	398-1/2	399-1/2	400-1/2	401-1/2	402-1/2	403-1/2
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1200	2	405-1/2	406-1/2	407-1/2	408-1/2	409-1/2	410-1/2	411-1/2	412-1/2	413-1/2	414-1/2	415-1/2	416-1/2	417-1/2	418-1/2	419-1/2
1224	2	413-1/2	414-1/2	415-1/2	416-1/2	417-1/2	418-1/2	419-1/2	420-1/2	421-1/2	422-1/2	423-1/2	424-1/2	425-1/2	426-1/2	427-1/2

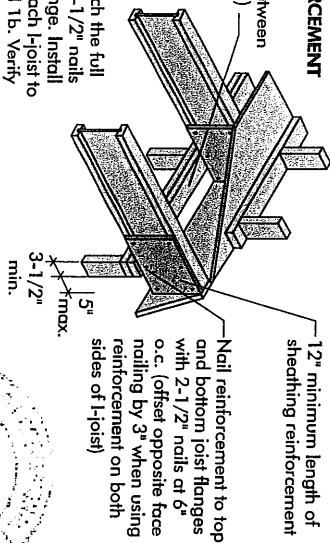
Above table may be used for Joist spacing of 24 inches on centre or less.

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

5a SHEATHING REINFORCEMENT

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

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

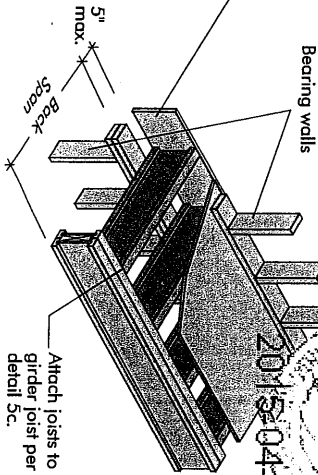


5b SET-BACK DETAIL

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

Notes:

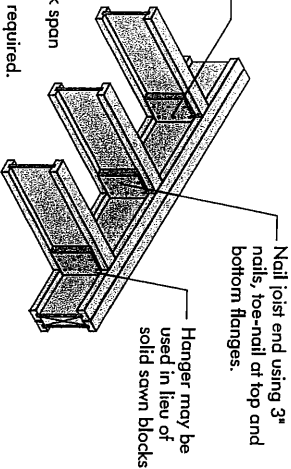
- Provide full depth blocking between joists over support (not shown for clarity)
- Attach I-joist to plate at all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.



5c SET-BACK CONNECTION

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

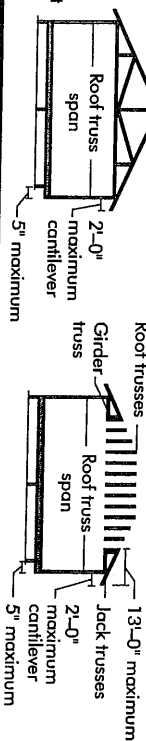
Alternate for opposite side.



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

FIGURE 5 (continued)

See table below for NI reinforcement requirements at cantilever:



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)			
		LL = 30 psf, DL = 15 psf		LL = 40 psf, DL = 15 psf	
		JOIST SPACING (in.)		JOIST SPACING (in.)	
		12	16	12	16
11 7/8	24	12	16	12	16
14	24	12	16	12	16
16	24	12	16	12	16
18	24	12	16	12	16
20	24	12	16	12	16
22	24	12	16	12	16
24	24	12	16	12	16
26	24	12	16	12	16
28	24	12	16	12	16
30	24	12	16	12	16
32	24	12	16	12	16
34	24	12	16	12	16
36	24	12	16	12	16
38	24	12	16	12	16
40	24	12	16	12	16
42	24	12	16	12	16

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. X = Try a deeper joist or closer spacing.
4. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
5. 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 beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in)	Minimum Panel Thickness (in)	Nail Size and Type		Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges Intern. Supports
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.

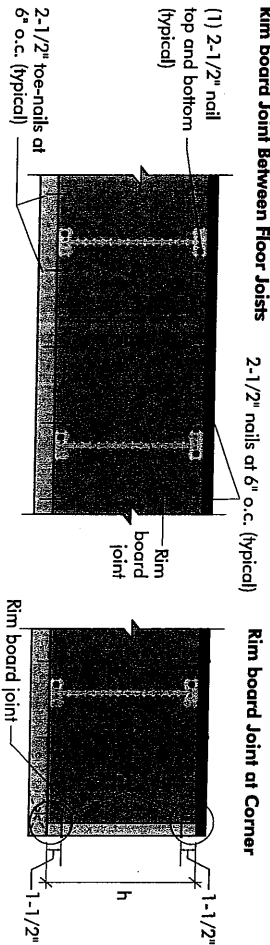
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

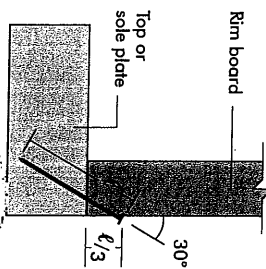
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

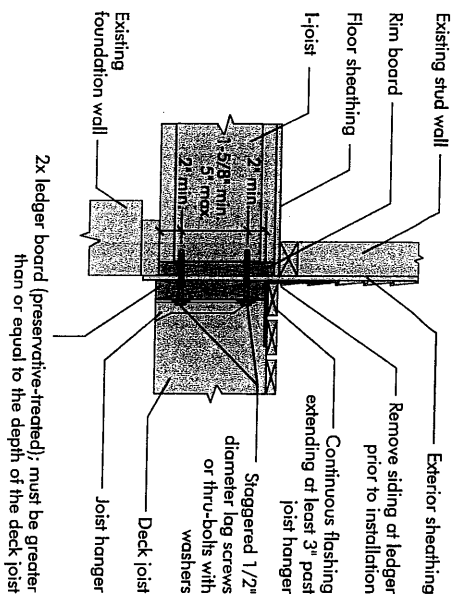
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL

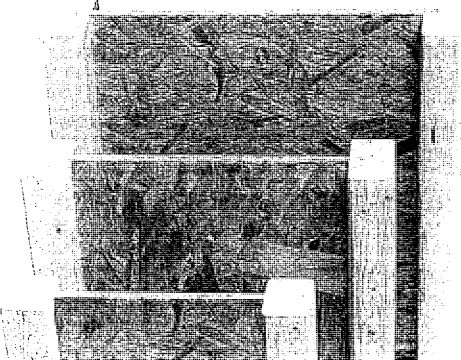


2015-04-16

PRODUCT WARRANTY

Champion Challenging guarantees that its products are professional-grade products and are free from manufacturing defects in material and workmanship.

Furthermore, Champion Challenging guarantees that any products shown without its professional-grade seal, including and including instructions, will meet or exceed new specifications for the duration of the warranty.



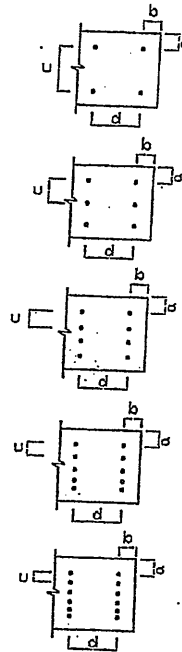
MICRO CITY

ENGINEERING SERVICES INC.

TEL: (519) 287 - 2242

R.R. #1, P.O. BOX 61, GLENCOE, ONTARIO, N0L 1M0

LVL HEADER AND CONVENTIONAL LUMBER NAILING DETAILS		
DETAIL NUMBER	NUMBER OF ROWS	SPACING (INCHES o/c) "d"
A	2	12
B	2	8
C	2	6
D	2	4
1A	3	12
1B	3	8
1C	3	6
1D	3	4
2A	4	12
2B	4	8
2C	4	6
2D	4	4
3A	5	12
3B	5	8
3C	5	6
3D	5	4
4A	6	12
4B	6	8
4C	6	6
4D	6	4



NOTES:

- (1) MINIMUM LUMBER EDGE DISTANCE "a" = 1"
- (2) MINIMUM LUMBER END DISTANCE "b" = 2"
- (3) MINIMUM NAIL ROW SPACING "c" = 2"
- (4) STAGGER NAILS "d/2" BETWEEN PLYS FOR MULTI-PLY MEMBERS (3 PLY OR MORE)
- (5) ALL NAILS ARE 3-1/2" ARDOX SPIRAL NAILS
- (6) DO NOT USE AIR-DRIVEN NAILS



DWG NO TAMN1001.14

STRUCTURAL

COMPONENT ONLY

TO BE USED ONLY
WITH BEAM CALCS
BEARING THE
STAMP BELOW

PROVIDE NAILING
DETAIL # X SEE
DWG #TAMN1001-14