

FROM PLAN DATED: OCT 2017

BUILDER: GREENPARK HOMES

SITE: SECONDO VALES ESTATES

MODEL: PINEBROOKE 2

ELEVATION: 1, 2, 3

LOT:

CITY: EAST GWILLIMBURY

SALESMAN: M D

DESIGNER: LBV

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/ft<sup>2</sup>

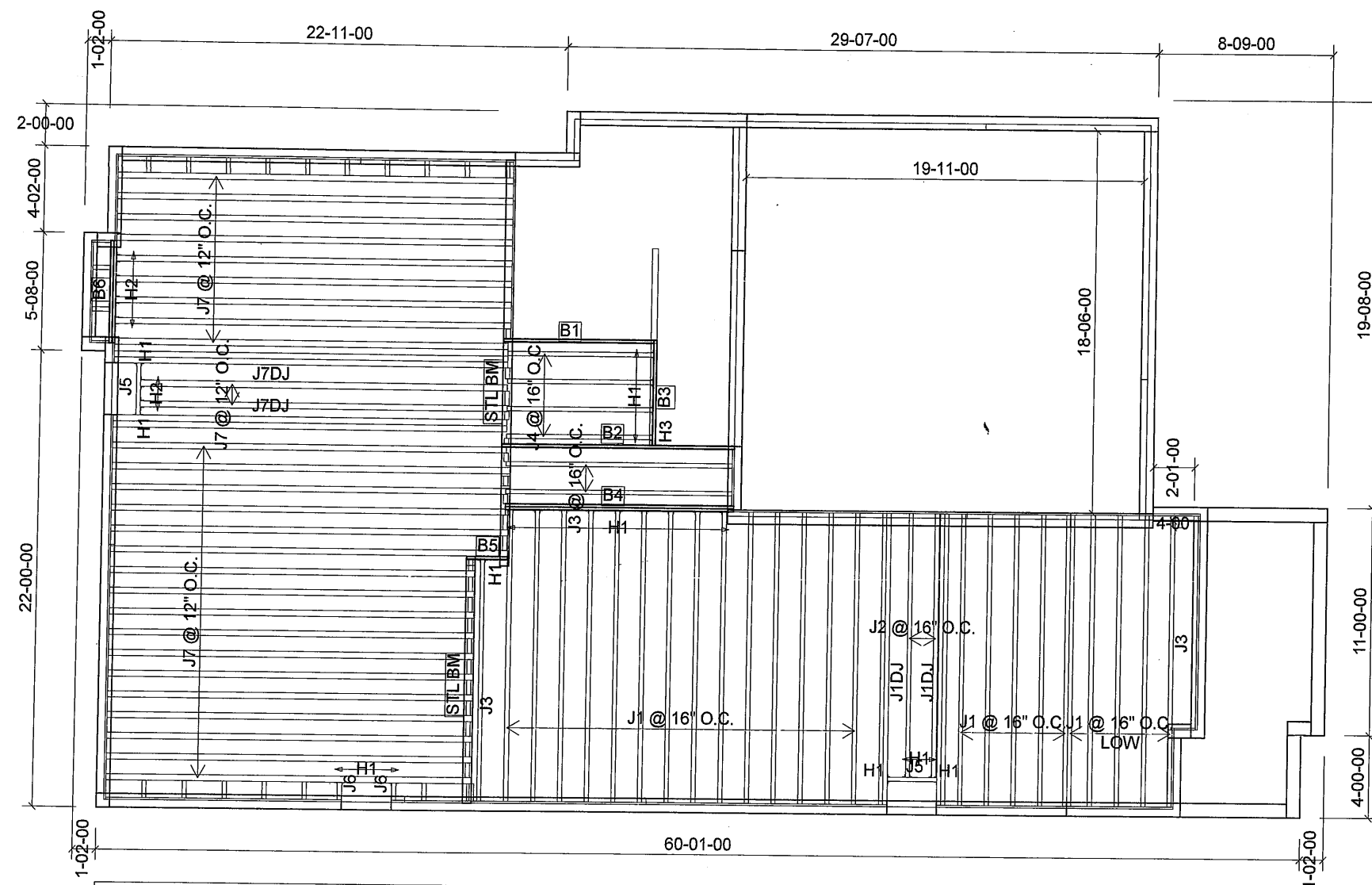
DEAD LOAD: 15.0 lb/ft<sup>2</sup>

TILED AREAS: 20 lb/ft

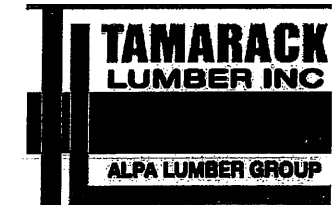
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2017-11-11

1st FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J1	16-00-00	11 7/8" NI-40x	1	24	5	H1	IUS2.56/11.88
J1DJ	16-00-00	11 7/8" NI-40x	2	4	9	H1	IUS2.56/11.88
J2	14-00-00	11 7/8" NI-40x	1	2	2	H1	IUS2.56/11.88
J3	12-00-00	11 7/8" NI-40x	1	4	2	H1	IUS2.56/11.88
J4	8-00-00	11 7/8" NI-40x	1	4	2	H1	IUS2.56/11.88
J5	4-00-00	11 7/8" NI-40x	1	2	2	H1	IUS2.56/11.88
J6	2-00-00	11 7/8" NI-40x	1	2	4	H2	IUS3.56/11.88
J7	20-00-00	11 7/8" NI-80	1	28	2	H2	IUS3.56/11.88
J7DJ	20-00-00	11 7/8" NI-80	2	4	1	H3	HUS1.81/10
B2	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B4	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B1	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B3	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B6	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B5	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			



FROM PLAN DATED: OCT 2017

BUILDER: GREENPARK HOMES

SITE: SECONDO VALES ESTATES

MODEL: PINEBROOKE 2

ELEVATION: 1, 2

LOT:

CITY: EAST GWILLIMBURY

SALESMAN: M D

DESIGNER: LBV

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/ft<sup>2</sup>

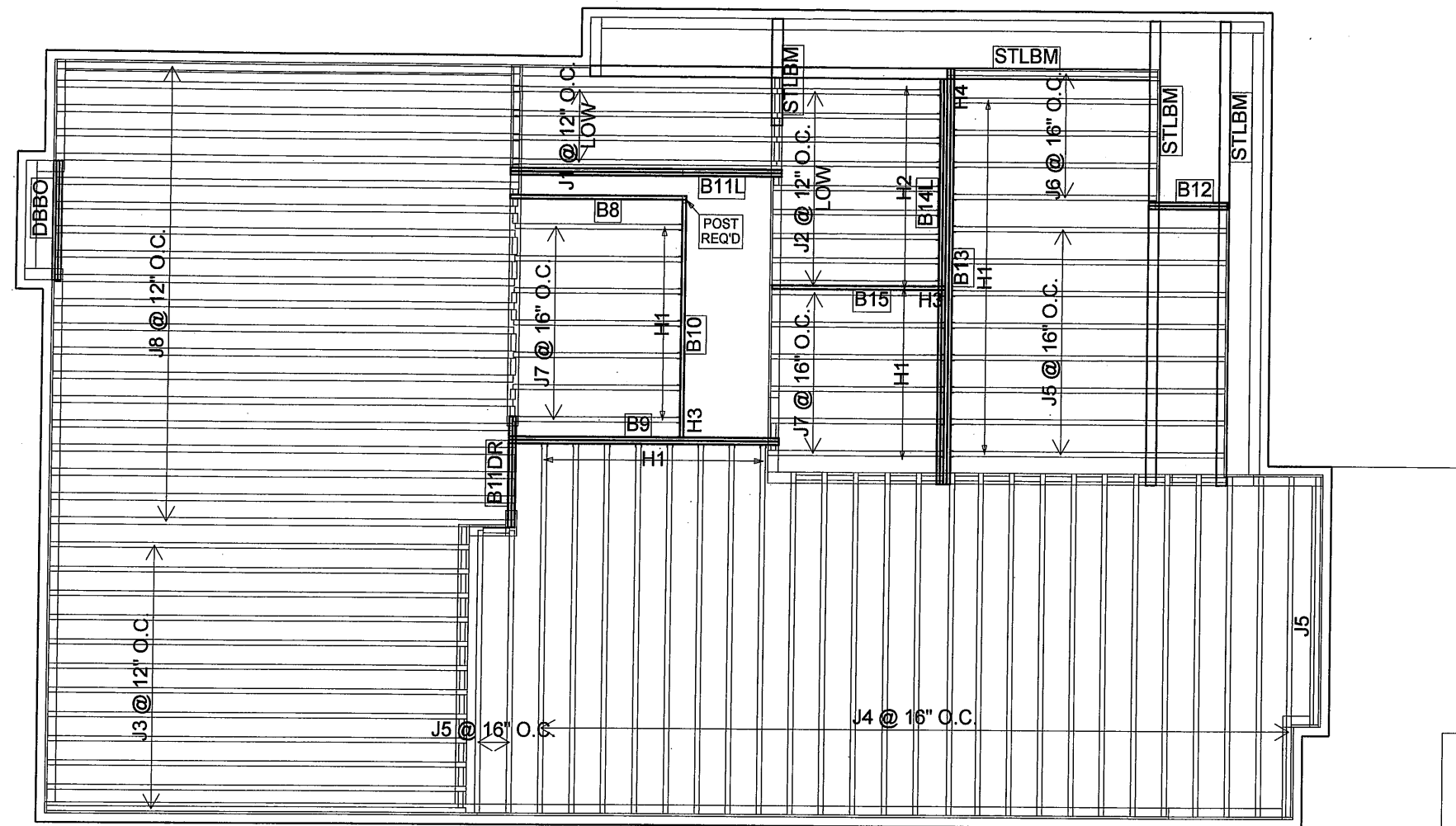
DEAD LOAD: 15.0 lb/ft<sup>2</sup>

TILED AREAS: 20 lb/ft<sup>2</sup>

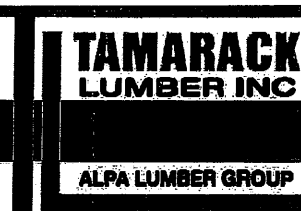
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2018-01-22

## 2nd FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J1	12-00-00	9 1/2" NI-40x	1	4	7	H1	IUS2.56/11.88
J2	8-00-00	9 1/2" NI-40x	1	9	26	H1	IUS2.56/11.88
J3	18-00-00	11 7/8" NI-40x	1	12	9	H2	IUS2.56/9.5
J4	16-00-00	11 7/8" NI-40x	1	25	2	H3	HUS1.81/10
J5	12-00-00	11 7/8" NI-40x	1	11	1	H4	HGUS410
J6	10-00-00	11 7/8" NI-40x	1	5			
J7	8-00-00	11 7/8" NI-40x	1	13			
J8	20-00-00	11 7/8" NI-80	1	20			
B14L	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B11L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B11DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B13	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B9	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B15	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B8	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B12	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			



FROM PLAN DATED: OCT 2017

BUILDER: GREENPARK HOMES

SITE: SECONDO VALES ESTATES

MODEL: PINEBROOKE 2

ELEVATION: 3

LOT:

CITY: EAST GWILLIMBURY

SALESMAN: M D

DESIGNER: LBV

REVISION:

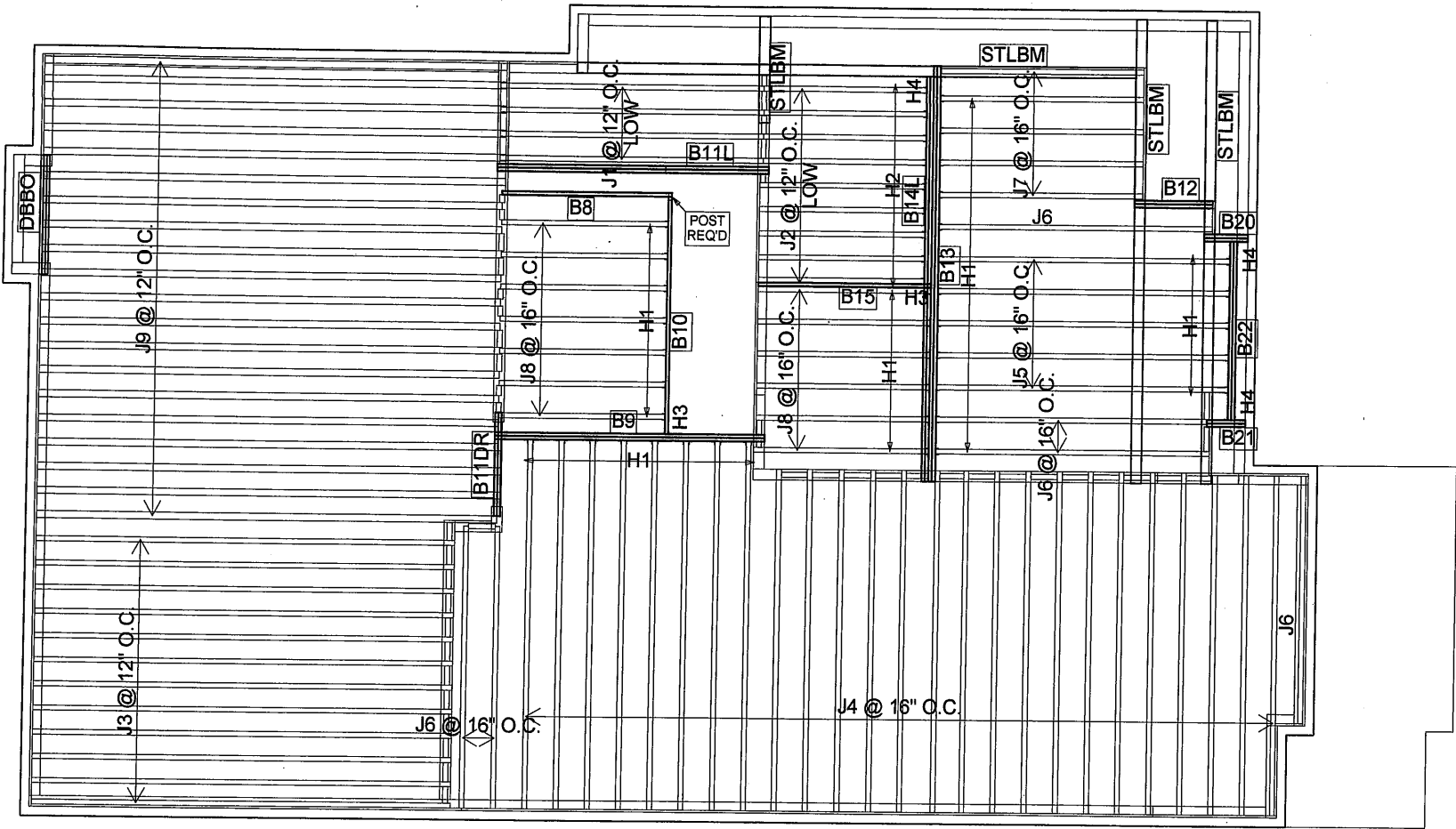
**NOTES:**  
REFER TO THE NORDIC **INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' 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/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILED AREAS: 20 lb/ft<sup>2</sup>

**SUBFLOOR:** 5/8" GLUED AND NAILED

**DATE:** 2018-01-22

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-40x	1	4
J2	8-00-00	9 1/2" NI-40x	1	9
J3	18-00-00	11 7/8" NI-40x	1	12
J4	16-00-00	11 7/8" NI-40x	1	25
J5	14-00-00	11 7/8" NI-40x	1	5
J6	12-00-00	11 7/8" NI-40x	1	6
J7	10-00-00	11 7/8" NI-40x	1	5
J8	8-00-00	11 7/8" NI-40x	1	13
J9	20-00-00	11 7/8" NI-80	1	20
B14L	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B9	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B15	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B8	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B22	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B12	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B20	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B21	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

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

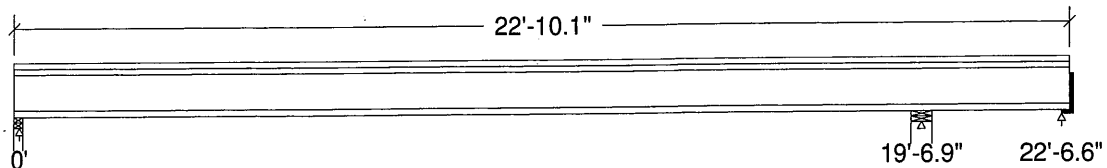
## Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

### Loads:

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

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



Unfactored:					
Dead	156			548	-247
Live	311			1096	64
Factored:					
Uplift					1136
Total	662			2330	
Bearing:					
Resistance					
Joist	2099			5587	
Support	3971			9724	
Des ratio					
Joist	0.32			0.42	
Support	0.17			0.24	
Load case	#4			#2	
Length	2-3/8			5-1/2	
Min req'd	1-3/4			3-1/2	
Stiffener	No			No	
Kd	1.00			1.00	
KB support	1.00			1.00	
fcp sup	769			769	
Kzcp sup	1.09			1.15	

\*Minimum bearing length for joists is 2" for exterior supports

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

### Nordic 11-7/8" NI-40x Floor joist @ 12" o.c.

Supports: 1,2 - Lumber Wall, No.1/No.2; 3 - Hanger;

Total length: 22'-10.1"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

**This section PASSES the design code check.**

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 1317	Vr = 2336	lbs	Vf/Vr = 0.56
Moment (+)	Mf = 2494	Mr = 6255	lbs-ft	Mf/Mr = 0.40
Moment (-)	Mf = 3546	Mr = 6255	lbs-ft	Mf/Mr = 0.57
Perm. Defl'n	0.08 = <L/999	0.65 = L/360	in	0.13
Live Defl'n	0.16 = <L/999	0.49 = L/480	in	0.33
Total Defl'n	0.25 = L/956	0.98 = L/240	in	0.25
Bare Defl'n	0.19 = <L/999	0.65 = L/360	in	0.29
Vibration	Lmax = 19'-7	Lv = 20'-11	ft	
Defl'n	= 0.028	= 0.033	in	0.85



**Additional Data:**

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#4
Mr-	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#4

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L  
 Moment(+) : LC #4 = 1.25D + 1.5L (pattern: L\_)  
 Moment(-) : LC #2 = 1.25D + 1.5L  
 Deflection: LC #1 = 1.0D (permanent)  
               LC #4 = 1.0D + 1.0L (pattern: L\_) (live)  
               LC #4 = 1.0D + 1.0L (pattern: L\_) (total)  
               LC #4 = 1.0D + 1.0L (pattern: L\_) (bare joist)  
 Bearing : Support 1 - LC #4 = 1.25D + 1.5L (pattern: L\_)  
               Support 2 - LC #2 = 1.25D + 1.5L  
               Support 3 - LC #1 = 1.4D

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<sub>I</sub>eff = 433e06 lb-in<sup>2</sup> K= 6.18e06 lbs  
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC 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.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

**CONFORMS TO OBC 2012**

DWG NO. TAM5317-18  
 STRUCTURAL  
 COMPONENT ONLY

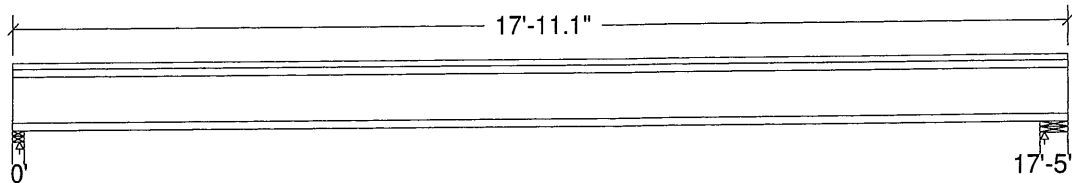
## Design Check Calculation Sheet

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	177		182
Live	353		364
Factored:			
Total	751		773
Bearing:			
Resistance			
Joist	2099		2336
Support	3971		9724
Des ratio			
Joist	0.36		0.33
Support	0.19		0.08
Load case	#2		#2
Length	2-3/8		5-1/2
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.09		1.15

\*Minimum bearing length for joists is 2" for exterior supports

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

### Nordic 11-7/8" NI-40x Floor joist @ 12" o.c.

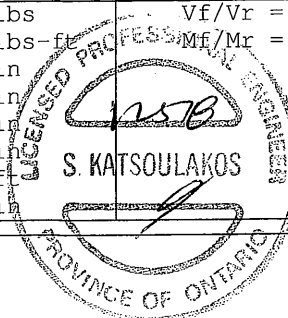
Supports: All - Lumber Wall, No.1/No.2

Total length: 17'-11.1"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

**This section PASSES the design code check.**

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 740	Vr = 2336	lbs	Vf/Vr = 0.32
Moment (+)	Mf = 3224	Mr = 6255	lbs-ft	Mf/Mr = 0.52
Perm. Defl'n	0.11 = <L/999	0.58 = L/360	in	0.19
Live Defl'n	0.21 = L/972	0.44 = L/480	in	0.49
Total Defl'n	0.32 = L/648	0.87 = L/240	in	0.37
Bare Defl'n	0.25 = L/846	0.58 = L/360	in	0.43
Vibration	Lmax = 17'-5	Lv = 18'-11	ft	
Defl'n	= 0.029	= 0.036	in	0.80



**Additional Data:**

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

**CRITICAL LOAD COMBINATIONS:**Shear : LC #2 =  $1.25D + 1.5L$ Moment(+) : LC #2 =  $1.25D + 1.5L$ 

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

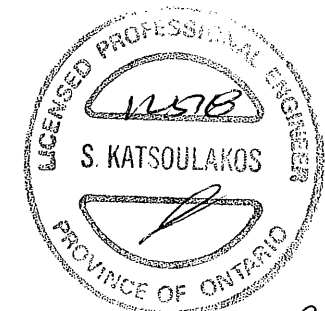
All Load Combinations (LCs) are listed in the Analysis output

**CALCULATIONS:**Deflection:  $EI_{eff} = 433e06 \text{ lb-in}^2$   $K = 6.18e06 \text{ lbs}$ 

"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.
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 5318-18  
 STRUCTURAL  
 COMPONENT ONLY

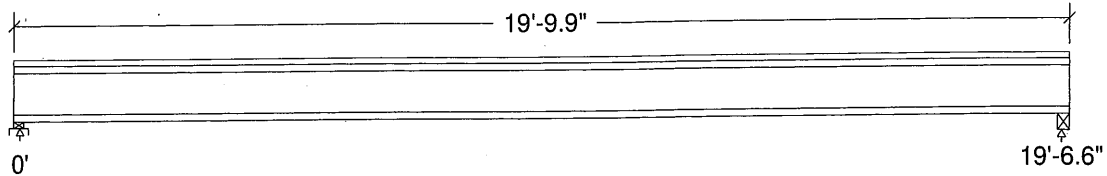
## Design Check Calculation Sheet

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) :



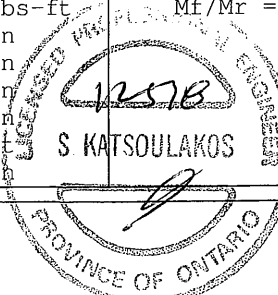
Unfactored:			
Dead	198		198
Live	396		397
Factored:			
Total	842		843
Bearing:			
Resistance			
Joist	2186		2209
Support	5112		-
Des ratio			
Joist	0.38		0.38
Support	0.16		-
Load case	#2		#2
Length	2-3/8		2-5/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.00		-

\*Minimum bearing length for joists is 2" for exterior supports

**Nordic Joist 11-7/8" NI-80 Floor joist @ 12" o.c.**  
Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;  
Total length: 19'-9.9"; 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 = 831	Vr = 2336	lbs	Vf/Vr = 0.36
Moment (+)	Mf = 4063	Mr = 11609	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = <L/999	0.65 = L/360	in	0.18
Live Defl'n	0.24 = L/977	0.49 = L/480	in	0.49
Total Defl'n	0.36 = L/651	0.98 = L/240	in	0.37
Bare Defl'n	0.27 = L/868	0.65 = L/360	in	0.41
Vibration	Lmax = 19'-7	Lv = 21'-3	ft	
Defl'n	= 0.027	= 0.033	in	0.82





**Additional Data:**

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

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

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

**CALCULATIONS:**

Deflection: E<sub>IEff</sub> = 625e06 lb-in<sup>2</sup> K= 6.18e06 lbs

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

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC 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.
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 5319-18  
STRUCTURAL  
COMPONENT ONLY



# Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i2668)

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

November 11, 2017 09:13:35

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

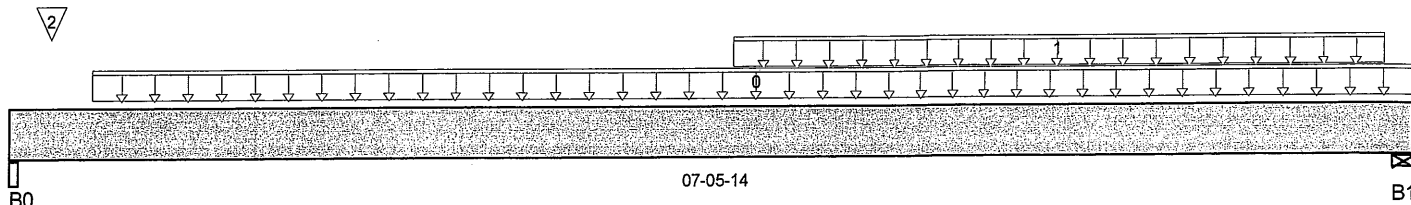
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i2668)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 07-05-14

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	421 / 0	246 / 0		
B1, 1-3/4"	674 / 0	359 / 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	00-05-04	07-05-14	14	7			n/a
1	STAIR	Unf. Lin. (lb/ft)	L	03-10-02	07-04-02	240	120			n/a
2	11(i1013)	Conc. Pt. (lbs)	L	00-02-10	00-02-10	155	89			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,024 ft-lbs	19,364 ft-lbs	10.5%	1	04-08-08
End Shear	913 lbs	7,232 lbs	12.6%	1	06-04-04
Total Load Defl.	L/999 (0.024")	n/a	n/a	4	04-01-14
Live Load Defl.	L/999 (0.015")	n/a	n/a	5	04-01-14
Max Defl.	0.024"	n/a	n/a	4	04-01-14
Span / Depth	7.1	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 Beam	5-1/4" x 1-3/4"	939 lbs	19.1%	8.4%	Unspecified
B1 Wall/Plate	1-3/4" x 1-3/4"	1,460 lbs	89.3%	39.1%	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.

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

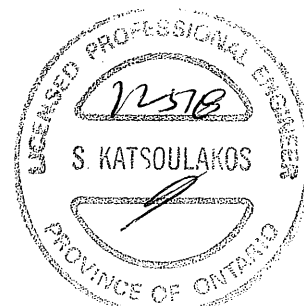
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

BC CALC®, 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.





# Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i2718)

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

November 11, 2017 09:13:34

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

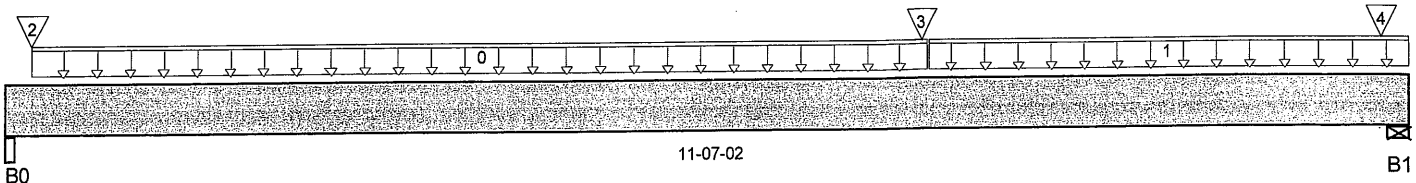
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i2718)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 11-07-02

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	419 / 0	262 / 0		
B1, 3-1/2"	351 / 0	232 / 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	00-02-10	07-07-10	27	13			n/a
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	07-07-10	11-07-02	19	10			n/a
2	11(i1013)	Conc. Pt. (lbs)	L	00-02-10	00-02-10	155	89			n/a
3	B3(i2525)	Conc. Pt. (lbs)	L	07-06-12	07-06-12	342	186			n/a
4	E40(i1011)	Conc. Pt. (lbs)	L	11-04-06	11-04-06		12			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,658 ft-lbs	19,364 ft-lbs	13.7%	1	07-06-12
End Shear	740 lbs	7,232 lbs	10.2%	1	10-03-12
Total Load Defl.	L/999 (0.074")	n/a	n/a	4	06-01-08
Live Load Defl.	L/999 (0.046")	n/a	n/a	5	06-01-08
Max Defl.	0.074"	n/a	n/a	4	06-01-08
Span / Depth	11.1	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"	956 lbs	19.5%	8.5%	Unspecified
B1 Wall/Plate	3-1/2" x 1-3/4"	817 lbs	25%	10.9%	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

## 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 5321-18  
 STRUCTURAL  
 COMPONENT ONLY



Boise Cascade

## Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i2525)

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

November 11, 2017 09:13:30

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

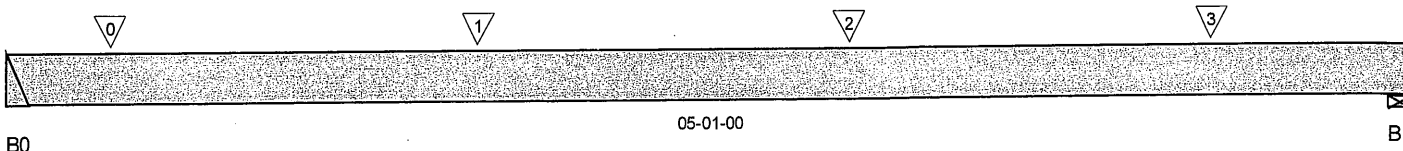
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i2525)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 05-01-00

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

Bearing	Live	Dead	Snow	Wind
B0	350 / 0	190 / 0		
B1, 1-3/4"	317 / 0	173 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	J4(i2297)	Conc. Pt. (lbs)	L	00-04-08	00-04-08	128	64			n/a
1	J4(i2325)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	198	99			n/a
2	J4(i2294)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	194	97			n/a
3	J4(i2367)	Conc. Pt. (lbs)	L	04-04-08	04-04-08	147	73			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	922 ft-lbs	19,364 ft-lbs	4.8%	1	03-00-08
End Shear	548 lbs	7,232 lbs	7.6%	1	03-11-06
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-06-08
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-06-08
Max Defl.	0.006"	n/a	n/a	4	02-06-08
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 Hanger	2" x 1-3/4"	764 lbs	n/a	17.9%	HUS1.81/10
B1 Wall/Plate	1-3/4" x 1-3/4"	691 lbs	42.3%	18.5%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

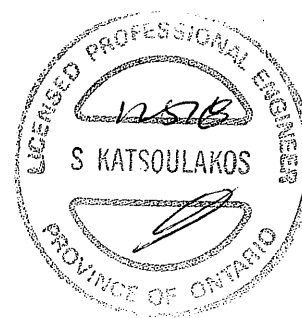
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## Disclosure

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DWG NO. TAM 5322-18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B4(i2707)

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

November 11, 2017 09:13:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

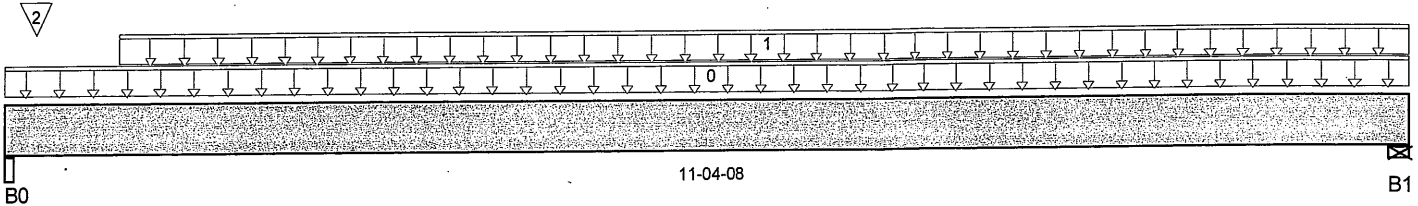
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i2707)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 11-04-08

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

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	1,961 / 0	1,091 / 0		
B1, 3-1/2"	1,841 / 0	1,041 / 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	11-04-08	15	7			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-00	11-04-08	297	153			n/a
2	J1(i2619)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	524	307			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,932 ft-lbs	38,727 ft-lbs	25.6%	1	05-07-00
End Shear	3,133 lbs	14,464 lbs	21.7%	1	10-01-02
Total Load Defl.	L/851 (0.155")	0.549"	28.2%	4	05-07-00
Live Load Defl.	L/999 (0.101")	n/a	n/a	5	05-07-00
Max Defl.	0.155"	n/a	n/a	4	05-07-00
Span / Depth	11.1	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	2-5/8" x 3-1/2"	4,305 lbs	87.8%	38.4%	Unspecified
B1 Wall/Plate	3-1/2" x 3-1/2"	4,063 lbs	62.1%	27.2%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012





# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basmentl...B4(i2707)

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

November 11, 2017 09:13:28

## BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\Basment\Flush Beams\B4(i270

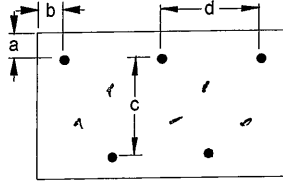
Specifier:

Designer: LBV

Company:

Msc:

## Connection Diagram



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

Calculated Side Load = 671.5 lb/ft

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

Connectors are: 16d Nails

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

## Disclosure

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# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B5(i3792)

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

November 17, 2017 12:21:35

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

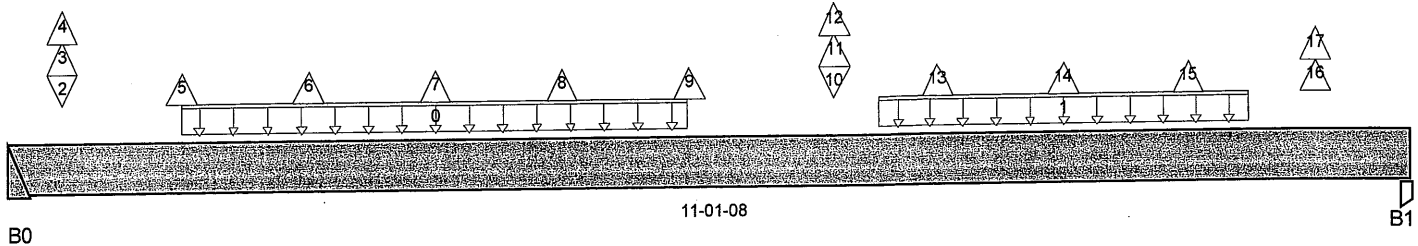
Description: Designs\Flush Beams\1st Floor\Flush Beams\B5(i3792)

Specifier:

Designer: LBV

Company:

Misc:



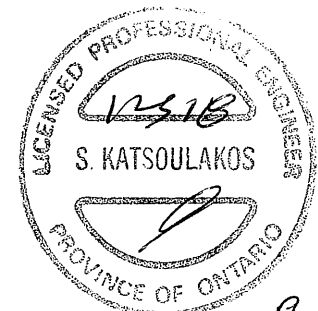
Total Horizontal Product Length = 11-01-08

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

Bearing	Live	Dead	Snow	Wind
B0	862 / 2,758	0 / 878		
B1, 3-1/2"	779 / 2,647	0 / 861		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	05-04-08	160	37			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	06-10-08	09-10-08	74				n/a
2	-	Conc. Pt. (lbs)	L	00-05-02	00-05-02	134	40			n/a
3	-	Conc. Pt. (lbs)	L	00-05-02	00-05-02		-218			n/a
4	-	Conc. Pt. (lbs)	L	00-05-02	00-05-02	-489				n/a
5	J3(i3979)	Conc. Pt. (lbs)	L	01-04-08	01-04-08	-489	-210			n/a
6	J3(i3968)	Conc. Pt. (lbs)	L	02-04-08	02-04-08	-489	-210			n/a
7	J3(i3823)	Conc. Pt. (lbs)	L	03-04-08	03-04-08	-489	-210			n/a
8	J3(i3873)	Conc. Pt. (lbs)	L	04-04-08	04-04-08	-489	-210			n/a
9	J3(i3948)	Conc. Pt. (lbs)	L	05-04-08	05-04-08	-489	-210			n/a
10	-	Conc. Pt. (lbs)	L	06-06-04	06-06-04	574	263			n/a
11	-	Conc. Pt. (lbs)	L	06-06-04	06-06-04		-213			n/a
12	-	Conc. Pt. (lbs)	L	06-06-04	06-06-04	-495				n/a
13	J3(i3833)	Conc. Pt. (lbs)	L	07-04-08	07-04-08	-494	-211			n/a
14	J3(i3973)	Conc. Pt. (lbs)	L	08-04-08	08-04-08	-494	-209			n/a
15	J3(i3832)	Conc. Pt. (lbs)	L	09-04-08	09-04-08	-494	-209			n/a
16	J3(i3781)	Conc. Pt. (lbs)	L	10-04-08	10-04-08	64	-217			n/a
17	J3(i3781)	Conc. Pt. (lbs)	L	10-04-08	10-04-08	-494				n/a



## BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B5(i3792

Specifier:

Designer: LBV

Company:

Misc:

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,308 ft-lbs	38,727 ft-lbs	6%	3	06-08-02
Neg. Moment	-13,420 ft-lbs	-38,727 ft-lbs	34.7%	2	05-04-08
End Shear	5,200 lbs	14,464 lbs	35.9%	2	01-01-14
Uplift	5,235 lbs	n/a	n/a	2	00-00-00
Total Load Defl.	L/999 (0.01")	n/a	n/a	6	05-10-08
Live Load Defl.	L/842 (-0.154")	-0.36"	42.8%	9	05-06-08
Total Neg. Defl.	L/651 (-0.199")	-0.54"	36.9%	7	05-06-08
Max Defl.	-0.199"	n/a	n/a	7	05-06-08
Span / Depth	10.9	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 3-1/2"	502 lbs	n/a	61.3%	HGUS410
B0 Hanger Uplift	2" x 3-1/2"	5,235 lbs	n/a	0.49	HGUS410
B1 Post	3-1/2" x 3-1/2"	5,047 lbs	50.7%	33.8%	Unspecified

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## Cautions

Uplift of 5,235 lbs found at span 1 - Left.

Hanger B0 cannot handle uplift of 5,235 lbs.

*- SIMPSON HGUS410 @ D-B0 + 1-H25A*

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

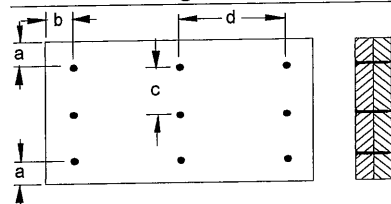
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

## Connection Diagram



a minimum = 2" c = 3-15/16"  
b minimum = 3" d = 6"

Calculated Side Load = 1,057.9 lb/ft

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

Connectors are: 16d Nails

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



DWG NO. TAM 5324-18  
STRUCTURAL  
COMPONENT ONLY





# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B6(i2804)

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

November 11, 2017 09:13:32

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

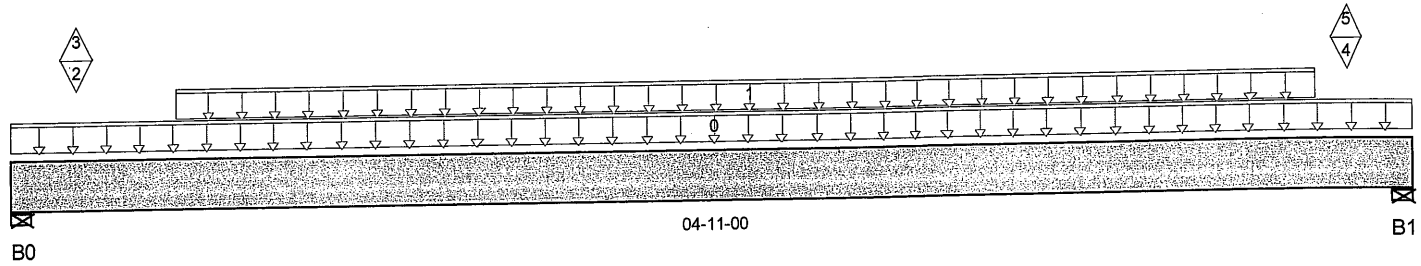
Description: Designs\Flush Beams\Basement\Flush Beams\B6(i2804)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 04-11-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,739 / 1	989 / 0		
B1, 3-1/2"	1,533 / 1	886 / 0		

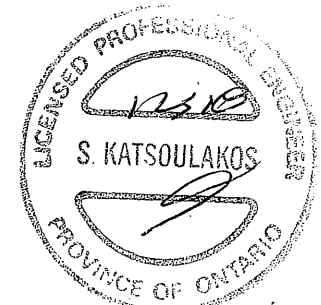
## Load Summary

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	04-11-00	22	11			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-07-00	04-07-00	396	198			n/a
2	E21(i1001)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	935	540			n/a
3	E21(i1001)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	-1				n/a
4	E26(i1000)	Conc. Pt. (lbs)	L	04-08-04	04-08-04	639	409			n/a
5	E26(i1000)	Conc. Pt. (lbs)	L	04-08-04	04-08-04	-1				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,260 ft-lbs	38,727 ft-lbs	5.8%	1	02-01-00
End Shear	1,498 lbs	14,464 lbs	10.4%	1	01-03-06
Total Load Defl.	L/999 (0.006")	n/a	n/a	6	02-05-08
Live Load Defl.	L/999 (0.004")	n/a	n/a	8	02-05-08
Max Defl.	0.006"	n/a	n/a	6	02-05-08
Span / Depth	4.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	3,845 lbs	58.8%	25.7%	Unspecified
B1 Wall/Plate	3-1/2" x 3-1/2"	3,407 lbs	52.1%	22.8%	Unspecified

## Notes



DWG NO. TAM 5325-18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basment\...\B6(i2804)

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

November 11, 2017 09:13:32

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\Basment\Flush Beams\B6(i280

Specifier:

Designer: LBV

Company:

Misc:

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

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

Calculations assume member is fully braced.

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

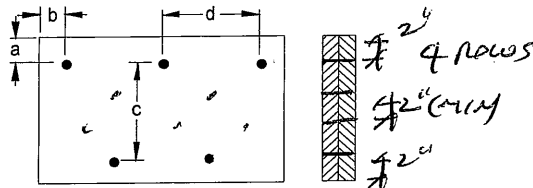
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## Connection Diagram



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

Calculated Side Load = 686.3 lb/ft

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

Connectors are: 16d Nails

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

## Disclosure

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

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.



DWG NO. TAM 5325-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



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

November 20, 2017 14:11:11

Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 1, EL 2.mmdl

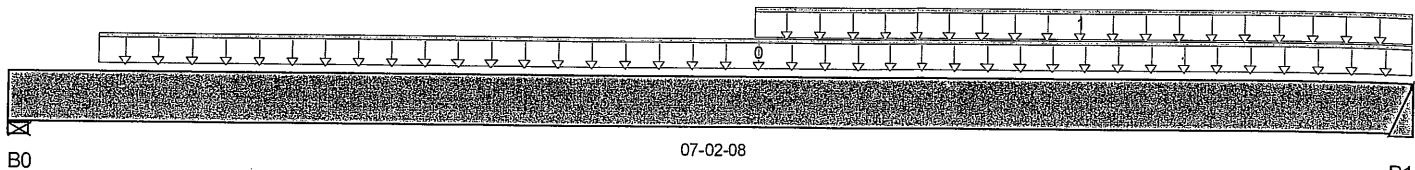
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i3999)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 07-02-08

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	280 / 0	162 / 0		
B1	711 / 0	376 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	07-02-08	26	13			n/a
1	STAIR	Unf. Lin. (lb/ft)	L	03-09-12	07-02-08	240	120			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,904 ft-lbs	19,364 ft-lbs	9.8%	1	04-06-02
End Shear	874 lbs	7,232 lbs	12.1%	1	06-00-10
Total Load Defl.	L/999 (0.021")	n/a	n/a	4	03-11-07
Live Load Defl.	L/999 (0.013")	n/a	n/a	5	03-11-07
Max Defl.	0.021"	n/a	n/a	4	03-11-07
Span / Depth	6.8	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

B0	Wall/Plate	5-1/2" x 1-3/4"	623 lbs	12.1%	5.3%	Unspecified
B1	Hanger	2" x 1-3/4"	1,536 lbs	n/a	36%	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

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BC CALC® Design Report

**1st Floor\Dropped Beams\B11DR(i4723)**

Dry | 1 span | No cant.

January 22, 2018 09:02:20

Build 6215

Job name:

File name: PINEBROOKE 2 EL 1, EL 2.mmdl

Address:

Description: 1st Floor\Dropped Beams\B11DR(i4723)

City, Province, Postal Code: EAS...URY

Specifier:

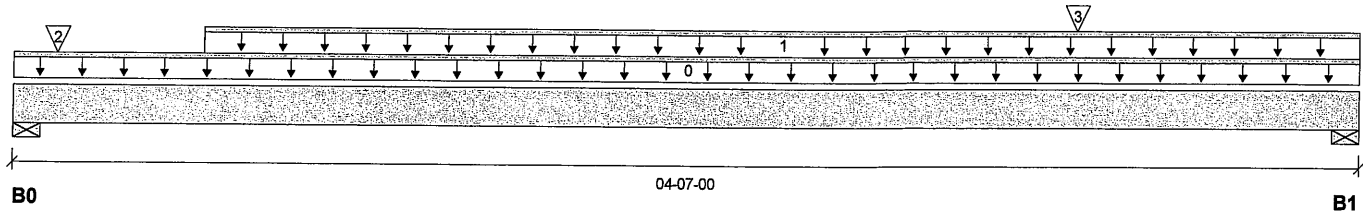
Customer:

Designer: LBV

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 04-07-00

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

Bearing	Live	Dead	Snow	Wind
B0, 8-1/4"	1,390 / 0	732 / 0		
B1, 4-3/4"	2,650 / 0	1,412 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-07-00		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-07-12	04-07-00	434	218			n/a
2	J8(i4664)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	359	179			n/a
3	B9(i4737)	Conc. Pt. (lbs)	L	03-07-08	03-07-08	1,965	1,060			n/a

**Controls Summary**

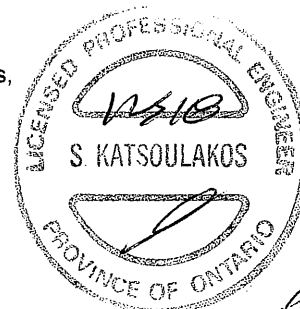
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3,089 ft-lbs	23,220 ft-lbs	13.3%	1	03-01-12
End Shear	3,372 lbs	11,571 lbs	29.1%	1	03-04-12
Total Load Deflection	L/999 (0.01")	n/a	n/a	4	02-07-00
Live Load Deflection	L/999 (0.006")	n/a	n/a	5	02-07-00
Max Defl.	0.01"	n/a	n/a	4	02-07-00
Span / Depth	4.6				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 8-1/4" x 3-1/2"	3,000 lbs	16.0%	8.5%	Unspecified
B1	Wall/Plate 4-3/4" x 3-1/2"	5,740 lbs	53.1%	28.3%	Unspecified

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Calculations assume unbraced length of Top: 00-02-07, Bottom: 00-02-07.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
Design based on Dry Service Condition. **CONFORMS TO OBC 2012**  
Importance Factor : Normal Part code : Part 9  
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.  
Member has no side loads.


DWG NO. TAM 5327-18  
STRUCTURAL  
COMPONENT ONLY

1st Floor/Dropped Beams\B11DR(i4723)

Dry | 1 span | No cant.

January 22, 2018 09:02:20

BC CALC® Design Report

Build 6215

Job name:

File name: PINEBROOKE 2 EL 1, EL 2.mmdl

Address:

Description: 1st Floor/Dropped Beams\B11DR(i4723)

City, Province, Postal Code: EAS...URY

Specifier:

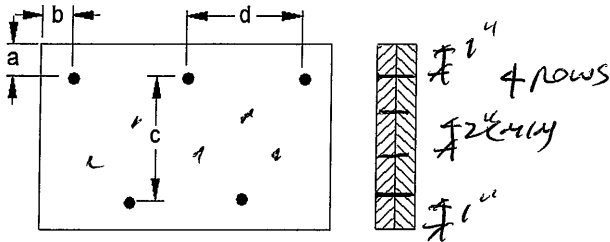
Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:

Connection Diagram




a minimum = 1"  
b minimum = 3"

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

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

Member has no side loads.

Connectors are: 16d  Nails

3-1/2" ARDOX SPIRAL

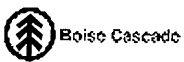
Disclosure

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 5322 18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B9(i3843)

BC CALC® Design Report



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

November 20, 2017 14:11:13

Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 1, EL 2.mmdl

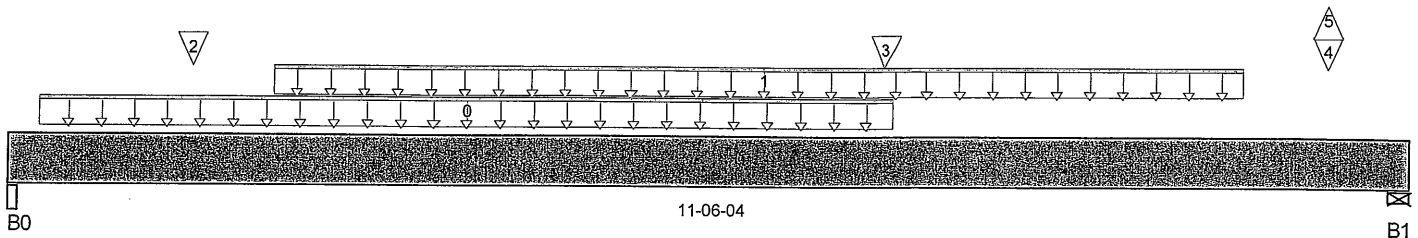
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i3843)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 11-06-04

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,014 / 1	1,086 / 0		
B1, 5-1/2"	2,350 / 37	1,248 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-03-00	07-03-04	17	9			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	02-02-04	10-02-04	308	154			n/a
2	J4(i4042)	Conc. Pt. (lbs)	L	01-06-04	01-06-04	594	297			n/a
3	B10(i3998)	Conc. Pt. (lbs)	L	07-02-06	07-02-06	788	428			n/a
4	J4(i4001)	Conc. Pt. (lbs)	L	10-10-04	10-10-04	387	175			n/a
5	J4(i4001)	Conc. Pt. (lbs)	L	10-10-04	10-10-04	-38				n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	14,184 ft-lbs	38,727 ft-lbs	36.6%	1	06-10-04
End Shear	4,429 lbs	14,464 lbs	30.6%	1	10-00-14
Total Load Defl.	L/607 (0.215")	0.545"	39.6%	6	05-08-04
Live Load Defl.	L/933 (0.14")	0.363"	38.6%	8	05-08-04
Max Defl.	0.215"	n/a	n/a	6	05-08-04
Span / Depth	11	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	3-1/2" x 3-1/2"	4,378 lbs	32.8%	29.3%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	5,085 lbs	49.5%	21.7%	Unspecified

## Notes



P6 1/2



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 1, EL 2.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\IB9(i3843

Specifier:

Designer: LBV

Company:

Misc:

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

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

Calculations assume member is fully braced.

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

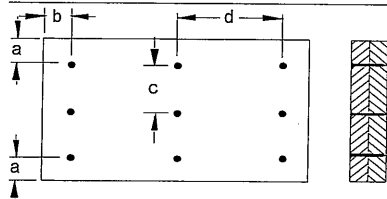
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

### Connection Diagram



a minimum = 2" c = 3-15/16"  
b minimum = 3" d = 6"

Calculated Side Load = 628.4 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.

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 532B-18  
STRUCTURAL  
COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 1, EL 2.mmdl

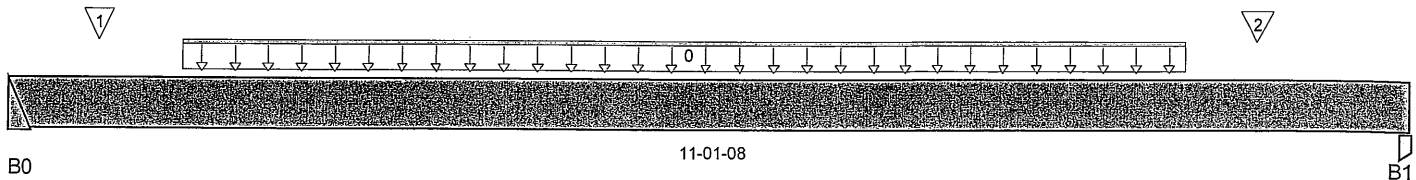
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i3998)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 11-01-08

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

Bearing	Live	Dead	Snow	Wind
B0	793 / 0	431 / 0		
B1, 3-1/2"	1,203 / 0	654 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	09-04-08	142	71			n/a
1	J7(i4047)	Conc. Pt. (lbs)	L	00-08-08	00-08-08	156	78			n/a
2	B8(i3999)	Conc. Pt. (lbs)	L	09-11-02	09-11-02	704	372			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,127 ft-lbs	18,840 ft-lbs	27.2%	1	06-00-08
End Shear	2,484 lbs	7,232 lbs	34.3%	1	09-10-02
Total Load Defl.	L/823 (0.157")	0.54"	29.2%	4	05-06-08
Live Load Defl.	L/999 (0.102")	n/a	n/a	5	05-06-08
Max Defl.	0.157"	n/a	n/a	4	05-06-08
Span / Depth	10.9	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 Hanger	2" x 1-3/4"	1,728 lbs	n/a	40.5%	HUS1.81/10
B1 Post	3-1/2" x 1-3/4"	2,622 lbs	52.7%	35.1%	Unspecified

## Notes

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

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

Calculations assume unbraced length of Top: 01-01-08, Bottom: 01-01-08.

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.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

BC CALCO®, 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.







Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOKE 2 EL 1, EL 2.mmdl

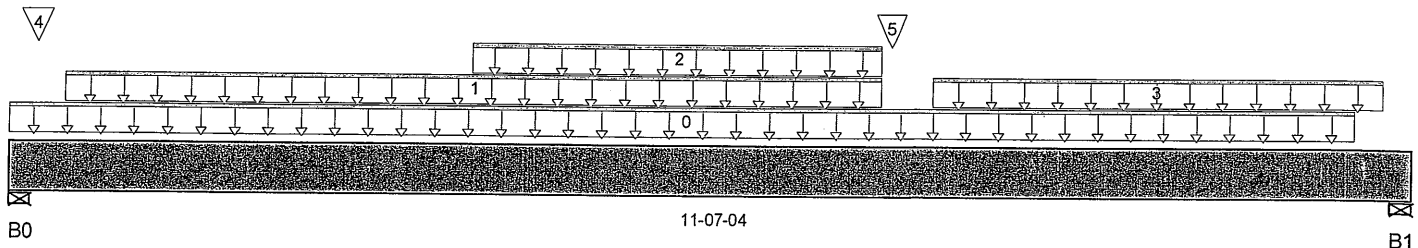
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11L(i3860

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 11-07-04

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,190 / 0	720 / 0		
B1, 5-1/2"	1,971 / 0	1,102 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC6 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-01-12	11	5			n/a
1	23(i4095)	Unf. Lin. (lb/ft)	L	00-05-08	07-02-08		9			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	03-09-12	07-02-08	240	120			n/a
3	STAIR	Unf. Lin. (lb/ft)	L	07-07-10	11-04-08	240	120			n/a
4	19(i2982)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	117	62			n/a
5	PBO3(i1105)	Conc. Pt. (lbs)	L	07-03-06	07-03-06	1,208	668			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	12,477 ft-lbs	25,408 ft-lbs	49.1%	1	07-03-06
End Shear	3,775 lbs	11,571 lbs	32.6%	1	10-04-04
Total Load Defl.	L/389 (0.334")	0.541"	61.7%	4	06-00-08
Live Load Defl.	L/611 (0.212")	0.36"	58.9%	5	06-00-08
Max Defl.	0.334"	n/a	n/a	4	06-00-08
Span / Depth	13.7	n/a	n/a		00-00-00

## Bearing Supports

B0	Wall/Plate	5-1/2" x 3-1/2"	2,684 lbs	26.1%	11.4%	Unspecified
B1	Wall/Plate	5-1/2" x 3-1/2"	4,335 lbs	42.2%	18.5%	Unspecified

## Notes





Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 1, EL 2.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11L(i3860)

Specifier:

Designer: LBV

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: 00-00-00, Bottom: 00-00-00.

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

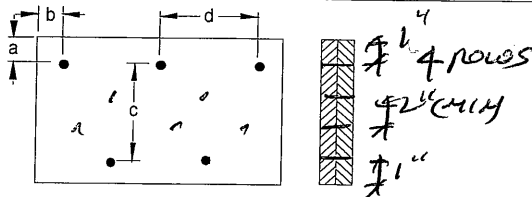
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

### Connection Diagram



a minimum = 1" c = 7-1/2"  
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

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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# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B12(i2754)

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

November 11, 2017 09:13:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

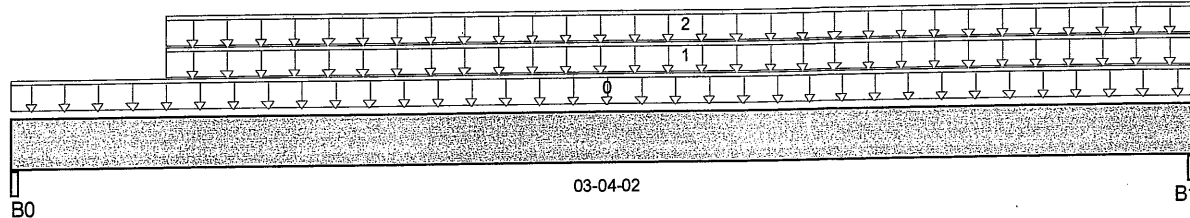
Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i2754)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 03-04-02

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	213 / 0	346 / 0	532 / 0	
B1, 4-1/8"	256 / 0	425 / 0	674 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-04-02	26	13			n/a
1	ROOF	Unf. Lin. (lb/ft)	L	00-05-04	03-04-02	131	137	415		n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-04	03-04-02		99			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	928 ft-lbs	38,727 ft-lbs	2.4%	13	01-08-10
End Shear	1,274 lbs	14,464 lbs	8.8%	13	01-05-02
Total Load Defl.	L/999 (0.001")	n/a	n/a	45	01-08-10
Live Load Defl.	L/999 (0.001")	n/a	n/a	61	01-08-10
Max Defl.	0.001"	n/a	n/a	45	01-08-10
Span / Depth	2.7	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 3-1/2"	1,338 lbs	13.6%	6%	Unspecified
B1 Beam	4-1/8" x 3-1/2"	1,671 lbs	21.7%	9.5%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

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





# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B12(i2754)

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

November 11, 2017 09:13:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i2754)

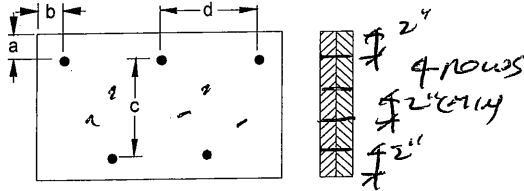
Specifier:

Designer: LBV

Company:

Misc:

## Connection Diagram



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

b minimum = 3" d = 6"

Member has no side loads.

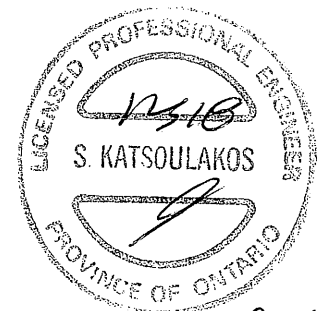
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

## Disclosure

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

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DWG NO. TAM 5331-18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B13(i2748)

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

November 11, 2017 09:13:38

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

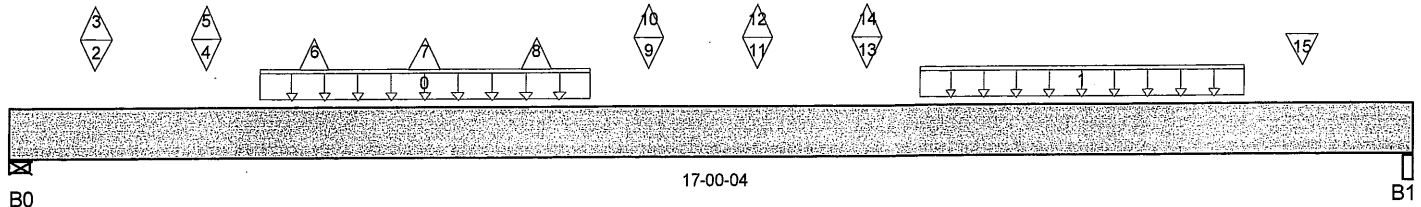
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i2748)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 17-00-04

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

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	2,171 / 7	1,138 / 0		
B1, 5-1/4"	1,620 / 3	902 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	03-00-04	07-00-04	296	146			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	11-00-04	15-00-04	180	90			n/a
2	-	Conc. Pt. (lbs)	L	01-00-04	01-00-04	435	192			n/a
3	-	Conc. Pt. (lbs)	L	01-00-04	01-00-04	-2				n/a
4	-	Conc. Pt. (lbs)	L	02-04-04	02-04-04	435	195			n/a
5	-	Conc. Pt. (lbs)	L	02-04-04	02-04-04	-2				n/a
6	J7(i2761)	Conc. Pt. (lbs)	L	03-08-04	03-08-04	-1				n/a
7	J7(i2755)	Conc. Pt. (lbs)	L	05-00-04	05-00-04	-1				n/a
8	J7(i2756)	Conc. Pt. (lbs)	L	06-04-04	06-04-04	-1				n/a
9	-	Conc. Pt. (lbs)	L	07-08-07	07-08-07	317	188			n/a
10	-	Conc. Pt. (lbs)	L	07-08-07	07-08-07	-1				n/a
11	J7(i2753)	Conc. Pt. (lbs)	L	09-00-04	09-00-04	202	98			n/a
12	J7(i2753)	Conc. Pt. (lbs)	L	09-00-04	09-00-04	-1				n/a
13	J8(i2759)	Conc. Pt. (lbs)	L	10-04-04	10-04-04	242	99			n/a
14	J8(i2759)	Conc. Pt. (lbs)	L	10-04-04	10-04-04	-1				n/a
15	J9(i2875)	Conc. Pt. (lbs)	L	15-08-04	15-08-04	224	112			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	17,321 ft-lbs	38,727 ft-lbs	44.7%	1	07-08-04
End Shear	4,482 lbs	14,464 lbs	31%	1	01-02-10
Total Load Defl.	L/326 (0.607")	0.824"	73.7%	6	08-02-14
Live Load Defl.	L/502 (0.394")	0.549"	71.7%	8	08-02-14
Max Defl.	0.607"	n/a	n/a	6	08-02-14
Span / Depth	16.7	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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BC CALC® Design Report



Build 5033  
Job Name:  
Address:  
City, Province, Postal Code: EAST GWILLIMBURY,  
Customer:  
Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl  
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i274  
Specifier:  
Designer: LBV  
Company:  
Misc:

B0	Wall/Plate	2-3/4" x 3-1/2"	4,678 lbs	91%	39.8%	Unspecified
B1	Beam	5-1/4" x 3-1/2"	3,557 lbs	36.3%	15.9%	Unspecified

Notes

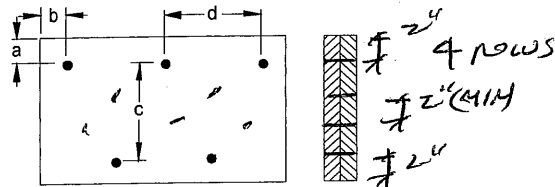
Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit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

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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Connection Diagram



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

Calculated Side Load = 327.5 lb/ft

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

Connectors are: 16d Nails

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



DWG NO. TAM 5332-13  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14L(i2643)

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

November 11, 2017 09:13:58

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

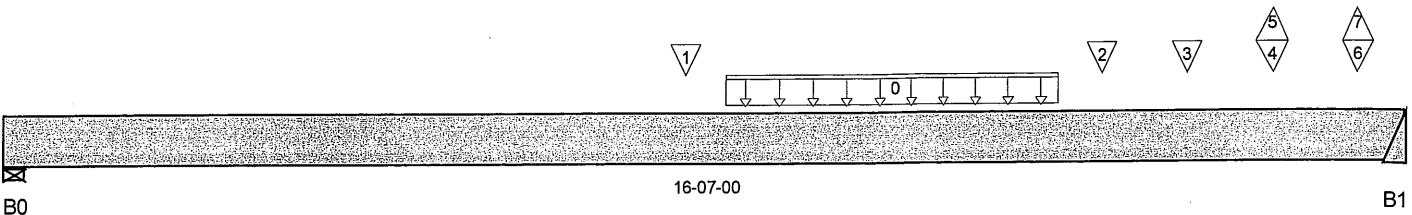
Description: Designs\Flush Beams\1st Floor\Flush Beams\B14L(i264:

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 16-07-00

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

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	376 / 2	276 / 0		
B1	1,123 / 34	632 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	08-06-04	12-06-04	148	74			n/a
1	B16L(i2702)	Conc. Pt. (lbs)	L	08-00-10	08-00-10	77	55			n/a
2	J1(i2742)	Conc. Pt. (lbs)	L	13-00-04	13-00-04	278	139			n/a
3	J1(i2746)	Conc. Pt. (lbs)	L	14-00-04	14-00-04	297	148			n/a
4	J1(i2687)	Conc. Pt. (lbs)	L	15-00-04	15-00-04	134	57			n/a
5	J1(i2687)	Conc. Pt. (lbs)	L	15-00-04	15-00-04	-19				n/a
6	J1(i2716)	Conc. Pt. (lbs)	L	16-00-04	16-00-04	119	51			n/a
7	J1(i2716)	Conc. Pt. (lbs)	L	16-00-04	16-00-04	-17				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	7,670 ft-lbs	20,187 ft-lbs	38%	1	10-00-04
End Shear	2,341 lbs	11,571 lbs	20.2%	1	15-07-08
Total Load Defl.	L/408 (0.48")	0.816"	58.8%	6	09-00-04
Live Load Defl.	L/659 (0.297")	0.544"	54.6%	8	09-00-04
Max Defl.	0.48"	n/a	n/a	6	09-00-04
Span / Depth	20.6	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/4" x 3-1/2"	909 lbs	11.6%	7.7%	Unspecified
B1 Hanger	2" x 3-1/2"	2,474 lbs	n/a	29%	HGUS410

## Notes



BC CALC® Design Report



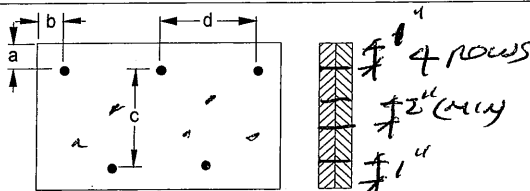
Build 5033  
Job Name:  
Address:  
City, Province, Postal Code: EAST GWILLIMBURY,  
Customer:  
Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl  
Description: Designs\Flush Beams\1st Floor\Flush Beams\B14L(i2643)  
Specifier:  
Designer: LBV  
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: 07-09-00, Bottom: 07-09-00.  
Hanger Manufacturer: Unassigned  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
Design based on Dry Service Condition.  
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Connection Diagram



a minimum = 1" c = 7-1/2"  
b minimum = 3" d = 12"

Calculated Side Load = 188.7 lb/ft

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

Connectors are: Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 5333-18  
STRUCTURAL  
COMPONENT ONLY





# Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B15(i2645)

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

November 11, 2017 09:13:48

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

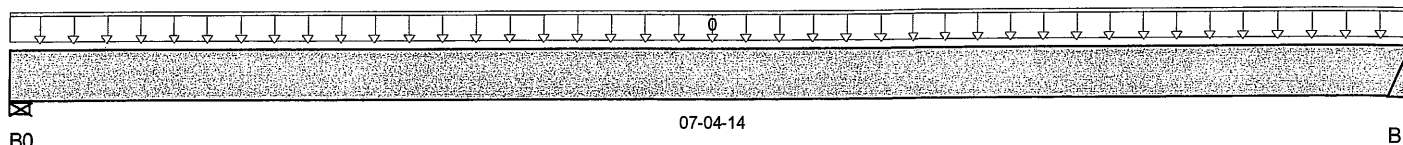
Description: Designs\Flush Beams\1st Floor\Flush Beams\B15(i2645)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 07-04-14

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

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	22 / 0	34 / 0		
B1	21 / 0	32 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-04-14	6	3			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	122 ft-lbs	19,364 ft-lbs	0.6%	1	03-09-10
End Shear	49 lbs	7,232 lbs	0.7%	1	01-04-04
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	03-09-10
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	03-09-10
Max Defl.	0.002"	n/a	n/a	4	03-09-10
Span / Depth	7.1	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 Wall/Plate	4-3/8" x 1-3/4"	76 lbs	1.9%	0.8%	Unspecified
B1 Hanger	2" x 1-3/4"	72 lbs	n/a	1.7%	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

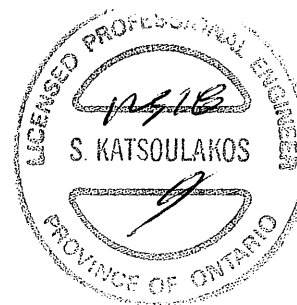
O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

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# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16L(i2702)

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

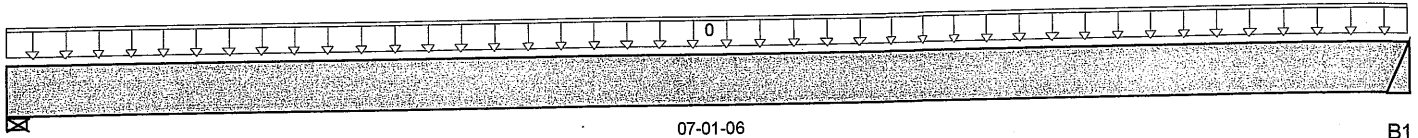
November 11, 2017 09:13:43

BC CALC® Design Report



Build 5033  
Job Name:  
Address:  
City, Province, Postal Code: EAST GWILLIMBURY,  
Customer:  
Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl  
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16L(i2702)  
Specifier:  
Designer: LBV  
Company:  
Misc:



Total Horizontal Product Length = 07-01-06

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

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	76 / 0	56 / 0		
B1	72 / 0	53 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC6 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-01-06	21	10			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	283 ft-lbs	12,704 ft-lbs	2.2%	1	03-07-14
End Shear	126 lbs	5,785 lbs	2.2%	1	01-01-14
Total Load Defl.	L/999 (0.007")	n/a	n/a	4	03-07-14
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	03-07-14
Max Defl.	0.007"	n/a	n/a	4	03-07-14
Span / Depth	8.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 1-3/4"	184 lbs	4.5%	2%	Unspecified
B1 Hanger	2" x 1-3/4"	174 lbs	n/a	4.1%	HUS1.81/10

## Notes

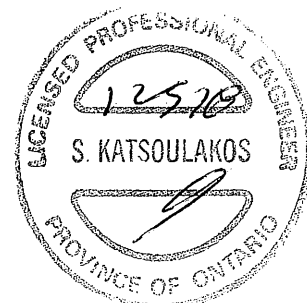
Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Calculations assume member is fully braced.  
Hanger Manufacturer: Unassigned  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® 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

## Disclosure

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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.



DWG NO. TAM 5335 -18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B20(i2882)

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

November 11, 2017 09:13:55

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

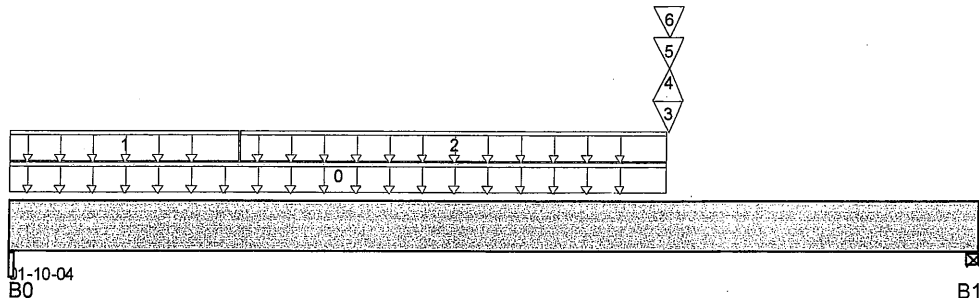
Description: Designs\Flush Beams\1st Floor\Flush Beams\B20(i2882)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 01-10-04

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	76 / 26	287 / 0	160 / 0	
B1, 5-1/2"	206 / 112	737 / 0	414 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	WALL	Unf. Lin. (lb/ft)	L	00-00-00	01-03-00		100			n/a
1	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-04	27				n/a
2	ROOF	Unf. Lin. (lb/ft)	L	00-05-04	01-03-00	40	46	165		n/a
3	B22(i2884)	Conc. Pt. (lbs)	L	01-03-00	01-03-00	232	812	416		n/a
4	B22(i2884)	Conc. Pt. (lbs)	L	01-03-00	01-03-00	-138				n/a
5	ROOF	Conc. Pt. (lbs)	L	01-03-00	01-03-00	6		24		n/a
6	WALL	Conc. Pt. (lbs)	L	01-03-00	01-03-00		15			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	339 ft-lbs	38,727 ft-lbs	0.9%	25	01-03-00
End Shear	222 lbs	14,464 lbs	1.5%	25	01-05-02
Total Load Defl.	L/999 (0")	n/a	n/a	73	00-11-10
Max Defl.	0"	n/a	n/a	73	00-11-10
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 Beam	5-1/4" x 3-1/2"	637 lbs	6.5%	2.8%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,645 lbs	16%	7%	Unspecified

## Notes



DWG NO. TAM 5336-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B20(i2882)

Specifier:

Designer: LBV

Company:

Misc:

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

Calculations assume unbraced length of Top: 00-05-08, Bottom: 00-05-08.

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.

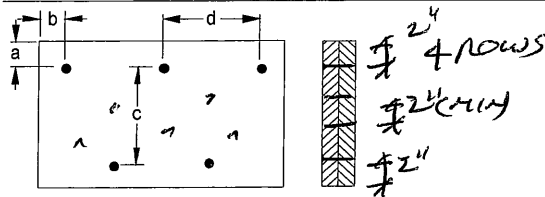
Importance Factor: Normal Part code: Part 9

**Disclosure**

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**Connection Diagram**



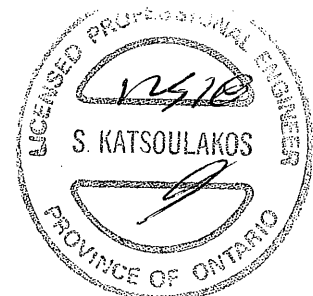
a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 3"

Calculated Side Load = 834.9 lb/ft

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

Connectors are: 16d Nails

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



DWG NO. TAM 5336-18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B21(i2883)

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

November 11, 2017 09:13:37

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

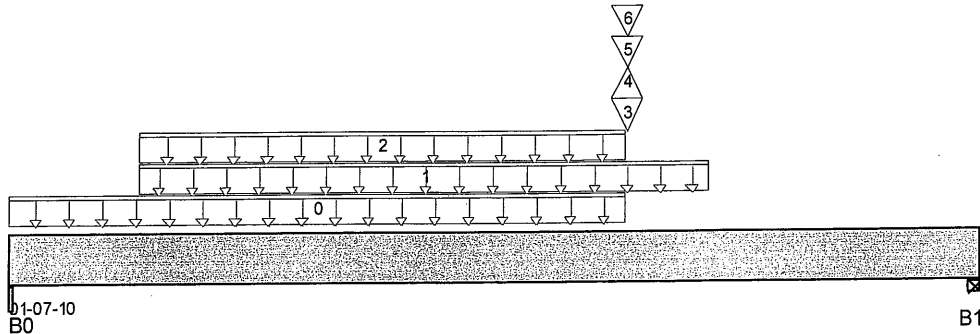
Description: Designs\Flush Beams\1st Floor\Flush Beams\B21(i2883)

Specifier:

Designer: LBV

Company:

Misc:



Total Horizontal Product Length = 01-07-10

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

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	63 / 24	251 / 0	154 / 0	
B1, 5-1/2"	186 / 100	704 / 0	386 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	WALL	Unf. Lin. (lb/ft)	L	00-00-00	01-00-06		100			n/a
1	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	01-02-02	10				n/a
2	ROOF	Unf. Lin. (lb/ft)	L	00-02-10	01-00-06	40	46	165		n/a
3	B22(i2884)	Conc. Pt. (lbs)	L	01-00-06	01-00-06	201	768	381		n/a
4	B22(i2884)	Conc. Pt. (lbs)	L	01-00-06	01-00-06	-124				n/a
5	ROOF	Conc. Pt. (lbs)	L	01-00-06	01-00-06	6		24		n/a
6	WALL	Conc. Pt. (lbs)	L	01-00-06	01-00-06		15			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	320 ft-lbs	38,727 ft-lbs	0.8%	25	01-00-06
End Shear	226 lbs	14,464 lbs	1.6%	25	01-02-08
Total Load Defl.	L/999 (0")	n/a	n/a	73	00-09-00
Max Defl.	0"	n/a	n/a	73	00-09-00
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 Beam	2-5/8" x 3-1/2"	576 lbs	11.7%	5.1%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,551 lbs	15.1%	6.6%	Unspecified

## Notes





# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...\B21(i2883)

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

November 11, 2017 09:13:37

## BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B21(i2883)

Specifier:

Designer: LBV

Company:

Msc:

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

Calculations assume unbraced length of Top: 00-05-08, Bottom: 00-05-08.

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.

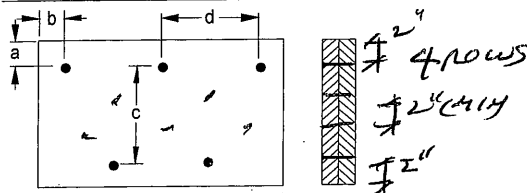
**CONFORMS TO OBC 2012**

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

## Connection Diagram



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

Calculated Side Load = 884.2 lb/ft

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

Connectors are: 16d Nails

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

## Disclosure

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DWG NO. TAM 5337  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor... \B22(i2884)

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

November 11, 2017 09:14:00

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

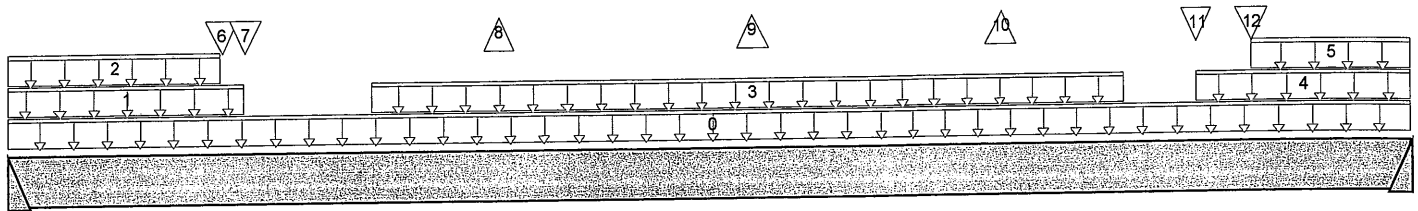
Description: Designs\Flush Beams\1st Floor\Flush Beams\B22(i2884)

Specifier:

Designer: LBV

Company:

Misc:



B0

B1

Total Horizontal Product Length = 07-05-00

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

Bearing	Live	Dead	Snow	Wind
B0	206 / 123	774 / 0	399 / 0	
B1	214 / 139	799 / 0	399 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-05-00		100			n/a
1	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-03-00	24	12			n/a
2	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	01-01-08	40	46	165		n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-11-00	05-11-00	17	59			n/a
4	ROOF	Unf. Lin. (lb/ft)	L	06-03-08	07-05-00	40	46	165		n/a
5	FC7 Floor Material	Unf. Lin. (lb/ft)	L	06-07-00	07-05-00	38	19			n/a
6	WINDOW	Conc. Pt. (lbs)	L	01-01-08	01-01-08	100	115	213		n/a
7	J7(i2761)	Conc. Pt. (lbs)	L	01-03-00	01-03-00	-59	70			n/a
8	J7(i2755)	Conc. Pt. (lbs)	L	02-07-00	02-07-00	-48				n/a
9	J7(i2756)	Conc. Pt. (lbs)	L	03-11-00	03-11-00	-48				n/a
10	J7(i2757)	Conc. Pt. (lbs)	L	05-03-00	05-03-00	-48				n/a
11	WINDOW	Conc. Pt. (lbs)	L	06-03-08	06-03-08	100	115	213		n/a
12	J7(i2753)	Conc. Pt. (lbs)	L	06-07-00	06-07-00	-59	71			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,762 ft-lbs	25,173 ft-lbs	7%	0	03-11-00
End Shear	1,435 lbs	14,464 lbs	9.9%	25	06-03-02
Total Load Defl.	L/999 (0.017")	n/a	n/a	73	03-09-00
Live Load Defl.	L/999 (0.005")	n/a	n/a	100	03-09-00
Max Defl.	0.017"	n/a	n/a	73	03-09-00
Span / Depth	7.3	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,669 lbs	n/a	19.5%	HGUS410
B1 Hanger	2" x 3-1/2"	1,704 lbs	n/a	20.1%	HGUS410

## Notes



PL 1/2

DWG NO. TAM 5338-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOKE 2 EL 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B22(i2884)

Specifier:

Designer: LBV

Company:

Misc:

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

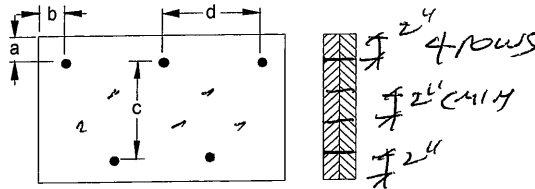
CONFORMS TO OBC 2012

Disclosure

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Connection Diagram



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

Calculated Side Load = 27.5 lb/ft

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

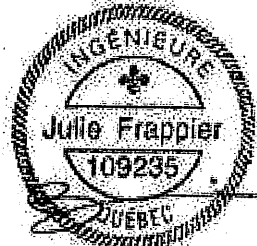
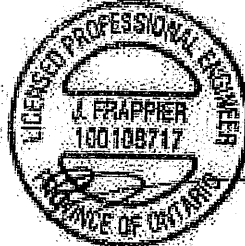
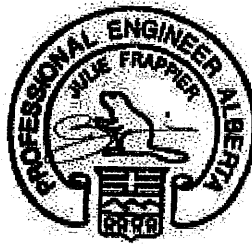
Connectors are: 3-1/2" ARDOX SPIRAL

3-1/2" ARDOX SPIRAL



DWG NO. TAM 5338-18  
STRUCTURAL  
COMPONENT ONLY





## Maximum Floor Spans

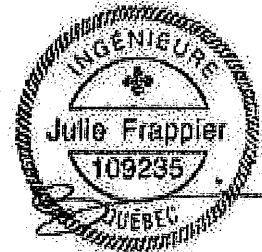
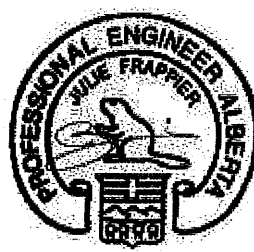
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
5/8" OSB G&N Sheathing

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.



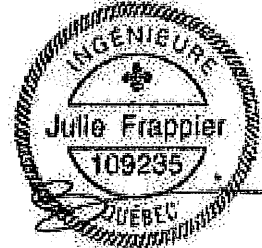
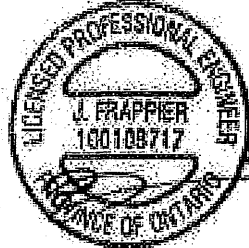
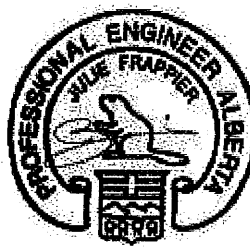
## Maximum Floor Spans

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

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

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



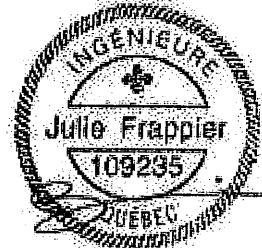
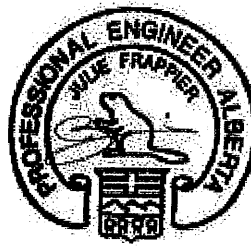
## Maximum Floor Spans

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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



## Maximum Floor Spans

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

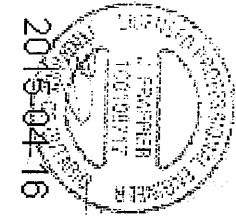
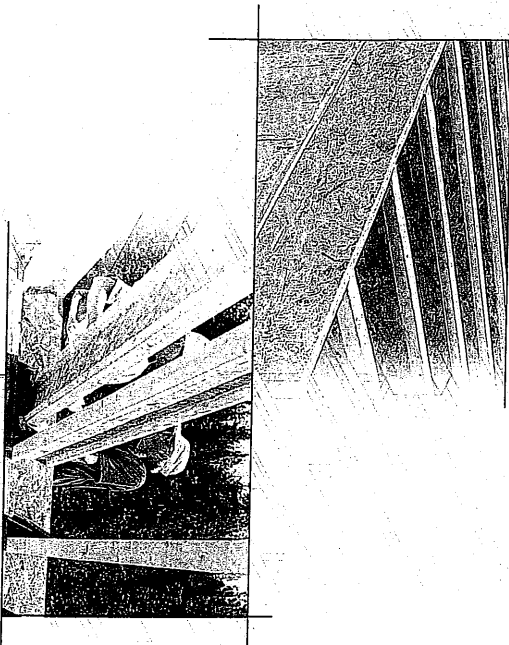
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



# INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



N-C301 / November 2014

## SAFETY AND CONSTRUCTION PRECAUTIONS

### WARNING

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

### Avoid Accidents by Following these Important Guidelines:

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

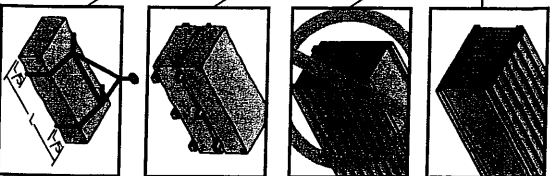
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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



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

## STORAGE AND HANDLING GUIDELINES

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



## MAXIMUM FLOOR SPANS

- Maximum **clear** spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches or more. Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

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

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	16"	19.2	24"	12"	16"	19.2	24"
12	NI-20	13.11	13.52	13.93	13.55	16.83	15.24	14.31	14.47
12	NI-20	13.11	13.92	14.33	13.95	17.53	16.55	15.10	15.55
12	NI-20	13.11	14.31	14.72	14.33	18.22	16.87	16.01	16.13
12	NI-20	13.11	14.71	15.12	14.73	18.91	17.18	16.31	16.74
12	NI-20	13.11	15.11	15.52	15.13	19.60	17.50	16.61	17.35
12	NI-20	13.11	15.51	15.93	15.53	20.29	17.81	16.91	17.96
12	NI-20	13.11	15.91	16.33	15.93	20.98	18.13	17.21	18.57
12	NI-20	13.11	16.31	16.73	16.33	21.67	18.44	17.51	19.18
12	NI-20	13.11	16.71	17.13	16.73	22.36	18.75	17.81	19.79
12	NI-20	13.11	17.11	17.53	17.13	23.05	19.06	18.11	20.40
12	NI-20	13.11	17.51	17.93	17.53	23.74	19.37	18.41	21.01
12	NI-20	13.11	17.91	18.33	17.93	24.43	19.68	18.71	21.62
12	NI-20	13.11	18.31	18.73	18.33	25.12	19.99	19.01	22.23
12	NI-20	13.11	18.71	19.13	18.73	25.81	20.30	19.31	22.84
12	NI-20	13.11	19.11	19.53	19.13	26.50	20.61	19.61	23.45
12	NI-20	13.11	19.51	19.93	19.53	27.19	20.92	19.91	24.06
12	NI-20	13.11	19.91	20.33	19.93	27.88	21.23	20.21	24.67
12	NI-20	13.11	20.31	20.73	20.33	28.57	21.54	20.51	25.28
12	NI-20	13.11	20.71	21.13	20.73	29.26	21.85	20.81	25.89
12	NI-20	13.11	21.11	21.53	21.13	29.95	22.16	21.11	26.50
12	NI-20	13.11	21.51	21.93	21.53	30.64	22.47	21.41	27.11
12	NI-20	13.11	21.91	22.33	21.93	31.33	22.78	21.71	27.72
12	NI-20	13.11	22.31	22.73	22.33	32.02	23.09	22.01	28.33
12	NI-20	13.11	22.71	23.13	22.73	32.71	23.40	22.31	28.94
12	NI-20	13.11	23.11	23.53	23.13	33.40	23.71	22.61	29.55
12	NI-20	13.11	23.51	23.93	23.53	34.09	24.02	22.91	30.16
12	NI-20	13.11	23.91	24.33	23.93	34.78	24.33	23.21	30.77
12	NI-20	13.11	24.31	24.73	24.33	35.47	24.64	23.51	31.38
12	NI-20	13.11	24.71	25.13	24.73	36.16	24.95	23.81	31.99
12	NI-20	13.11	25.11	25.53	25.13	36.85	25.26	24.11	32.60
12	NI-20	13.11	25.51	25.93	25.53	37.54	25.57	24.41	33.21
12	NI-20	13.11	25.91	26.33	25.93	38.23	25.88	24.71	33.82
12	NI-20	13.11	26.31	26.73	26.33	38.92	26.19	25.01	34.43
12	NI-20	13.11	26.71	27.13	26.73	39.61	26.50	25.31	35.04
12	NI-20	13.11	27.11	27.53	27.13	40.30	26.81	25.61	35.65
12	NI-20	13.11	27.51	27.93	27.53	40.99	27.12	25.91	36.26
12	NI-20	13.11	27.91	28.33	27.93	41.68	27.43	26.21	36.87
12	NI-20	13.11	28.31	28.73	28.33	42.37	27.74	26.51	37.48
12	NI-20	13.11	28.71	29.13	28.73	43.06	28.05	26.81	38.09
12	NI-20	13.11	29.11	29.53	29.13	43.75	28.36	27.11	38.70
12	NI-20	13.11	29.51	29.93	29.53	44.44	28.67	27.41	39.31
12	NI-20	13.11	29.91	30.33	29.93	45.13	28.98	27.71	39.92
12	NI-20	13.11	30.31	30.73	30.33	45.82	29.29	28.01	40.53
12	NI-20	13.11	30.71	31.13	30.73	46.51	29.60	28.31	41.14
12	NI-20	13.11	31.11	31.53	31.13	47.20	29.91	28.61	41.75
12	NI-20	13.11	31.51	31.93	31.53	47.89	30.22	28.91	42.36
12	NI-20	13.11	31.91	32.33	31.93	48.58	30.53	29.21	42.97
12	NI-20	13.11	32.31	32.73	32.33	49.27	30.84	29.51	43.58
12	NI-20	13.11	32.71	33.13	32.73	49.96	31.15	29.81	44.19
12	NI-20	13.11	33.11	33.53	33.13	50.65	31.46	30.11	44.80
12	NI-20	13.11	33.51	33.93	33.53	51.34	31.77	30.41	45.41
12	NI-20	13.11	33.91	34.33	33.93	52.03	32.08	30.71	46.02
12	NI-20	13.11	34.31	34.73	34.33	52.72	32.39	31.01	46.63
12	NI-20	13.11	34.71	35.13	34.73	53.41	32.70	31.31	47.24
12	NI-20	13.11	35.11	35.53	35.13	54.10	33.01	31.61	47.85
12	NI-20	13.11	35.51	35.93	35.53	54.79	33.32	31.91	48.46
12	NI-20	13.11	35.91	36.33	35.93	55.48	33.63	32.21	49.07
12	NI-20	13.11	36.31	36.73	36.33	56.17	33.94	32.51	49.68
12	NI-20	13.11	36.71	37.13	36.73	56.86	34.25	32.81	50.29
12	NI-20	13.11	37.11	37.53	37.13	57.55	34.56	33.11	50.90
12	NI-20	13.11	37.51	37.93	37.53	58.24	34.87	33.41	51.51
12	NI-20	13.11	37.91	38.33	37.93	58.93	35.18	33.71	52.12
12	NI-20	13.11	38.31	38.73	38.33	59.62	35.49	34.01	52.73
12	NI-20	13.11	38.71	39.13	38.73	60.31	35.80	34.31	53.34
12	NI-20	13.11	39.11	39.53	39.13	61.00	36.11	34.61	53.95
12	NI-20	13.11	39.51	39.93	39.53	61.69	36.42	34.91	54.56
12	NI-20	13.11	39.91	40.33	39.93	62.38	36.73	35.21	55.17
12	NI-20	13.11	40.31	40.73	40.33	63.07	37.04	35.51	55.78
12	NI-20	13.11	40.71	41.13	40.73	63.76	37.35	35.81	56.39
12	NI-20	13.11	41.11	41.53	41.13	64.45	37.66	36.11	57.00
12	NI-20	13.11	41.51	41.93	41.53	65.14	37.97	36.41	57.61
12	NI-20	13.11	41.91	42.33	41.93	65.83	38.28	36.71	58.22
12	NI-20	13.11	42.31	42.73	42.33	66.52	38.59	37.01	58.83
12	NI-20	13.11	42.71	43.13	42.73	67.21	38.90	37.31	59.44
12	NI-20	13.11	43.11	43.53	43.13	67.90	39.21	37.61	60.05
12	NI-20	13.11	43.51	43.93	43.53	68.59	39.52	37.91	60.66
12	NI-20	13.11	43.91	44.33	43.93	69.28	39.83	38.21	61.27
12	NI-20	13.11	44.31	44.73	44.33	69.97	40.14	38.51	61.88
12	NI-20	13.11	44.71	45.13	44.73	70.66	40.45	38.81	62.49
12	NI-20	13.11	45.11	45.53	45.13	71.35	40.76	39.11	63.10
12	NI-20	13.11	45.51	45.93	45.53	72.04	41.07	39.41	63.71
12	NI-20	13.11	45.91	46.33	45.93	72.73	41.38	39.71	64.32
12	NI-20	13.11	46.31	46.73	46.33	73.42	41.69	40.01	64.93
12	NI-20	13.11	46.71	47.13	46.73	74.11	42.00	40.31	65.54
12	NI-20	13.11	47.11	47.53	47.13	74.80	42.31	40.61	66.15
12	NI-20	13.11	47.51	47.93	47.53	75.49	42.62	40.91	66.76
12	NI-20	13.11	47.91	48.33	47.93	76.18	42.93	41.21	67.37
12	NI-20	13.11	48.31	48.73	48.33	76.87	43.24	41.51	67.98
12	NI-20	13.11	48.71	49.13	48.73	77.56	43.55	41.81	68.59
12	NI-20	13.11	49.11	49.53	49.13	78.25	43.86	42.11	69.20
12	NI-20	13.11	49.51	49.93	49.53	78.94	44.17	42.41	69.81
12	NI-20	13.11	49.91	50.33	49.93	79.63	44.48	42.71	70.42
12	NI-20	13.11	50.31	50.73	50.33	80.32	44.79	43.01	71.03
12	NI-20	13.11	50.71	51.13	50.73	81.01	45.10	43.31	71.64
12	NI-20	13.11	51.11	51.53	51.13	81.70	45.41	43.61	72.25
12	NI-20	13.11	51.51	51.93	51.53	82.39	45.72	43.91	72.86
12	NI-20	13.11	51.91	52.33	51.93	83.08	46.03	44.21	73.47
12	NI-20	13.11	52.31	52.73	52.33	83.77	46.34	44.51	74.08
12	NI-20	13.11	52.71	53.13	52.73	84.46	46.65	44.81	74.69
12	NI-20	13.11	53.11	53.53	53.13	85.15	46.96	45.11	75.30
12	NI-20	13.11	53.51	53.93	53.53	85.84	47.27	45.41	75.91
12	NI-20	13.11	53.91	54.33	53.93	86.53	47.58	45.71	76.52
12	NI-20	13.11	54.31	54.73	54.33	87.22	47.89	46.01	77.13
12	NI-20	13.11	54.71	55.13	54.73	87.91	48.20	46.31	77.74
12	NI-20	13.11	55.11	55.53	55.13	88.60	48.51	46.61	78.35
12	NI-20	13.11	55.51	55.93	55.53	89.29	48.82	46.91	78.96
12	NI-20	13.11	55.91	56.33	55.93	89.98	49.13	47.21	79.57
12	NI-20	13.11	56.31	56.73	56.33	90.67	49.44	47.51	80.18
12	NI-20	13.11	56.71	57.13	56.73	91.36	49.75	47.81	80.79
12	NI-20	13.11	57.11	57.53	57.13	92.05	50.06	48.11	81.40
12	NI-20	13.11	57.51	57.93	57.53	92.74	50.37	48.41	82.01
12	NI-20	13.11	57.91	58.33	57.93	93.43	50.68	48.71	82.62
12	NI-20	13.11	58.31	58.73	58.33	94.12	50.99	49.01	83.23
12	NI-20	13.11	58.71	59.13	58.73	94.81	51.30	49.31	83.84
12	NI-20	13.11	59.11	59.53	59.13	95.50	51.61	49.61	84.45
12	NI-20	13.11	59.51	59.93	59.53	96.19	51.92	49.91	85.06
12	NI-20	13.11	59.91	60.33	59.93	96.88	52.23	50.21	85.67
12	NI-20	13.11	60.31	60.73	60.33	97.57	52.54	50.51	86.28
12	NI-20	13.11	60.71	61.13	60.73	98.26	52.85	50.81	86.89
12	NI-20	13.11	61.11	61.53	61.13	98.95	53.16	51.11	87.50
12	NI-20	13.11	61.51	61.93	61.53	99.64	53.47	51.41	88.11
12	NI-20	13.11	61.91	62.33					

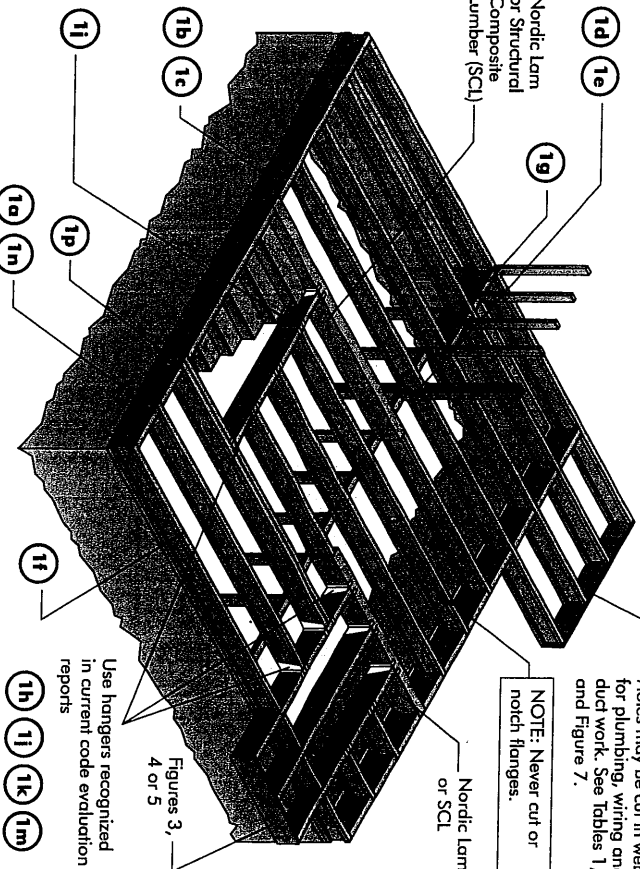
# INSTALLING NORDIC I-JOISTS

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 spans must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge **may never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the 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.

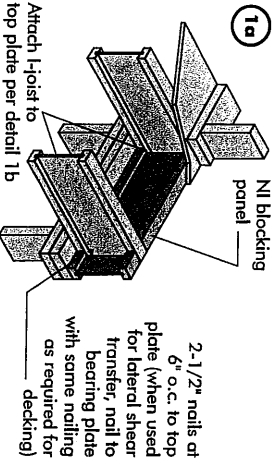
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**FIGURE 1**  
**TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS**

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

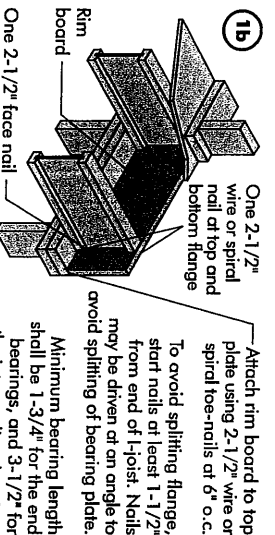


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir, No. 2 or better. Individual components not shown to scale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



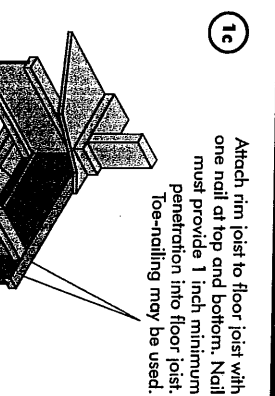
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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



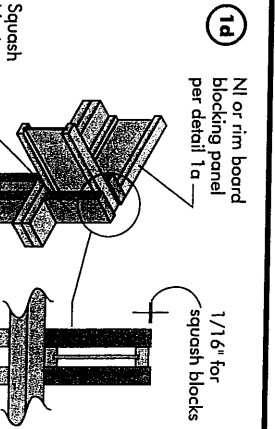
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI rim joist	per detail 1a

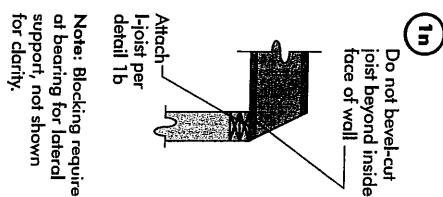
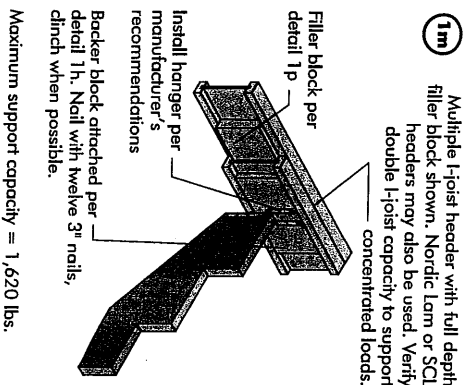
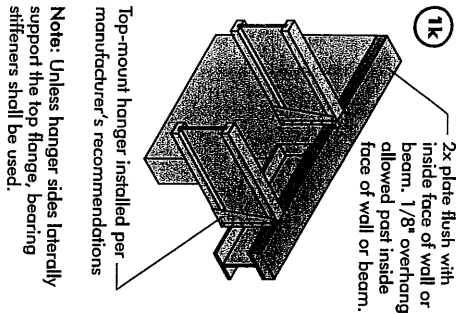
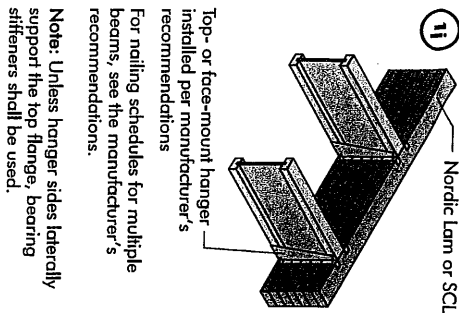
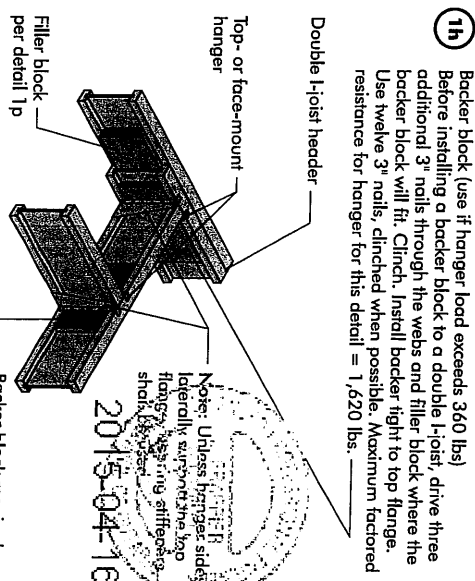
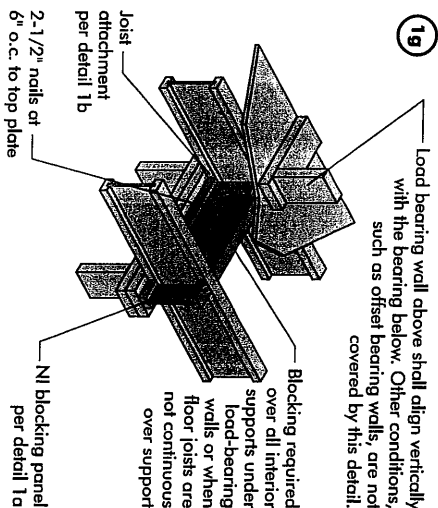
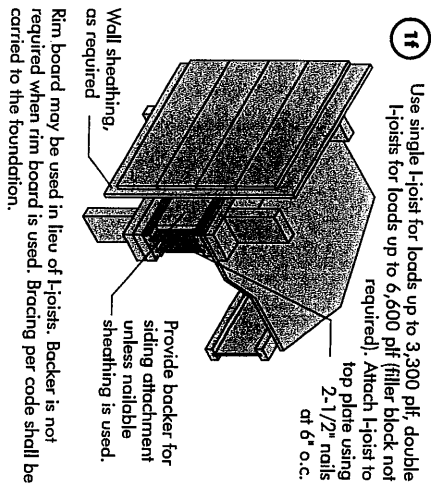
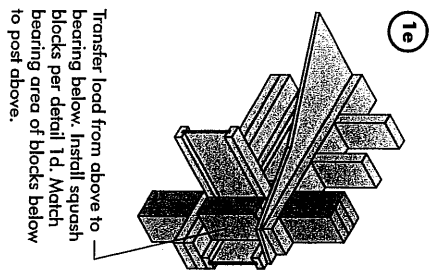
Attach I-joist per detail 1b. Minimum 1-3/4" bearing required.



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

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





**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"

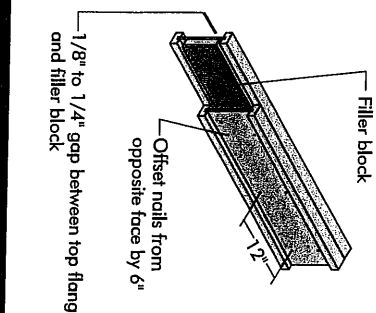
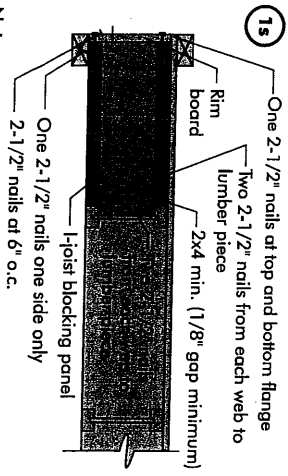
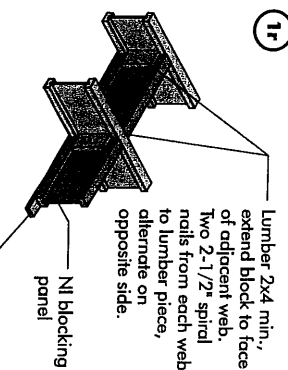
\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard.  
 \*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

**Notes:**

- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
- The maximum factored load that may be applied to one side of the double I-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 14"	2-1/8" x 6"
2-1/2" x 1-1/2"	11-7/8" x 14"	2-1/8" x 8"
3-1/2" x 1-1/2"	11-7/8" x 14"	2-1/8" x 10"
3-1/2" x 1-1/2"	11-7/8" x 14"	2-1/8" x 12"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 6"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 8"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 10"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 12"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 7"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 9"
3-1/2" x 1-1/2"	11-7/8" x 14"	3" x 11"



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

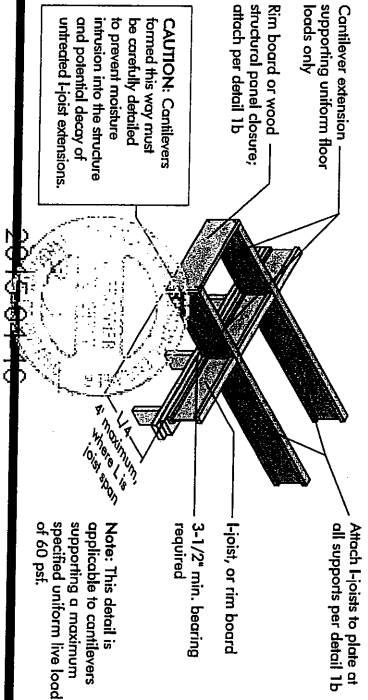
**Notes:**

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

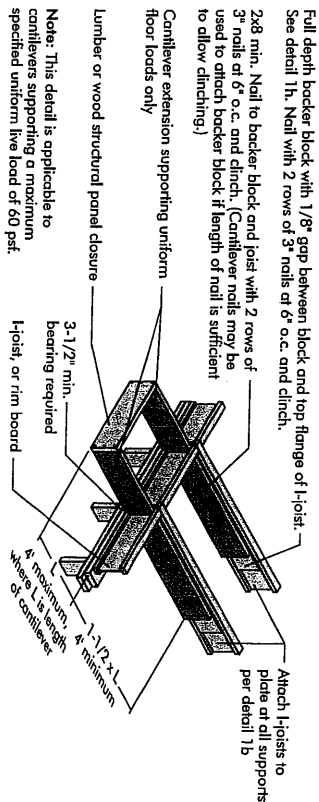


# CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

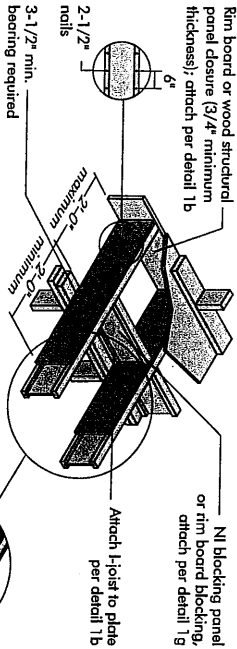


## 3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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

## 4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



## Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

## 4b) Alternate Method 2 — DOUBLE I-JOIST

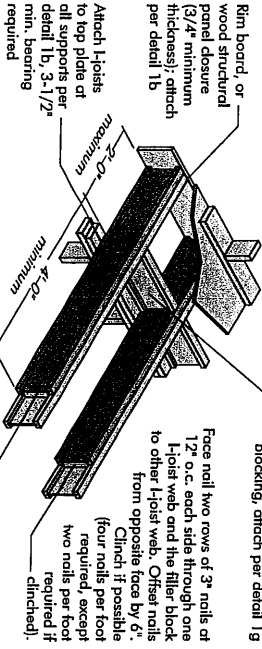
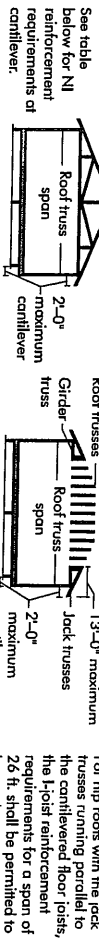


FIGURE 4 (continued)



## CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS				ROOF LOADING (UNFACTORED)				ROOF TRUSS			
	LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	LL = 60 psf, DL = 15 psf	LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	LL = 60 psf, DL = 15 psf	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	12	12	12	12	12	12	12	12	12	12	12	12
16	16	16	16	16	16	16	16	16	16	16	16	16
19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
24	24	24	24	24	24	24	24	24	24	24	24	24
30	30	30	30	30	30	30	30	30	30	30	30	30
32	32	32	32	32	32	32	32	32	32	32	32	32
34	34	34	34	34	34	34	34	34	34	34	34	34
36	36	36	36	36	36	36	36	36	36	36	36	36
38	38	38	38	38	38	38	38	38	38	38	38	38
40	40	40	40	40	40	40	40	40	40	40	40	40
42	42	42	42	42	42	42	42	42	42	42	42	42
44	44	44	44	44	44	44	44	44	44	44	44	44
46	46	46	46	46	46	46	46	46	46	46	46	46
48	48	48	48	48	48	48	48	48	48	48	48	48
50	50	50	50	50	50	50	50	50	50	50	50	50
52	52	52	52	52	52	52	52	52	52	52	52	52
54	54	54	54	54	54	54	54	54	54	54	54	54
56	56	56	56	56	56	56	56	56	56	56	56	56
58	58	58	58	58	58	58	58	58	58	58	58	58
60	60	60	60	60	60	60	60	60	60	60	60	60

1. N = 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 = Try a deeper joist or closer spacing.

5 = Maximum design load shall be: 15 psf and 80 psf wall load. Wall load is based on 3-0" maximum width window or door opening.

For larger openings, or multiple 3-0" width openings spaced less than 6-0" o.c., additional joists beneath the opening's cripple studs may be required.

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

4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is formed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.

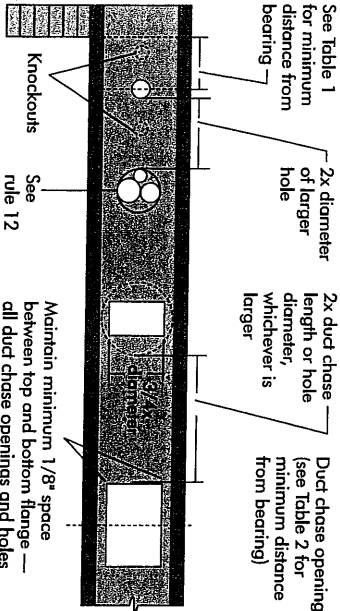
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

# WEB HOLES

## RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

FIGURE 7  
FIELD-CUT HOLE LOCATOR



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

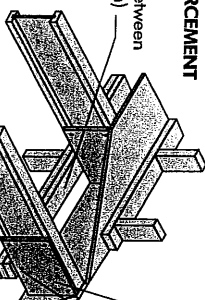
TABLE 1  
LOCATION OF CIRCULAR HOLES IN JOIST WEBS  
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft.-in.)											Span adjustment Factor			
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10		10-3/4	11	12
24	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
30	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
36	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
42	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
48	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
54	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
60	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
66	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
72	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
78	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
84	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
90	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
96	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
102	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
108	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
114	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
120	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
126	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
132	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
138	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
144	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
150	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
156	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
162	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
168	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
174	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
180	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
186	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
192	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
198	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
204	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
210	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
216	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
222	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
228	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
234	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
240	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
246	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
252	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
258	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
264	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
270	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
276	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
282	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
288	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
294	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
300	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
306	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
312	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
318	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
324	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
330	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
336	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
342	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
348	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
354	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
360	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
366	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
372	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
378	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
384	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
390	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
396	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
402	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
408	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
414	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
420	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
426	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
432	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
438	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
444	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
450	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
456	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
462	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
468	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
474	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
480	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
486	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
492	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
498	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
504	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
510	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
516	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
522	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
528	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
534	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
540	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
546	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
552	0	0.7	1.0	1.3	1.6	1.9	2.2	2.5								

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

## 5c SHEATHING REINFORCEMENT

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



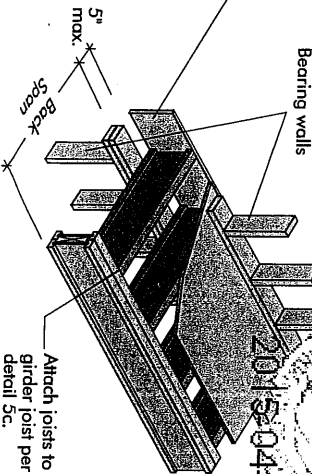
**Note:** Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

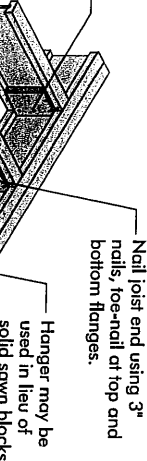
**Notes:**

- 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.

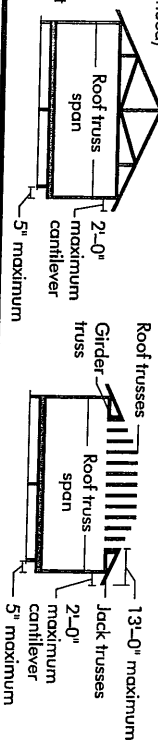


**Notes:**

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

FIGURE 5 (continued)

See table below for NI reinforcement requirements of cantilever.



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

## BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS				ROOF LOADING (UNFACTORED)							
	SPAN (ft)	LL = 30 psf, DL = 15 psf	JOIST SPACING (in.)		LL = 40 psf, DL = 15 psf	JOIST SPACING (in.)		LL = 50 psf, DL = 15 psf	JOIST SPACING (in.)			
12	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
14	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
16	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
18	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
20	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
22	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
24	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
26	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
28	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
30	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
32	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
34	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
36	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
38	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
40	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
42	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. N = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. N = Try a deeper joist or closer spacing.
5. N = Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
6. 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.
7. N = Joist spacing 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.
8. N = Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

# INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
2. Snap a chalk line across the I-joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when topped into place with a block and sledgehammer.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
7. After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joist flanges.
8. 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 R&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	Maximum Spacing of Fasteners
16	5/8	2"	1-3/4"	2"
20	5/8	2"	1-3/4"	2"
24	3/4	2"	1-3/4"	2"

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.

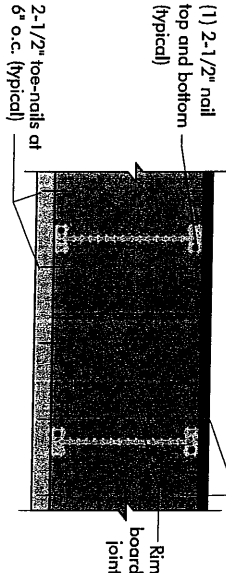
# RIM BOARD INSTALLATION DETAILS

## 8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

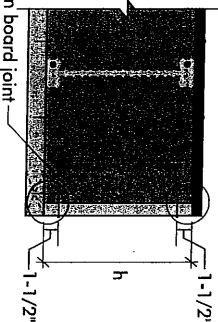
### Rim board Joint Between Floor Joists

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

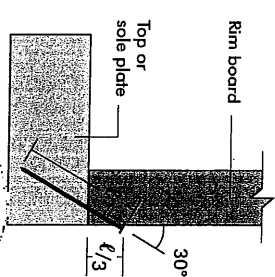
(1) 2-1/2" nail top and bottom (typical)



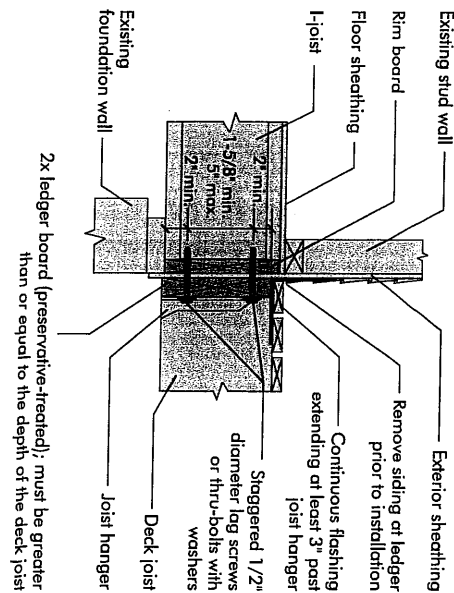
### Rim board Joint at Corner



## 8b TOE-NAIL CONNECTION AT RIM BOARD



## 8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL

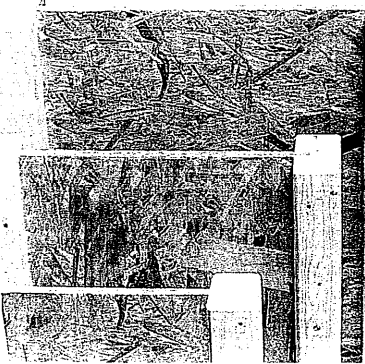


2015-04-16

## PRODUCT WARRANTY

Chambers Challenging guarantees that, in accordance with our specifications, Chamber products are free from manufacturing defects in material and workmanship.

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



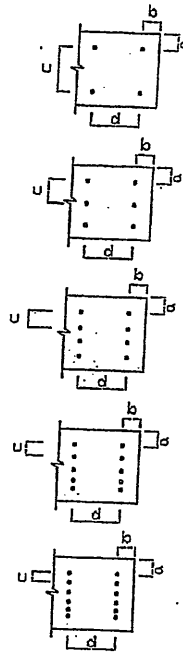
# MICRO CITY

## 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 PLIES 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