

FROM PLAN DATED: JUNE 2017

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS

MODEL: DEWBERRY 1

ELEVATION: 1,2

LOT:

CITY: WATERDOWN

SALESMAN: M D

DESIGNER: AJ

REVISION:

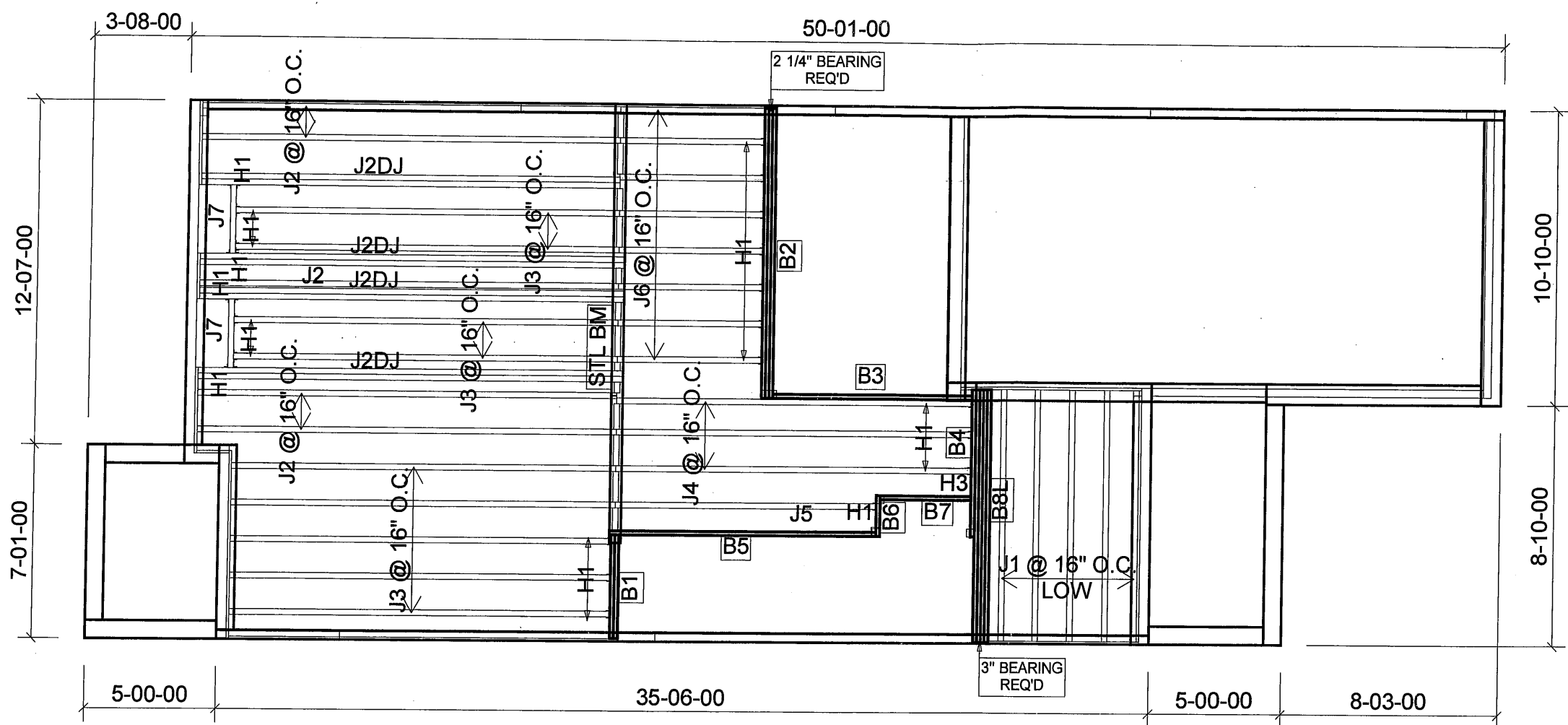
NOTES:
REFER TO THE **NORDIC INSTALLATION**
GUIDE FOR PROPER STORAGE AND
INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F
REQ'D UNDER INTERIOR UNIFORM LOAD
BEARING WALLS. **MULTIPLE SQUASH**
BLOCKS REQ'D UNDER CONCENTRATED
LOADS. SEE FIGURE 1. **CANTILEVERED**
JOISTS INCLUDING **CANT' OVER BRICK** 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/ft²
TILED AREAS: 20 lb/ft

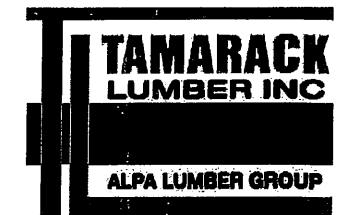
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2018-02-28

1st FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J1	10-00-00	9 1/2" NI-40x	1	5	4	H1	IUS2.56/11.88
J2	18-00-00	11 7/8" NI-40x	1	5	3	H1	IUS2.56/11.88
J2DJ	18-00-00	11 7/8" NI-40x	2	8	4	H1	IUS2.56/11.88
J3	16-00-00	11 7/8" NI-40x	1	9	7	H1	IUS2.56/11.88
J4	14-00-00	11 7/8" NI-40x	1	3	4	H1	IUS2.56/11.88
J5	10-00-00	11 7/8" NI-40x	1	1	1	H3	HUS1.81/10
J6	6-00-00	11 7/8" NI-40x	1	8			
J7	4-00-00	11 7/8" NI-40x	1	2			
B8L	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	4	4			
B5	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B2	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3			
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B4	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B7	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B1	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B6	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			



FROM PLAN DATED: JUNE 2017

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS

MODEL: DEWBERRY 1

ELEVATION: 1,2

LOT:

CITY: WATERDOWN

SALESMAN: M D

DESIGNER: AJ

REVISION:

NOTES:

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

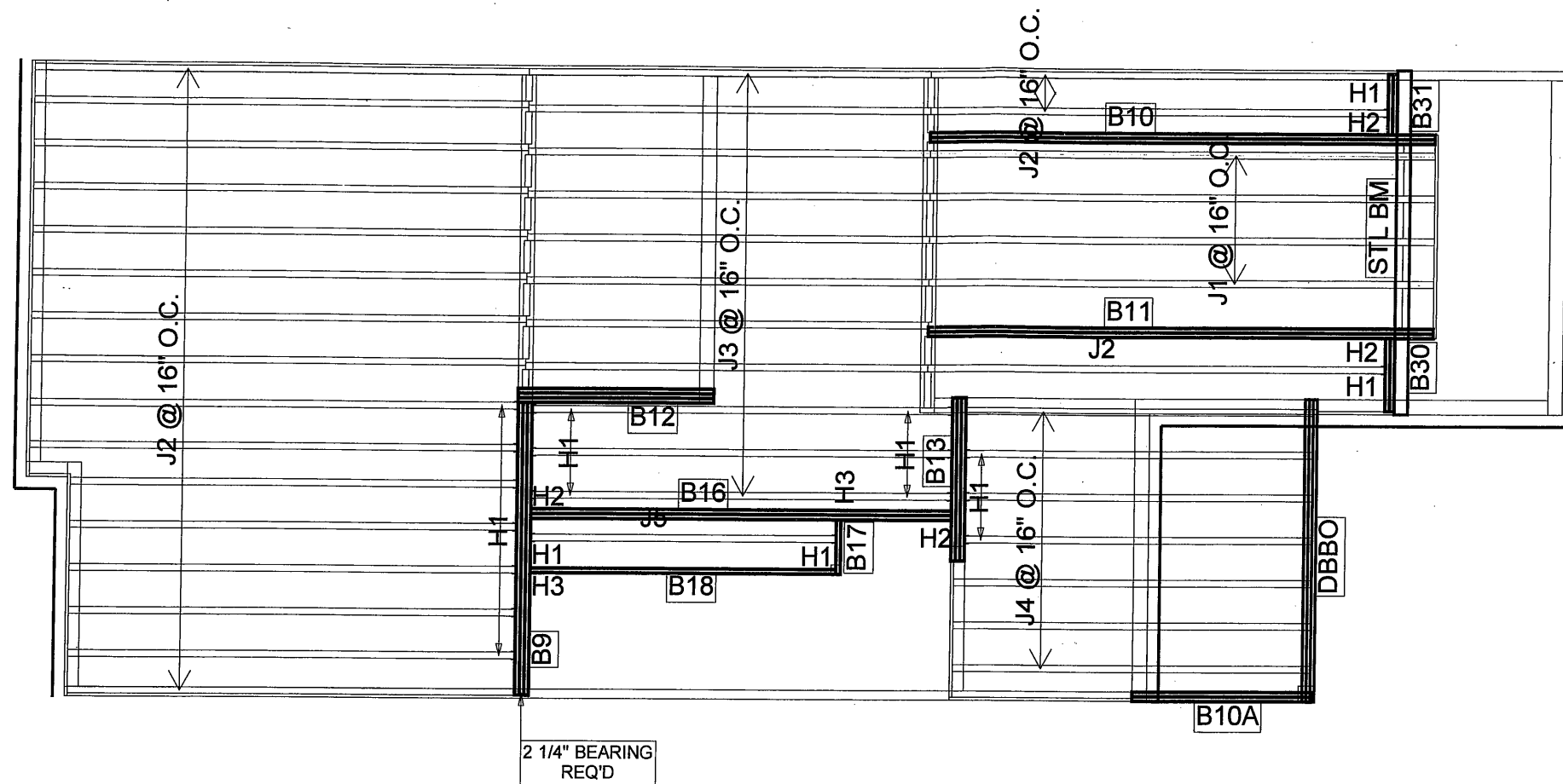
DEAD LOAD: 15.0 lb/ft²

TILED AREAS: 20 lb/ft

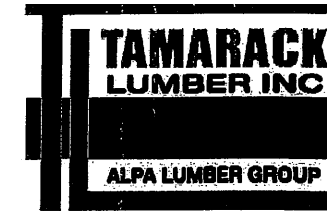
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2018-02-28

2nd FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J1	18-00-00	11 7/8" NI-40x	1	4	1	H1	IUS2.56/11.88
J2	16-00-00	11 7/8" NI-40x	1	19	2	H1	IUS2.56/11.88
J3	14-00-00	11 7/8" NI-40x	1	11	17	H1	IUS2.56/11.88
J4	12-00-00	11 7/8" NI-40x	1	7	2	H2	HGUS410
J5	10-00-00	11 7/8" NI-40x	1	1	2	H2	HGUS410
B10	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	1	H3	HUS1.81/10
B11	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	1	H3	HUS1.81/10
B16	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B18	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B9	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3			
B12	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3			
B10A	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B13	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3			
B30	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B17	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B31	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			



FROM PLAN DATED: JUNE 2017

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SALESMAN: M D

DESIGNER: AJ

REVISION:

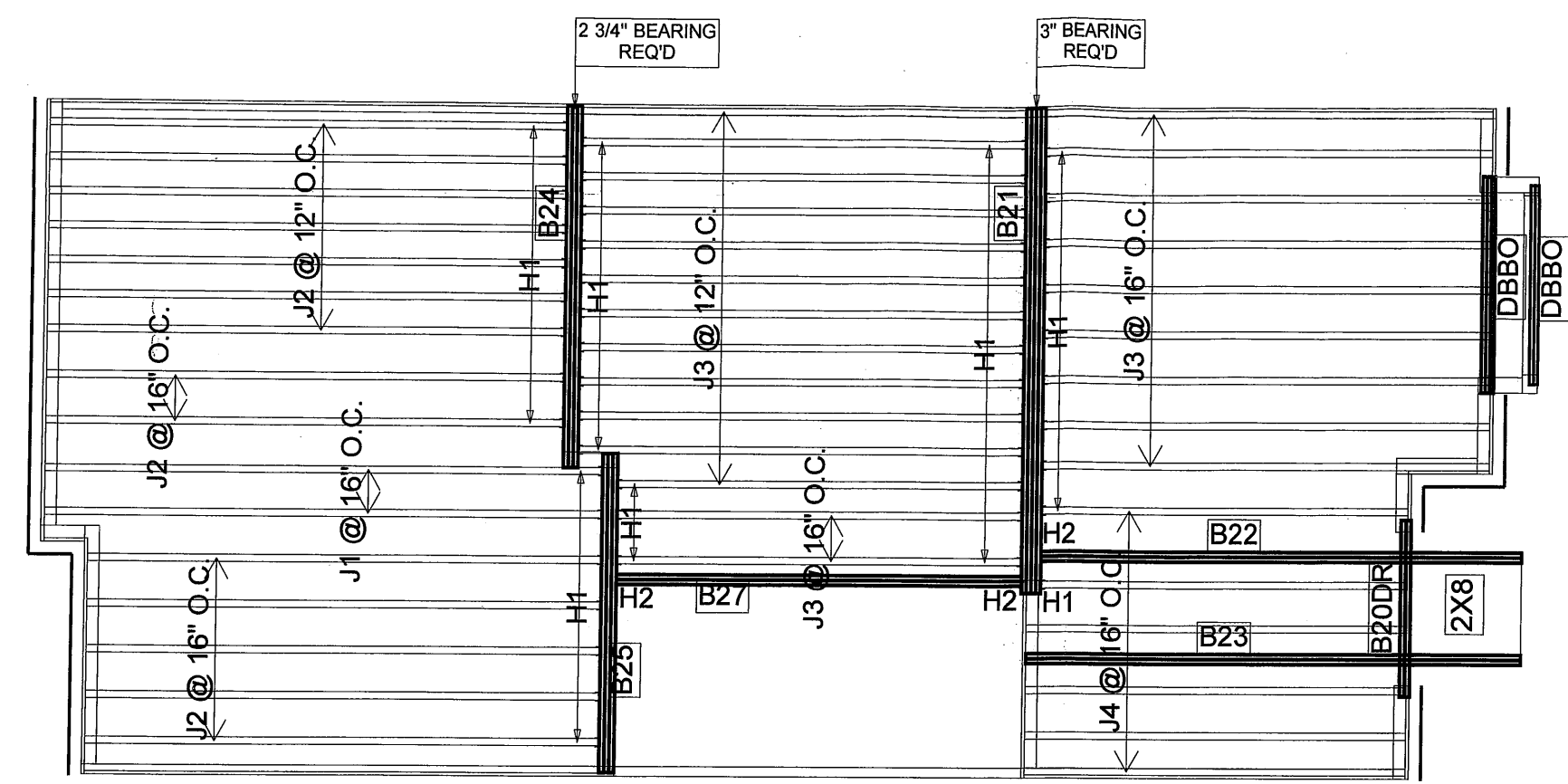
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LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILED AREAS: 20 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2018-03-02

UPPER FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J1	18-00-00	11 7/8" NI-40x	1	2	10	H1	IU2.56/11.88
J2	16-00-00	11 7/8" NI-40x	1	14	19	H1	IUS2.56/11.88
J3	14-00-00	11 7/8" NI-40x	1	23	23	H1	IUS2.56/11.88
J4	12-00-00	11 7/8" NI-40x	1	6	1	H2	HGUS410
B22	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	2	H2	HGUS410
B23	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B21	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	4	4			
B27	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B24	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3			
B25	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3			
B20DR	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
BURLINGTON
Feb. 28, 2018 08:55

PROJECT
J1 1ST FLR

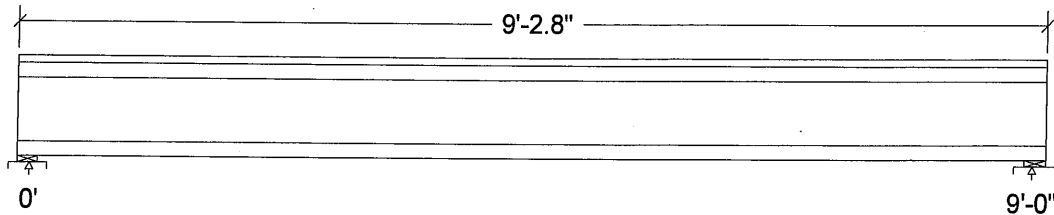
Design Check Calculation Sheet

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	123		123
Live	246		247
Factored:			
Total	522		524
Bearing:			
Resistance			
Joist	1861		1865
Support	3267		3651
Des ratio			
Joist	0.28		0.28
Support	0.16		0.14
Load case	#2		#2
Length	2-1/8		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.00		1.00

Nordic Joist 9-1/2" NI-40x Floor joist @ 16" o.c.

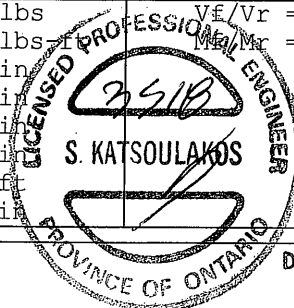
Supports: All - Lumber Sill plate, No.1/No.2

Total length: 9'-2.8"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 510	Vr = 1895	lbs	Vf/Vr = 0.27
Moment(+)	Mf = 1148	Mr = 4824	lbs-ft	Mf/Mr = 0.24
Perm. Defl'n	0.02 = <L/999	0.30 = L/360	in	0.07
Live Defl'n	0.04 = <L/999	0.23 = L/480	in	0.17
Total Defl'n	0.06 = <L/999	0.45 = L/240	in	0.13
Bare Defl'n	0.05 = <L/999	0.30 = L/360	in	0.16
Vibration	Lmax = 9'-0	Lv = 16'-2	ft	
Defl'n	= 0.013	= 0.079	in	0.17



DWG NO. TAM 11842-8
STRUCTURAL
COMPONENT ONLY

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

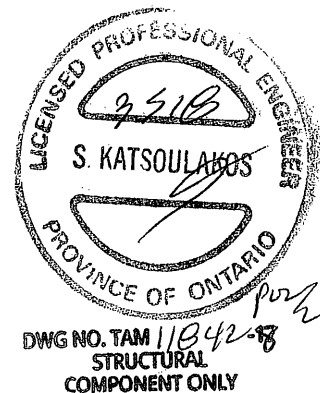
CALCULATIONS:

Deflection: E_Ieff = 276e06 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 O86-14 Engineering Design in Wood standard (May 2014 edition).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to technical documentation for installation guidelines and construction details. **CONFORMS TO OBC 2012**
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.





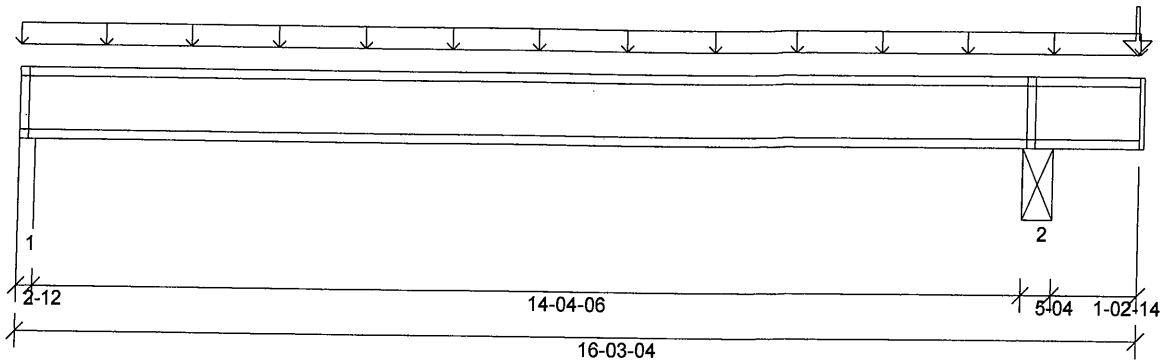
Customer:
Street 1:
City:
From Plan Date: **JUNE 2017**

Job Name: **DEWBERRY 1**
Level: **2ND FLOOR**
Label: **J1 - i3695**
Type: **FloorJoist**

1 Ply Member
11 7/8" NI-40x

Status:
Design Passed

Graphical Illustration Not to Scale. Pitch: 0/12 Designed by: MiTek SAPPHIRE™ Structure Version 8.0.3.230.Update5 ReportVersion: 2016.08.17 07/11/2017 11:24



DESIGN INFORMATION

Building Code: NBCC 2010, Part 9
Design Methodology: LSD
Service Condition: Dry
System Live Load: 40.0 psf
System Dead Load: 20.0 psf
System Spacing: 16" c.c
LL Deflection Limit: L/480,
TL Deflection Limit: L/240,

Floor Assembly Requirements:

Subfloor: name of the method and its
Connection: name of the method and its
Ceiling: None
Blocking: None
Bridging: None
Strapping: None

Lateral Restraint Requirements:

Top and bottom edges of member to be fully restrained laterally, or have the following maximum unbraced length:

Top: 0-00 Bottom: 14-04-06

Factored Resistance of Support Material:

- 534 psi Wall @ 1-12
- 534 psi Beam @ 14-09-12

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	Design	Limit	Result
Max Factored Moment:	7-03-02	1.25D + 1.5L + 0.5S	3069 lb ft	5630 lb ft	Passed - 55%
Max Factored Shear:	14-07-01	1.25D + 1.5L + 0.5S	903 lb	2106 lb	Passed - 43%
Live Load (LL) Deflection:	7-05-06	L + 0.5S	0.151"	L/480	Passed - L/999
Total Load (TL) Deflection:	7-04-10	D + L + 0.5S	0.214"	L/240	Passed - L/804
Vibration Controlled Span:	-	-	14-04-06	18-00-07	Passed - 80%

SUPPORT AND REACTION INFORMATION

Support Location	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1-12	2-12	1.25D + 1.5L + 0.5S	1.00	881 lb		2157 lb	3671 lb	Passed - 41%
14-09-12	5-04	1.25D + 1.5L + 0.5S	1.00	1441 lb		5484 lb	7009 lb	Passed - 26%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)
Uniform	0-00	16-03-04	FC3 Floor Material	29.00 lb/ft	57.00 lb/ft	-
Point	16-02-11	16-02-11	-	157.00 lb	47.00 lb	111.00 lb

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)
1	0-00	2-12	1(206)	196.00 lb	427.00/-9.00 lb	-11.00 lb
2	14-07-02	15-00-06	STL BM(222)	428.00 lb	564.00 lb	123.00 lb

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Design for vibration control is based on the concluding report: "Development of Design Procedures for Vibration Controlled Spans Using Engineered Wood Members," dated Sep-04-97
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Actual field conditions may differ from those shown. These results should be reviewed by a qualified design professional.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Anchorage for uplift reactions to be specified by others. Installation of member as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 3/8" and therefore has been excluded from the deflection ratio considerations.



DWG NO. TAM 50172-17
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
July 11, 2017 11:26

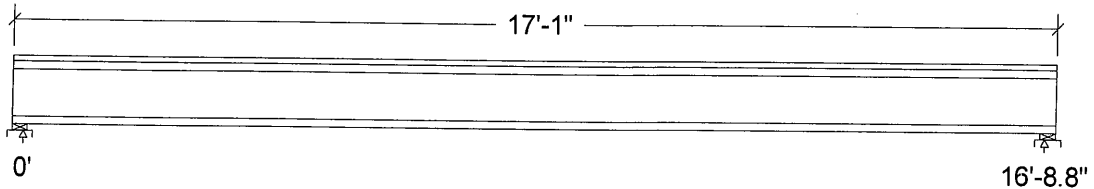
PROJECT
J1 UPPER FLOOR
NORDIC SIZER

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
Self-weight	Dead	Full UDL			2.9	plf

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



Unfactored:			
Dead	247		247
Live	446		446
Factored:			
Total	978		978
Bearing:			
Resistance			
Joist	2189		2189
Support	5304		5304
Des ratio			
Joist	0.45		0.45
Support	0.18		0.18
Load case	#2		#2
Length	3		3
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.15

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

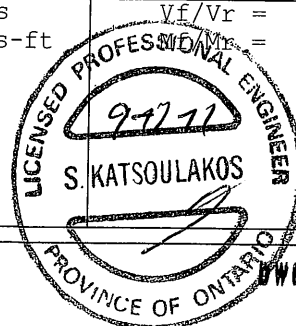
Supports: All - Lumber Sill plate, No.1/No.2

Total length: 17'-1.0"; 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 = 978	Vr = 2336	lbs	Vf/Vr = 0.42
Moment (+)	Mf = 4090	Mr = 6255	lbs-ft	Mf/Mr = 0.65
Perm. Defl'n	0.13 = <L/999	0.56 = L/360	in	0.24
Live Defl'n	0.24 = L/839	0.42 = L/480	in	0.57
Total Defl'n	0.37 = L/540	0.84 = L/240	in	0.44
Bare Defl'n	0.28 = L/711	0.56 = L/360	in	0.51
Vibration	Lmax = 16'-9	Lv = 17'-8	ft	
Defl'n	= 0.032	= 0.038	in	0.84



NO. TAM 50173-17
STRUCTURAL
COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake

L=live(use,occupancy) Ls=live(storage,equipment) f=fire

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

CALCULATIONS:Deflection: E_Ieff = 448e06 lb-in² K= 6.18e06 lbs

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

Design Notes:**CONFORMS TO OBC 2012**

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 50173-17
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report
Build 6215

1ST FLOOR\Flush Beams\B1(i8002)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 1ST FLOOR\Flush Beams\B1(i8002)

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

Specifier:

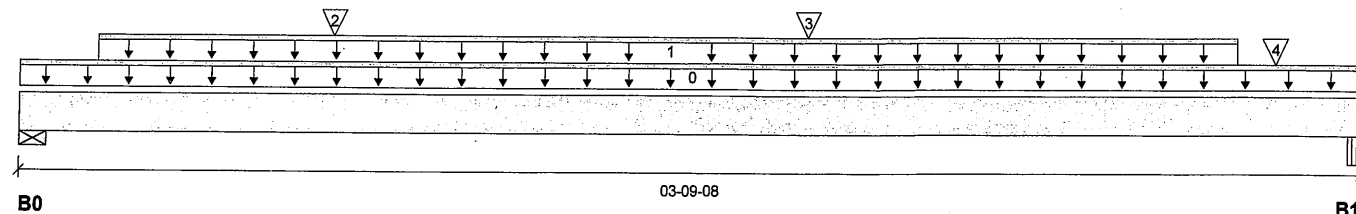
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 03-09-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-1/8"	817 / 0	431 / 0		
B1, 3-1/2"	1,106 / 0	576 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-09-08	12				00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-10	03-05-06	240	120			n/a
2	J3(i7916)	Conc. Pt. (lbs)	L	00-10-10	00-10-10	350	175			n/a
3	J3(i7830)	Conc. Pt. (lbs)	L	02-02-10	02-02-10	400	200			n/a
4	J3(i7938)	Conc. Pt. (lbs)	L	03-06-10	03-06-10	397	198			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,666 ft-lbs	35,392 ft-lbs	4.7%	1	02-01-13
End Shear	1,536 lbs	14,464 lbs	10.6%	1	01-02-00
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-09-14
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-09-14
Max Defl.	0.003"	n/a	n/a	4	01-09-14
Span / Depth	3.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-1/8" x 3-1/2"	1,765 lbs	55.5%	19.4%	Unspecified
B1	Beam 3-1/2" x 3-1/2"	2,380 lbs	45.5%	15.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO 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.



P614

DWG NO. TAM 11035-18
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

1ST FLOOR\Flush Beams\B1(i8002)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

File name: DEWBERRY 1.mmdl

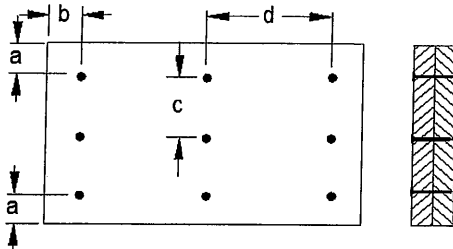
Description: 1ST FLOOR\Flush Beams\B1(i8002)

Specifier:

Designer:

Company:

Connection Diagram



a minimum = 2"

b minimum = 3"

c = 4"

d = 3"

Calculated Side Load = 642.7 lb/ft

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

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 11035-18
STRUCTURAL
COMPONENT ONLY



BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 1ST FLOOR\Flush Beams\B2(i8031)

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

Specifier:

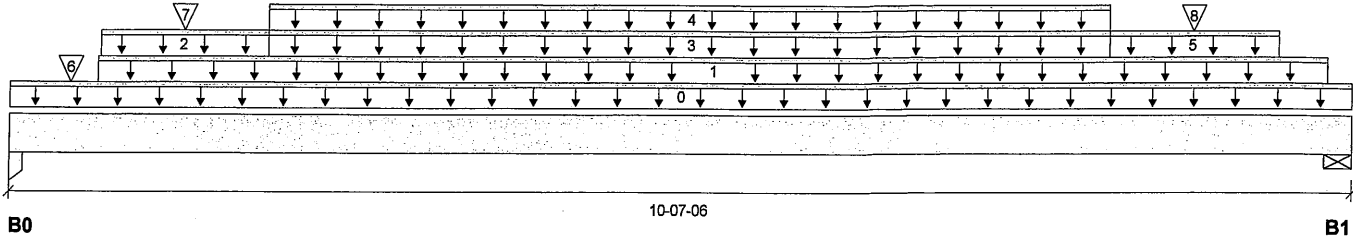
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-07-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,355 / 0	1,828 / 0		
B1, 2-1/4"	2,036 / 0	1,525 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-07-06		18			00-00-00
1	4(i218)	Unf. Lin. (lb/ft)	L	00-08-06	10-05-02		81			n/a
2	4(i218)	Unf. Lin. (lb/ft)	L	00-08-10	02-00-10	294	147			n/a
3	4(i218)	Unf. Lin. (lb/ft)	L	02-00-10	08-08-10	317	158			n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	02-00-10	08-08-10	124	61			n/a
5	4(i218)	Unf. Lin. (lb/ft)	L	08-08-10	10-00-10	293	147			n/a
6	PBO9(i3307)	Conc. Pt. (lbs)	L	00-05-12	00-05-12	339	354			n/a
7	J6(i7913)	Conc. Pt. (lbs)	L	01-04-10	01-04-10	176	87			n/a
8	J6(i7855)	Conc. Pt. (lbs)	L	09-04-10	09-04-10	153	77			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	13,934 ft-lbs	55,212 ft-lbs	25.2%	1	05-04-10
End Shear	5,017 lbs	21,696 lbs	23.1%	1	01-03-06
Total Load Deflection	L/956 (0.129")	n/a	25.1%	4	05-04-10
Live Load Deflection	L/999 (0.075")	n/a	n/a	5	05-04-10
Max Defl.	0.129"	n/a	n/a	4	05-04-10
Span / Depth	10.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Column 3-1/2" x 5-1/4"	5,818 lbs	48.7%	26.0%	Unspecified
B1	Wall/Plate 2-1/4" x 5-1/4"	4,959 lbs	98.3%	34.4%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

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

Nailing schedule applies to both sides of the member.



DWG NO. TAM 11036-18
STRUCTURAL
COMPONENT ONLY



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

PASSED

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 28, 2018 10:59:40

File name: DEWBERRY 1.mmdl

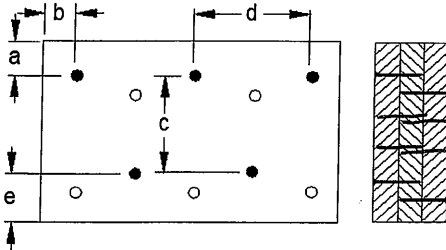
Description: 1ST FLOOR\Flush Beams\B2(i8031)

Specifier:

Designer:

Company:

Connection Diagram



a minimum = 1"
b minimum = 3"

c = 6-7/8"
d = 4"
e minimum = 2"

Calculated Side Load = 230.4 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 ^{30x} Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 11036.18
STRUCTURAL
COMPONENT ONLY





Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1ST FLOOR\...\B3(i3467)

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

September 6, 2017 11:17:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

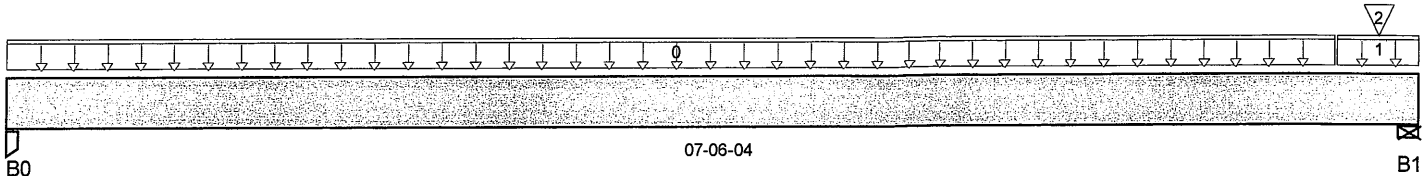
Description: Designs\Flush Beams\1ST FLOOR\Flush Beams\B3(i346

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 07-06-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	19 / 0	30 / 0		
B1, 10-1/16"	27 / 0	56 / 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	07-01-00	6	3			n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	07-01-00	07-06-04	12	6			n/a
2	2(i205)	Conc. Pt. (lbs)	L	07-03-10	07-03-10	1	18			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	108 ft-lbs	19,364 ft-lbs	0.6%	1	03-04-15
End Shear	44 lbs	7,232 lbs	0.6%	1	01-01-10
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	03-04-15
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	03-04-15
Max Defl.	0.001"	n/a	n/a	4	03-04-15
Span / Depth	6.7	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	67 lbs	2.7%	1.8%	Unspecified
B1 Wall/Plate	10-1/16" x 1-3/4"	78 lbs	1.3%	0.6%	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

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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Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1ST FLOOR\...\B4(i4031)

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

September 6, 2017 11:17:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: DEWBERRY 1.mmdl

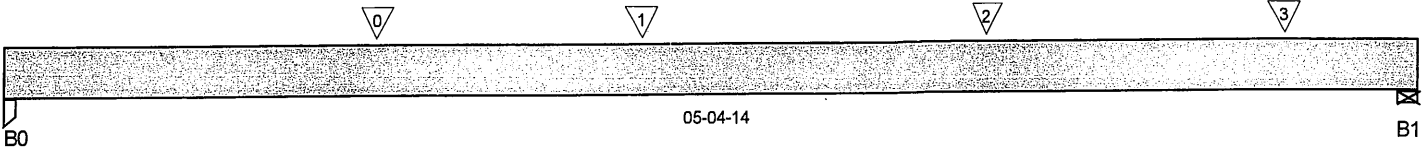
Description: Designs\Flush Beams\1ST FLOOR\Flush Beams\B4(i403

Specifier:

Designer:

Company:

Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	614 / 0	331 / 0		
B1, 4-3/8"	716 / 0	377 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	B7(i3457)	Conc. Pt. (lbs)	L	01-05-00	01-05-00	423	222			n/a
1	J4(i3638)	Conc. Pt. (lbs)	L	02-05-00	02-05-00	346	173			n/a
2	J4(i3637)	Conc. Pt. (lbs)	L	03-09-00	03-09-00	337	169			n/a
3	J4(i4040)	Conc. Pt. (lbs)	L	04-10-12	04-10-12	224	112			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,986 ft-lbs	19,364 ft-lbs	10.3%	1	02-05-00
End Shear	1,325 lbs	7,232 lbs	18.3%	1	01-03-06
Total Load Defl.	L/999 (0.012")	n/a	n/a	4	02-07-08
Live Load Defl.	L/999 (0.008")	n/a	n/a	5	02-07-08
Max Defl.	0.012"	n/a	n/a	4	02-07-08
Span / Depth	4.9	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 1-3/4"	1,335 lbs	26.8%	17.9%	Unspecified
B1 Wall/Plate	4-3/8" x 1-3/4"	1,546 lbs	37.8%	16.6%	Unspecified

Notes

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

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

Calculations assume unbraced length of Top: 00-05-10, Bottom: 00-05-10.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1ST FLOOR\...\B5(i3852)

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

September 6, 2017 11:17:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

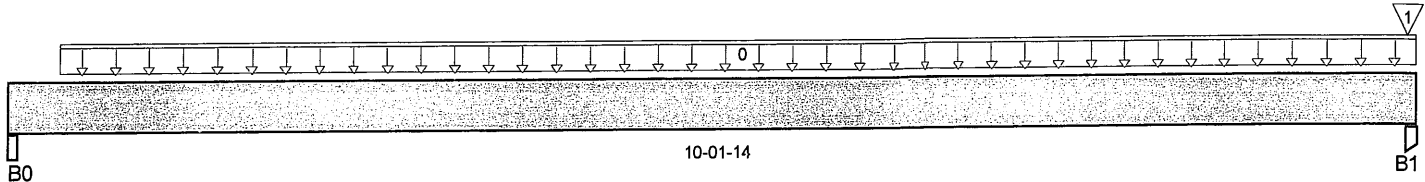
Description: Designs\Flush Beams\1ST FLOOR\Flush Beams\B5(i3852)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 10-01-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	106 / 0	85 / 0		
B1, 1-3/4"	170 / 0	154 / 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	00-04-06	10-01-14	22	11			n/a
1	PBO7(i237)	Conc. Pt. (lbs)	L	10-01-00	10-01-00	62	70			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	635 ft-lbs	19,364 ft-lbs	3.3%	1	05-02-11
End Shear	205 lbs	7,232 lbs	2.8%	1	01-05-02
Total Load Defl.	L/999 (0.016")	n/a	n/a	4	05-02-11
Live Load Defl.	L/999 (0.009")	n/a	n/a	5	05-02-11
Max Defl.	0.016"	n/a	n/a	4	05-02-11
Span / Depth	9.8	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5-1/4" x 1-3/4"	265 lbs	5.4%	2.4%	Unspecified
B1 Post	1-3/4" x 1-3/4"	447 lbs	18%	12%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1ST FLOOR\...\B6(i3484)

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

September 6, 2017 11:17:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

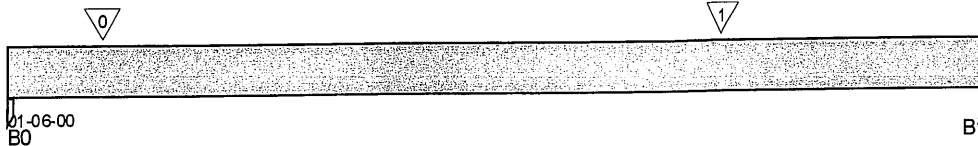
Description: Designs\Flush Beams\1ST FLOOR\Flush Beams\B6(i3484)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 01-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	166 / 0	165 / 0		
B1, 3-1/2"	204 / 0	106 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	PBO7(i237)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	125	140			n/a
1	J5(i3639)	Conc. Pt. (lbs)	L	01-01-02	01-01-02	245	122			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	76 ft-lbs	19,364 ft-lbs	0.4%	1	01-01-02
End Shear	24 lbs	7,232 lbs	0.3%	1	00-02-10
Span / Depth	1.1	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 1-3/4"	456 lbs	9.2%	6.1%	Unspecified
B1 Post	3-1/2" x 1-3/4"	438 lbs	8.8%	5.9%	Unspecified

Notes

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1ST FLOOR\...\B7(i3457)

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

September 6, 2017 11:17:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: DEWBERRY 1.mmdl

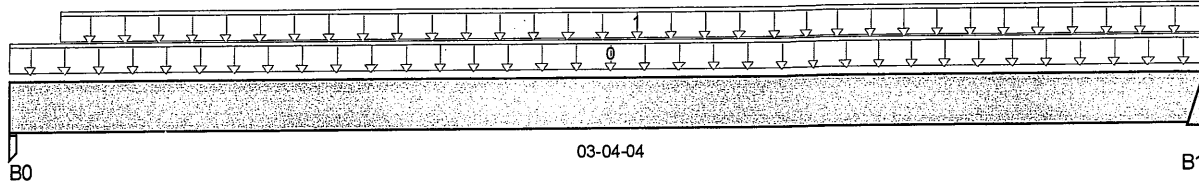
Description: Designs\Flush Beams\1ST FLOOR\Flush Beams\B7(i3457)

Specifier:

Designer:

Company:

Msc:



Total Horizontal Product Length = 03-04-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	401 / 0	211 / 0		
B1	441 / 0	231 / 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	03-04-04	21	11			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-01-12	03-04-04	240	120			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	705 ft-lbs	19,364 ft-lbs	3.6%	1	01-08-00
End Shear	299 lbs	7,232 lbs	4.1%	1	01-01-10
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-08-00
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-08-00
Max Defl.	0.002"	n/a	n/a	4	01-08-00
Span / Depth	3.2	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	865 lbs	34.8%	23.1%	Unspecified
B1 Hanger	2" x 1-3/4"	950 lbs	n/a	22.2%	HUS1.81/10

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



BC CALC® Design Report

1ST FLOOR\Flush Beams\B8L(i8059)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Build 6215

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 1ST FLOOR\Flush Beams\B8L(i8059)

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

Specifier:

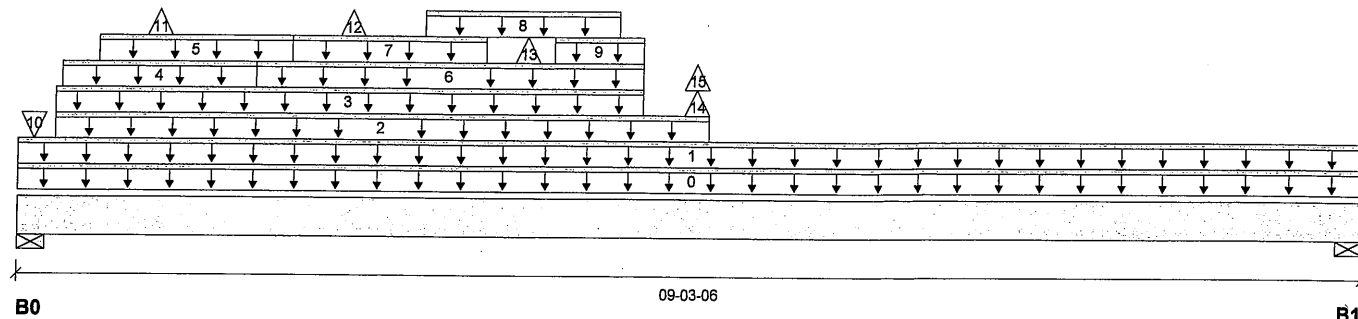
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 09-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3"	3,572 / 67	2,761 / 0	0 / 41	
B1, 4-3/8"	3,006 / 41	2,003 / 0	0 / 32	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-03-06		19			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-03-06	22	11			n/a
2	5(i227)	Unf. Lin. (lb/ft)	L	00-03-00	04-09-00		103			n/a
3	5(i227)	Unf. Lin. (lb/ft)	L	00-03-00	04-03-08		81			n/a
4	5(i227)	Unf. Lin. (lb/ft)	L	00-03-08	01-07-08	100	45			n/a
5	5(i227)	Unf. Lin. (lb/ft)	L	00-06-08	01-10-08	210	105			n/a
6	5(i227)	Unf. Lin. (lb/ft)	L	01-07-08	04-03-08	116	52			n/a
7	5(i227)	Unf. Lin. (lb/ft)	L	01-10-08	03-02-08	201	100			n/a
8	5(i227)	Unf. Lin. (lb/ft)	L	02-09-08	04-01-08	162	118			n/a
9	5(i227)	Unf. Lin. (lb/ft)	L	03-08-02	04-03-08	189	94			n/a
10	E19(i235)	Conc. Pt. (lbs)	L	00-01-04	00-01-04		104			n/a
11	5(i227)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	-14				n/a
12	5(i227)	Conc. Pt. (lbs)	L	02-03-08	02-03-08	-16				n/a
13	-	Conc. Pt. (lbs)	L	03-05-15	03-05-15	-33				n/a
14	5(i227)	Conc. Pt. (lbs)	L	04-08-00	04-08-00	(5,026	2,900	-32)		n/a
15	5(i227)	Conc. Pt. (lbs)	L	04-08-00	04-08-00	-45				n/a

TOP EDGE
LOADED.
ONLY.

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	29,507 ft-lbs	48,297 ft-lbs	61.1%	21	04-08-00
End Shear	8,383 lbs	23,142 lbs	36.2%	21	01-00-08
Total Load Deflection	L/429 (0.246")	n/a	55.9%	56	04-05-12
Live Load Deflection	L/717 (0.147")	n/a	50.2%	83	04-05-12
Max Defl.	0.246"	n/a	n/a	56	04-05-12
Span / Depth	11.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3" x 7"	8,809 lbs	98.2%	34.4%	Unspecified
B1	Wall/Plate 4-3/8" x 7"	7,013 lbs	53.6%	18.8%	Unspecified



DWG NO. TAM 11037-18
STRUCTURAL
COMPONENT ONLY



BC CALC® Design Report
Build 6215

1ST FLOOR\Flush Beams\B8L(i8059)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 1ST FLOOR\Flush Beams\B8L(i8059)

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

Specifier:

Customer:

Designer:

Code reports:

CCMC 12472-R

Company:

Notes

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

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

Calculations assume member is fully braced.

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

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

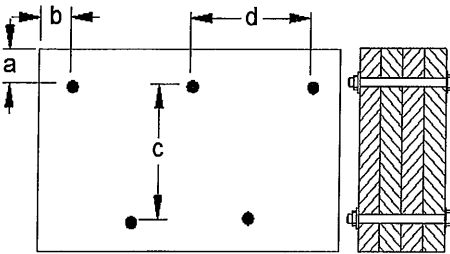
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Beams 7 inches wide will be assumed to be either top-loaded only, or equally loaded from each side.

Bolts are assumed to be Grade A307 or Grade 2 or higher.

Member has no side loads.

Connection Diagram



a minimum = $2\frac{1}{2}$ " c = $4\frac{1}{2}$ "
b minimum = $2\frac{1}{2}$ " d = $2\frac{1}{2}$ "

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.

Beams 7 inches wide will be assumed to be either top-loaded only, or equally loaded from each side.

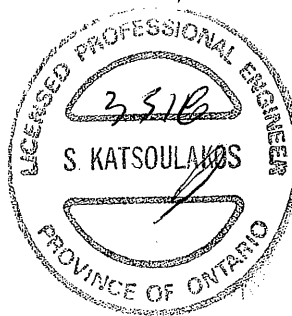
Bolts are assumed to be Grade A307 or Grade 2 or higher.

Member has no side loads.

Connectors are: 1/2 in. Staggered Through Bolt

Disclosure

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



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

DWG NO. TAM 11B37-18 P624
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 28, 2018 10:59:40

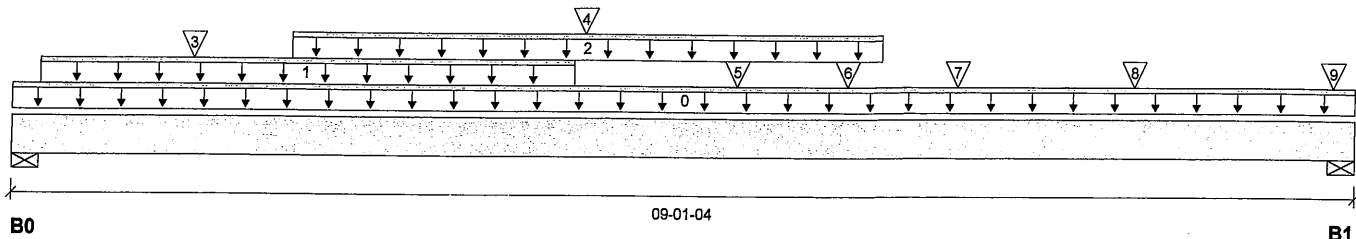
File name: DEWBERRY 1.mmdl

Description: 2ND FLOOR\Flush Beams\B9(i8003)

Specifier:

Designer:

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-1/4"	2,217 / 0	1,237 / 0		
B1, 4"	2,905 / 0	1,601 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-01-04		18			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-04	03-09-10	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-12	05-10-12	292	146			n/a
3	J2(i7977)	Conc. Pt. (lbs)	L	01-02-12	01-02-12	369	185			n/a
4	B18(i7626)	Conc. Pt. (lbs)	L	03-10-08	03-10-08	107	83			n/a
5	J5(i7608)	Conc. Pt. (lbs)	L	04-10-12	04-10-12	184	92			n/a
6	B16(i8041)	Conc. Pt. (lbs)	L	05-07-12	05-07-12	318	241			n/a
7	-	Conc. Pt. (lbs)	L	06-05-01	06-05-01	625	313			n/a
8	-	Conc. Pt. (lbs)	L	07-07-08	07-07-08	757	378			n/a
9	-	Conc. Pt. (lbs)	L	08-11-08	08-11-08	707	353			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11,653 ft-lbs	55,212 ft-lbs	21.1%	1	04-10-12
End Shear	4,828 lbs	21,696 lbs	22.3%	1	07-09-06
Total Load Deflection	L/999 (0.077")	n/a	n/a	4	04-06-04
Live Load Deflection	L/999 (0.049")	n/a	n/a	5	04-06-04
Max Defl.	0.077"	n/a	n/a	4	04-06-04
Span / Depth	8.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-1/4" x 5-1/4"	4,872 lbs	96.5%	33.8%	Unspecified
B1	Wall/Plate 4" x 5-1/4"	6,359 lbs	70.9%	24.8%	Unspecified





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

PASSED

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 28, 2018 10:59:40

File name: DEWBERRY 1.mmdl

Description: 2ND FLOOR\Flush Beams\B9(i8003)

Specifier:

Designer:

Company:

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

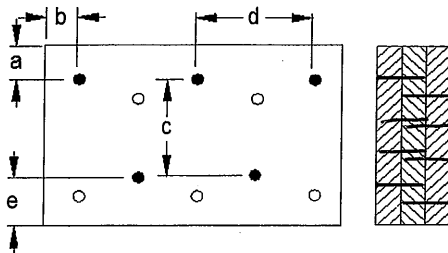
CONFORMS TO OBC 2012

Importance Factor : Normal Part code : Part 9

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

Nailing schedule applies to both sides of the member.

Connection Diagram



4 rows

a minimum = 1"
b minimum = 3"

c = 6-7/8"
d = 4"
e minimum = 2"

Calculated Side Load = 630.9 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.

Nailing schedule applies to both sides of the member.

Connectors are: 16d Common 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 11841-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2ND FLOOR\...\B10A(i4074)

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

September 6, 2017 11:20:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

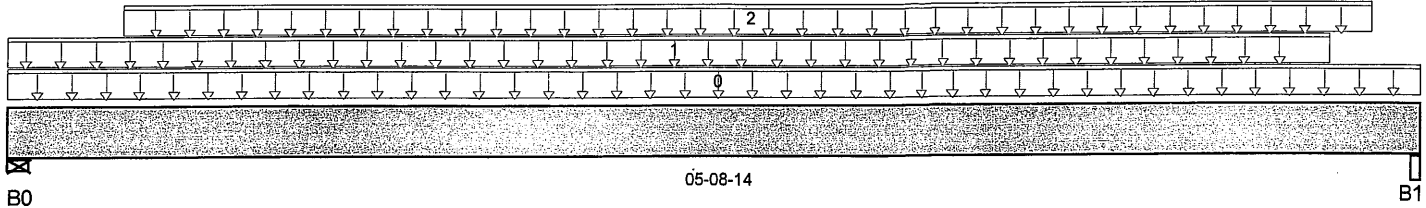
Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B10A(i

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 05-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	259 / 0	725 / 0	264 / 0	
B1, 2-3/8"	236 / 0	657 / 0	264 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-08-14	20	10			n/a
1	E31(i860)	Unf. Lin. (lb/ft)	L	00-00-00	05-04-08	29	101			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-05-08	05-06-08	44	140	104		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,247 ft-lbs	25,173 ft-lbs	5%	0	03-00-00
End Shear	689 lbs	9,401 lbs	7.3%	0	04-06-10
Total Load Defl.	L/999 (0.007")	n/a	n/a	45	03-00-00
Live Load Defl.	L/999 (0.003")	n/a	n/a	61	03-00-00
Max Defl.	0.007"	n/a	n/a	45	03-00-00
Span / Depth	5.3	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	1,015 lbs	15.2%	6.6%	Unspecified
B1 Beam	2-3/8" x 3-1/2"	919 lbs	15.6%	13.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



DWG NO. TAM5018317
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY1.mmdl

Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B10/

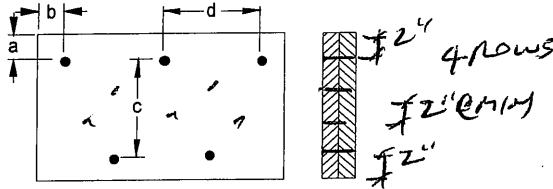
Specifier:

Designer:

Company:

Misc:

Connection Diagram



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

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. TAM 50183-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

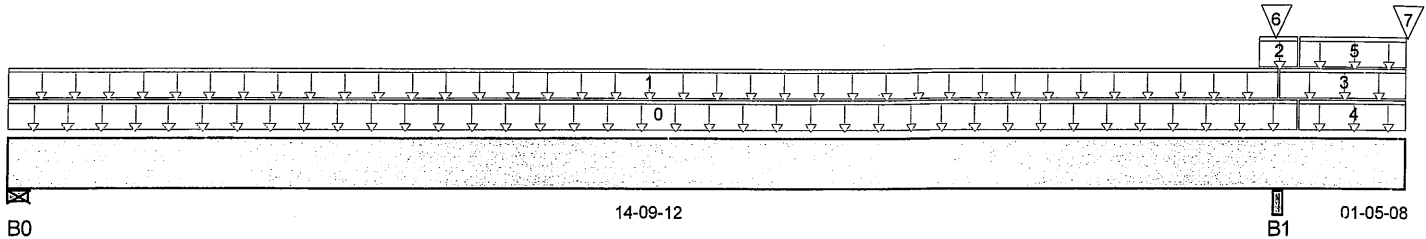
Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B10(i3.

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 16'-03"-04"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	200 / 4	180 / 0	0 / 7	
B1, 5-1/4"	285 / 0	413 / 0	148 / 0	

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	15-00-06	16	8			n/a
1 FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-09-12	10	5			n/a
2 FC3 Floor Material	Unf. Lin. (lb/ft)	L	14-06-14	15-00-06	16	15	38		n/a
3 FC3 Floor Material	Unf. Lin. (lb/ft)	L	14-09-12	16-03-04	26	20	38		n/a
4 E25(i863)	Unf. Lin. (lb/ft)	L	15-00-06	16-03-04		81			n/a
5 FC3 Floor Material	Unf. Lin. (lb/ft)	L	15-00-06	16-03-04	22	18	39		n/a
6 -	Conc. Pt. (lbs)	L	14-09-03	14-09-03		28	9		n/a
7 -	Conc. Pt. (lbs)	L	16-03-03	16-03-03		12	11		n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,828 ft-lbs	38,727 ft-lbs	4.7%	44	07-02-10
Neg. Moment	-369 ft-lbs	-38,727 ft-lbs	1%	49	14-09-12
End Shear	437 lbs	14,464 lbs	3%	44	01-02-10
Cont. Shear	463 lbs	14,464 lbs	3.2%	1	13-07-04
Total Load Defl.	L/999 (0.052")	n/a	n/a	107	07-04-15
Live Load Defl.	L/999 (0.028")	n/a	n/a	159	07-04-15
Total Neg. Defl.	2xL/1,998 (-0.015")	n/a	n/a	107	16-03-04
Max Defl.	0.052"	n/a	n/a	107	07-04-15
Span / Depth	14.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/4" x 3-1/2"	524 lbs	12.7%	4.5%	Unspecified
B1 Beam	5-1/4" x 3-1/2"	1,018 lbs	13%	4.5%	Unspecified

Notes





Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B10(

Specifier:

Designer:

Company:

Msc:

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

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

Calculations assume member is fully braced.

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

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

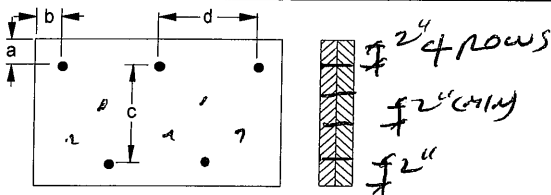
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

CONFORMS TO OBC 2012

Disclosure

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Connection Diagram



a minimum = 2" c = 7-7/8"
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.

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

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



DWONG, TAM SOI 04-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2ND FLOOR...B11(i3668)

Dry | 2 spans | Right cantilever | 0/12 slope (deg)

July 11, 2017 11:15:35

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

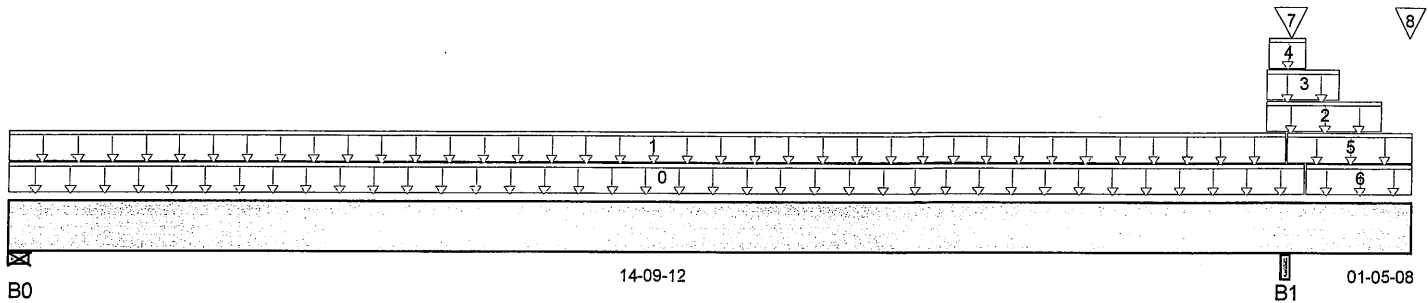
Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B11(i3668)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 16-03-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	400 / 13	271 / 0	0 / 11	
B1, 5-1/4"	1,510 / 0	1,117 / 0	194 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	15-00-06	23	11			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-09-12	30	15			n/a
2	E27(i865)	Unf. Lin. (lb/ft)	L	14-06-14	15-10-14		81			n/a
3	E27(i865)	Unf. Lin. (lb/ft)	L	14-06-14	15-05-01	444	223			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	14-07-02	15-00-06			39		n/a
5	FC3 Floor Material	Unf. Lin. (lb/ft)	L	14-09-12	16-03-04	47	30	39		n/a
6	FC3 Floor Material	Unf. Lin. (lb/ft)	L	15-00-06	16-03-04	22	18	39		n/a
7	-	Conc. Pt. (lbs)	L	14-10-02	14-10-02	596	327	9		n/a
8	-	Conc. Pt. (lbs)	L	16-02-09	16-02-09	22	95	53		n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,283 ft-lbs	38,727 ft-lbs	8.5%	44	07-04-15
Neg. Moment	-717 ft-lbs	-38,727 ft-lbs	1.9%	1	14-09-12
End Shear	783 lbs	14,464 lbs	5.4%	44	01-02-10
Cont. Shear	854 lbs	14,464 lbs	5.9%	16	13-07-04
Total Load Defl.	L/999 (0.091")	n/a	n/a	107	07-04-15
Live Load Defl.	L/999 (0.057")	n/a	n/a	159	07-04-15
Total Neg. Defl.	2xL/1,998 (-0.028")	n/a	n/a	107	16-03-04
Max Defl.	0.091"	n/a	n/a	107	07-04-15
Span / Depth	14.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
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DRG NO. TAMS01BS-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: DEWBERRY 1.mmdl

Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B11(

Specifier:

Designer:

Company:

Msc:

B0	Wall/Plate	2-3/4" x 3-1/2"	940 lbs	22.9%	8%	Unspecified
B1	Beam	5-1/4" x 3-1/2"	3,759 lbs	47.9%	16.8%	Unspecified

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.

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.

CONFORMS TO OBC 2012

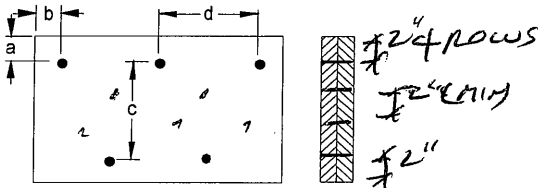
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6"

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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

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



DW NO. TAM 5018517
STRUCTURAL
COMPONENT ONLY



Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2ND FLOOR\...B12(i3526)

BC CALC® Design Report



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

July 11, 2017 11:15:35

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

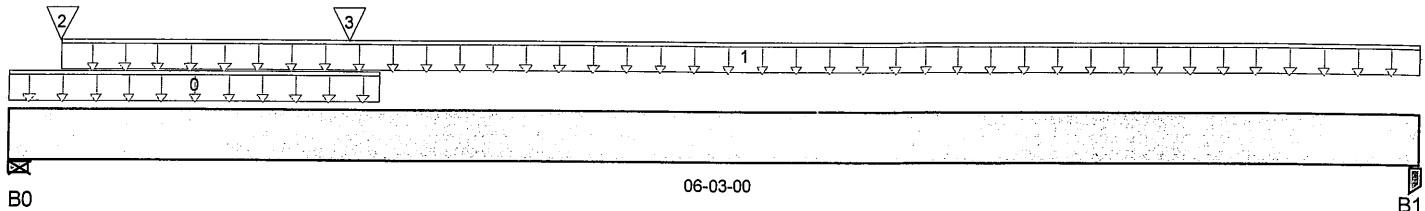
Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B12(i3526)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 06-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	4,882 / 0	2,839 / 0		
B1, 5-1/2"	559 / 0	388 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	7(i871)	Unf. Lin. (lb/ft)	L	00-00-00	01-07-12		81			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	06-03-00	27	13			n/a
2	7(i871)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	2,925	1,524			n/a
3	7(i871)	Conc. Pt. (lbs)	L	01-06-00	01-06-00	2,356	1,376			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,873 ft-lbs	60,415 ft-lbs	8.1%	1	01-06-00
End Shear	4,331 lbs	21,696 lbs	20%	1	01-05-06
Total Load Defl.	L/999 (0.01")	n/a	n/a	4	02-09-06
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-09-06
Max Defl.	0.01"	n/a	n/a	4	02-09-06
Span / Depth	5.5	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 5-1/4"	10,872 lbs	88.1%	30.9%	Unspecified
B1 Post	5-1/2" x 5-1/4"	1,323 lbs	7.1%	3.8%	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





Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B12(

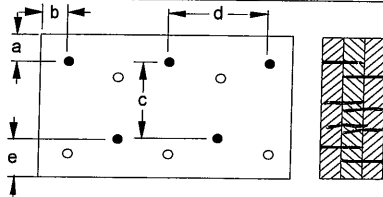
Specifier:

Designer:

Company:

Msc:

Connection Diagram



a minimum = 1"
b minimum = 3"
c = 8-7/8"
d = 4"
e minimum = 2"

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.

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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BC CALC® Design Report
Build 6215

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 2ND FLOOR\Flush Beams\B13(i8066)

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

Specifier:

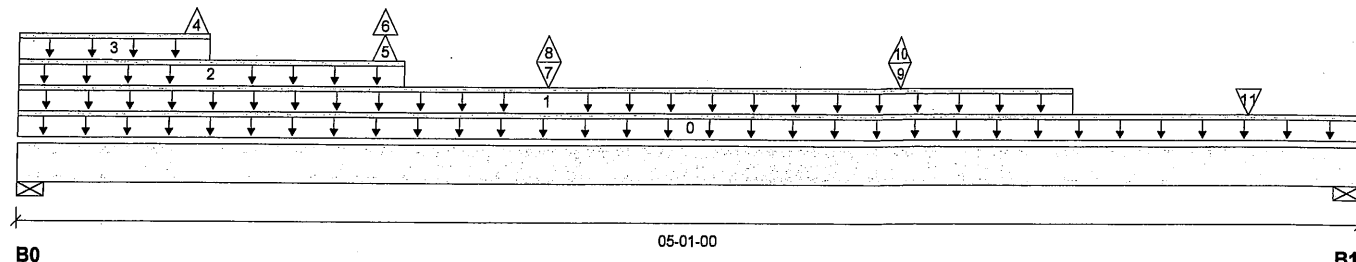
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 05-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	4,891 / 43	2,824 / 0	0 / 31	
B1, 5-1/2"	2,103 / 22	1,171 / 0	0 / 9	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-01-00		18			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-00-00	110	48			n/a
2	8(i873)	Unf. Lin. (lb/ft)	L	00-00-00	01-05-08		81			n/a
3	8(i873)	Unf. Lin. (lb/ft)	L	00-00-00	00-08-10	189	94			n/a
4	J4(i8061)	Conc. Pt. (lbs)	L	00-08-00	00-08-00	-16				n/a
5	-	Conc. Pt. (lbs)	L	01-04-09	01-04-09	5,415	3,020	-40		n/a
6	-	Conc. Pt. (lbs)	L	01-04-09	01-04-09	-17				n/a
7	-	Conc. Pt. (lbs)	L	02-00-00	02-00-00	273	136			n/a
8	-	Conc. Pt. (lbs)	L	02-00-00	02-00-00	-16				n/a
9	-	Conc. Pt. (lbs)	L	03-04-00	03-04-00	371	185			n/a
10	-	Conc. Pt. (lbs)	L	03-04-00	03-04-00	-16				n/a
11	J3(i8028)	Conc. Pt. (lbs)	L	04-08-00	04-08-00	338	169			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10,029 ft-lbs	55,212 ft-lbs	18.2%	21	01-05-00
End Shear	9,461 lbs	21,696 lbs	43.6%	21	01-05-06
Total Load Deflection	L/999 (0.013")	n/a	n/a	56	02-04-00
Live Load Deflection	L/999 (0.008")	n/a	n/a	83	02-04-00
Max Defl.	0.013"	n/a	n/a	56	02-04-00
Span / Depth	4.3				

TOP EDGE
LOADED
ONLY.

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 5-1/4"	10,867 lbs	88.1%	30.8%	Unspecified
B1	Wall/Plate 5-1/2" x 5-1/4"	4,618 lbs	37.4%	13.1%	Unspecified



BC CALC® Design Report
Build 6215

2ND FLOOR\Flush Beams\B13(i8066)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 2ND FLOOR\Flush Beams\B13(i8066)

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

Specifier:

Customer:

Designer:

Code reports:

CCMC 12472-R

Company:

Notes

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

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

Calculations assume member is fully braced.

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

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

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

CONFORMS TO OBC 2012

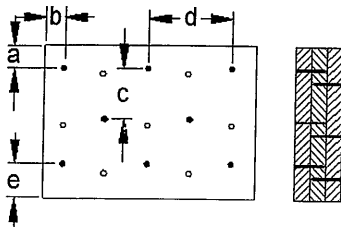
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

Nailing schedule applies to both sides of the member.

Connection Diagram



a minimum = 2"

b minimum = 3"

c = 3-1/2"

d = 4"

e minimum = 3"

Calculated Side Load = 831.1 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 Spike Nails

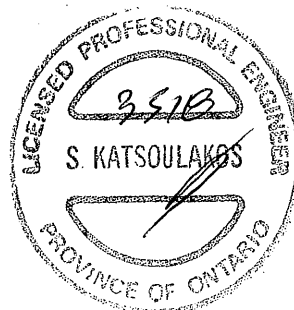
3-1/2" ARDOX SPIRAL

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 11038-18
STRUCTURAL
COMPONENT ONLY





Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2ND FLOOR\...B16(i3453)

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

July 11, 2017 11:15:35

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

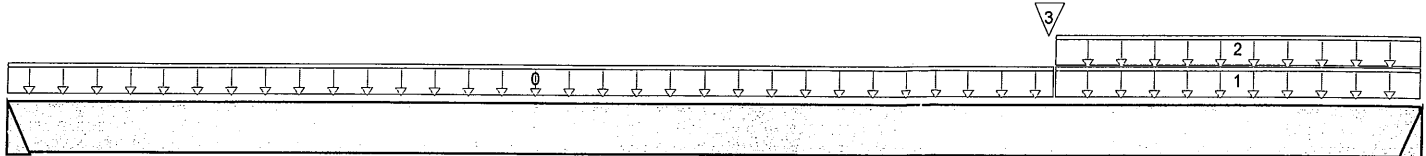
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Specifier:

Designer:

Company:

Misc:



B0

13-06-08

B1

Total Horizontal Product Length = 13-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	308 / 0	237 / 0		
B1	963 / 0	566 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-00-08	27	13			n/a
1	User Load	Unf. Lin. (lb/ft)	L	10-00-08	13-06-08	240	120			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	10-00-08	13-06-08	15	7			n/a
3	B17(i3482)	Conc. Pt. (lbs)	L	09-11-10	09-11-10	113	61			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,923 ft-lbs	38,727 ft-lbs	10.1%	1	09-11-10
End Shear	1,510 lbs	14,464 lbs	10.4%	1	12-04-10
Total Load Defl.	L/999 (0.086")	n/a	n/a	4	07-02-09
Live Load Defl.	L/999 (0.052")	n/a	n/a	5	07-04-04
Max Defl.	0.086"	n/a	n/a	4	07-02-09
Span / Depth	13.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	759 lbs	n/a	8.9%	HGUS410
B1 Hanger	2" x 3-1/2"	2,153 lbs	n/a	25.2%	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.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9





Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: DEWBERRY1.mmdl

Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B16(

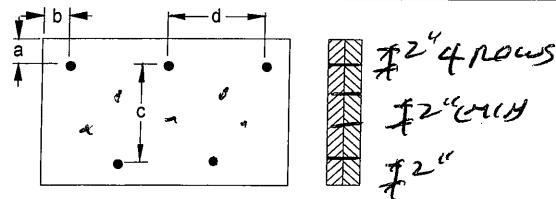
Specifier:

Designer:

Company:

Misc:

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6"

Calculated Side Load = 18.1 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

Disclosure

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 50100-17
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2ND FLOOR...B17(i3482)

BC CALC® Design Report



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

July 11, 2017 11:15:35

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

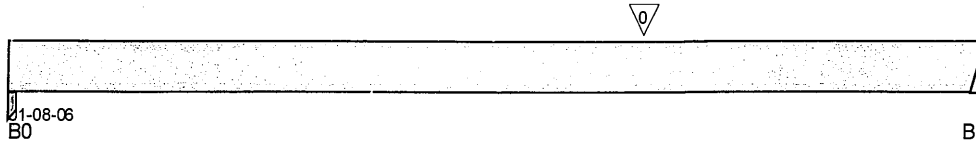
Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B17(i3482)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 01-08-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	69 / 0	40 / 0		
B1	119 / 0	64 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 J5(i3686)	Conc. Pt. (lbs)	L	01-01-02	01-01-02	188	94			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	128 ft-lbs	19,364 ft-lbs	0.7%	1	01-01-02
End Shear	67 lbs	7,232 lbs	0.9%	1	01-03-06
Total Load Defl.	L/999 (0")	n/a	n/a	4	00-11-07
Max Defl.	0"	n/a	n/a	4	00-11-07
Span / Depth	1.4	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	153 lbs	3.8%	2%	Unspecified
B1 Hanger	2" x 1-3/4"	260 lbs	n/a	6.1%	HUS1.81/10

Notes

Design meets Code minimum (L/240) Total 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

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





Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2ND FLOOR\...\B18(i3536)

BC CALC® Design Report



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

July 11, 2017 11:15:36

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

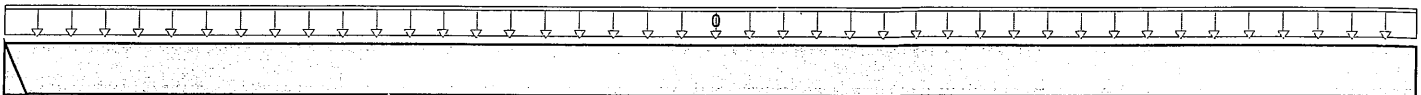
Description: Designs\Flush Beams\2ND FLOOR\Flush Beams\B18(i3:

Specifier:

Designer:

Company:

Misc:



09-10-12

B0

B1

Total Horizontal Product Length = 09-10-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	108 / 0	84 / 0		
B1, 1-3/4"	108 / 0	84 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-10-12	22	11	1.00	1.15	n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	636 ft-lbs	19,364 ft-lbs	3.3%	1	04-11-08
End Shear	205 lbs	7,232 lbs	2.8%	1	01-01-14
Total Load Defl.	L/999 (0.016")	n/a	n/a	4	04-11-08
Live Load Defl.	L/999 (0.009")	n/a	n/a	5	04-11-08
Max Defl.	0.016"	n/a	n/a	4	04-11-08
Span / Depth	9.8	n/a	n/a		00-00-00

Disclosure

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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	268 lbs	n/a	6.3%	HUS1.81/10
B1 Post	1-3/4" x 1-3/4"	267 lbs	13.4%	7.1%	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.

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. **CONFORMS TO OBC 2012**

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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DWG NO. TAM 50190-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

July 11, 2017 11:15:36

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

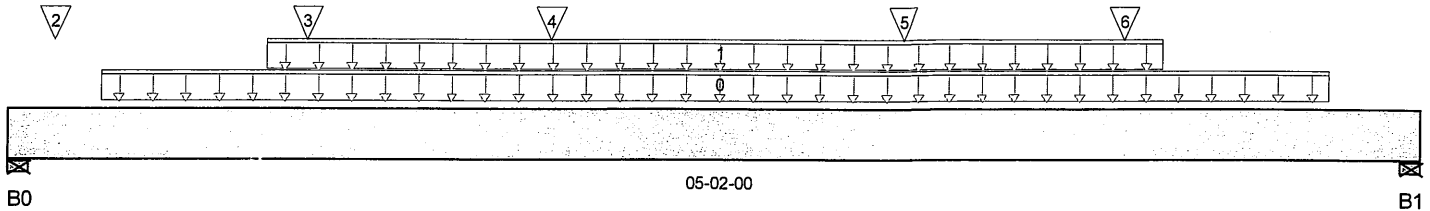
Description: Designs\Dropped Beams\UPPER FLOOR\Dropped Beam

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 05-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	901 / 0	897 / 0	433 / 0	
B1, 4"	670 / 0	783 / 0	434 / 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	00-04-00	04-10-00		100			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-11-04	04-02-12	33	30	78		n/a
2	J4(i3569)	Conc. Pt. (lbs)	L	00-02-00	00-02-00	260	130			n/a
3	B23(i3679)	Conc. Pt. (lbs)	L	01-01-00	01-01-00	334	336	305		n/a
4	J4(i3567)	Conc. Pt. (lbs)	L	01-11-10	01-11-10	251	125			n/a
5	J4(i3565)	Conc. Pt. (lbs)	L	03-03-00	03-03-00	243	122			n/a
6	B22(i3609)	Conc. Pt. (lbs)	L	04-01-00	04-01-00	374	356	305		n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,469 ft-lbs	38,727 ft-lbs	6.4%	1	02-07-05
End Shear	1,776 lbs	14,464 lbs	12.3%	1	03-10-02
Total Load Defl.	L/999 (0.008")	n/a	n/a	35	02-06-13
Live Load Defl.	L/999 (0.004")	n/a	n/a	51	02-06-13
Max Defl.	0.008"	n/a	n/a	35	02-06-13
Span / Depth	4.7	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	2,689 lbs	29.6%	15.7%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,200 lbs	24.2%	12.9%	Unspecified

Notes





BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY1.mmdl

Description: Designs\Dropped Beams\UPPER FLOOR\Dropped Be

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume unbraced length of Top: 00-07-04, Bottom: 00-07-04.

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

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

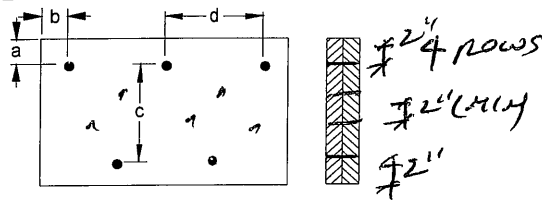
CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6"

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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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

PASSED

BC CALC® Design Report
Build 6215

UPPER FLOOR\Flush Beams\B21(i8084)

Dry | 1 span | No cant.

March 2, 2018 16:54:46

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: UPPER FLOOR\Flush Beams\B21(i8084)

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

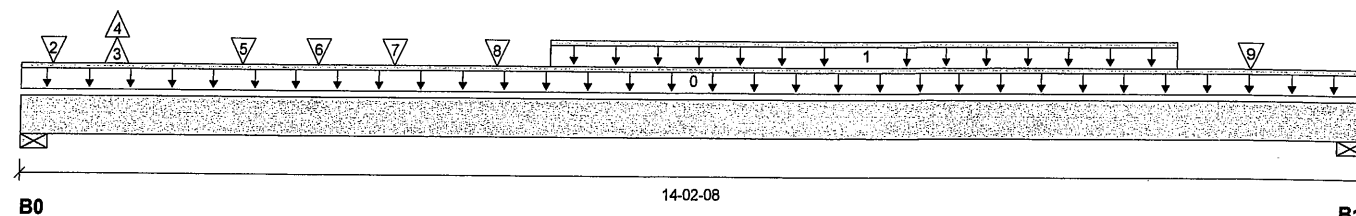
Specifier:

Customer:

Designer:

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 14-02-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-9/16"	4,480 / 17	2,506 / 0	0 / 39	
B1, 3"	3,554 / 1	1,942 / 0	0 / 3	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-02-08		24			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	05-07-00	12-03-00	574	286			n/a
2	-	Conc. Pt. (lbs)	L	00-04-00	00-04-00	1,041	595			n/a
3	-	Conc. Pt. (lbs)	L	01-00-00	01-00-00	511	301	-42		n/a
4	-	Conc. Pt. (lbs)	L	01-00-00	01-00-00	-18				n/a
5	-	Conc. Pt. (lbs)	L	02-04-01	02-04-01	589	295			n/a
6	J3(i8183)	Conc. Pt. (lbs)	L	03-01-12	03-01-12	243	121			n/a
7	-	Conc. Pt. (lbs)	L	03-11-06	03-11-06	567	256			n/a
8	-	Conc. Pt. (lbs)	L	05-00-04	05-00-04	629	314			n/a
9	-	Conc. Pt. (lbs)	L	13-00-03	13-00-03	610	305			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	28,341 ft-lbs	73,615 ft-lbs	38.5%	21	07-01-12
End Shear	7,619 lbs	28,927 lbs	26.3%	1	12-11-10
Total Load Deflection	L/472 (0.35")	n/a	50.8%	56	07-01-12
Live Load Deflection	L/728 (0.227")	n/a	49.4%	83	07-01-12
Max Defl.	0.35"	n/a	n/a	56	07-01-12
Span / Depth	13.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-9/16" x 7"	9,853 lbs	93.2%	32.6%	Unspecified
B1	Wall/Plate 3" x 7"	7,759 lbs	86.5%	30.3%	Unspecified



DWG NO. TAM 1183248
STRUCTURAL
COMPONENT ONLY



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

PASSED

UPPER FLOOR\Flush Beams\B21(i8084)

Dry | 1 span | No cant.

March 2, 2018 16:54:46

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

File name: DEWBERRY 1.mmdl

Description: UPPER FLOOR\Flush Beams\B21(i8084)

Specifier:

Designer:

Company:

Notes

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

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

Calculations assume member is fully braced.

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

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

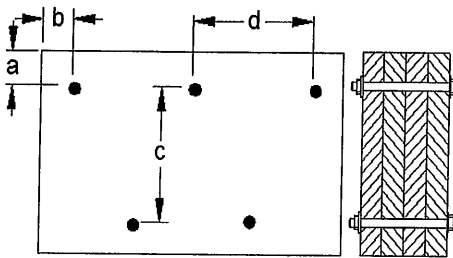
Importance Factor : Normal Part code : Part 9

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

Beams 7 inches wide will be assumed to be either top-loaded only, or equally loaded from each side.

Bolts are assumed to be Grade A307 or Grade 2 or higher.

Connection Diagram



a minimum = 2-1/2"

b minimum = 3-1/8"

c = 6-7/8"

d = 12"

Calculated Side Load = 659.9 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.

Beams 7 inches wide will be assumed to be either top-loaded only, or equally loaded from each side.

Bolts are assumed to be Grade A307 or Grade 2 or higher.

Connectors are: 5/8 in. Staggered Through Bolt

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 11032-18
STRUCTURAL
COMPONENT ONLY



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

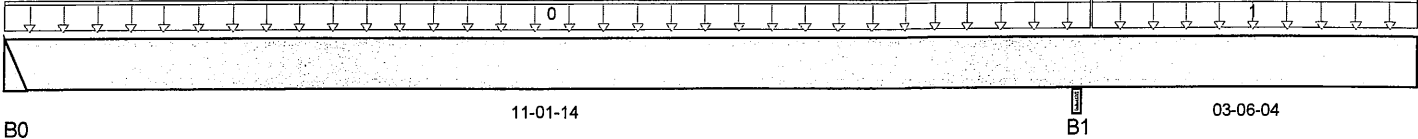
Description: Designs\Flush Beams\UPPER FLOOR\Flush Beams\B22

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 14-08-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	244 / 19	166 / 0	0 / 44	
B1, 3-1/2"	376 / 0	357 / 0	307 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-03-10	43	22			n/a
1	User Load	Unf. Lin. (lb/ft)	L	11-03-10	14-08-02	33	30	78		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,477 ft-lbs	36,369 ft-lbs	4.1%	32	05-03-12
Neg. Moment	-1,152 ft-lbs	-36,369 ft-lbs	3.2%	37	11-01-14
End Shear	450 lbs	14,464 lbs	3.1%	32	01-01-14
Cont. Shear	549 lbs	14,464 lbs	3.8%	1	10-00-04
Total Load Defl.	L/999 (0.023")	n/a	n/a	79	05-05-06
Live Load Defl.	2xL/1,998 (0.017")	n/a	n/a	141	14-08-02
Total Neg. Defl.	2xL/1,998 (-0.02")	n/a	n/a	79	14-08-02
Max Defl.	0.023"	n/a	n/a	79	05-05-06
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 Hanger	2" x 3-1/2"	574 lbs	n/a	6.7%	HGUS4 10
B1 Beam	3-1/2" x 3-1/2"	1,163 lbs	10.9%	7.8%	Unspecified

Notes



DWG NO. TAM 50193 17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

Description: Designs\Flush Beams\UPPER FLOOR\Flush Beams\B

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume unbraced length of Top: 03-04-08, Bottom: 03-04-08.

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.

CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

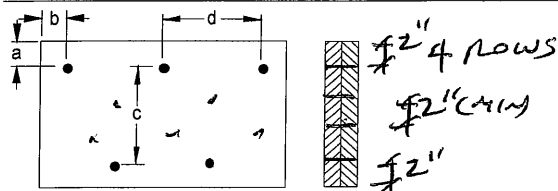
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

Disclosure

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Connection Diagram



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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL





Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP UPPER FLOOR...B23(i3679)

BC CALC® Design Report



Dry | 2 spans | Right cantilever | 0/12 slope (deg)

July 11, 2017 11:15:36

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

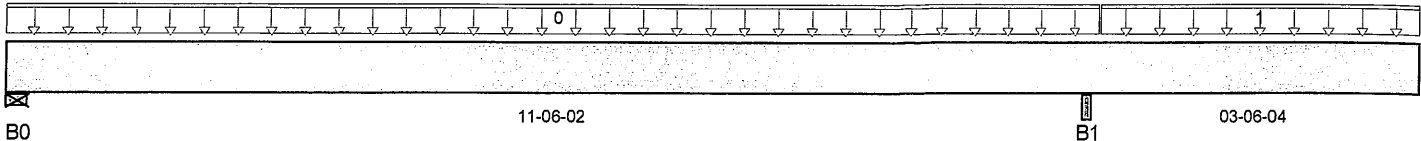
Description: Designs\Flush Beams\UPPER FLOOR\Flush Beams\B23

Specifier:

Designer:

Company:

Msc:



Total Horizontal Product Length = 15-00-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	213 / 18	154 / 0	0 / 43	
B1, 3-1/2"	337 / 0	338 / 0	306 / 0	

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-07-14	36	18			n/a
1 User Load	Unf. Lin. (lb/ft)	L	11-07-14	15-00-06	33	30	78		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,281 ft-lbs	36,369 ft-lbs	3.5%	32	05-07-00
Neg. Moment	-1,152 ft-lbs	-36,369 ft-lbs	3.2%	37	11-06-02
End Shear	388 lbs	14,464 lbs	2.7%	32	01-04-04
Cont. Shear	487 lbs	14,464 lbs	3.4%	1	10-04-08
Total Load Defl.	L/999 (0.02")	n/a	n/a	79	05-08-11
Live Load Defl.	2xL/1,998 (0.017")	n/a	n/a	141	15-00-06
Total Neg. Defl.	2xL/1,998 (-0.017")	n/a	n/a	79	15-00-06
Max Defl.	0.02"	n/a	n/a	79	05-08-11
Span / Depth	11.3	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	512 lbs	7.8%	2.7%	Unspecified
B1 Beam	3-1/2" x 3-1/2"	1,081 lbs	10.1%	7.2%	Unspecified

Notes



DWG NO. TAM 5019417
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP UPPER FLOOR...B23(i3679)

Dry | 2 spans | Right cantilever | 0/12 slope (deg)

July 11, 2017 11:15:36

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: DEWBERRY 1.mmdl

Description: Designs\Flush Beams\UPPER FLOOR\Flush Beams\B

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume unbraced length of Top: 03-04-08, Bottom: 03-04-08.

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.

CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

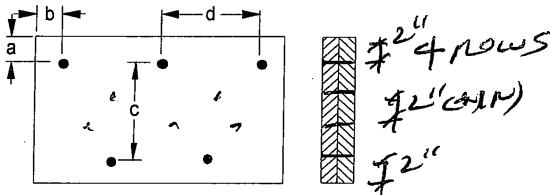
Importance Factor: Normal Part code: Part 9

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

Disclosure

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Connection Diagram



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

Member has no side loads.

Connectors are: 16d or Nails

3 1/2" ARDOX SPIRAL

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BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 28, 2018 10:59:40

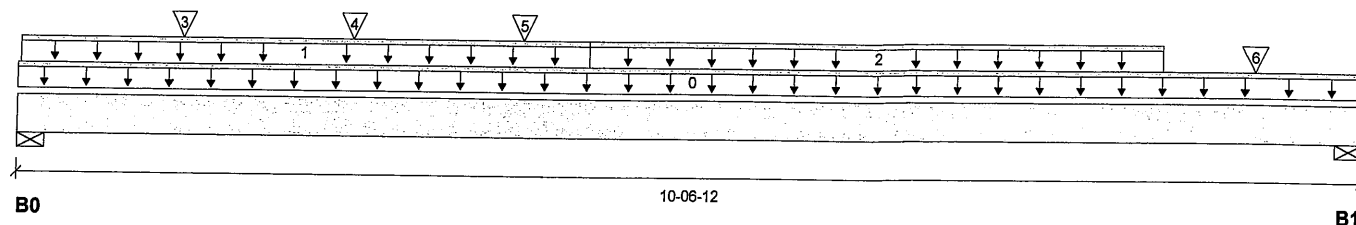
File name: DEWBERRY 1.mmdl

Description: UPPER FLOOR\Flush Beams\B24(i7964)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 10-06-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	3,003 / 0	1,599 / 0		
B1, 2-3/4"	2,836 / 0	1,513 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-06-12	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-04	04-05-10	248	124			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-05-10	09-00-04	654	327			n/a
3	J2(i7861)	Conc. Pt. (lbs)	L	01-03-08	01-03-08	433	216			n/a
4	J2(i7860)	Conc. Pt. (lbs)	L	02-07-08	02-07-08	423	211			n/a
5	J2(i7841)	Conc. Pt. (lbs)	L	03-11-08	03-11-08	372	186			n/a
6	-	Conc. Pt. (lbs)	L	09-08-15	09-08-15	525	263			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	16,109 ft-lbs	55,212 ft-lbs	29.2%	1	05-06-04
End Shear	5,788 lbs	21,696 lbs	26.7%	1	01-05-06
Total Load Deflection	L/859 (0.14")	n/a	27.9%	4	05-06-04
Live Load Deflection	L/999 (0.091")	n/a	n/a	5	05-06-04
Max Defl.	0.14"	n/a	n/a	4	05-06-04
Span / Depth	10.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 5-1/4"	6,503 lbs	52.7%	18.5%	Unspecified
B1	Wall/Plate 2-3/4" x 5-1/4"	6,145 lbs	99.6%	34.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

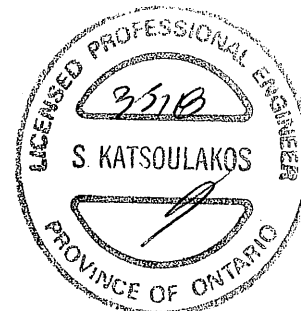
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO 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.

Nailing schedule applies to both sides of the member.


DWG NO. TAM 11833-8
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 28, 2018 10:59:40

File name: DEWBERRY 1.mmdl

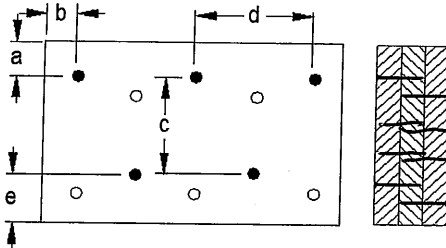
Description: UPPER FLOOR\Flush Beams\B24(i7964)

Specifier:

Designer:

Company:

Connection Diagram



4 PLUGS

a minimum = 3"

b minimum = 3"

c = 6-7/8"

d = 6"

e minimum = 3"

Calculated Side Load = 618.7 lb/ft

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

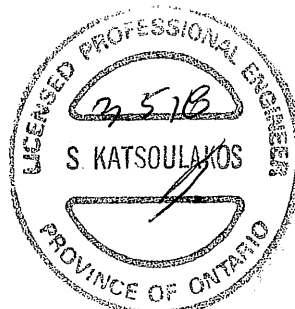
Nailing schedule applies to both sides of the member.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 11833-18
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Build 6215

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: UPPER FLOOR\Flush Beams\B25(i7872)

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

Specifier:

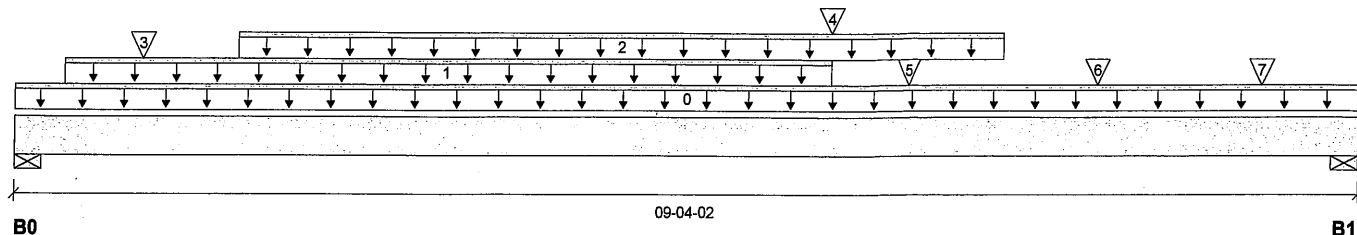
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 09-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-1/8"	1,568 / 0	1,109 / 0		
B1, 5"	2,397 / 0	1,434 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-04-02	18				00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-04-02	05-07-14	60				n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-06-10	06-10-10	320	160			n/a
3	J2(i7837)	Conc. Pt. (lbs)	L	00-10-10	00-10-10	377	189			n/a
4	B27(i7917)	Conc. Pt. (lbs)	L	05-07-14	05-07-14	207	177			n/a
5	J3(i7871)	Conc. Pt. (lbs)	L	06-02-10	06-02-10	257	128			n/a
6	-	Conc. Pt. (lbs)	L	07-06-10	07-06-10	728	364			n/a
7	-	Conc. Pt. (lbs)	L	08-08-04	08-08-04	678	339			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9,921 ft-lbs	55,212 ft-lbs	18.0%	1	04-10-10
End Shear	4,262 lbs	21,696 lbs	19.6%	1	07-11-04
Total Load Deflection	L/999 (0.068")	n/a	n/a	4	04-07-10
Live Load Deflection	L/999 (0.041")	n/a	n/a	5	04-07-10
Max Defl.	0.068"	n/a	n/a	4	04-07-10
Span / Depth	9.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2-1/8" x 5-1/4"	3,738 lbs	78.4%	27.5%	Unspecified
B1	Wall/Plate 5" x 5-1/4"	5,388 lbs	48.1%	16.8%	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

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.


DWG NO. TAM 11834-18
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 28, 2018 10:59:40

File name: DEWBERRY 1.mmdl

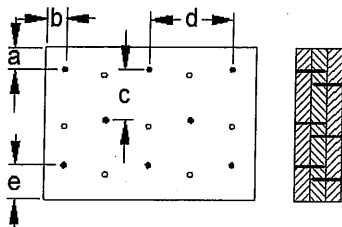
Description: UPPER FLOOR\Flush Beams\B25(i7872)

Specifier:

Designer:

Company:

Connection Diagram



a minimum = 2"

b minimum = 3"

c = 3-1/2"

d = 4"

e minimum = 3"

Calculated Side Load = 674.1 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

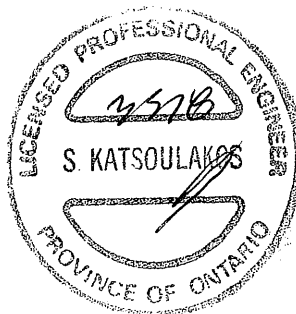
3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 11034-18
STRUCTURAL
COMPONENT ONLY





Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

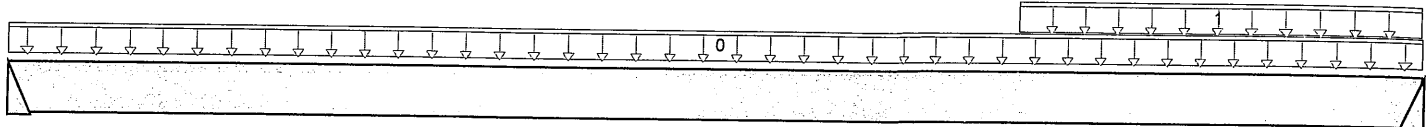
Description: Designs\Flush Beams\UPPER FLOOR\Flush Beams\B27

Specifier:

Designer:

Company:

Misc:



B0

12-03-06

B1

Total Horizontal Product Length = 12-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	202 / 0	175 / 0		
B1	811 / 0	480 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-03-06	14	7	1.00	1.15	n/a
1	User Load	Unf. Lin. (lb/ft)	L	08-09-04	12-03-04	240	120			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,802 ft-lbs	38,727 ft-lbs	7.2%	1	09-00-13
End Shear	1,180 lbs	14,464 lbs	8.2%	1	11-01-08
Total Load Defl.	L/999 (0.049")	n/a	n/a	4	06-07-09
Live Load Defl.	L/999 (0.028")	n/a	n/a	5	06-09-00
Max Defl.	0.049"	n/a	n/a	4	06-07-09
Span / Depth	12.2	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"	522 lbs	n/a	6.1%	HGUS4 10
B1 Hanger	2" x 3-1/2"	1,817 lbs	n/a	21.3%	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




Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: DEWBERRY 1.mmdl

Description: Designs\Flush Beams\UPPER FLOOR\Flush Beams\B

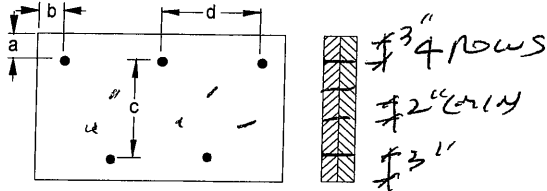
Specifier:

Designer:

Company:

Msc:

Connection Diagram



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

Member has no side loads.

Connectors are: 16d or 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 5019717
STRUCTURAL
COMPONENT ONLY

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

BC CALC® Design Report

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Build 6215

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 2ND FLOOR\Flush Beams\B30(i8027)

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

Specifier:

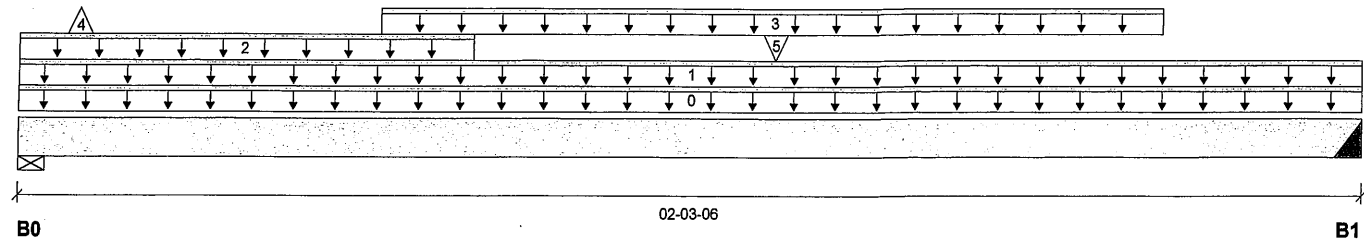
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 02-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	425 / 0	230 / 0	97 / 0	
B1, 2"	420 / 0	320 / 0	81 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-03-06	12				00-00-00
1	E28(i867)	Unf. Lin. (lb/ft)	L	00-00-00	02-03-06	33	111	78		n/a
2	E28(i867)	Unf. Lin. (lb/ft)	L	00-00-00	00-09-04	46				n/a
3	E28(i867)	Unf. Lin. (lb/ft)	L	00-07-06	01-11-06	266	134			n/a
4	E28(i867)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	-98				n/a
5	J2(i8010)	Conc. Pt. (lbs)	L	01-03-06	01-03-06	379	189			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	713 ft-lbs	35,392 ft-lbs	2.0%	1	01-03-06
End Shear	688 lbs	14,464 lbs	4.8%	11	01-04-04
Total Load Deflection	L/999 (0")	n/a	n/a	35	01-02-14
Live Load Deflection	L/999 (0")	n/a	n/a	51	01-02-14
Max Defl.	0"	n/a	n/a	35	01-02-14
Span / Depth	1.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 4-3/8" x 3-1/2"	974 lbs	14.9%	5.2%	Unspecified
B1	Hanger 2" x 3-1/2"	1,071 lbs	n/a	12.5%	HGUS410

Cautions

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



DWG NO. TAM 11B39-18
STRUCTURAL
COMPONENT ONLY



BC CALC® Design Report
Build 6215

2ND FLOOR\Flush Beams\B30(i8027)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 2ND FLOOR\Flush Beams\B30(i8027)

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

Specifier:

Customer:

Designer:

Code reports:

CCMC 12472-R

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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

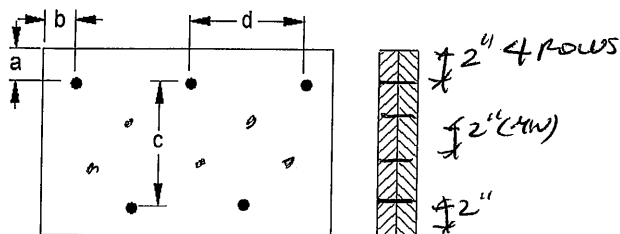
CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

Connection Diagram



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 4"

Calculated Side Load = 352.8 lb/ft

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

Connectors are: 16d Sinker Nails

3-1/2" ARDOX SPIRAL

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DWG NO. TAM 11B39-18 1624
STRUCTURAL
COMPONENT ONLY





BC CALC® Design Report

2ND FLOOR\Flush Beams\B31(i7854)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Build 6215

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 2ND FLOOR\Flush Beams\B31(i7854)

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

Specifier:

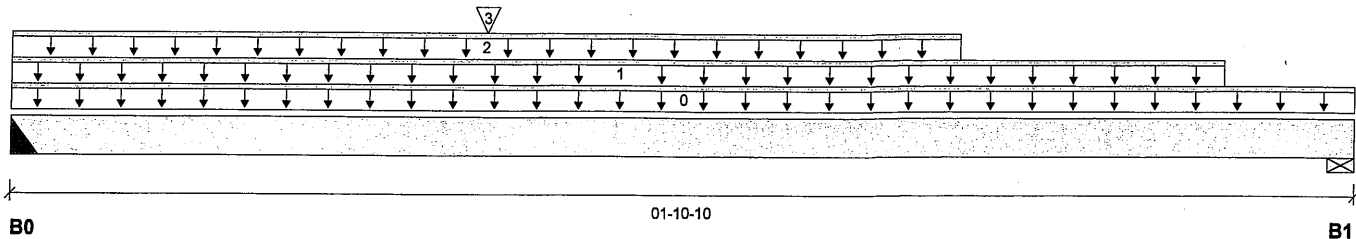
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 01-10-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	458 / 0	329 / 0	73 / 0	
B1, 2-1/8"	245 / 0	207 / 0	60 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-10-10		12			00-00-00
1	E24(i862)	Unf. Lin. (lb/ft)	L	00-00-00	01-08-08	33	111	78		n/a
2	E24(i862)	Unf. Lin. (lb/ft)	L	00-00-00	01-04-00	262	131			n/a
3	J2(i7823)	Conc. Pt. (lbs)	L	00-08-00	00-08-00	296	148			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	464 ft-lbs	35,392 ft-lbs	1.3%	1	00-08-00
End Shear	421 lbs	14,464 lbs	2.9%	11	00-08-10
Total Load Deflection	L/999 (0")	n/a	n/a	35	00-10-14
Live Load Deflection	L/999 (0")	n/a	n/a	51	00-10-11
Max Defl.	0"	n/a	n/a	35	00-10-14
Span / Depth	1.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Hanger 2" x 3-1/2"	1,135 lbs	n/a	13.3%	HGUS410
B1	Wall/Plate 2-1/8" x 3-1/2"	657 lbs	20.7%	7.2%	Unspecified

Cautions

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



DWG NO. TAM 11840-18
STRUCTURAL
COMPONENT ONLY

P6 14

BC CALC® Design Report
Build 6215

2ND FLOOR\Flush Beams\B31(i7854)

Dry | 1 span | No cant.

February 28, 2018 10:59:40

Job name:

File name: DEWBERRY 1.mmdl

Address:

Description: 2ND FLOOR\Flush Beams\B31(i7854)

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

Specifier:

Customer:

Designer:

Code reports:

CCMC 12472-R

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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

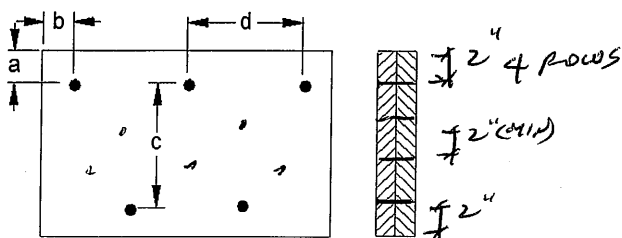
Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor : Normal Part code : Part 9

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

Connection Diagram



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 4"

Calculated Side Load = 333.6 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 Spike Nails

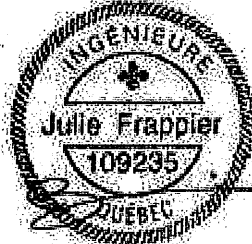
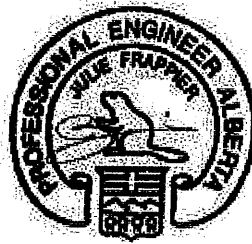
3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 11840-8
STRUCTURAL
COMPONENT ONLY



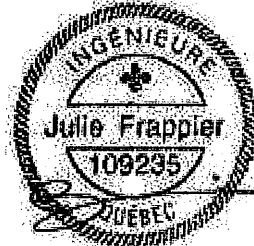
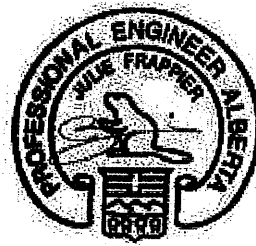
Maximum Floor Spans

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

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

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



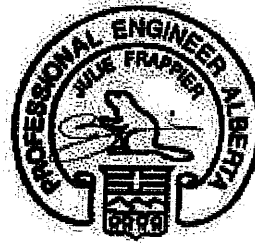
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

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

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

1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.

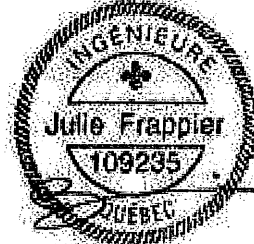
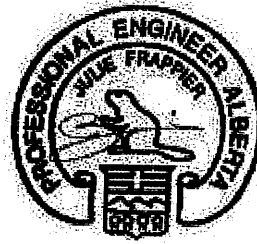
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

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

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

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

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



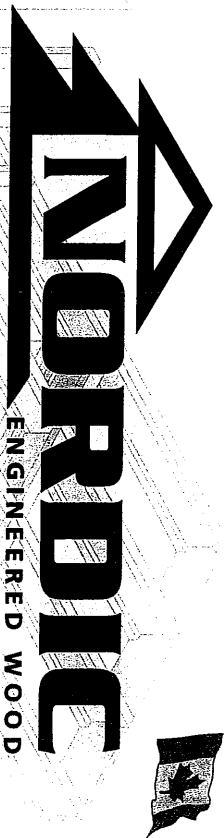
Maximum Floor Spans

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

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

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



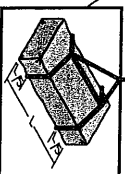
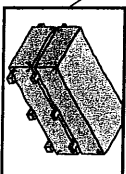
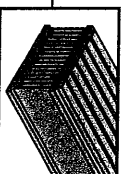
Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



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

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stock, 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.



1-101ST 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.

I-JOIST HANGERS

CCMC EVALUATION REPORT 13032-R

NORDIC I-JOIST SERIES

NORDIC I-JOIST SERIES

Diagram illustrating a concentrated load on a beam. The load is applied through a load stiffener, creating a tight joint at the point of application. Gaps are shown at the ends of the beam.

Diagram illustrating a concentrated load on a beam. The load is applied through a load stiffener, creating a tight joint at the point of application. Gaps are shown at the ends of the beam.

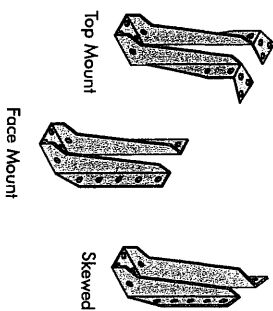
END BEARING
(Bearing stiffener)

A cross-sectional diagram of a tight joint. A thick, textured block is shown with a smaller, lighter-colored rectangular piece inserted into a slot. The text "Tight Joint No Gap" is written to the left of the block, with a line pointing to the interface between the two pieces. The text "Gap" is written to the right of the block, with a line pointing to the space between the block and the surrounding structure.

2015-04-16

I-JOIST HANGERS

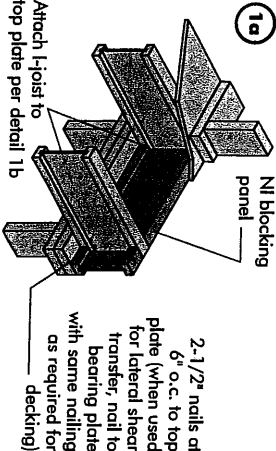
1. Hangers shown illustrate the three most commonly used metal hangers to support I-joists.
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3. Hangers should be selected based on the joist depth, flange width and load capacity based on the maximum spans.
4. Web stiffeners are required when the sides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



INSTALLING NORDIC I-JOISTS

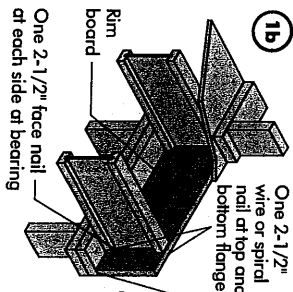
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span I-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 rock 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 gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

2015-04-16



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.

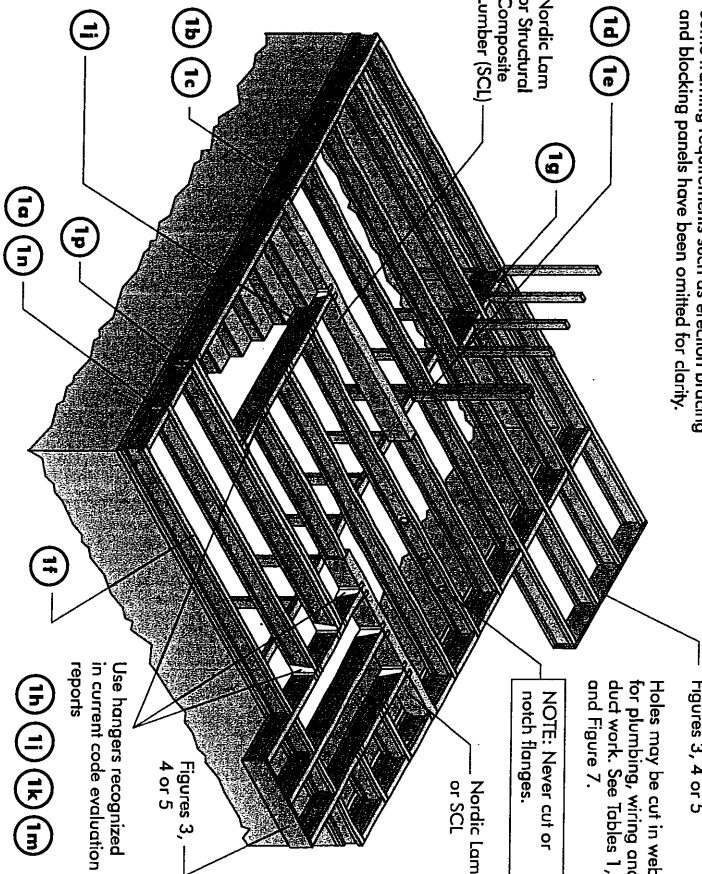


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

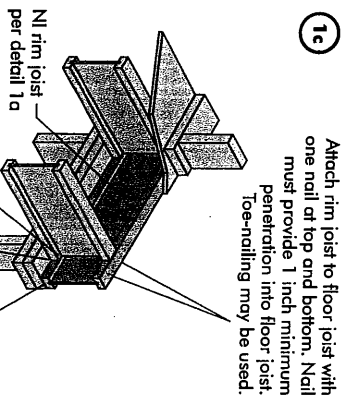
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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

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

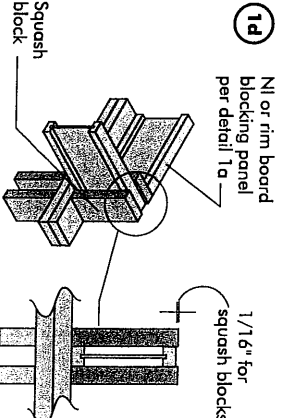


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.127" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



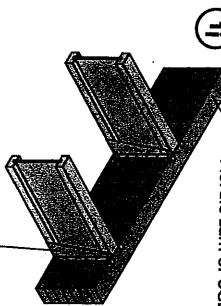
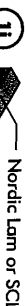
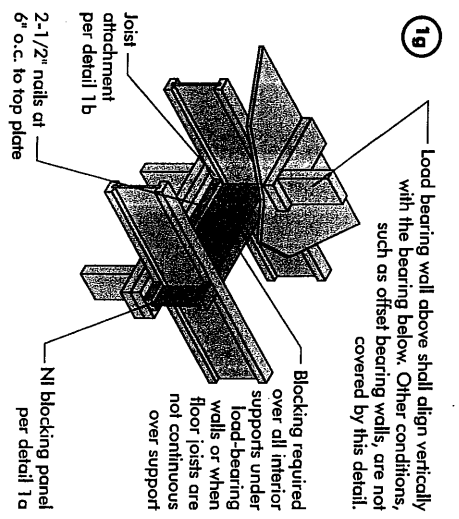
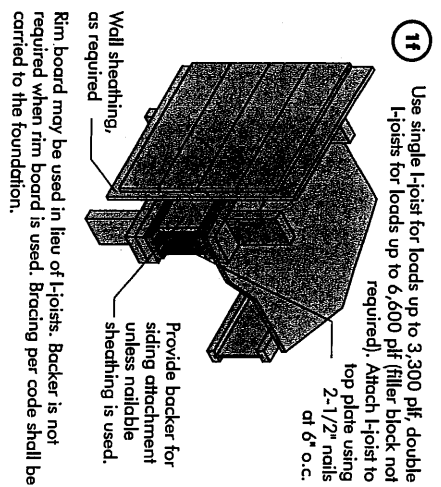
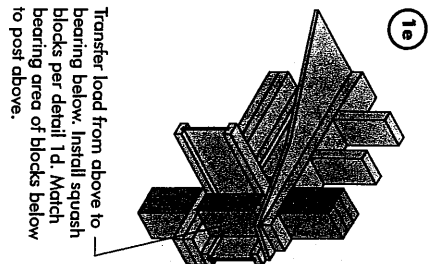
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*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.



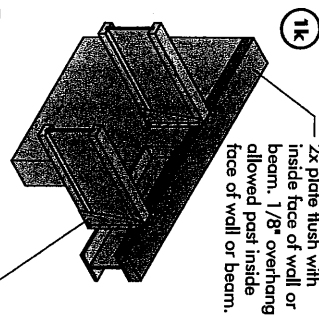
Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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

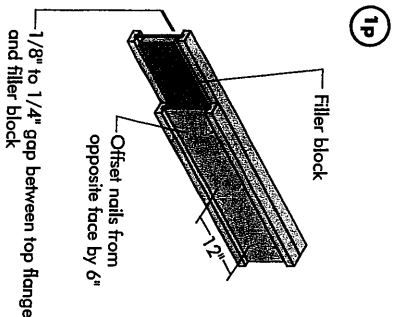
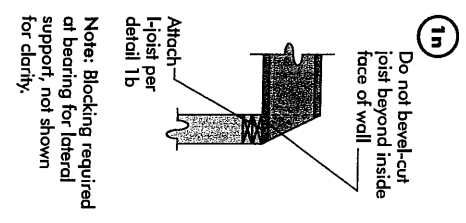
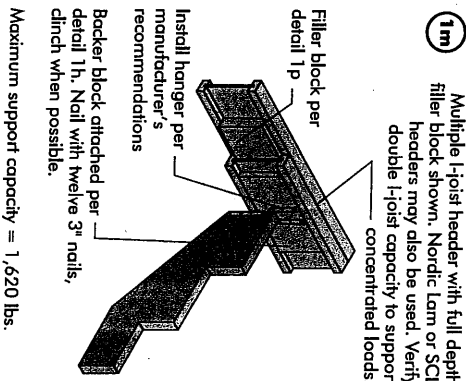


For nailing schedules for multiple beams, see the manufacturer's recommendations.

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



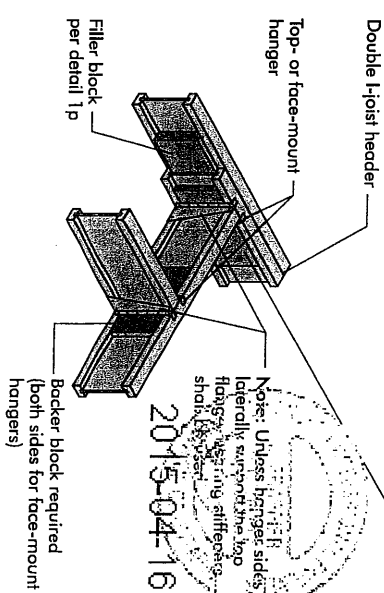
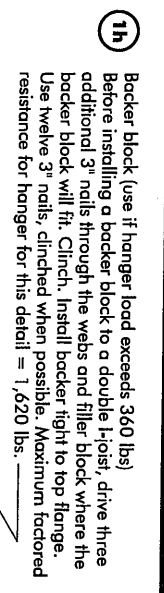
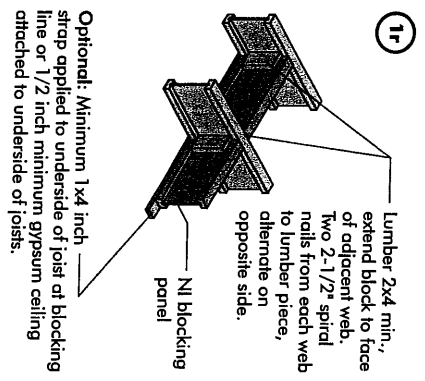
Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



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

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

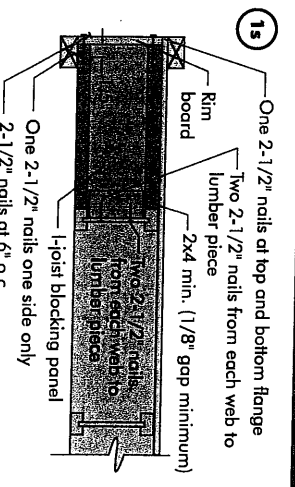


For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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

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

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



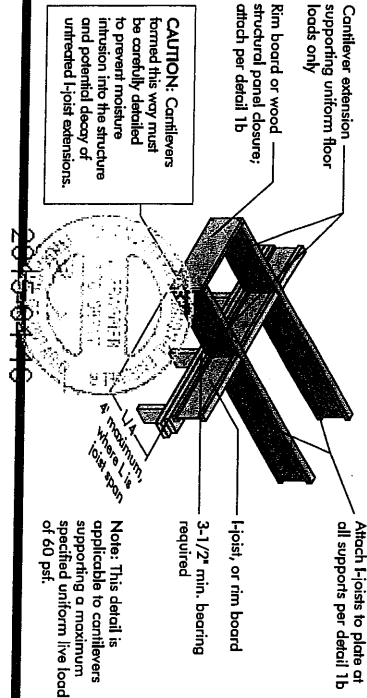
Notes:

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

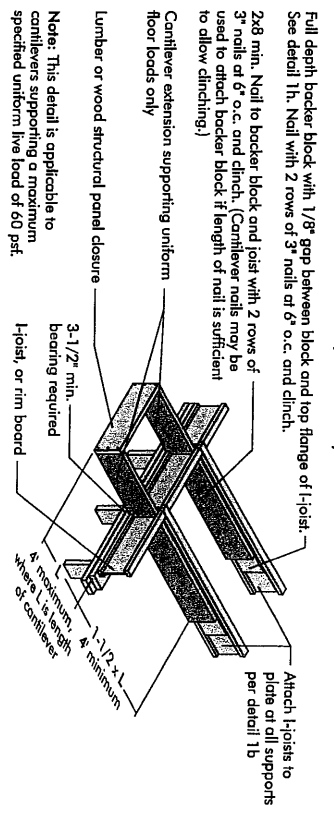
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CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

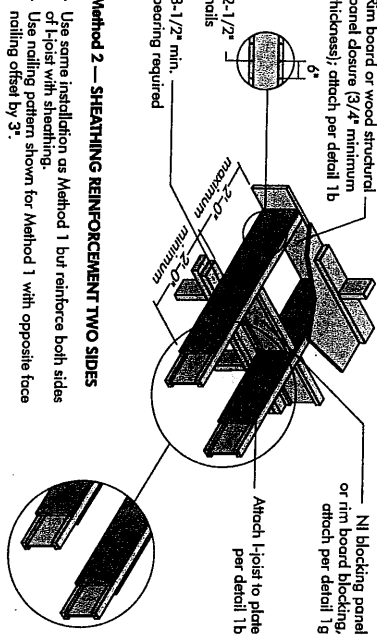


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

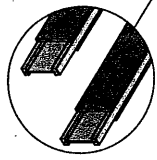


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES



Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4 inch) required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2 inch nails at 6 inch 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

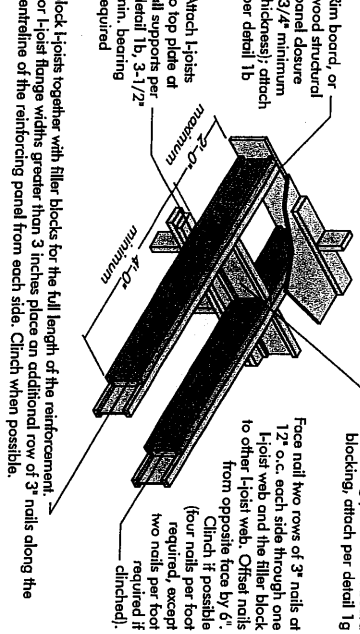
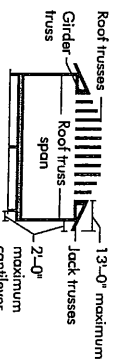
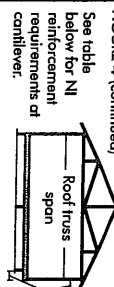


FIGURE 4 (continued)



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

CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	JOIST TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)			
		LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	LL = 60 psf, DL = 15 psf
12	16	19.2	24	12	16
16	19.2	24	12	16	19.2
24	24	12	16	19.2	24
32	32	12	16	19.2	24
36	36	12	16	19.2	24
40	40	12	16	19.2	24
44	44	12	16	19.2	24
48	48	12	16	19.2	24
52	52	12	16	19.2	24
56	56	12	16	19.2	24
60	60	12	16	19.2	24
64	64	12	16	19.2	24
68	68	12	16	19.2	24
72	72	12	16	19.2	24
76	76	12	16	19.2	24
80	80	12	16	19.2	24
84	84	12	16	19.2	24
88	88	12	16	19.2	24
92	92	12	16	19.2	24
96	96	12	16	19.2	24
100	100	12	16	19.2	24

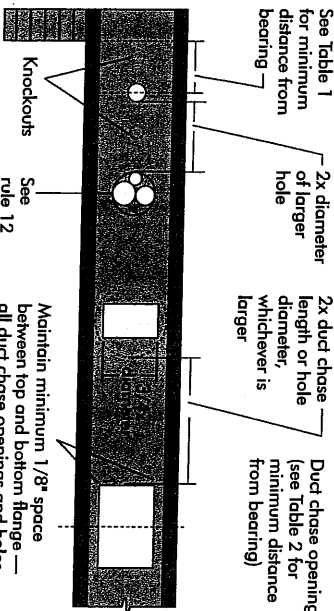
1. NI = No reinforcement required.
2. NI = Reinforced with 3/4" wood structural panel on one side only.
3. NI = Reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3-0" width openings spaced less than 6-0" o.c., additional joists beneath the opening's cripple studs may be required.
5. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
6. Cantilevered joist supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joint 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-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joint flange.
5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
7. A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes of 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 Series	2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4	Span adjustment Factor
Depth	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	1.0
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	1.0
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	1.0
18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	1.0
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	1.0
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	1.0
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	1.0
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	1.0
28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	1.0
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	1.0
32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	1.0
34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	1.0
36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	1.0
38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	1.0
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	1.0
42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	1.0
44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	1.0
46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	1.0
48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	1.0
50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	1.0
52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	1.0
54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	1.0
56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	1.0
58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	1.0
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	1.0
62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	1.0
64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	1.0
66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	1.0
68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	1.0
70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	1.0
72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	1.0
74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	1.0
76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	1.0
78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	1.0
80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	1.0
82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	1.0
84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	1.0
86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	1.0
88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	1.0
90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	1.0
92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	1.0
94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	1.0
96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	1.0
98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	1.0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1.0

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

OPTIONAL:

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

$$\text{Reduced } D = \frac{\text{Actual } D}{\text{Full Span}} \times \text{Full Span}$$

Where:

$$\text{Reduced } D = \frac{\text{Actual } D}{\text{Full Span}} \times \text{Full Span}$$

Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
The actual measured span distance between the inside faces of supports (ft).
Span Adjustment Factor given in this table.
The minimum distance from the inside face of any support to centre of hole from this table.
If Reduced is greater than 1, use 1 in the above calculation for Actual.

2015-04-16

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

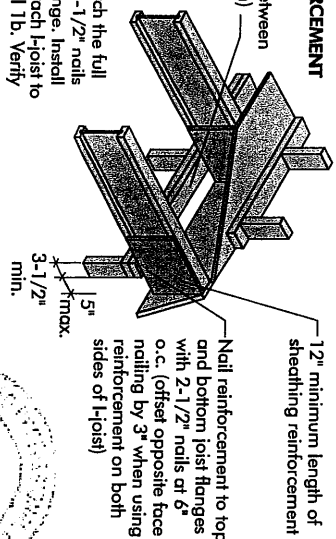
Joist Series	8	10	12	14	16	18	20	22	24
Depth	12	12	12	12	12	12	12	12	12
14	14	14	14	14	14	14	14	14	14
16	16	16	16	16	16	16	16	16	16
18	18	18	18	18	18	18	18	18	18
20	20	20	20	20	20	20	20	20	20
22	22	22	22	22	22	22	22	22	22
24	24	24	24	24	24	24	24	24	24
26	26	26	26	26	26	26	26	26	26
28	28	28	28	28	28	28	28	28	28
30	30	30	30	30	30	30	30	30	30
32	32	32	32	32	32	32	32	32	32
34	34	34	34	34	34	34	34	34	34
36	36	36	36	36	36	36	36	36	36
38	38	38	38	38	38	38	38	38	38
40	40	40	40	40	40	40	40	40	40
42	42	42	42	42	42	42	42	42	42
44	44	44	44	44	44	44	44	44	44
46	46	46	46	46	46	46	46	46	46
48	48	48	48	48	48	48	48	48	48
50	50	50	50	50	50	50	50	50	50
52	52	52	52	52	52	52	52	52	52
54	54	54	54	54	54	54	54	54	54
56	56	56	56	56	56	56	56	56	56
58	58	58	58	58	58	58	58	58	58
60	60	60	60	60	60	60	60	60	60
62	62	62	62	62	62	62	62	62	62
64	64	64	64	64	64	64	64	64	64
66	66	66	66	66	66	66	66	66	66
68	68	68	68	68	68	68	68	68	68
70	70	70	70	70	70	70	70	70	70
72	72	72	72	72	72	72	72	72	72
74	74	74	74	74	74	74	74	74	74
76	76	76	76	76	76	76	76	76	76
78	78	78	78	78	78	78	78	78	78
80	80	80	80	80	80	80	80	80	80
82	82	82	82	82	82	82	82	82	82
84	84	84	84	84	84	84	84	84	84
86	86	86	86	86	86	86	86	86	86
88	88	88	88	88	88	88	88	88	88
90	90	90	90	90	90	90	90	90	90
92	92	92	92	92	92	92	92	92	92
94	94	94	94	94	94	94	94	94	94
96	96	96	96	96	96	96	96	96	96
98	98	98	98	98	98	98	98	98	98
100	100	100	100	100	100	100	100	100	100

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

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

5b SHEATHING REINFORCEMENT

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

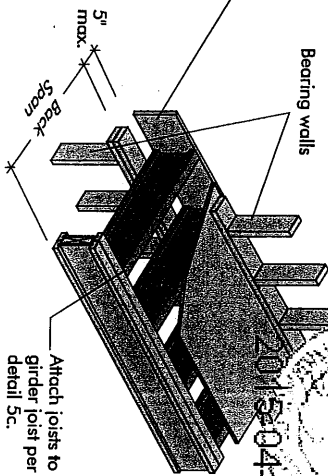


Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

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

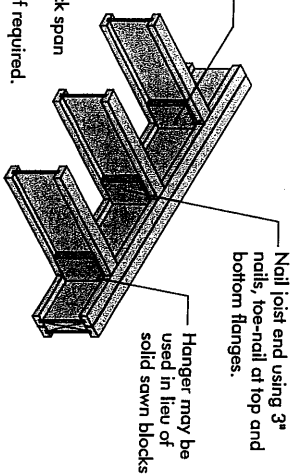
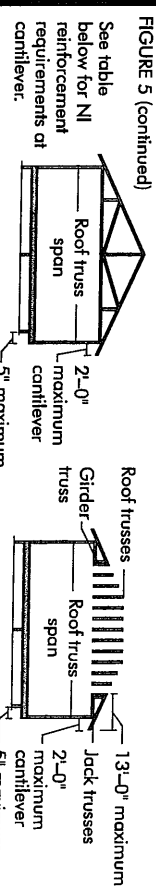


FIGURE 5 (continued)



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	LL = 30 psf, DL = 15 psf JOIST SPACING (in.)				ROOF LOADING (UNFACTORED) LL = 40 psf, DL = 15 psf JOIST SPACING (in.)				LL = 50 psf, DL = 15 psf JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
12	26	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X	2	X	X	X
	36	2	X	X	X	2	X	X	X	2	X	X	X
	38	2	X	X	X	2	X	X	X	2	X	X	X
	40	2	X	X	X	2	X	X	X	2	X	X	X
	42	2	X	X	X	2	X	X	X	2	X	X	X
	44	2	X	X	X	2	X	X	X	2	X	X	X
14	26	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X
	36	1	X	X	X	2	X	X	X	2	X	X	X
	38	1	X	X	X	2	X	X	X	2	X	X	X
	40	1	X	X	X	2	X	X	X	2	X	X	X
	42	1	X	X	X	2	X	X	X	2	X	X	X
	44	1	X	X	X	2	X	X	X	2	X	X	X
16	26	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X
	36	1	X	X	X	2	X	X	X	2	X	X	X
	38	1	X	X	X	2	X	X	X	2	X	X	X
	40	1	X	X	X	2	X	X	X	2	X	X	X
	42	1	X	X	X	2	X	X	X	2	X	X	X
	44	1	X	X	X	2	X	X	X	2	X	X	X

INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
2. Snap a chalk line across the I-joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
7. After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joist flanges.
8. Top 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.)	Common Wire or Spiral Nails	Nail Size and Type Ring Thread Nails or Screws	Staples	Maximum Spacing of Fasteners of 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/CSG-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.

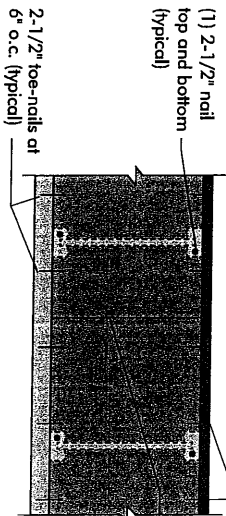
RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

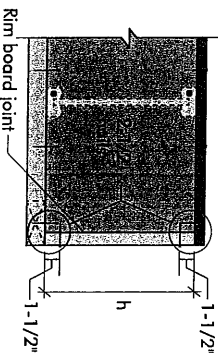
Rim board joint Between Floor Joists

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

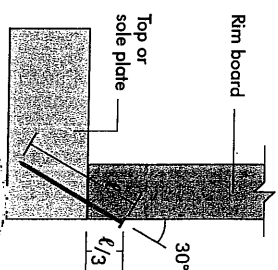
(1) 2-1/2" nail
top and bottom
(typical)



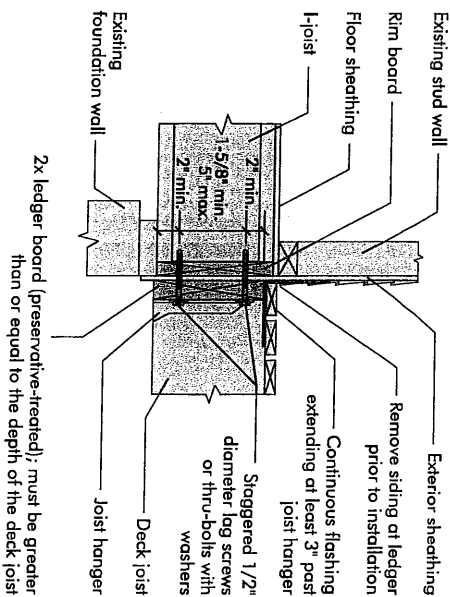
Rim board joint at Corner



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



2015-04-16

PRODUCT WARRANTY

Customer acknowledges and warrants that, in accordance with the terms and conditions of this warranty, the product is warranted against manufacturing defects and workmanship.

Furthermore, Customer acknowledges and warrants that any products, when installed in accordance with the building and installation instructions, will meet or exceed the specifications for the lifetime of the structure.

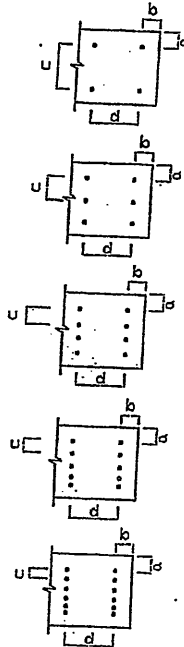


MICRO CITY ENGINEERING SERVICES INC.

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