



FROM PLAN DATED: NOV 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL:\$45-1

ELEVATION: A&B

LOT:

CITY: INNISFILL

SALESMAN: M D
DESIGNER: AJ
REVISION:

NOTES:
CERAMIC TILE APPLICATION
AS PER O.B.C. 9.30.6.
SQUASH BLOCKS
2x4 OR 2x6 #2 S.P.F. REQ'D UNDER
INTERIOR UNIFORM LOAD BEARING
WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS.
CANTILEVERED JOISTS
REQUIRE I-JOIST BLOCKING ALONG
BEARING AND RIMBOARD CLOSURE
AT ENDS.

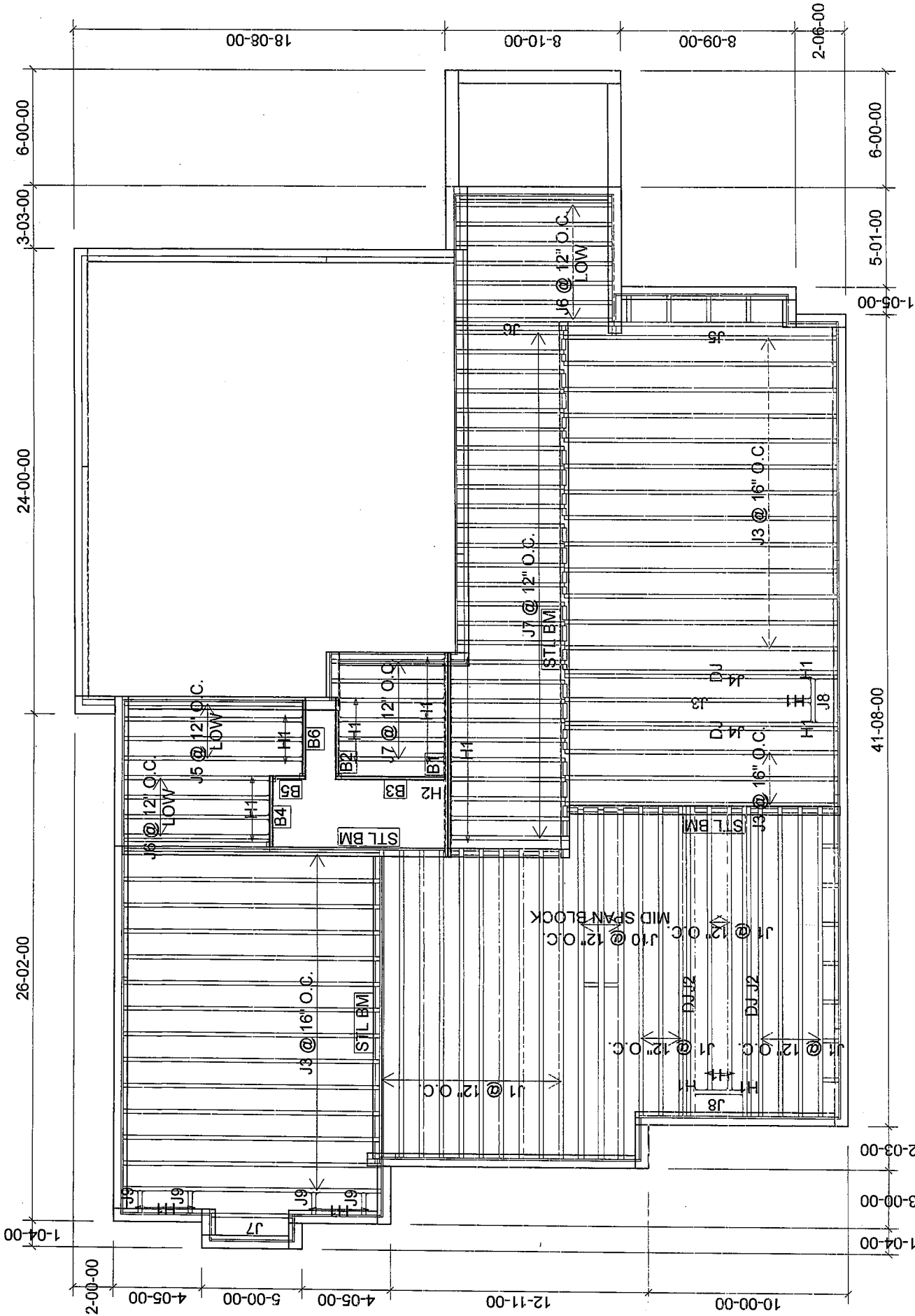
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.

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

SUBFLOOR: 5/8" GLUED AND NAILED

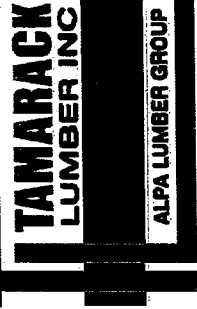
DATE: 9/19/2016

1st FLOOR



Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
16	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5
1	H2	HUS1.81/9.5

Products			
PlotID	Length	Product	Plies Net Qty
J1	16-00-00	9 1/2" NI-40x	1 19
J2	16-00-00	9 1/2" NI-40x	2 4
J3	14-00-00	9 1/2" NI-40x	1 31
J4	14-00-00	9 1/2" NI-40x	2 4
J5	10-00-00	9 1/2" NI-40x	1 5
J6	8-00-00	9 1/2" NI-40x	1 12
J7	6-00-00	9 1/2" NI-40x	1 34
J8	4-00-00	9 1/2" NI-40x	1 2
J9	2-00-00	9 1/2" NI-40x	1 4
J10	18-00-00	9 1/2" NI-80	1 3
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2 2
B2	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1 1
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1 1
B4	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1 1
B6	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1 1
B5	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1 1



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REQUIRE I-JOIST BLOCKING ALONG
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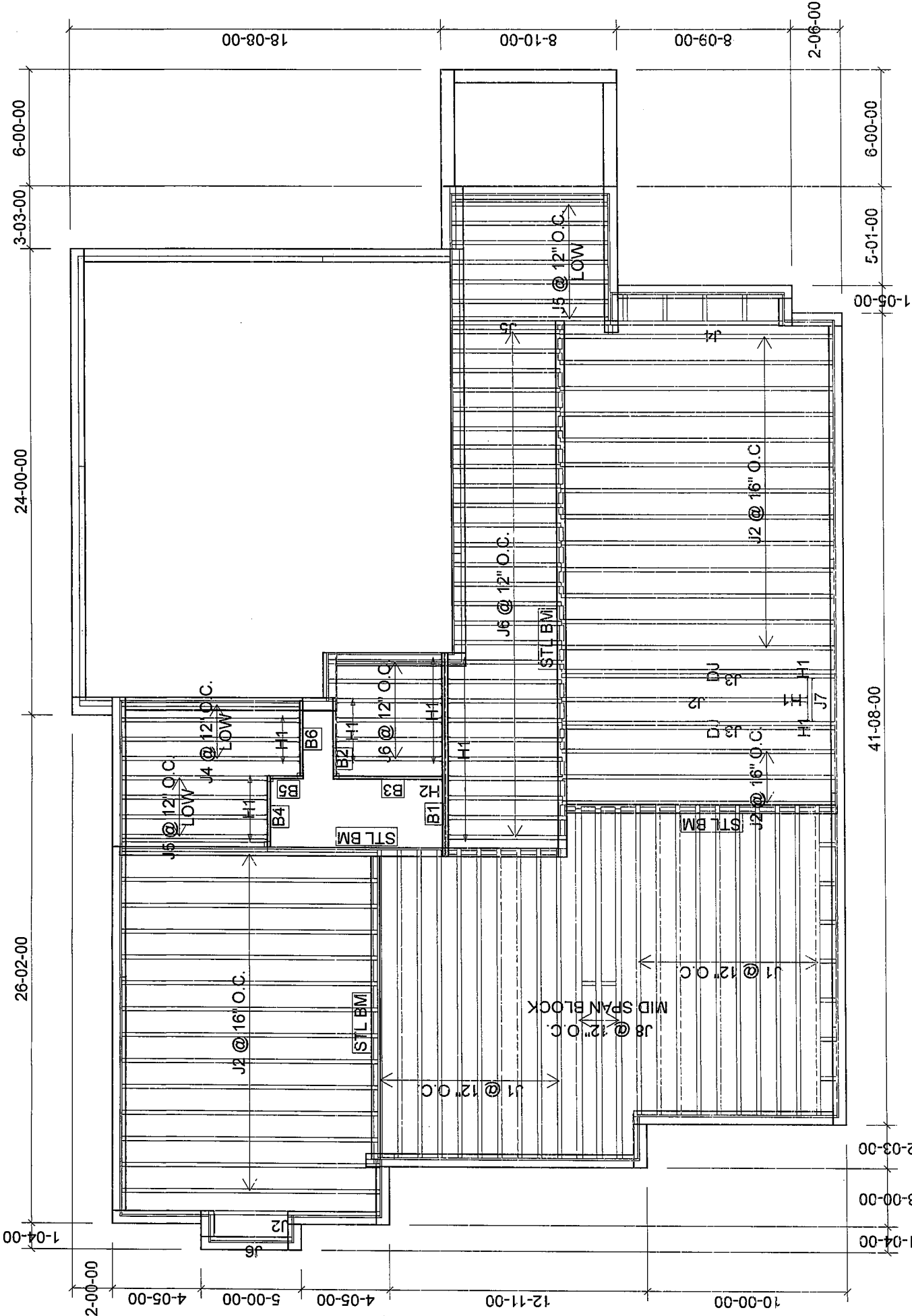
LOADING:
DESIGN LOADS: L/480,000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 9/19/2016

1st FLOOR

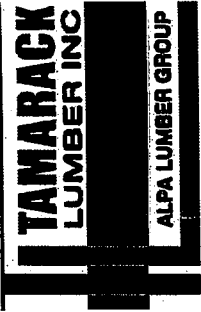
W.O.B & W.O.D



Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
16	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
1	H1	IUS2.56/9.5
1	H2	HUS1.81/9.5

Town of Innisfil Certified Model
03/01/2018 9:33:41 AM kgervais

Products				
PlotID	Length	Product	Piles	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	20
J2	14-00-00	9 1/2" NI-40x	1	32
J3	14-00-00	9 1/2" NI-40x	2	4
J4	10-00-00	9 1/2" NI-40x	1	5
J5	8-00-00	9 1/2" NI-40x	1	12
J6	6-00-00	9 1/2" NI-40x	1	34
J7	4-00-00	9 1/2" NI-40x	1	1
J8	18-00-00	9 1/2" NI-80	1	3
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1



FROM PLAN DATED: NOV 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL: \$45-1

ELEVATION: A

LOT:

CITY: INNISFILL

SALESMAN: M D
DESIGNER: AJ
REVISION:

NOTES:
CERAMIC TILE APPLICATION
AS PER O.B.C. 9.30.6.
SQUASH BLOCKS
2x4 OR 2x6 #2 S.P.F. REQ'D UNDER
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REQUIRE I-JOIST BLOCKING ALONG
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AT ENDS.

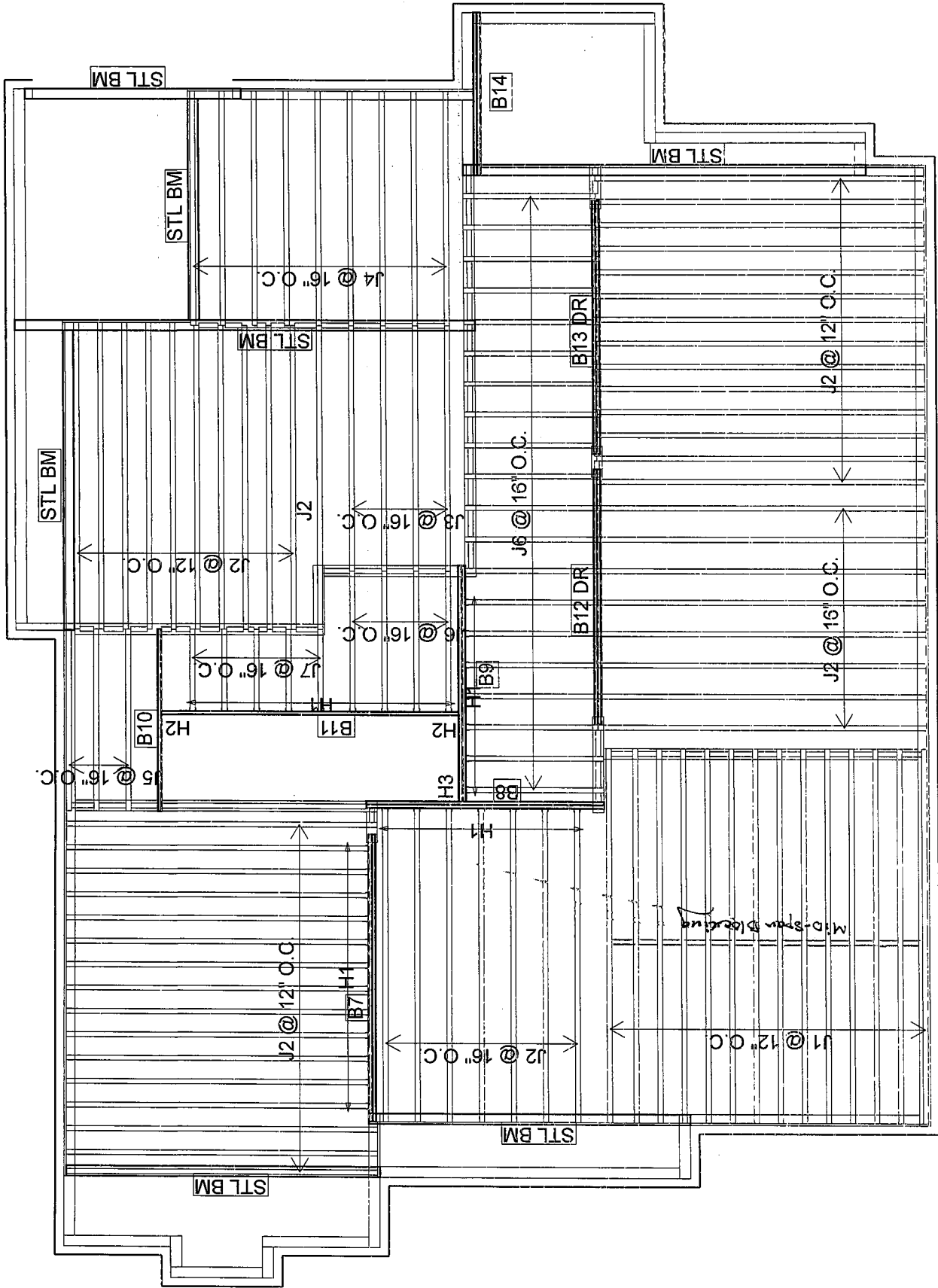
REFER TO THE NORDIC
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LIVE LOAD: 40.0 lb/ft²
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SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 9/19/2016

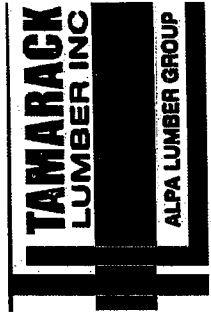
2nd FLOOR



Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/9.5
26	H1	IUS2.56/9.5
1	H2	HUS1.81/9.5
1	H2	HUS1.81/9.5
1	H3	HGUS410

Products			
PlotID	Length	Product	Plies Net Qty
J1	16-00-00	9 1/2" NI-40x	1 14
J2	14-00-00	9 1/2" NI-40x	1 56
J3	12-00-00	9 1/2" NI-40x	1 4
J4	10-00-00	9 1/2" NI-40x	1 9
J5	8-00-00	9 1/2" NI-40x	1 3
J6	6-00-00	9 1/2" NI-40x	1 24
J7	4-00-00	9 1/2" NI-40x	1 5
B11	14-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1
B7	14-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B12 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2 ✓
B13 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2 ✓
B9	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1
B14	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2

Town of Innisfil Certified Model
03/01/2018 9:33:45 AM kgervais



FROM PLAN DATED: NOV 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL:\$45-1

ELEVATION: B

LOT:

CITY: INNISFILL

SALESMAN: M D
DESIGNER: AJ
REVISION:

NOTES:
CERAMIC TILE APPLICATION
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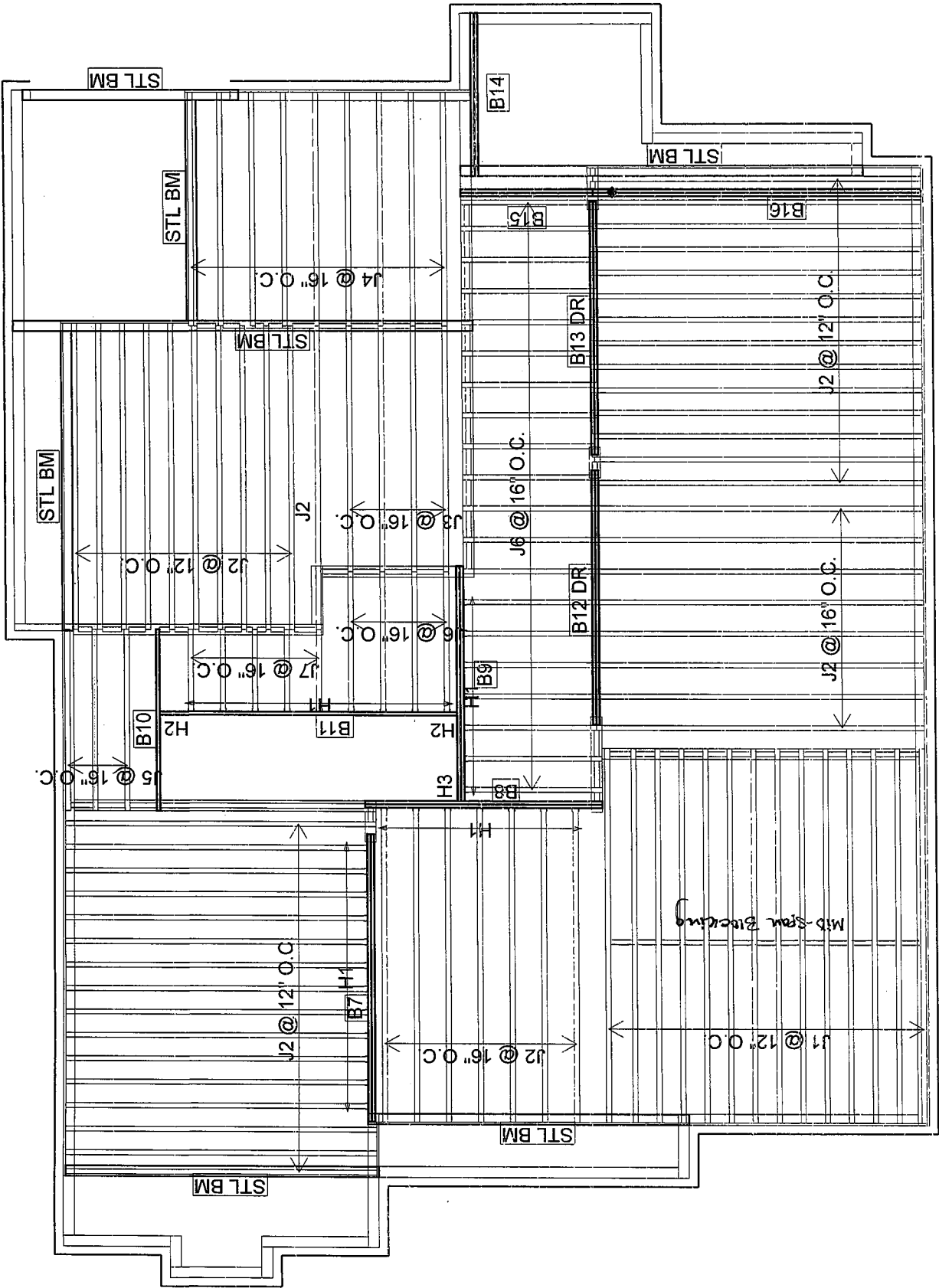
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LOADING:
DESIGN LOADS: L/480,000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 9/19/2016

2nd FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J1	16-00-00	9 1/2" NI-40x	1	14	9	H1	IUS2.56/9.5
J2	14-00-00	9 1/2" NI-40x	1	56	26	H1	IUS2.56/9.5
J3	12-00-00	9 1/2" NI-40x	1	4	1	H2	HUS1.81/9.5
J4	10-00-00	9 1/2" NI-40x	1	9	1	H2	HUS1.81/9.5
J5	8-00-00	9 1/2" NI-40x	1	3	1	H3	HGUS410
J6	6-00-00	9 1/2" NI-40x	1	24			
J7	4-00-00	9 1/2" NI-40x	1	5			
B11	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1			
B16	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B7	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B12 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B13 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B9	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1			
B14	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			
B15	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2			

Town of Innisfil Certified Model
03/01/2018 9:33:48 AM kgervais

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON ON
Sep. 19, 2016 15:15

PROJECT
COUNTRY WIDE HOMES
BAYVIEW WELLINGTON
S45-1
J101st FLOOR
NORDIC SIZER

Design Check Calculation Sheet

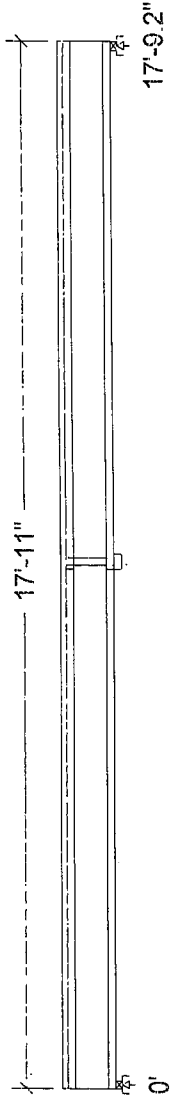
Nordic Sizer – Canada 6.3.1

Town of Innisfil Certified Model
03/01/2018 9:33:55 AM kgervais

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load2	Live	Full Area			40.00	psf
Load3	Dead	Full Area			20.00	psf
Self-weight	Dead	Full UDL			3.3	plf

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



Unfactored:	207					207
Dead	355					355
Live						
Factored:	791					791
Total						
Bearing:						
Resistance						
Joist	1893					1893
Support	3813					3813
Anal/Des						
Joist	0.42					0.42
Support	0.21					0.21
Load case	#2					#2
Length	1-3/4					1-3/4
Min req'd	1-3/4					1-3/4
Stiffener	No					No
KB support	1.00					1.00
fcp sup	769					769
Kzcp sup	1.00					1.00

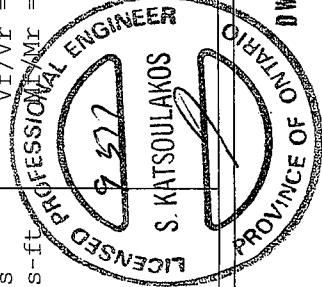
Nordic 9-1/2" NI-80 Floor joist @ 12" o.c.

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

Total length: 17'-11.0"; 5/8" nailed and glued OSB sheathing with 1 row of blocking and strapping at blocking locations
This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 791	Vr = 1895	lbs	Vf/Vr = 0.42
Moment (+)	Mf = 3516	Mr = 8958	lbs-ft	Mf/Mr = 0.39
Perm. Defl'n	0.16 = <L/999	0.59 = L/360	in	0.27
Live Defl'n	0.27 = L/775	0.44 = L/480	in	0.62
Total Defl'n	0.43 = L/490	0.89 = L/240	in	0.49
Bare Defl'n	0.31 = L/693	0.59 = L/360	in	0.52
Vibration	Imax = 17'-9	Lv = 19'-7	ft	
Defl'n	= 0.028	= 0.035	in	0.79



DWG NO. TAM44751-17
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	8958	1.00	1.00	-	1.000	-	-	-	#2
EI	324.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

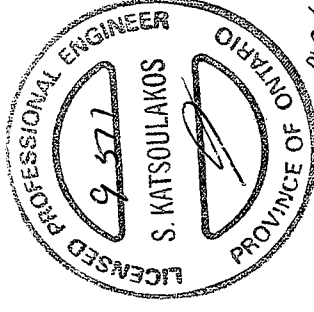
Shear : LC #2 = 1.25D + 1.5L
 Moment(+) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #2 = 1.0D + 1.0L (live)
 LC #2 = 1.0D + 1.0L (total)
 LC #2 = 1.0D + 1.0L (bare joist)
 Bearing : Support 1 - LC #2 = 1.25D + 1.5L
 Support 2 - LC #2 = 1.25D + 1.5L
 Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake
 L=live(use, occupancy) Ls=live(storage, equipment) f=fire
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: EIcomp = 367e06 lb-in² K= 4.94e06 lbs
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1. **CONFORMS TO 2012**
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 44751-17
 STRUCTURAL
 COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON ON
Sep. 19, 2016 15:48

PROJECT
COUNTRY WIDE HOMES
BAYVIEW WELLINGTON
S45-1
J1 2nd FLOOR
NORDIC SIZER

Design Check Calculation Sheet

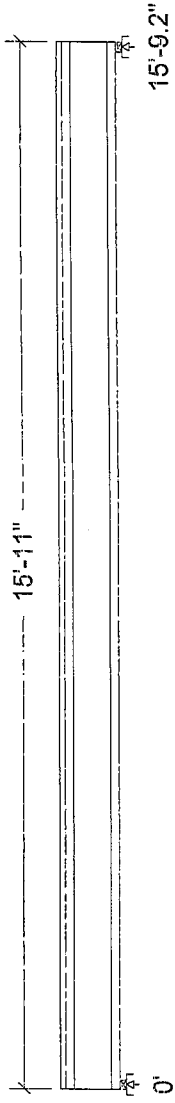
Nordic Sizer – Canada 6.3.1

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load2	Live					
Load3	Dead	Full Area			40.00	psf
Self-weight	Dead	Full Area			20.00	psf
		Full UDL			2.7	plf

Town of Innisfil Certified Model
03/01/2018 9:34:02 AM kgavals

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



Unfactored:						
Dead	179					179
Live	315					315
Factored:						
Total	696					696
Bearing:						
Resistance						
Joist	1855					1855
Support	2724					2724
Anal/Des						
Joist	0.38					0.38
Support	0.26					0.26
Load case	#2					#2
Length	1-3/4					1-3/4
Min req'd	1-3/4					1-3/4
Stiffener	No					No
KB support	1.00					1.00
fcp sup	769					769
Kzcp sup	1.00					1.00

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

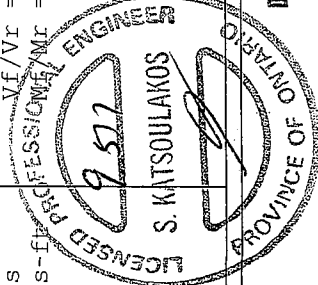
Supports: All - Lumber Sill plate, No. 1/No.2

Total length: 15'-11.0"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

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

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 696	Vr = 1895	lbs	Vf/Vr = 0.37
Moment (+)	Mf = 2745	Mr = 4824	lbs-ft	Mf/Mr = 0.57
Perm. Defl'n	0.14 = <L/999	0.53 = L/360	in	0.26
Live Defl'n	0.24 = L/789	0.39 = L/480	in	0.61
Total Defl'n	0.38 = L/504	0.79 = L/240	in	0.48
Bare Defl'n	0.28 = L/677	0.53 = L/360	in	0.53
Vibration	Lmax = 15'-9	Lv = 16'-9	ft	
Defl'n	= 0.034	= 0.041	in	0.83



DWG NO. TAM 44752-17

STRUCTURAL

COMPONENT ONLY

pe/h

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	4824	1.00	1.00	-	1.000	-	-	-	#2
EI	218.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

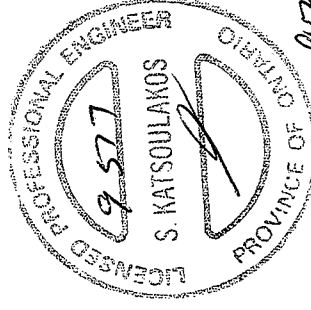
Shear : LC #2 = 1.25D + 1.5L
 Moment(+) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #2 = 1.0D + 1.0L (live)
 LC #2 = 1.0D + 1.0L (total)
 LC #2 = 1.0D + 1.0L (bare joist)
 Bearing : Support 1 - LC #2 = 1.25D + 1.5L
 Support 2 - LC #2 = 1.25D + 1.5L
 Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake
 L=live(use, occupancy) Ls=live(storage, equipment) f=fire
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: EIcomp = 258e06 lb-in2 K= 4.94e06 lbs
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1. **CONFORMS TO NBC 2012**
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9577
 S. KATSOUKAKOS
 PROVINCE OF ONTARIO
 DWG NO. YAM 44752-17
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B1(i2182)



BC CALC® Design Report

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

September 19, 2016 15:50:37

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i2182)

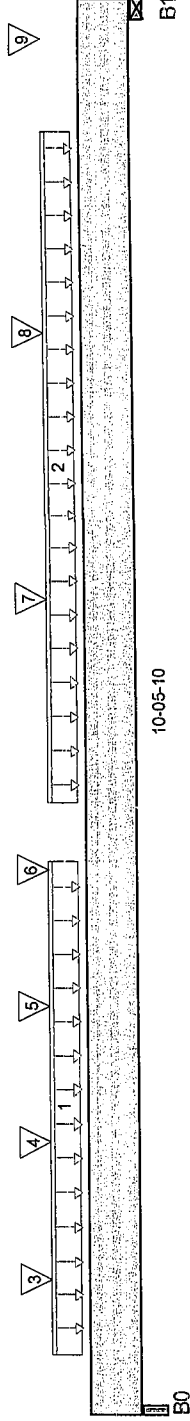
Specifier:

Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model
03/01/2018 9:34:43 AM kgervais



Total Horizontal Product Length = 10-05-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	1,481 / 0	790 / 0		
B1, 5-1/2"	1,737 / 0	984 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 User Load	Unf. Lin. (lb/ft)	L	00-05-04	04-01-00	240	120			n/a
2 Smoothed Load	Unf. Lin. (lb/ft)	L	04-06-00	09-06-00	183	92			n/a
3 J6(i2149)	Conc. Pt (lbs)	L	01-00-00	01-00-00	141	68			n/a
4 J6(i2152)	Conc. Pt (lbs)	L	02-00-00	02-00-00	125	62			n/a
5 J6(i2204)	Conc. Pt (lbs)	L	03-00-00	03-00-00	118	59			n/a
6 -	Conc. Pt (lbs)	L	04-00-01	04-00-01	128	68			n/a
7 J6(i2419)	Conc. Pt (lbs)	L	06-00-00	06-00-00	118	59			n/a
8 J6(i2421)	Conc. Pt (lbs)	L	08-00-00	08-00-00	118	59			n/a
9 -	Conc. Pt (lbs)	L	10-01-14	10-01-14	660	394			n/a

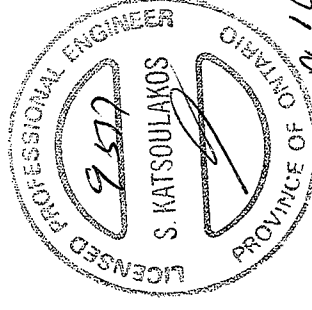
Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,817 ft-lbs	25,408 ft-lbs	26.8%	1	05-00-00
End Shear	2,705 lbs	11,571 lbs	23.4%	1	01-02-12
Total Load Defl.	L/710 (0.164")	0.485"	33.8%	4	05-01-08
Live Load Defl.	L/999 (0.107")	n/a	n/a	5	05-01-08
Max Defl.	0.164"	n/a	n/a	4	05-01-08
Span / Depth	12.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Beam	5-1/4" x 3-1/2"	3,210 lbs	40.9%	14.3%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	3,836 lbs	46.6%	16.3%	Unspecified

Notes



pe 16
DWG NO. TAM44753-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams (B1(i2182))

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

September 19, 2016 15:50:37

BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs Flush Beams (Basement Flush Beams) (B1(i2182))

Specifier:

Designer: AJ

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.

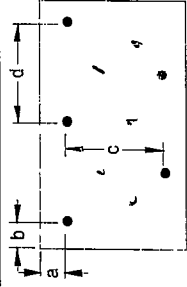
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.

Design based on Dry Service Condition.

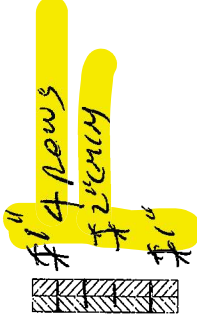
Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

Connection Diagram



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



Calculated Side Load = 251.5 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:

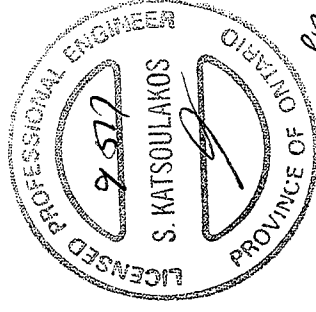
Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. YAW 44753-17

STRUCTURAL

COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i2286)

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

September 19, 2016 15:50:38

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i2286)

Specifier:

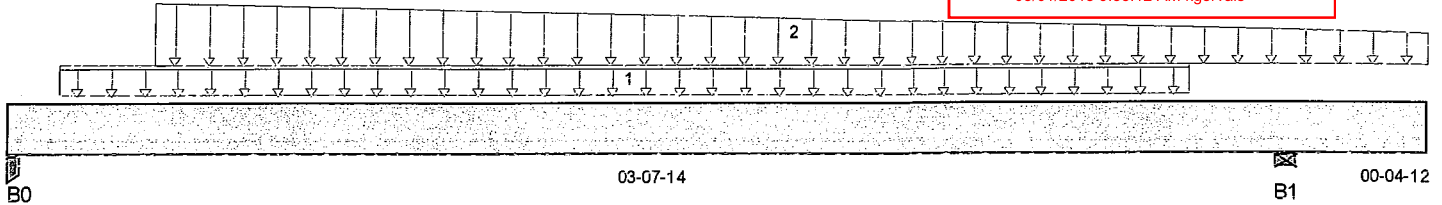
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:35:12 AM kgervais



Total Horizontal Product Length = 04-00-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	578 / 8	293 / 0		
B1, 5-1/2"	658 / 0	347 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1 User Load	Unf. Lin. (lb/ft)	L	00-01-12	03-04-10	240	120			n/a
2 Smoothed Load	Trapezoidal (lb/ft)	L	00-05-00	04-00-10	122	66			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,205 ft-lbs	12,704 ft-lbs	9.5%	2	01-11-00
Neg. Moment	-63 ft-lbs	-12,704 ft-lbs	0.5%	1	03-07-14
Neg. Moment	-63 ft-lbs	-12,704 ft-lbs	0.5%	1	03-07-14
End Shear	818 lbs	5,785 lbs	14.1%	2	00-11-04
Cont. Shear	1,087 lbs	5,785 lbs	18.8%	1	02-07-10
Total Load Defl.	L/999 (0.008")	n/a	n/a	9	01-10-04
Live Load Defl.	L/999 (0.005")	n/a	n/a	12	01-10-04
Total Neg. Defl.	2xL/1,998 (-0.003")	n/a	n/a	9	04-00-10
Max Defl.	0.008"	n/a	n/a	9	01-10-04
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 Post	1-3/4" x 1-3/4"	1,234 lbs	62%	33%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	1,421 lbs	34.6%	12.1%	Unspecified

Notes



DWG NO. TAM 44754-17
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B2(i2286)

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

September 19, 2016 15:50:38

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i2286)

Specifier:

Designer: AJ

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 086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

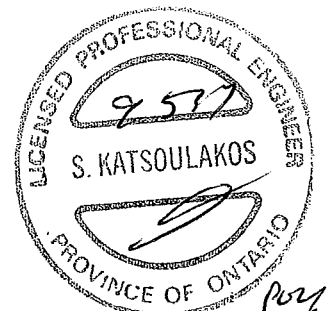
Deflections less than 1/8" were ignored in the results.

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 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 44754-17
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i813)

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

September 19, 2016 15:50:38

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i813)

Specifier:

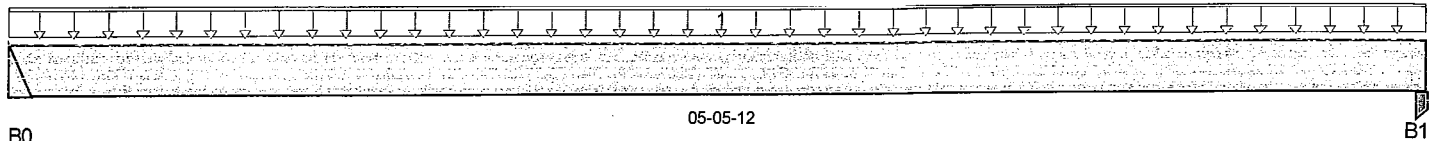
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:35:22 AM kgervais



Total Horizontal Product Length = 05-05-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	57 / 0	34 / 0		
B1, 3-1/2"	60 / 0	36 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC3 Floor Material	Unf. Lin. (lb/ft)	L	-00-00-00	05-05-12	21	8	1.00	1.15	n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	158 ft-lbs	12,704 ft-lbs	1.2%	1	02-08-02
End Shear	82 lbs	5,785 lbs	1.4%	1	00-11-08
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	02-08-02
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	02-08-02
Max Defl.	0.002"	n/a	n/a	4	02-08-02
Span / Depth	6.5	n/a	n/a		00-00-00

Disclosure

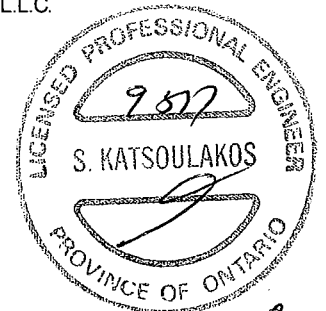
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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	128 lbs	n/a	3%	Hanger
B1 Post	3-1/2" x 1-3/4"	134 lbs	3.4%	1.8%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



DWG NO. TAM 44755-17
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams (B4) (i2546)

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

September 19, 2016 15:50:38

BC CALC® Design Report

Build 4.340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs \Flush Beams \Basement\ Flush Beams (B4) (i2546)

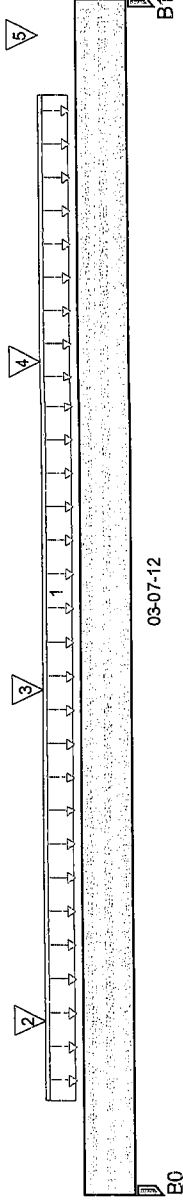
Specifier:

Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model
03/01/2018 9:35:40 AM kgavals



Total Horizontal Product Length = 03-07-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	637/0	294/0		
B1, 3-1/2"	699/0	317/0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 User Load	Unf. Lin. (lb/ft)	L	00-03-08	03-04-04	240	120			n/a
2 J5 (i912)	Conc. Pt. (lbs)	L	00-06-06	00-06-06	154	58			n/a
3 J5 (i1196)	Conc. Pt. (lbs)	L	01-06-06	01-06-06	149	56			n/a
4 J5 (i879)	Conc. Pt. (lbs)	L	02-06-06	02-06-06	149	56			n/a
5 J5 (i972)	Conc. Pt. (lbs)	L	03-06-06	03-06-06	146	55			n/a

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	1,027 ft-lbs	12,704 ft-lbs	8.1%	1	01-08-04
Total Load Defl.	746 lbs	5,785 lbs	12.9%	1	02-06-12
Live Load Defl.	L/999 (0.005")	n/a	n/a	4	01-09-12
Max Defl.	L/999 (0.004")	n/a	n/a	5	01-09-12
Span / Depth	0.005"	n/a	n/a	4	01-09-12
	4	n/a	n/a		00-00-00

Disclosure

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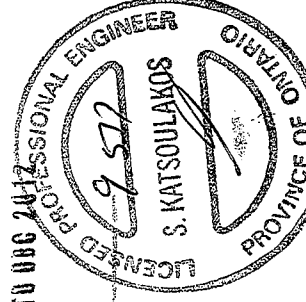
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	1,323 lbs	33.3%	17.7%	Unspecified
B1 Post	3-1/2" x 1-3/4"	1,445 lbs	36.3%	19.3%	Unspecified

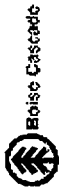
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO UBC 24-12



BOISE CASCADE
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(1909)



BC CALC® Design Report

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

September 19, 2016 15:50:38

Build 4340

File Name: S45-1.mmd

Job Name:

Description: Designs\Flush Beams\Basement\Flush Beams\B5(1909)

Address:

Specifier:

City, Province, Postal Code: INNISFILL,

Designer: AJ

Customer:

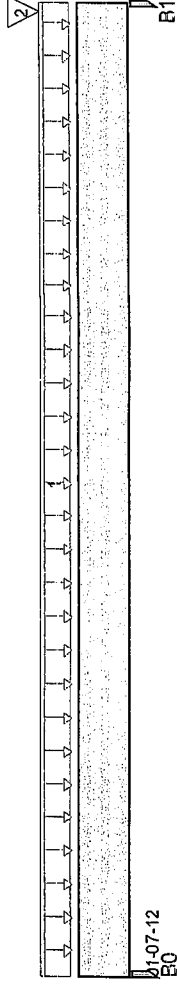
Company:

Code reports:

CCMC 12472-R

Misc:

Town of Innisfil Certified Model
03/01/2018 9:35:49 AM kgervais



Total Horizontal Product Length = 01-07-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	18 / 0	11 / 0		
B1, 1-3/4"	18 / 0	10 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-07-12	21	8			n/a
2 FC1 Floor Material	Conc. Pt. (lbs)	L	01-07-08	01-07-08	2	1			n/a

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	9 lbs	5,785 lbs	0.2%	1	01-01-00
Span / Depth	1.7	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	42 lbs	1%	0.6%	Unspecified
B1 Post	1-3/4" x 1-3/4"	40 lbs	2%	1.1%	Unspecified

Notes

Calculations assume Member is Fully Braced.

Resistance Factor phi has been applied to all presented results per CSA 086.

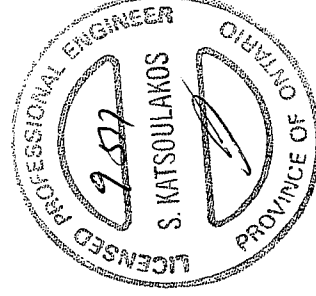
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



DWENH.YAM 4475717
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B6(12547)

BC CALC® Design Report



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

September 19, 2016 15:50:38

Build 4340

Job Name:

File Name: S45-1.mmdl

Address:

Description: Designs\Flush Beams\Basement\Flush Beams\B6(12547)

City, Province, Postal Code: INNISFILL,

Specifier:

Designer: AJ

Customer:

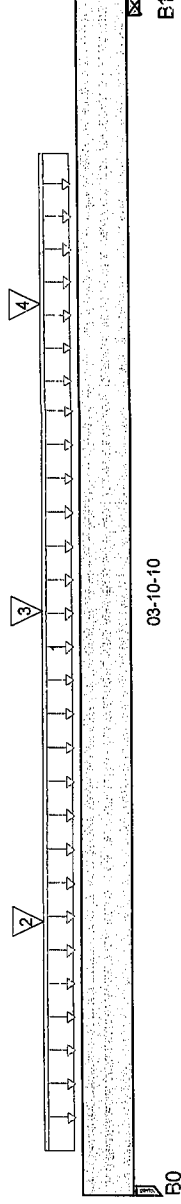
Company:

Code reports:

CCMC 12472-R

Misc:

Town of Innisfil Certified Model
03/01/2018 9:35:57 AM kgervais



Total Horizontal Product Length = 03-10-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	648 / 0	300 / 0		
B1, 5-1/2"	658 / 0	305 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 User Load	Unf. Lin. (lb/ft)	L	00-01-12	03-04-10	240	120			n/a
2 J4(878)	Conc. Pt. (lbs)	L	00-10-10	00-10-10	182	68			n/a
3 J4(877)	Conc. Pt. (lbs)	L	01-10-10	01-10-10	182	68			n/a
4 J4(1185)	Conc. Pt. (lbs)	L	02-10-10	02-10-10	164	62			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	1,286 ft-lbs	12,704 ft-lbs	10.1%	1	01-10-10
End Shear	1,258 lbs	5,785 lbs	21.7%	1	02-07-10
Total Load Defl.	L/999 (0.007")	n/a	n/a	4	01-09-03
Live Load Defl.	L/999 (0.005")	n/a	n/a	5	01-09-03
Max Defl.	0.007"	n/a	n/a	4	01-09-03
Span / Depth	4.3	n/a	n/a		00-00-00

Disclosure

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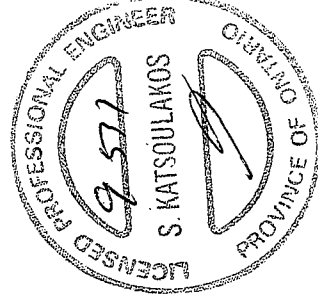
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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	1,347 lbs	67.7%	36.1%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	1,367 lbs	33.3%	11.6%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



DWG NO. TAM 44758-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B7(11968)



BC CALC® Design Report

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

September 19, 2016 15:50:39

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(11968)

Specifier:

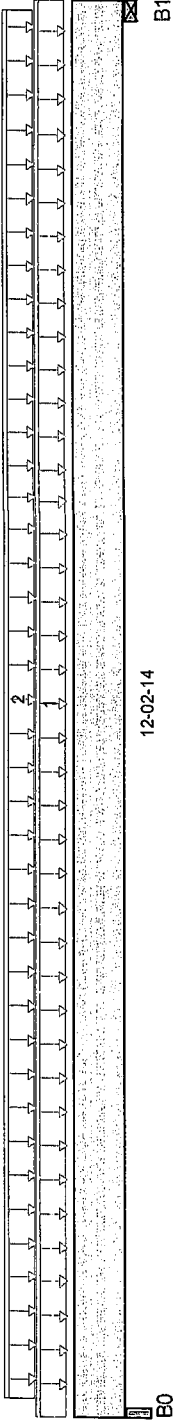
Designer: AJ

Company:

Msc:

Town of Innisfil Certified Model

03/01/2018 9:36:02 AM kgervais



Total Horizontal Product Length = 12-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,565 / 0	838 / 0		
B1, 4"	1,583 / 0	847 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf Lin. (lb/ft)	L	-00-00-00	12-02-14	11	6			n/a
2 Smoothed Load	Unf Lin. (lb/ft)	L	00-01-14	12-01-14	251	125			n/a

Controls Summary

Pos.	Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	3,039 lbs	11,571 lbs	26.3%	1	05-07-14	01-01-08
Total Load Defl.	L/414 (0.339")	0.585"	58%	4	06-01-14	06-01-14
Live Load Defl.	L/635 (0.221")	0.39"	56.7%	5	06-01-14	06-01-14
Max Defl.	0.339"	n/a	n/a	4	06-01-14	06-01-14
Span / Depth	14.8	n/a	n/a		00-00-00	

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Member	Material
B0 Beam	4" x 3-1/2"	3,395 lbs	56.8%	19.9%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	3,433 lbs	57.4%	20.1%	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 086.

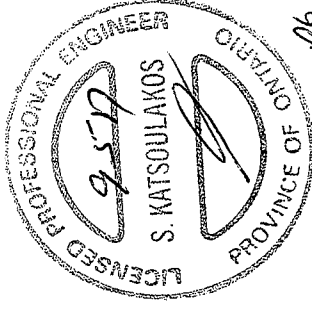
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



p6 14



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor Flush Beams (i1968)

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

September 19, 2016 15:50:39

BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs Flush Beams 1st Floor Flush Beams (i1968)

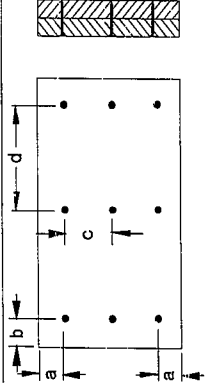
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 5407 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.

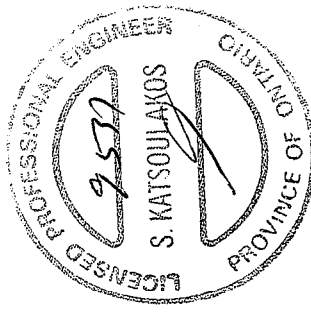
Connectors are: 16d Nails

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 engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-904-6999 before installation.

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per
DWG NO. TAM 44759-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor Flush Beams\B8(j2242)

BC CALC@ Design Report

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

September 19, 2016 15:50:39



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor Flush Beams\B8(j2242)

Specifier:

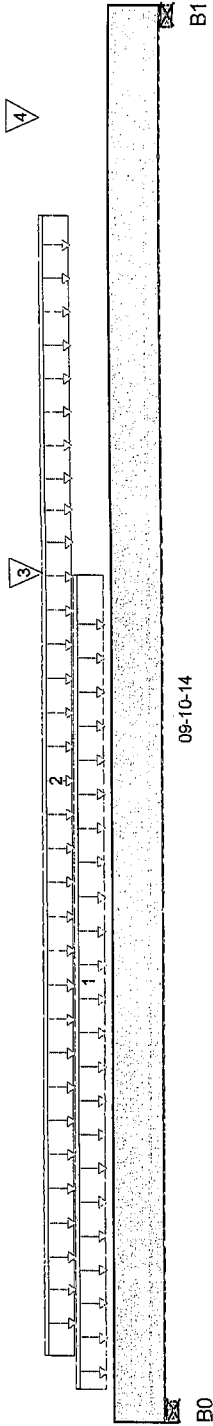
Designer: AJ

Company:

Msc:

Town of Innisfil Certified Model

03/01/2018 9:36:19 AM kgervais



Total Horizontal Product Length = 09-10-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,873 / 0	1,011 / 0		
B1, 5-1/2"	2,170 / 0	1,173 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	05-10-12	13	6			n/a
2 Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-08	08-05-08	268	134			n/a
3 B9(j2239)	Conc. Pt. (lbs)	L	05-10-12	05-10-12	1,572	851			n/a
4 J2(i1949)	Conc. Pt. (lbs)	L	09-01-08	09-01-08	257	128			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,346 ft-lbs	25,408 ft-lbs	52.5%	1	05-10-12
End Shear	4,383 lbs	11,571 lbs	37.9%	1	08-07-14
Total Load Defl.	L/427 (0.256")	0.456"	56.2%	4	05-01-08
Live Load Defl.	L/658 (0.166")	0.304"	54.7%	5	05-01-08
Max Defl.	0.256"	n/a	n/a	4	05-01-08
Span / Depth	11.5	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	4,073 lbs	49.5%	17.3%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	4,722 lbs	57.4%	20.1%	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 086.

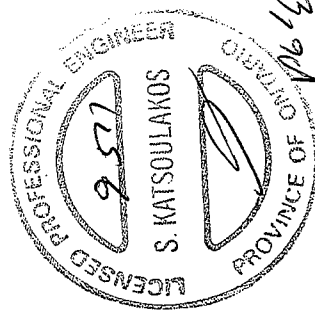
BC CALC@ analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor Flush Beams\B8(12242)



BC CALCO® Design Report

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

September 19, 2016 15:50:39

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(12242)

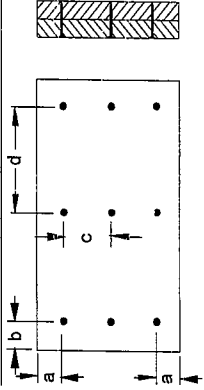
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 533.1 lb/ft

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

Connectors are: 16d

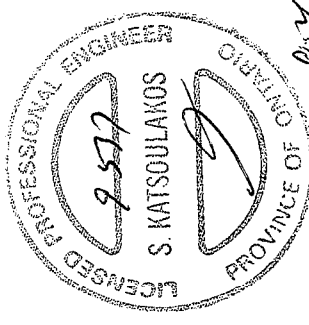
Nails

3 1/2" ARDOX SPIRAL

Disclosure

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per

DWG NO. TAM 4476017

STRUCTURAL

COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor Flush Beams\B9(j2239)



BC CALC® Design Report

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

September 19, 2016 15:50:39

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(j2239)

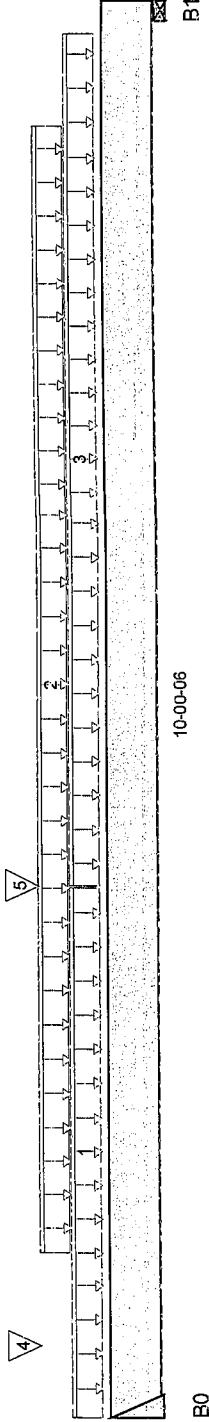
Specifier:

Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model
03/01/2018 9:36:39 AM kgervais



Total Horizontal Product Length = 10-00-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	1,564 / 0	848 / 0		
B1, 5-1/2"	978 / 0	551 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-14	151	76			n/a
2 Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-14	09-01-14	115	58			n/a
3 FC4 Floor Material	Unf. Lin. (lb/ft)	L	03-08-14	09-09-10	11	6			n/a
4 J6(1860)	Conc. Pt. (lbs)	L	00-05-14	00-05-14	114	57			n/a
5 B1 1/(2254)	Conc. Pt. (lbs)	L	03-08-14	03-08-14	876	468			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,449 ft-lbs	25,408 ft-lbs	33.3%	1	03-08-14
End Shear	2,944 lbs	11,571 lbs	25.4%	1	00-11-08
Total Load Defl.	L/651 (0.176")	0.477"	36.9%	4	04-07-14
Live Load Defl.	L/999 (0.113")	n/a	n/a	5	04-07-14
Max Defl.	0.176"	n/a	n/a	4	04-07-14
Span / Depth	12	n/a	n/a		00-00-00

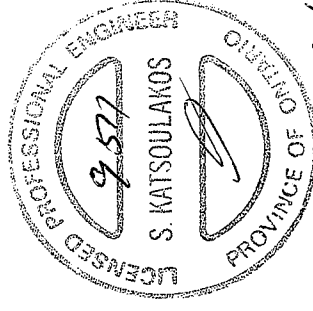
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Hanger	2" x 3-1/2"	3,407 lbs	n/a	39.9%	Hanger
B1 Wall/Plate	5-1/2" x 3-1/2"	2,156 lbs	26.2%	9.2%	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 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



pe 14

DWG NO. TAM 44764-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i2239)

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

September 19, 2016 15:50:39

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

CCMC 12472-R

File Name: S45-1.mmdl

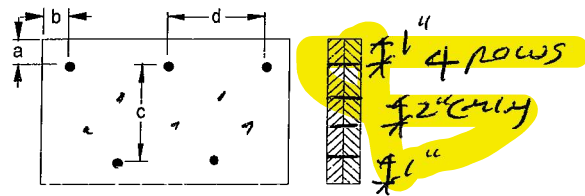
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i2239)

Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram

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

Calculated Side Load = 226.6 lb/ft

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

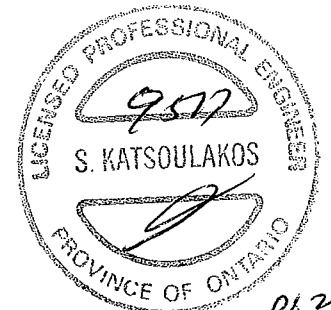
Connectors are:

Nails:

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

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE 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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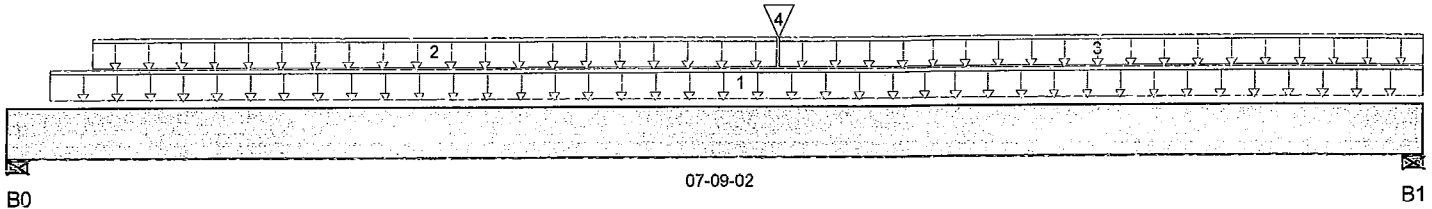
BWG NO. TAM 44761-17
 STRUCTURAL
 COMPONENT ONLY

Build 4340
Job Name:
Address:
City, Province, Postal Code: INNISFILL,
Customer:
Code reports: CCMC 12472-R

File Name: S45-1.mmdl
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i2264)
Specifier:
Designer: AJ
Company:
Misc:

Town of Innisfil Certified Model

03/01/2018 9:36:45 AM kgervais



Total Horizontal Product Length = 07-09-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,201 / 0	633 / 0		
B1, 2-3/4"	890 / 0	478 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	07-09-02	26	13			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-05-08	04-02-06	240	120			n/a
3	FC4 Floor Material	Unf. Lin. (lb/ft)	L	04-02-06	07-09-02	28	14			n/a
4	B11(i2254)	Conc. Pt. (lbs)	L	04-02-06	04-02-06	901	479			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,808 ft-lbs	12,704 ft-lbs	45.7%	1	04-02-06
End Shear	2,126 lbs	5,785 lbs	36.7%	1	01-03-00
Total Load Defl.	L/634 (0.136")	0.36"	37.8%	4	03-11-01
Live Load Defl.	L/999 (0.089")	n/a	n/a	5	03-11-01
Max Defl.	0.136"	n/a	n/a	4	03-11-01
Span / Depth	9.1	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 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	5-1/2" x 1-3/4"	2,593 lbs	63.1%	22.1%	Unspecified
B1 Wall/Plate	2-3/4" x 1-3/4"	1,933 lbs	94%	32.9%	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 CSA086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO DBC 2012

DWG NO. TAM4476217
STRUCTURAL
COMPONENT ONLY



BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i2254)

Specifier:

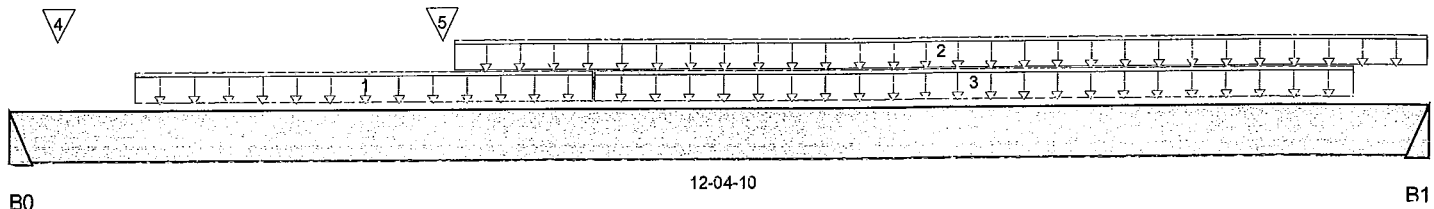
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:36:49 AM kgervais



Total Horizontal Product Length = 12-04-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	877 / 0	468 / 0		
B1	895 / 0	476 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-00	05-01-00	120	60			n/a
2	FC4 Floor Material	Unf. Lin. (lb/ft)	L	03-10-06	12-04-10	79	40			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	05-01-00	11-09-00	70	34			n/a
4	J6(i1930)	Conc. Pt. (lbs)	L	00-05-00	00-05-00	113	57			n/a
5	FC4 Floor Material	Conc. Pt. (lbs)	L	03-09-00	03-09-00	36	18			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,168 ft-lbs	12,704 ft-lbs	48.6%	1	05-09-00
End Shear	1,770 lbs	5,785 lbs	30.6%	1	11-05-02
Total Load Defl.	L/315 (0.464")	0.609"	76.2%	4	06-03-00
Live Load Defl.	L/482 (0.303")	0.406"	74.7%	5	06-03-00
Max Defl.	0.464"	n/a	n/a	4	06-03-00
Span / Depth	15.4	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"	1,900 lbs	n/a	44.5%	Hanger
B1 Hanger	2" x 1-3/4"	1,937 lbs	n/a	45.4%	Hanger

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 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Deflections less than 1/8" were ignored in the results.

Disclosure

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CONFORMS TO DBC 2012

DWG NO. TAM44763-17
 STRUCTURAL
 COMPONENT ONLY





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14(i2290)

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

September 19, 2016 15:50:40

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B14(i2290)

Specifier:

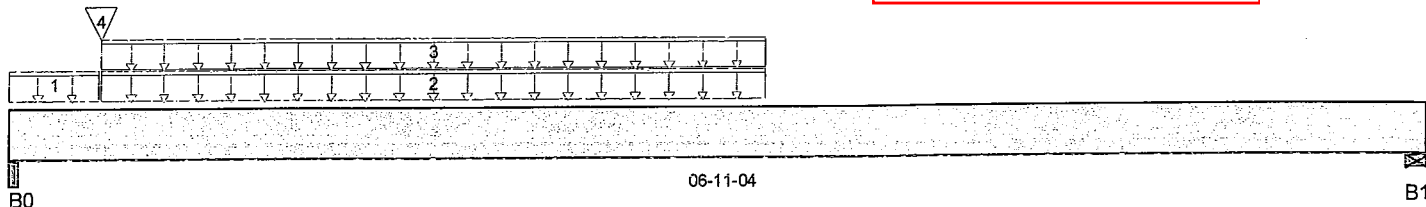
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:36:54 AM kgervais



Total Horizontal Product Length = 06-11-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	162 / 0	382 / 0	276 / 0	
B1, 5-1/2"	55 / 0	162 / 0	104 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-04	26	13			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-05-04	03-08-04	33	130	117		n/a
3	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	03-08-04	29	15			n/a
4	FC4 Floor Material	Conc. Pt. (lbs)	L	00-05-04	00-05-04	4				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,192 ft-lbs	24,542 ft-lbs	4.9%	13	02-10-02
End Shear	634 lbs	11,571 lbs	5.5%	13	01-02-12
Total Load Defl.	L/999 (0.011")	n/a	n/a	45	03-02-11
Live Load Defl.	L/999 (0.005")	n/a	n/a	61	03-02-11
Max Defl.	0.011"	n/a	n/a	45	03-02-11
Span / Depth	7.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5-1/4" x 3-1/2"	973 lbs	12.4%	4.3%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	387 lbs	4.7%	1.6%	Unspecified

Notes



BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B14(i2290

Specifier:

Designer: AJ

Company:

Misc:

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

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

Calculation assumes member is partially braced. See engineering report for the unbraced length.

Resistance Factor phi has been applied to all presented results per CSA 086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

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

Deflections less than 1/8" were ignored in the results.

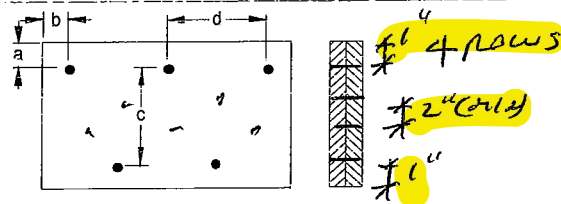
CONFORMS TO OBC 2012

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 engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-984-6999 before installation.

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Connection Diagram



a minimum = 2" c = 5-1/2"
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



DWG NO. TAM 44764-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B12 DR(i2202)

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

September 19, 2016 15:50:40

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B12

Specifier:

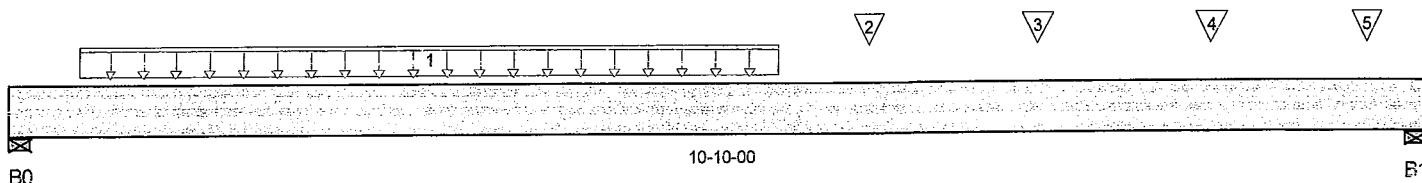
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:37:07 AM kgervais



Total Horizontal Product Length = 10-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,851 / 0	974 / 0		
B1, 4"	2,075 / 0	1,088 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-06	05-10-06	381	190			n/a
2	-	Conc. Pt. (lbs)	L	06-06-06	06-06-06	499	249			n/a
3	-	Conc. Pt. (lbs)	L	07-10-06	07-10-06	501	250			n/a
4	-	Conc. Pt. (lbs)	L	09-02-06	09-02-06	470	235			n/a
5	-	Conc. Pt. (lbs)	L	10-04-09	10-04-09	424	212			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,891 ft-lbs	25,408 ft-lbs	42.9%	1	05-02-06
End Shear	3,980 lbs	11,571 lbs	34.4%	1	01-01-08
Total Load Defl.	L/425 (0.291")	0.515"	56.5%	4	05-04-06
Live Load Defl.	L/648 (0.191")	0.343"	55.6%	5	05-04-06
Max Defl.	0.291"	n/a	n/a	4	05-04-06
Span / Depth	13	n/a	n/a		00-00-00

Bearing Supports

B0	Wall/Plate	4" x 3-1/2"	3,994 lbs	43.9%	23.4%	Unspecified
B1	Wall/Plate	4" x 3-1/2"	4,473 lbs	49.2%	26.2%	Unspecified

Notes

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

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

Calculation assumes member is partially braced. See engineering report for the unbraced length.

Resistance Factor phi has been applied to all presented results per CSA086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO DBC 2012



DWG NO. TAM 4476517
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B12 DR(i2202)

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

September 19, 2016 15:50:40

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B1

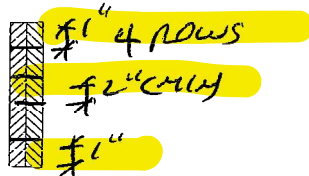
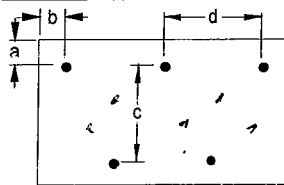
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

3/4" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 4476517
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B13 DR(i2170)

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

September 19, 2016 15:50:40

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B13

Specifier:

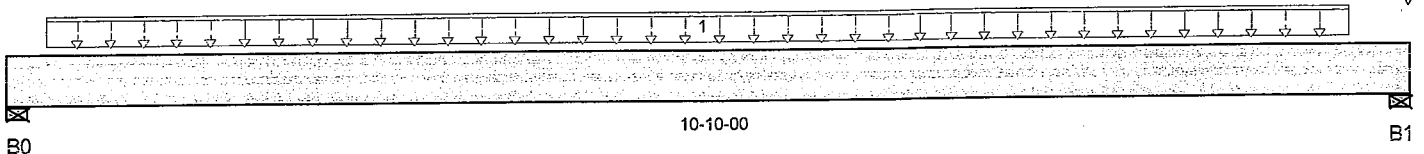
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:37:20 AM kgervais



Total Horizontal Product Length = 10-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,985 / 0	1,042 / 0		
B1, 4"	2,109 / 0	1,104 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-03-10	10-04-06	380	190			n/a
2	J2(i1915)	Conc. Pt. (lbs)	L	10-09-10	10-09-10	268	134			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,748 ft-lbs	25,408 ft-lbs	42.3%	1	05-08-06
End Shear	3,892 lbs	11,571 lbs	33.6%	1	09-08-08
Total Load Defl.	L/427 (0.289")	0.515"	56.2%	4	05-05-11
Live Load Defl.	L/651 (0.19")	0.343"	55.3%	5	05-05-11
Max Defl.	0.289"	n/a	n/a	4	05-05-11
Span / Depth	13	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	4,281 lbs	47.1%	25.1%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	4,543 lbs	50%	26.6%	Unspecified

Notes

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

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

Calculation assumes member is partially braced. See engineering report for the unbraced length.

Resistance Factor phi has been applied to all presented results per CSA086.

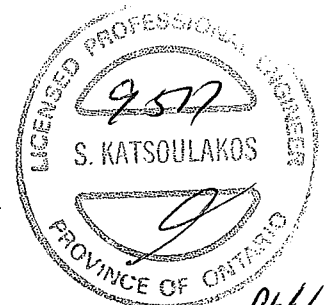
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO DBC 2012



DWG NO. TAM 4476617
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B13 DR(i2170)

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

September 19, 2016 15:50:40

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B1

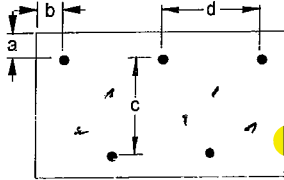
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

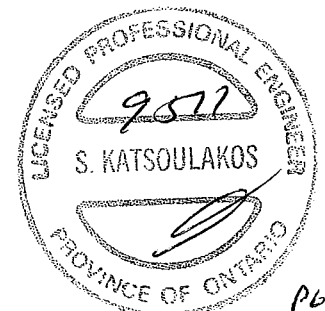
Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 4476617
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B15(i2870)

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

September 19, 2016 16:14:54

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1 EL-B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B15(i2870)

Specifier:

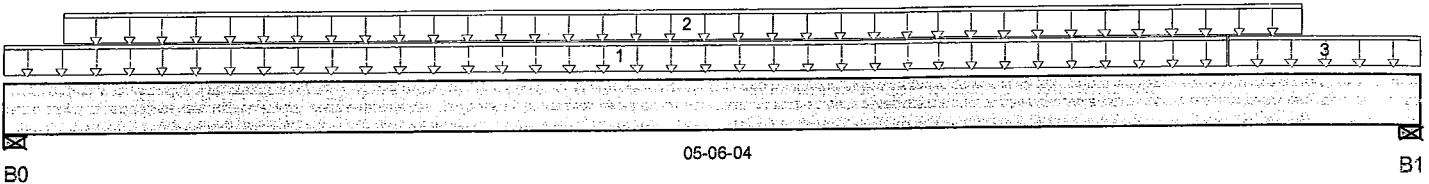
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:38:57 AM kgervais



Total Horizontal Product Length = 05-06-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	122 / 0	323 / 0	377 / 0	
B1, 5-1/2"	127 / 0	328 / 0	377 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	-00-00-00	04-09-04	6	3			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-02-12	05-00-12	44	120	156		n/a
3	FC4 Floor Material	Unf. Lin. (lb/ft)	L	04-09-04	05-06-04	11				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,304 ft-lbs	25,408 ft-lbs	5.1%	13	02-07-12
End Shear	697 lbs	11,571 lbs	6%	13	04-03-04
Total Load Defl.	L/999 (0.009")	n/a	n/a	45	02-07-12
Live Load Defl.	L/999 (0.005")	n/a	n/a	61	02-07-12
Max Defl.	0.009"	n/a	n/a	45	02-07-12
Span / Depth	6.3	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/4" x 3-1/2"	1,031 lbs	20%	8.8%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,039 lbs	10.1%	4.4%	Unspecified

Notes

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

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

Calculations assume Member is Fully Braced.

Resistance Factor phi has been applied to all presented results per CSA086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

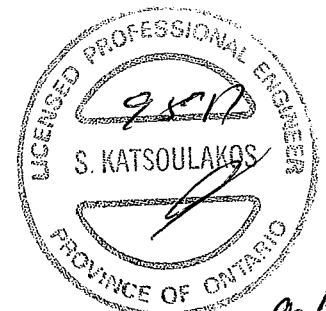
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO DBC 2012





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B15(i2870)

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

September 19, 2016 16:14:54

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

CCMC 12472-R

File Name: S45-1 EL-B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B15(i2870)

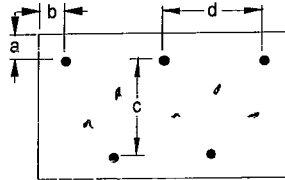
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



#1 4 rows
#2 4 rows
#1"

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

Member has no side loads.

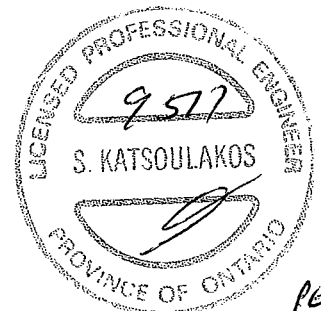
Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 4476217
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16(i2979)

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

September 19, 2016 16:14:54

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1 EL-B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i2979;

Specifier:

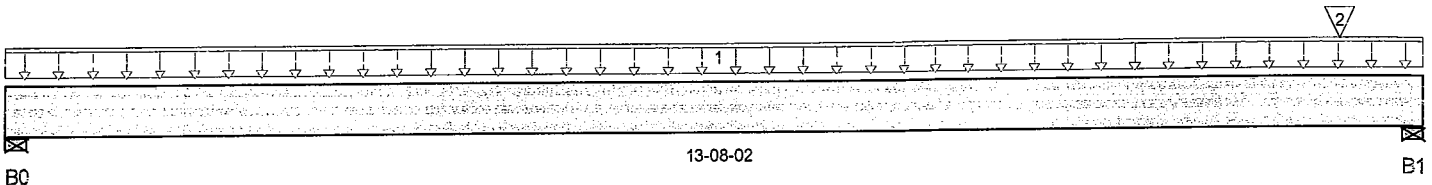
Designer: AJ

Company:

Misc:

Town of Innisfil Certified Model

03/01/2018 9:39:10 AM kgervais



Total Horizontal Product Length = 13-08-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	175 / 0	159 / 0	40 / 0	
B1, 2-3/4"	381 / 0	345 / 0	779 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-08-02	24	12			n/a
2	User Load	Conc. Pt. (lbs)	L	12-10-06	12-10-06	231	210	819		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,713 ft-lbs	25,408 ft-lbs	6.7%	1	07-07-08
End Shear	1,328 lbs	11,571 lbs	11.5%	13	12-07-14
Total Load Defl.	L/999 (0.083")	n/a	n/a	35	07-01-00
Live Load Defl.	L/999 (0.048")	n/a	n/a	51	07-03-03
Max Defl.	0.083"	n/a	n/a	35	07-01-00
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
B0 Wall/Plate	4-3/8" x 3-1/2"	482 lbs	5.9%	2.6%	Unspecified
B1 Wall/Plate	2-3/4" x 3-1/2"	1,790 lbs	34.8%	15.2%	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 CSA086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

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

Deflections less than 1/8" were ignored in the results.

CONFORMS TO DBC 2012



P612

DWG NO. TAM 4476917
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B16(i2979)

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

September 19, 2016 16:14:54

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S45-1 EL-B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i2979

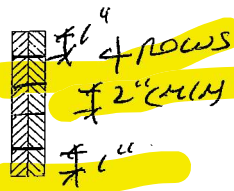
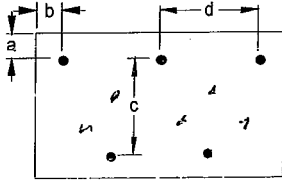
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

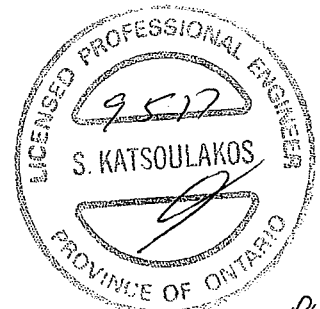
Connectors are: 16d Nails

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 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.

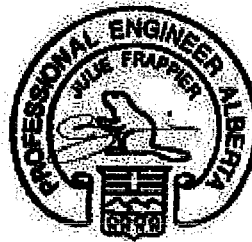
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-KIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.



DWG NO. TAM 4476817
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Maximum Floor Spans

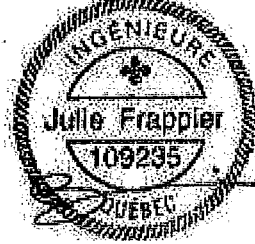
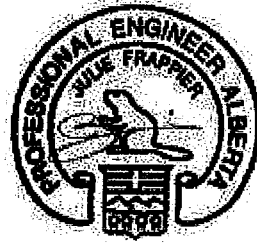
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing



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

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

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



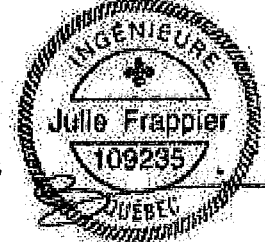
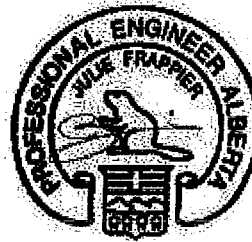
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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.



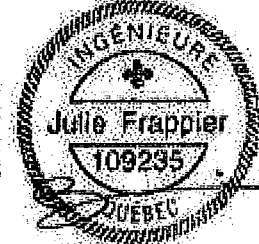
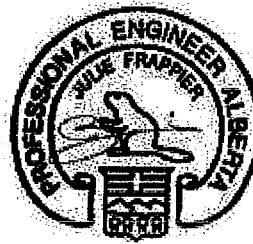
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

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

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

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

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

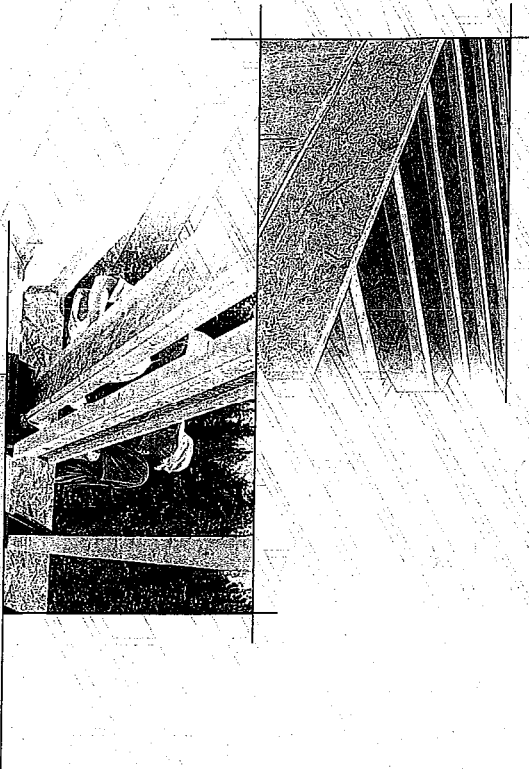
NORDIC

ENGINEERED WOOD



INSTALLATION GUIDE

FOR RESIDENTIAL FLOORS



Distributed by:



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:

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



1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.

2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.

■ Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.

■ Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.

3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.

4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.

5. Never install a damaged I-joist.

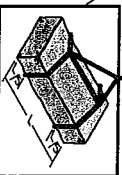
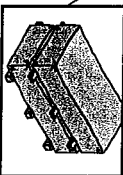
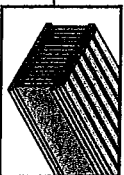
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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



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



MAXIMUM FLOOR SPANS

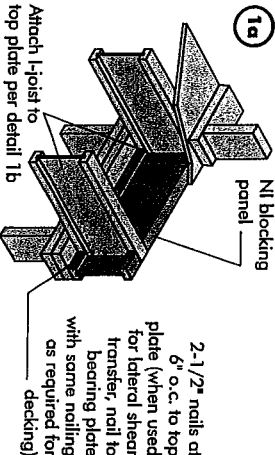
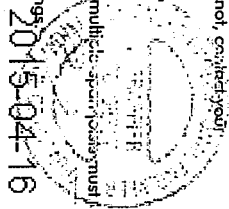
- Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

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"
NL-20		5.1	4.2	3.9	3.5	16.3	13.4	12.0	10.7
		16.1	15.2	14.8	14.9	17.5	16.5	15.0	13.5
		17.1	16.4	16.1	16.1	18.7	17.7	16.4	15.1
		18.1	17.4	17.4	17.5	19.9	18.9	17.6	16.1
		19.1	18.5	18.2	18.2	21.1	20.2	18.9	17.4
		20.2	19.7	19.6	19.7	22.3	21.4	20.2	18.9
		21.1	20.6	20.5	20.6	23.5	22.6	21.4	20.2
		22.1	21.5	21.4	21.5	24.7	23.8	22.6	21.4
		23.1	22.5	22.4	22.5	25.9	25.0	23.8	22.6
		24.1	23.5	23.4	23.5	27.1	26.2	25.0	23.8
NL-24		6.1	5.0	4.5	4.0	18.4	15.3	13.8	12.5
		18.1	17.0	16.5	16.6	20.0	18.9	17.5	16.2
		19.1	18.0	17.4	17.5	21.3	20.3	18.9	17.6
		20.2	19.5	19.6	19.7	22.5	21.6	20.3	19.0
		21.1	20.4	20.4	20.5	23.7	22.8	21.6	20.4
		22.1	21.3	21.3	21.4	24.9	24.0	22.8	21.6
		23.1	22.3	22.3	22.4	26.1	25.2	24.0	22.8
		24.1	23.3	23.3	23.4	27.3	26.4	25.2	24.0
		25.1	24.3	24.3	24.4	28.5	27.6	26.4	25.2
		26.1	25.3	25.3	25.4	29.7	28.8	27.6	26.4
NL-28		7.1	5.8	5.2	4.6	20.5	17.3	15.8	14.5
		20.5	19.0	18.4	18.5	22.7	21.6	20.3	19.0
		21.7	20.0	19.4	19.5	24.0	22.9	21.7	20.5
		22.1	20.5	19.4	19.5	25.3	24.2	23.0	21.7
		23.1	21.5	20.5	20.6	26.5	25.4	24.2	23.0
		24.1	22.5	21.5	21.6	27.7	26.6	25.4	24.2
		25.1	23.5	22.5	22.6	28.9	27.8	26.6	25.4
		26.1	24.5	23.5	23.6	30.1	29.0	27.8	26.6
		27.1	25.5	24.5	24.6	31.3	30.2	29.0	27.8
		28.1	26.5	25.5	25.6	32.5	31.4	30.2	29.0
NL-36		8.1	6.5	5.8	5.1	22.6	19.3	17.8	16.5
		22.6	20.0	19.4	19.5	24.7	23.6	22.3	21.0
		23.6	21.0	20.4	20.5	25.9	24.8	23.6	22.3
		24.6	22.0	21.4	21.5	27.1	26.0	24.8	23.6
		25.6	23.0	22.4	22.5	28.3	27.2	26.0	24.8
		26.6	24.0	23.4	23.5	29.5	28.4	27.2	26.0
		27.6	25.0	24.4	24.5	30.7	29.6	28.4	27.2
		28.6	26.0	25.4	25.5	31.9	30.8	29.6	28.4
		29.6	27.0	26.4	26.5	33.1	32.0	30.8	29.6
		30.6	28.0	27.4	27.5	34.3	33.2	32.0	30.8
NL-40		9.1	7.2	6.4	5.6	24.7	21.3	19.8	18.5
		24.7	21.0	20.4	20.5	26.7	25.6	24.3	23.0
		25.7	22.0	21.4	21.5	27.9	26.8	25.6	24.3
		26.7	23.0	22.4	22.5	29.1	28.0	26.8	25.6
		27.7	24.0	23.4	23.5	30.3	29.2	28.0	26.8
		28.7	25.0	24.4	24.5	31.5	30.4	29.2	28.0
		29.7	26.0	25.4	25.5	32.7	31.6	30.4	29.2
		30.7	27.0	26.4	26.5	33.9	32.8	31.6	29.2
		31.7	28.0	27.4	27.5	35.1	34.0	32.8	31.6
		32.7	29.0	28.4	28.5	36.3	35.2	34.0	32.8

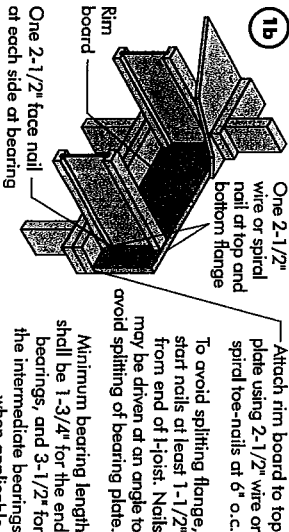
INSTALLING NORDIC I-JOISTS

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



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

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



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

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

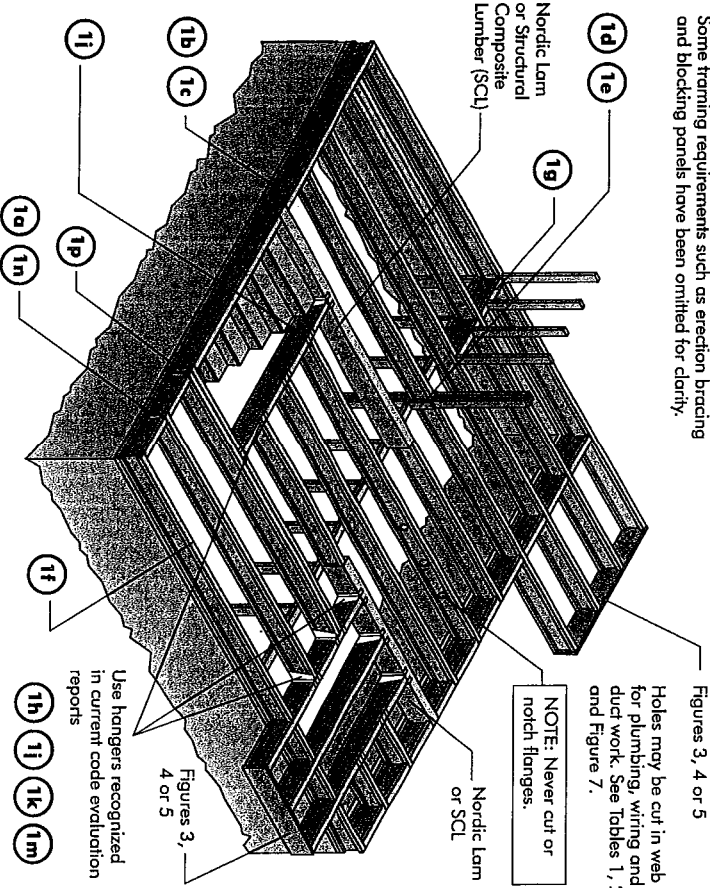
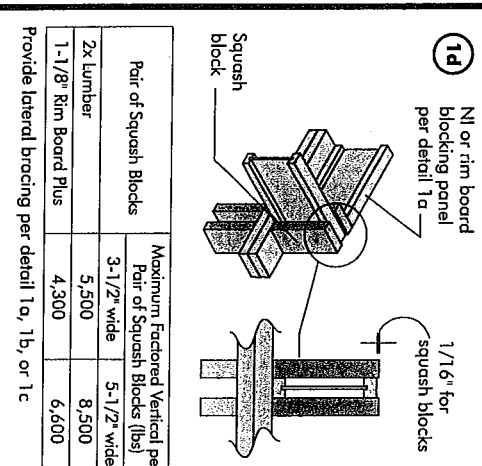
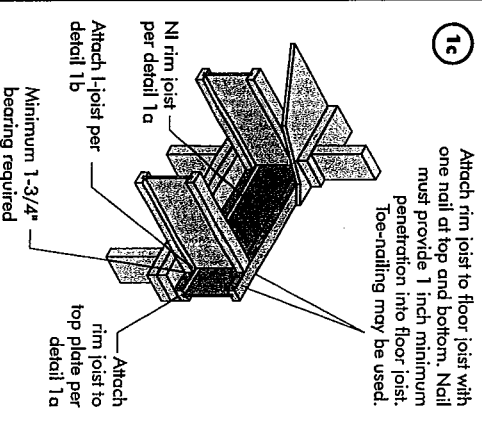


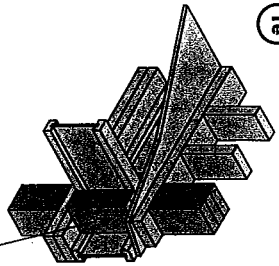
FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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

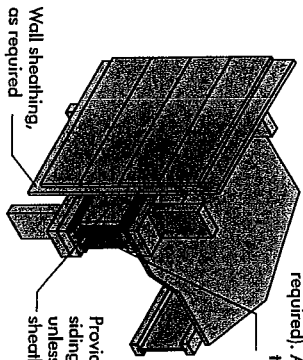


Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

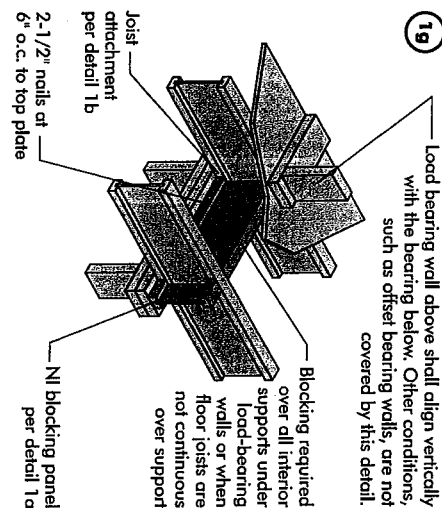
Provide lateral bracing per detail 1a, 1b, or 1c



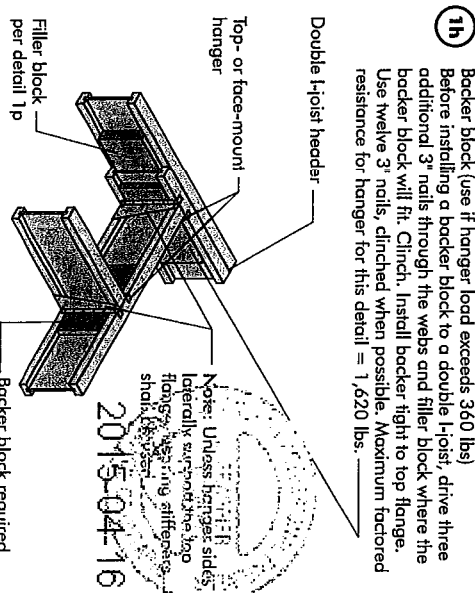
Transfer load from above to bearing below. Install squish blocks per detail 1d. Match bearing area of blocks below to post above.



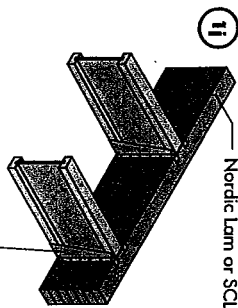
Use single I-joist for loads up to 3,300 pcf. double I-joists for loads up to 6,600 pcf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.



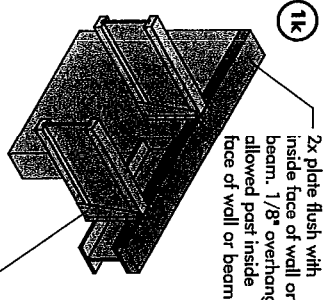
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.



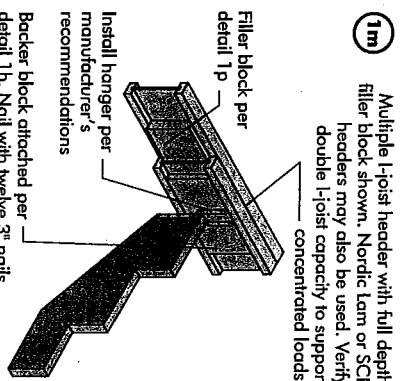
Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.



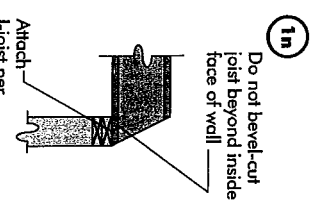
Nordic Lam or SCL installed per manufacturer's recommendations.



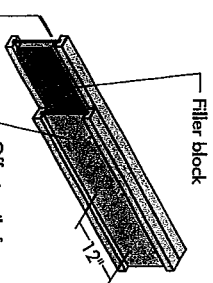
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.



Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.



Do not bevel-cut joist beyond inside face of wall.



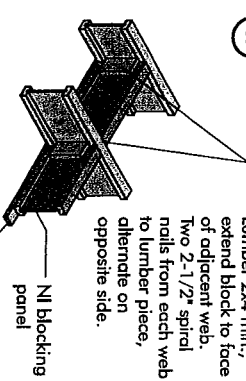
Filler block. Offset nails from opposite face by 6".

Notes:

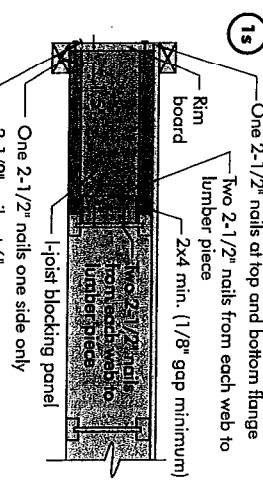
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8" to 1/4" gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. Nail joists together with two rows of 3" nails at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

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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



Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side.

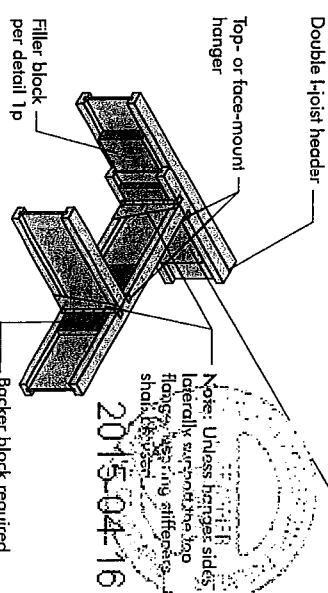


One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to 2x4 min. (1/8" gap minimum) lumber piece. Two 2-1/2" nails from each web to I-joist blocking panel.

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".

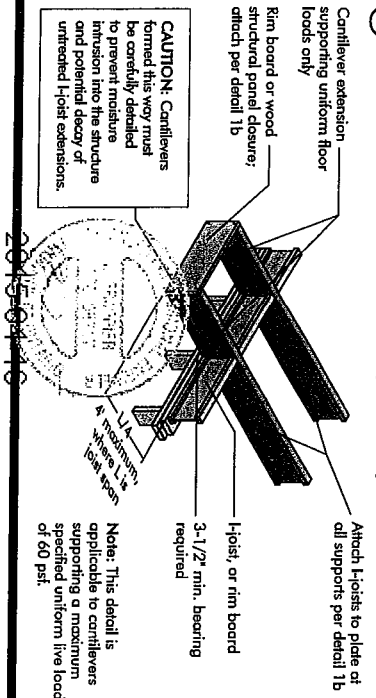


Double I-joist header. Top- or face-mount hanger. Filler block. Backer block required (both sides for face-mount hangers).

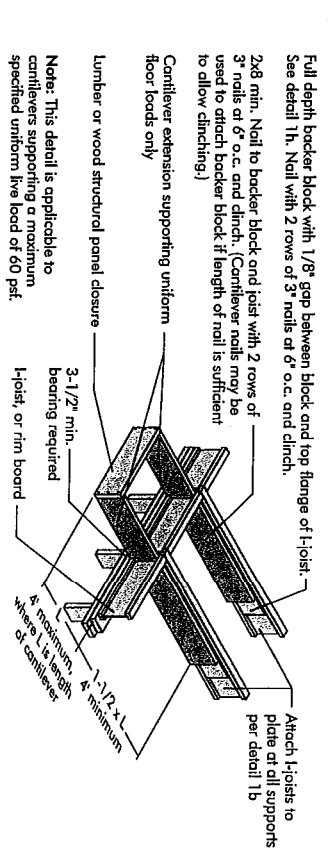
Notes:
- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

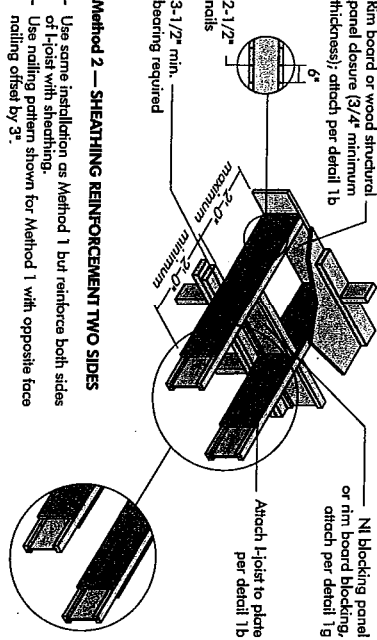


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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

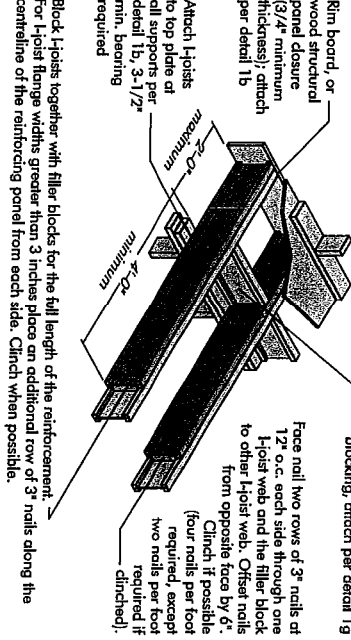
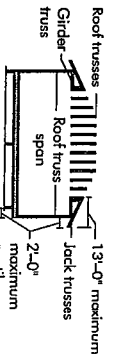
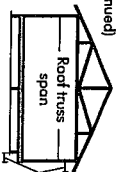


FIGURE 4 (continued)
See table below for NI reinforcement requirements of cantilever.



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

CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)			
		LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	
		JOIST SPACING (in.)	JOIST SPACING (in.)	JOIST SPACING (in.)	
12	12	16	19.2	24	24
16	16	19.2	24	24	24
20	20	24	24	24	24
24	24	24	24	24	24
28	28	24	24	24	24
32	32	24	24	24	24
36	36	24	24	24	24
40	40	24	24	24	24
44	44	24	24	24	24
48	48	24	24	24	24
52	52	24	24	24	24
56	56	24	24	24	24
60	60	24	24	24	24
64	64	24	24	24	24
68	68	24	24	24	24
72	72	24	24	24	24
76	76	24	24	24	24
80	80	24	24	24	24
84	84	24	24	24	24
88	88	24	24	24	24
92	92	24	24	24	24
96	96	24	24	24	24
100	100	24	24	24	24

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. NI = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
5. For hip roofs with the joist 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.

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centerline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centered 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.

See Table 1 for minimum distance from bearing

2x diameter of larger hole

2x duct chase — length or hole diameter, whichever is larger

Duct chase opening (see Table 2 for minimum distance from bearing)

Knockouts

See rule 12

Maintain minimum 1/8" space between top and bottom flange — all duct chase openings and holes

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.



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

holes in webs should be cut with a sharp saw.

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

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

[illegible]

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

2. Hole location distance is measured from inside face of supports to centre of hole
3. Distances in this chart are based on uniformly loaded joists.

OPTIONAL:

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

$$\text{Reduced } D = \frac{\text{Actual } D}{2} \times \text{span ratio}$$

$$D_{\text{reduced}} = \frac{L_{\text{actual}}}{L_{\text{actual}} + D_{\text{actual}}} \times D_{\text{actual}}$$

Where:

D
reduced

Lactual
SAFE

7 9

Distance from the inside face of any support to centre of hole, reduced for less-than-maximum distance shall not be less than 6 inches from the face of the support to side of the hole. The actual measured span distance between the inside faces of supports (R).

Span Adjustment Factor, given in this table.

The minimum distance from the inside face of any support to centre of hole from this table if actual is greater than 1, use 1 in the above calculation for $\frac{\text{SAF}}{\text{SAF}}$.

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)											
		8	10	12	14	16	18	20	22	24			
12	441	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	442	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	443	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	444	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	445	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	446	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	447	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	448	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	449	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	450	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	451	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	452	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	453	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	454	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	455	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	456	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	457	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	458	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	459	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	460	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	461	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	462	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	463	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	464	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	465	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	466	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	467	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	468	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	469	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	470	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	471	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	472	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	473	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			
12	474	7.5	7.5	7.0	6.75	5.9	5.1	4.6	4.1	3.5			

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

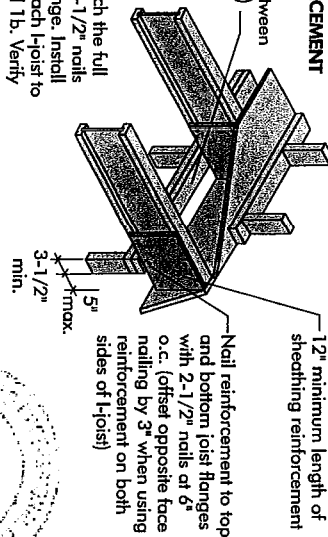
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BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

5a SHEATHING REINFORCEMENT

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

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

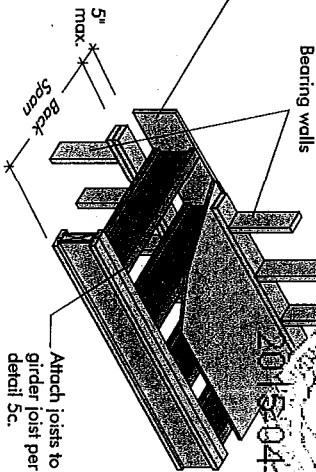


5b SET-BACK DETAIL

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

Notes:

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



5c SET-BACK CONNECTION

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

Alternate for opposite side.

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

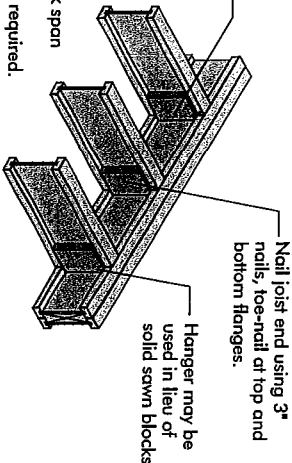
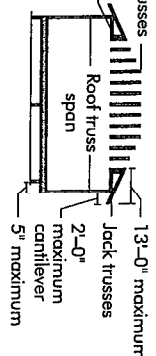
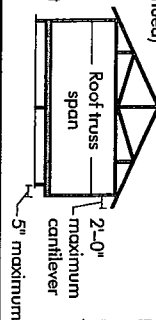


FIGURE 5 (continued)

See table below for NI reinforcement requirements at cantilever.



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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

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

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in.)		Minimum Panel Thickness (in.)	Nail Size and Type		Maximum Spacing of Fasteners	
			Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges Intern. Supports
16	5/8	2"	1-3/4"	2"	6"	12"
20	5/8	2"	1-3/4"	2"	6"	12"
24	3/4	2"	1-3/4"	2"	6"	12"

1. Fasteners of sheathing and subflooring shall conform to the above table.
2. Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
3. Flooring screws shall not be less than 1/8-inch in diameter.
4. Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
5. Use only adhesives conforming to CAN/CGSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

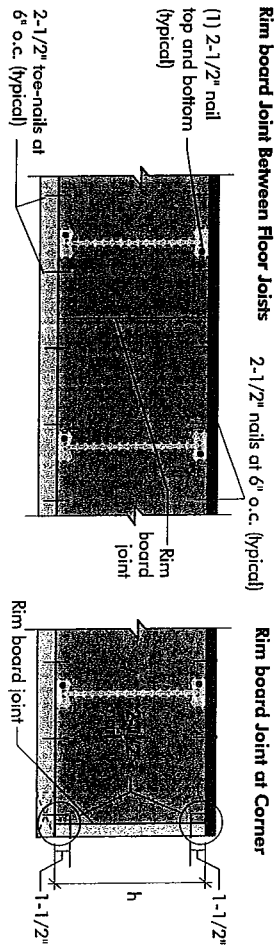
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

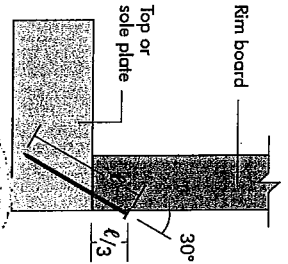
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

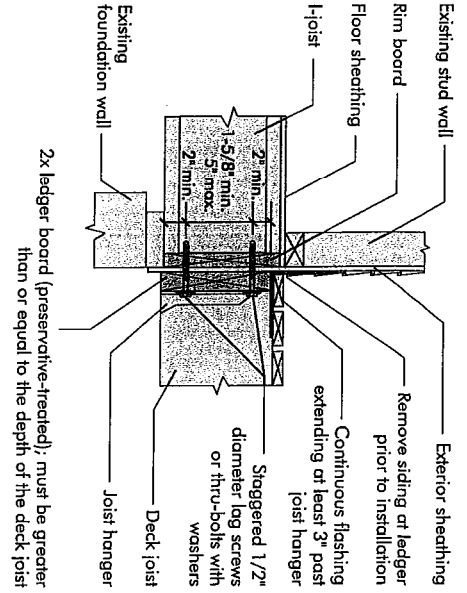
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL

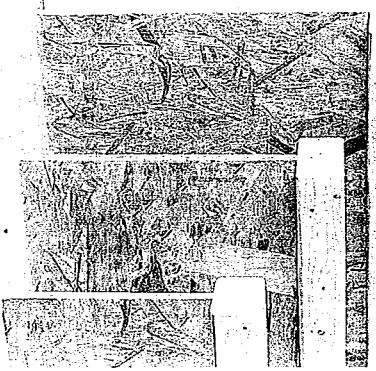


2015-04-16

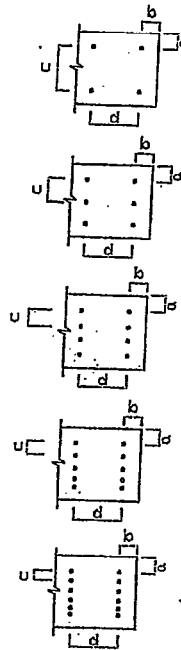
PRODUCT WARRANTY

Changma guarantees that, in accordance with our specifications, *Novus* products are free from manufacturing defects in material and workmanship.

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



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