

Town of Innisfil Certified Model
05/01/2018 10:57:12 AM kgervais



FROM PLAN DATED: NOV. 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA

MODEL: S32-4-10

ELEVATION: A,B

LOT:

CITY: INNISFIL, ON

SALESMAN: MARIO

DESIGNER: CZ

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.

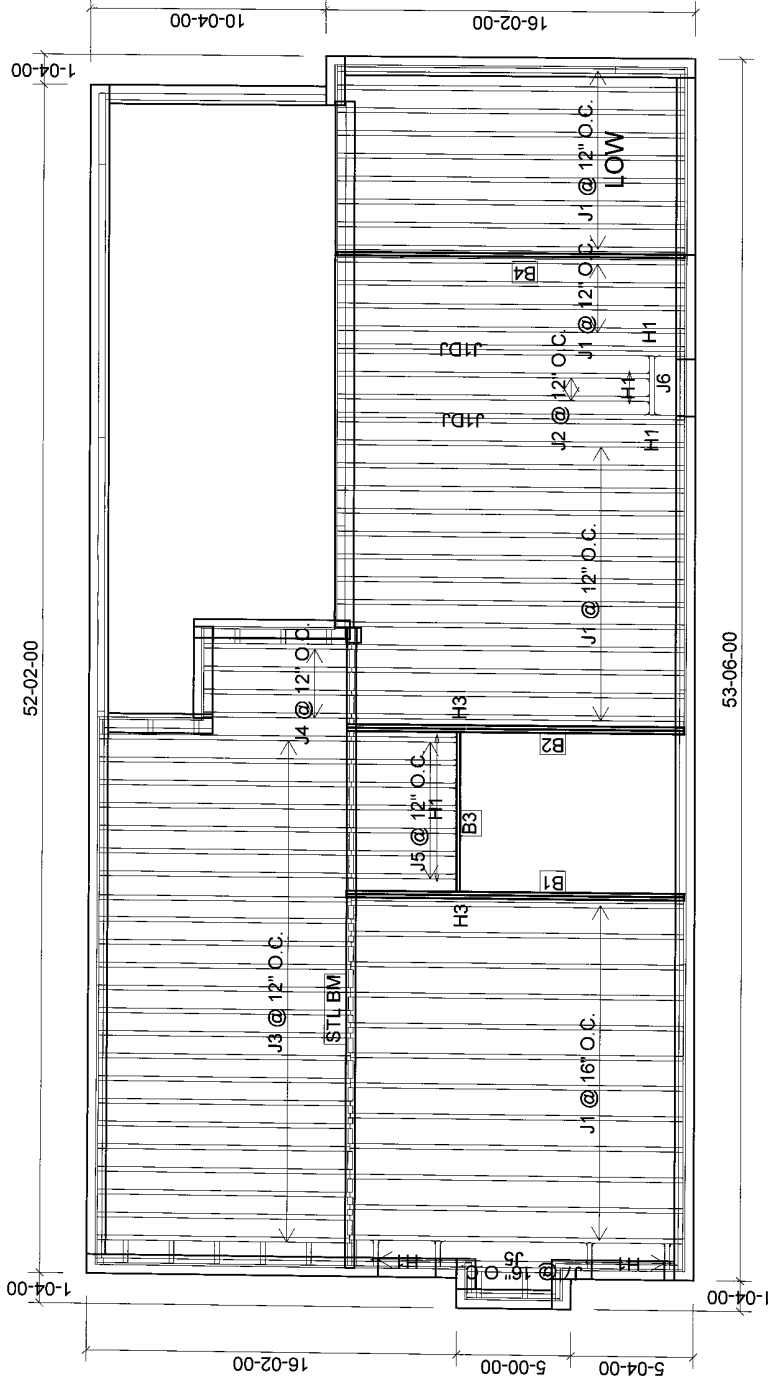
LOADING:
DESIGN LOADS: L/480,000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILED AREAS: 20 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 11/09/2017

1st FLOOR

STANDARD



Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H3	HUS1.81/10

Products			
PlotID	Length	Product	Plies Net Qty
J1	16'-00"-00	9 1/2" NI-40x	1 38
J1DJ	16'-00"-00	9 1/2" NI-40x	2 4
J2	14'-00"-00	9 1/2" NI-40x	1 2
J3	12'-00"-00	9 1/2" NI-40x	1 23
J4	8'-00"-00	9 1/2" NI-40x	1 4
J5	6'-00"-00	9 1/2" NI-40x	1 8
J6	4'-00"-00	9 1/2" NI-40x	1 1
J7	2'-00"-00	9 1/2" NI-40x	1 4
B4	16'-00"-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1
B1	16'-00"-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B2	16'-00"-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B3	8'-00"-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1



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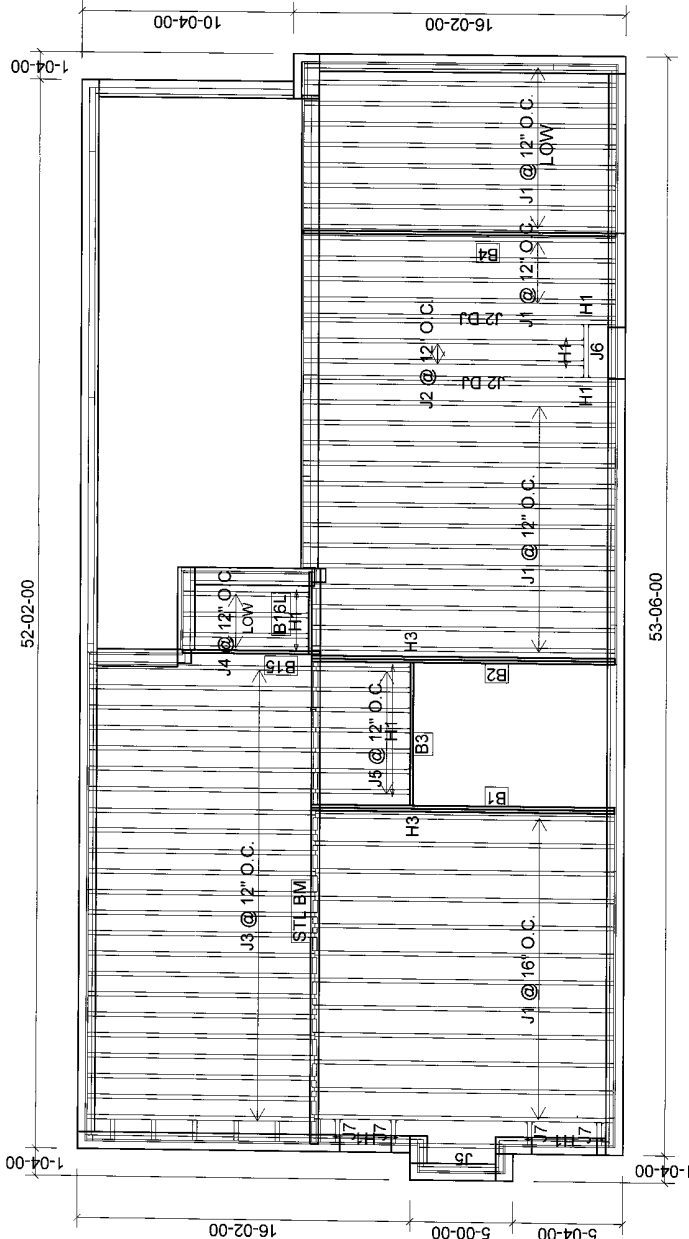
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TILED AREAS: 20 lb/ft

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DATE: 11/09/2017

1st FLOOR

SUNKEN



Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H3	HUS1.81/10

Products			
PlotID	Length	Product	Plies Net Qty
J1	16-00-00	9 1/2" NI-40x	1 38
J2 DJ	16-00-00	9 1/2" NI-40x	2 4
J3	14-00-00	9 1/2" NI-40x	1 2
J4	12-00-00	9 1/2" NI-40x	1 23
J5	8-00-00	9 1/2" NI-40x	1 4
J6	6-00-00	9 1/2" NI-40x	1 8
J7	4-00-00	9 1/2" NI-40x	1 1
B4	2-00-00	9 1/2" NI-40x	1 4
B1	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1
B2	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B15	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2 2
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1
B16L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1
	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1 1



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DEAD LOAD: 15.0 lb/ft

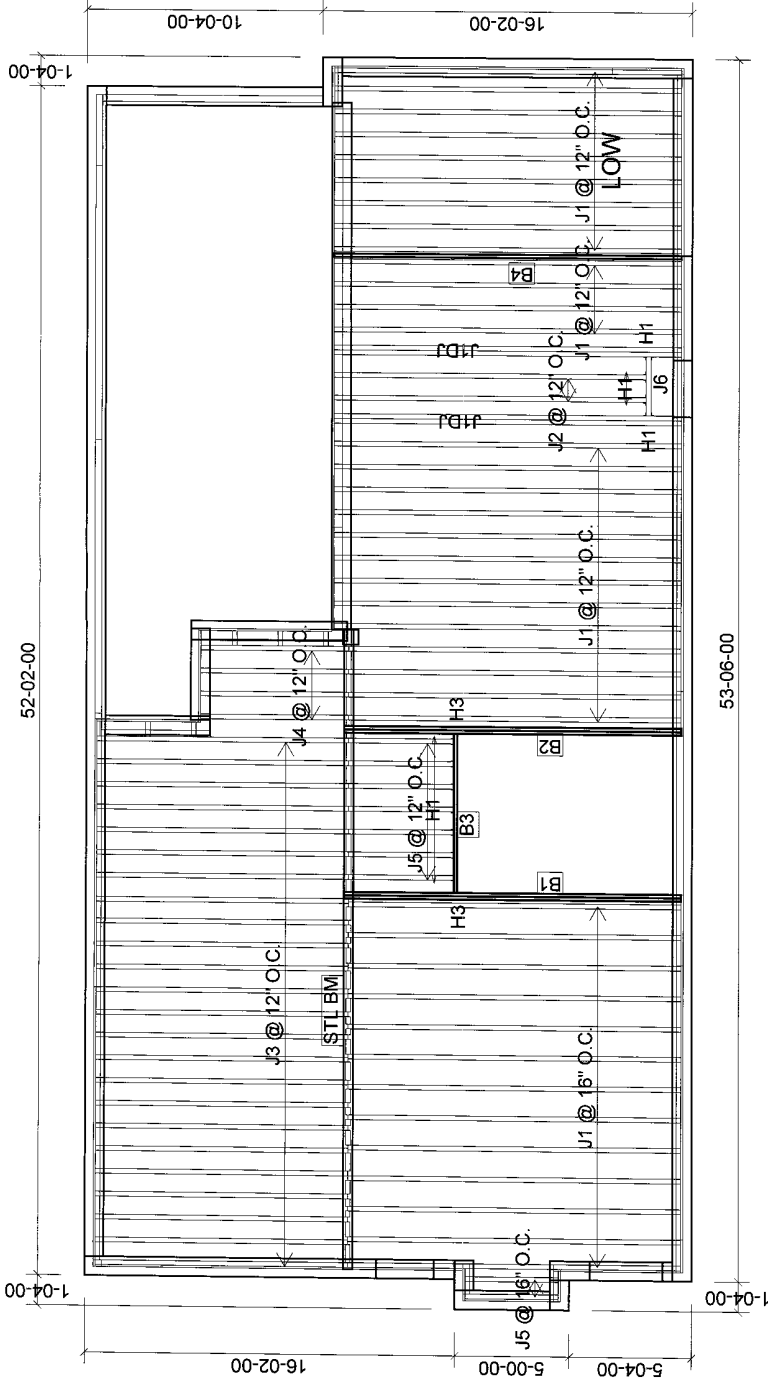
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 11/09/2017

1st FLOOR

WOD



Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H3	HUS1.81/10

Products			
PlotID	Length	Product	Plies
J1	16'-00'-00	9 1/2" NI-40x	1
J1DJ	16'-00'-00	9 1/2" NI-40x	2
J2	14'-00'-00	9 1/2" NI-40x	1
J3	12'-00'-00	9 1/2" NI-40x	1
J4	8'-00'-00	9 1/2" NI-40x	1
J5	6'-00'-00	9 1/2" NI-40x	1
J6	4'-00'-00	9 1/2" NI-40x	1
B4	16'-00'-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1
B1	16'-00'-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2
B2	16'-00'-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2
B3	8'-00'-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1



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MODEL: S32-4-10

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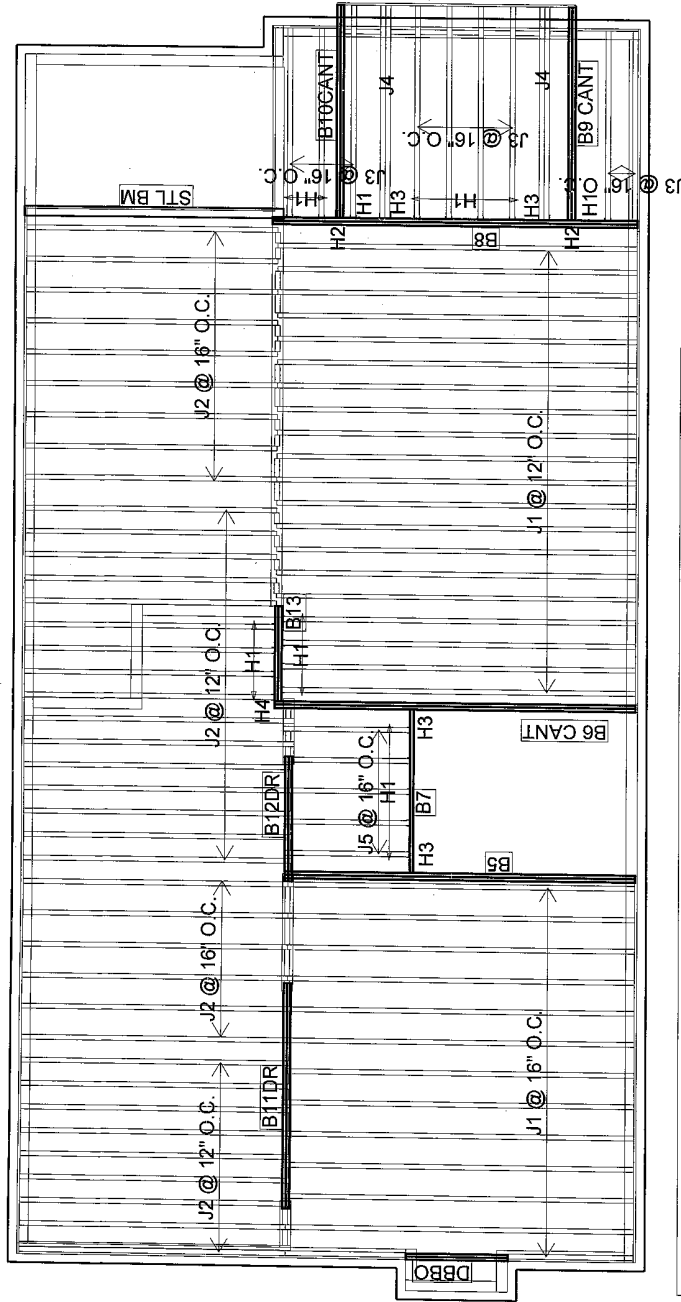
DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 05/09/2017

2nd FLOOR



Connector Summary		
Qty	Manuf	Product
5	H1	IUS2.56/9.5
16	H1	IUS2.56/9.5
2	H2	HGUS410
2	H3	HU310-2
2	H3	HUS1.81/10
1	H4	HUC410

Products				
PlotID	Length	Product	Piles	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	33
J2	12-00-00	9 1/2" NI-40x	1	41
J3	10-00-00	9 1/2" NI-40x	1	9
J4	10-00-00	9 1/2" NI-40x	2	4
J5	6-00-00	9 1/2" NI-40x	1	5
B5	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B6 CANT	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B8	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B10 CANT	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B11 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B9 CANT	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B7	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B12 DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B13	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2



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REVISION: -

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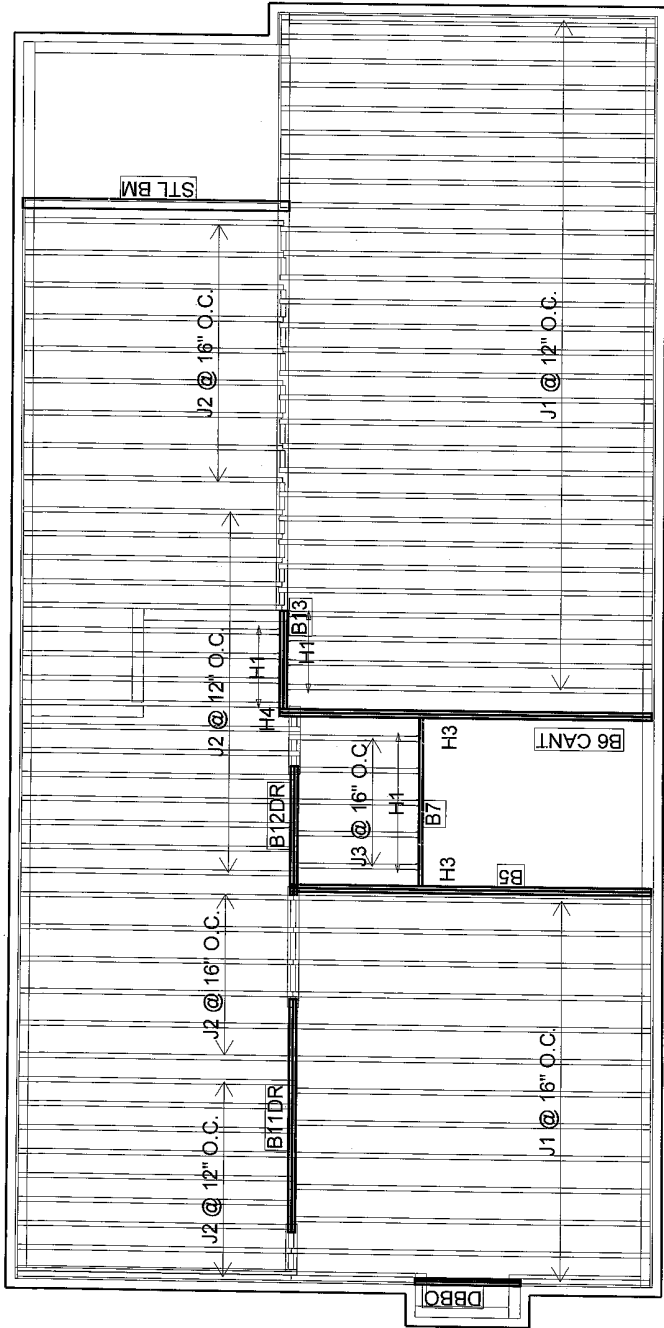
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DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 06/09/2017

2nd FLOOR



Products				Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf Product
J1	16-00-00	9 1/2" NI-40x	1	42	5	H1 IUS2.56/9.5
J2	12-00-00	9 1/2" NI-40x	1	41	8	H1 IUS2.56/9.5
J3	6-00-00	9 1/2" NI-40x	1	5	2	H3 HUS1.81/10
B5	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	1	H4 HUC410
B6 CANT	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2		
B11DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2		
B7	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1		
B12DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2		
B13	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2		

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Sep. 5, 2017 17:15

PROJECT
J1-2ND FL.wwb

Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

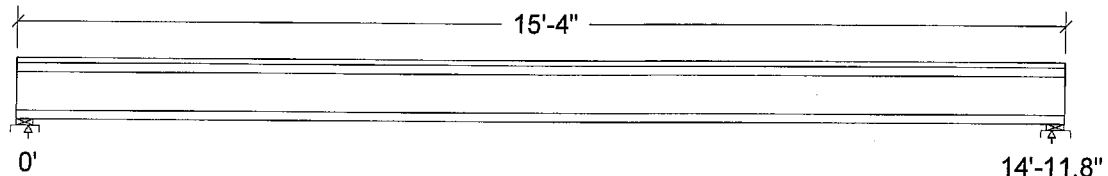
Town of Innisfil Certified Model

05/01/2018 10:57:34 AM kgervais

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

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



Unfactored:			
Dead	150		150
Live	300		300
Factored:			
Total	637		637
Bearing:			
Resistance			
Joist	1876		1876
Support	5304		5304
Des ratio			
Joist	0.34		0.34
Support	0.12		0.12
Load case	#2		#2
Length	3		3
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.15

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

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

Total length: 15'-4.0"; 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 = 637	Vr = 1895	lbs	Vf/Vr = 0.34
Moment(+)	Mf = 2385	Mr = 4824	lbs-ft	Mf/Mr = 0.49
Perm. Defl'n	0.10 = <L/999	0.50 = L/360	in	0.20
Live Defl'n	0.20 = L/911	0.37 = L/480	in	0.53
Total Defl'n	0.30 = L/607	0.75 = L/240	in	0.40
Bare Defl'n	0.23 = L/782	0.50 = L/360	in	0.46
Vibration	Lmax = 15'-0	Lv = 16'-9	ft	
Defl'n	= 0.031	= 0.044	in	0.71



DWG NO. TAM45345-17
STRUCTURAL
COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L
 Moment(+) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #2 = 1.0D + 1.0L (live)
 LC #2 = 1.0D + 1.0L (total)
 LC #2 = 1.0D + 1.0L (bare joist)
 Bearing : Support 1 - LC #2 = 1.25D + 1.5L
 Support 2 - LC #2 = 1.25D + 1.5L
 Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake
 L=live(use,occupancy) Ls=live(storage,equipment) f=fire
 Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

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

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1. **CONFORMS TO NBC 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 45345-17
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1605)

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

July 22, 2016 08:42:10

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA.B.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i1605)

Specifier:

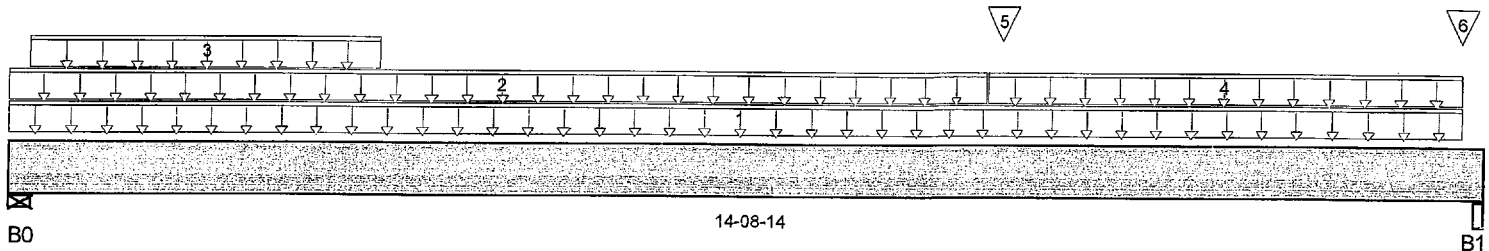
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:37 AM kgervais



Total Horizontal Product Length = 14-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	470 / 0	498 / 0		
B1, 5"	2,241 / 0	1,822 / 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	14-06-06	8	4			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-09-06	6	3			n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-02-06	03-08-06		60			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	09-09-06	14-06-06	16	8			n/a
5	B3(i1532)	Conc. Pt. (lbs)	L	09-11-02	09-11-02	1,158	612			n/a
6	7(i973)	Conc. Pt. (lbs)	L	14-06-02	14-06-02	1,305	1,232			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,874 ft-lbs	25,408 ft-lbs	34.9%	1	09-11-02
End Shear	2,076 lbs	11,571 lbs	17.9%	1	13-06-06
Total Load Defl.	L/447 (0.382")	0.712"	53.6%	4	07-10-09
Live Load Defl.	L/747 (0.229")	0.475"	48.2%	5	07-10-09
Max Defl.	0.382"	n/a	n/a	4	07-10-09
Span / Depth	18	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/8" x 3-1/2"	1,328 lbs	37.4%	13.1%	Unspecified
B1 Beam	5" x 3-1/2"	5,639 lbs	75.4%	26.4%	Unspecified

Notes

p614

DWG NO. TAM 4534617

STRUCTURAL

COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i16)

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume Member is Fully Braced.

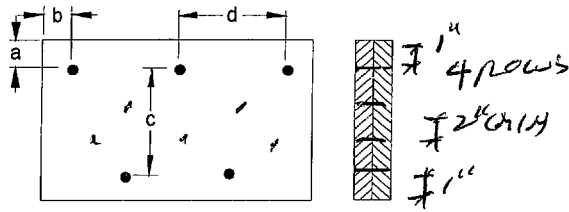
Resistance Factor phi has been applied to all presented results per CSA 086.

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**Connection Diagram**

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

Calculated Side Load = 176.0 lb/ft

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

Connectors are: ~~3/8" ARDOX SPIRAL Nails~~
3 1/2" ARDOX SPIRAL Nails

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



DWG NO. TAM 45346-17
 STRUCTURAL
 COMPONENT ONLY



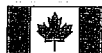
Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i1559)

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

July 22, 2016 08:42:11

BC CALC® Design Report



Build 4340

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Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

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Specifier:

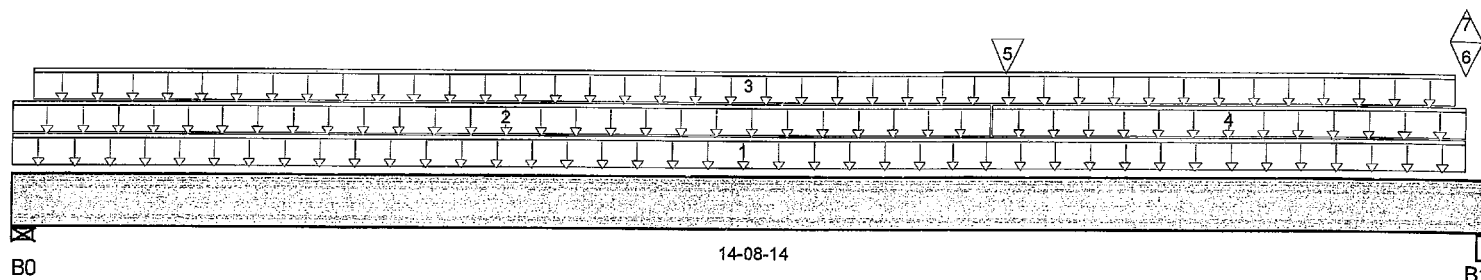
Designer:

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Misc:

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05/01/2018 10:57:40 AM kgervais



Total Horizontal Product Length = 14-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	487 / 0	748 / 0		
B1, 5"	2,590 / 17	2,365 / 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	14-06-06	10	5			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-09-06	6				n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-02-06	14-05-02		60			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	09-09-06	14-06-06	10				n/a
5	B3(i1532)	Conc. Pt. (lbs)	L	09-11-02	09-11-02	1,174	621			n/a
6	9(i975)	Conc. Pt. (lbs)	L	14-06-02	14-06-02	1,651	1,370			n/a
7	9(i975)	Conc. Pt. (lbs)	L	14-06-02	14-06-02	-17				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,480 ft-lbs	25,408 ft-lbs	41.2%	1	09-11-02
End Shear	2,528 lbs	11,571 lbs	21.8%	1	13-06-06
Total Load Defl.	L/353 (0.484")	0.712"	67.9%	6	07-08-10
Live Load Defl.	L/734 (0.233")	0.475"	49.1%	8	07-10-05
Max Defl.	0.484"	n/a	n/a	6	07-08-10
Span / Depth	18	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/8" x 3-1/2"	1,665 lbs	46.9%	16.4%	Unspecified
B1 Beam	5" x 3-1/2"	6,841 lbs	91.5%	32%	Unspecified

Notes

DWG NO. TAM 45347-17
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i15)

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume Member is Fully Braced.

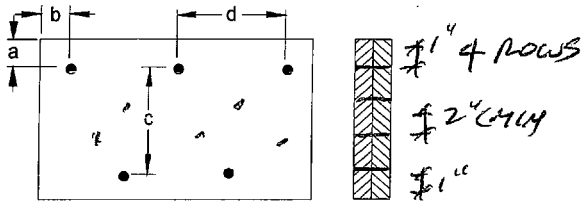
Resistance Factor phi has been applied to all presented results per CSA 086.

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**Connection Diagram**

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

Calculated Side Load = 178.5 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

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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DW000.TAM45347-17
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA.B.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1616)

Specifier:

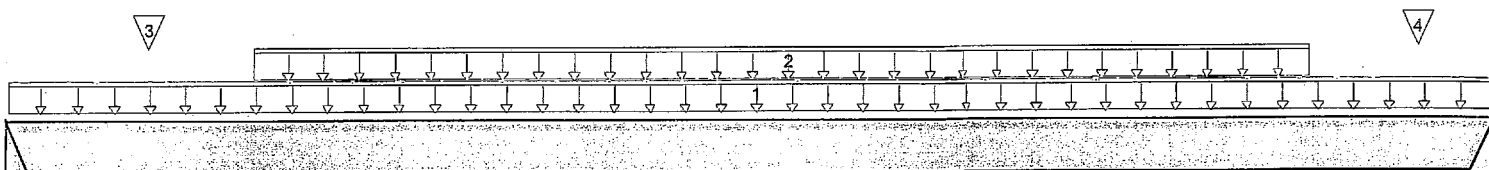
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:44 AM kgervais



07-00-00

B0

B1

Total Horizontal Product Length = 07-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	1,145 / 0	590 / 0		
B1	1,164 / 0	601 / 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	00-00-03	07-00-00	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-14	06-01-14	95	48			n/a
3	J6(i1634)	Conc. Pt. (lbs)	L	00-07-14	00-07-14	86	43			n/a
4	J6(i1631)	Conc. Pt. (lbs)	L	06-07-14	06-07-14	71	36			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,144 ft-lbs	12,704 ft-lbs	32.6%	1	03-07-14
End Shear	1,898 lbs	5,785 lbs	32.8%	1	00-11-08
Total Load Defl.	L/999 (0.097")	n/a	n/a	4	03-06-06
Live Load Defl.	L/999 (0.064")	n/a	n/a	5	03-06-06
Max Defl.	0.097"	n/a	n/a	4	03-06-06
Span / Depth	8.6	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"	2,455 lbs	n/a	57.5%	HUS1.81/10
B1 Hanger	2" x 1-3/4"	2,497 lbs	n/a	58.5%	HUS1.81/10

Notes

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

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

Calculations assume Member is Fully Braced.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA 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. TAM4534B-17
**STRUCTURAL
 COMPONENT ONLY**
Disclosure

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Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B4(i1517

Specifier:

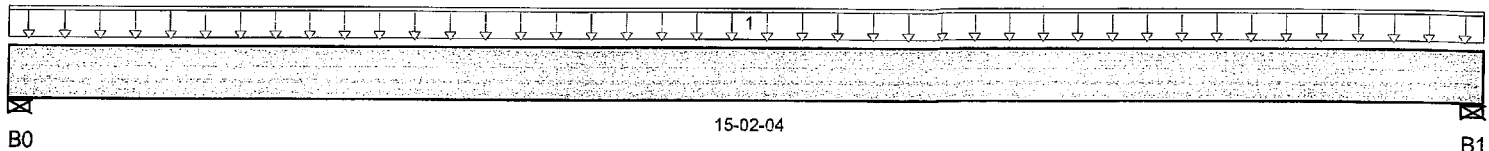
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:46 AM kgervais



Total Horizontal Product Length = 15-02-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/8"	52 / 0	62 / 0		
B1, 4-3/8"	53 / 0	63 / 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	15-02-04	7	3			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	561 ft-lbs	12,704 ft-lbs	4.4%	1	07-06-02
End Shear	135 lbs	5,785 lbs	2.3%	1	00-11-14
Total Load Defl.	L/999 (0.064")	n/a	n/a	4	07-06-02
Live Load Defl.	L/999 (0.029")	n/a	n/a	5	07-06-02
Max Defl.	0.064"	n/a	n/a	4	07-06-02
Span / Depth	18.6	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	2-3/8" x 1-3/4"	155 lbs	8.7%	3.1%	Unspecified
B1 Wall/Plate	4-3/8" x 1-3/4"	158 lbs	4.8%	1.7%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per 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 OBC 2012

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DWG NO. TAM 4534217
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B5(i1558)

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

July 22, 2016 08:42:11

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B5(i1558)

Specifier:

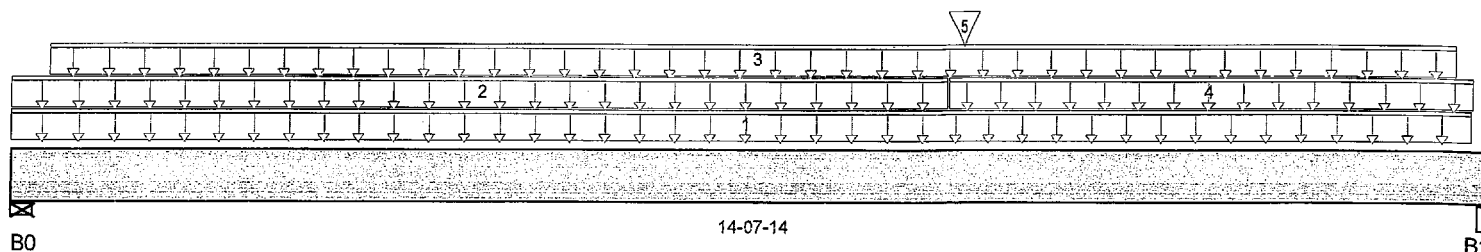
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:48 AM kgervais



14-07-14

Total Horizontal Product Length = 14-07-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	312 / 0	659 / 0		
B1, 3-1/2"	516 / 0	770 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-06-02	8	4			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-03-06	6	3			n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-04-06	14-04-06		60			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	09-03-06	14-06-05	19	9			n/a
5	B7(i1553)	Conc. Pt. (lbs)	L	09-05-02	09-05-02	560	314			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,868 ft-lbs	25,408 ft-lbs	27%	1	09-05-02
End Shear	1,610 lbs	11,571 lbs	13.9%	1	13-06-14
Total Load Defl.	L/515 (0.329")	0.706"	46.6%	4	07-09-01
Live Load Defl.	L/1,279 (0.133")	0.471"	28.2%	5	07-09-01
Max Defl.	0.329"	n/a	n/a	4	07-09-01
Span / Depth	17.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	922 lbs	21.7%	7.6%	Unspecified
B1 Beam	3-1/2" x 3-1/2"	1,736 lbs	16.3%	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 OBC 2012

DWG NO. TAM 45350-17
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELAB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B5(i155

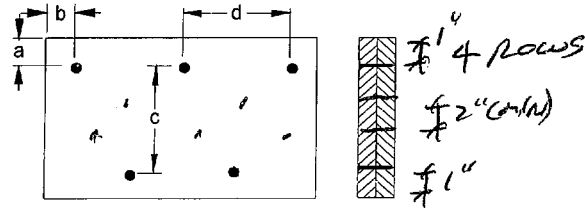
Specifier:

Designer:

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 87.3 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 45350-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B6 CANT

Specifier:

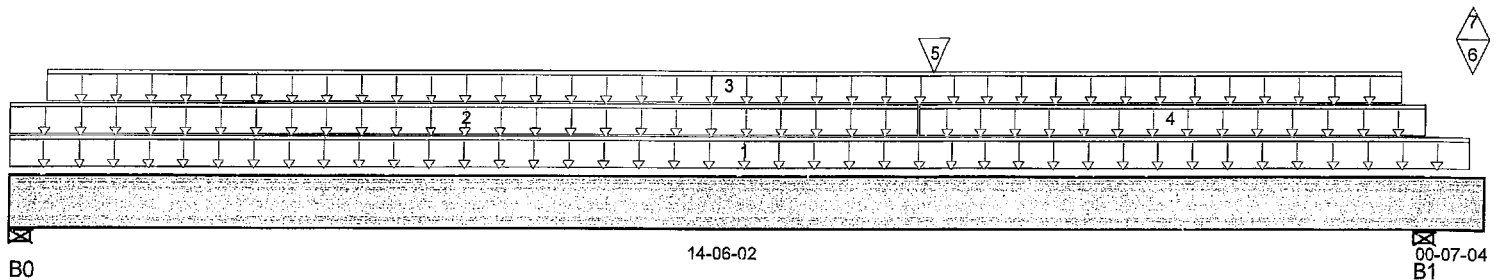
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:51 AM kgervais



Total Horizontal Product Length = 15-01-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	453 / 26	719 / 0		
B1, 5-1/2"	1,605 / 17	1,322 / 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	14-11-10	6	3			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-03-06	6	3			n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-04-06	14-03-06		60			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	09-03-06	14-06-05	20	10			n/a
5	B7(i1553)	Conc. Pt. (lbs)	L	09-05-02	09-05-02	976	522			n/a
6	B13(i1307)	Conc. Pt. (lbs)	L	14-11-10	14-11-10	801	411			n/a
7	B13(i1307)	Conc. Pt. (lbs)	L	14-11-10	14-11-10	-16				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,648 ft-lbs	25,408 ft-lbs	38%	3	09-05-02
Neg. Moment	-791 ft-lbs	-25,408 ft-lbs	3.1%	1	14-06-02
Neg. Moment	-791 ft-lbs	-25,408 ft-lbs	3.1%	1	14-06-02
End Shear	1,475 lbs	11,571 lbs	12.8%	3	01-01-14
Cont. Shear	2,201 lbs	11,571 lbs	19%	1	13-05-14
Total Load Defl.	L/386 (0.441")	0.71"	62.1%	12	07-09-01
Live Load Defl.	L/808 (0.211")	0.474"	44.6%	16	07-10-10
Total Neg. Defl.	2xL/1,998 (-0.062")	n/a	n/a	12	15-01-06
Max Defl.	0.441"	n/a	n/a	12	07-09-01
Span / Depth	17.9	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"	1,578 lbs	24.1%	8.4%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	4,060 lbs	49.4%	17.3%	Unspecified

Notes


 DWG NO. TAM 45351-17
 STRUCTURAL
 COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B6 CAN

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume Member is Fully Braced.

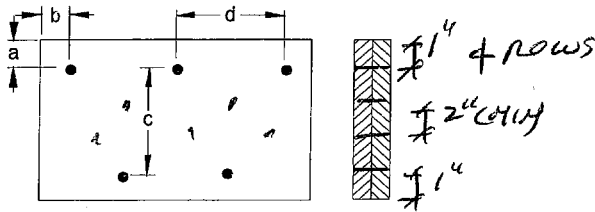
Resistance Factor phi has been applied to all presented results per CSA 086.

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**Connection Diagram**

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

Calculated Side Load = 145.2 lb/ft

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

Connectors are: Nails

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

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DWG NO. TAM 45351-17
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i1705)

Specifier:

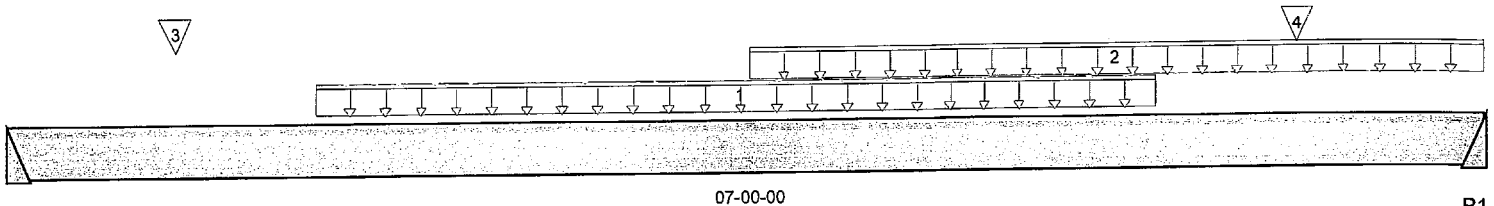
Designer:

Company:

Msc:

Town of Innisfil Certified Model

05/01/2018 10:57:54 AM kgowis



B0

B1

Total Horizontal Product Length = 07-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	545 / 0	289 / 0		
B1	973 / 0	503 / 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	01-05-08	05-05-08	108	54			n/a
2	User Load	Unf. Lin. (lb/ft)	L	03-06-01	07-00-00	240	120			n/a
3	J5(i1685)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	122	61			n/a
4	J5(i1695)	Conc. Pt. (lbs)	L	06-01-08	06-01-08	127	63			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,915 ft-lbs	12,704 ft-lbs	22.9%	1	04-00-13
End Shear	1,566 lbs	5,785 lbs	27.1%	1	06-00-08
Total Load Defl.	L/999 (0.066")	n/a	n/a	4	03-08-00
Live Load Defl.	L/999 (0.043")	n/a	n/a	5	03-08-00
Max Defl.	0.066"	n/a	n/a	4	03-08-00
Span / Depth	8.6	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"	1,179 lbs	n/a	27.6%	HUS1.81/10
B1 Hanger	2" x 1-3/4"	2,089 lbs	n/a	48.9%	HUS1.81/10

Notes

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

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

Calculations assume Member is Fully Braced.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA 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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DWG NO. TAM 45352-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B8(i1576)

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

July 22, 2016 08:42:11

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELAB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i1576)

Specifier:

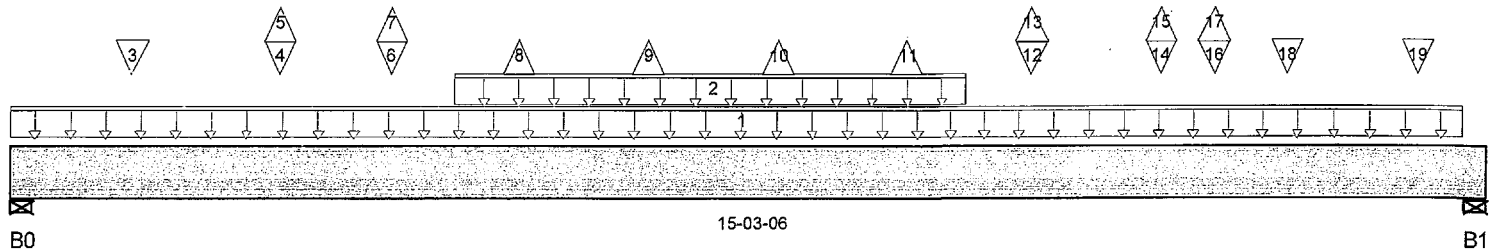
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:56 AM kgervais



Total Horizontal Product Length = 15-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	1,304 / 42	708 / 0	0 / 84	
B1, 5-1/2"	1,380 / 40	748 / 0	0 / 78	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	15-00-10	21	11			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-06-14	09-10-14	166	81			n/a
3	J3(i1225)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	216	108			n/a
4	B9 CANT(i1587)	Conc. Pt. (lbs)	L	02-09-02	02-09-02	221	134	-18		n/a
5	B9 CANT(i1587)	Conc. Pt. (lbs)	L	02-09-02	02-09-02	-7				n/a
6	J4(i1588)	Conc. Pt. (lbs)	L	03-10-14	03-10-14	205	69	-63		n/a
7	J4(i1588)	Conc. Pt. (lbs)	L	03-10-14	03-10-14	-23				n/a
8	J3(i1583)	Conc. Pt. (lbs)	L	05-02-14	05-02-14	-5				n/a
9	J3(i1577)	Conc. Pt. (lbs)	L	06-06-14	06-06-14	-5				n/a
10	J3(i1579)	Conc. Pt. (lbs)	L	07-10-14	07-10-14	-5				n/a
11	J3(i1573)	Conc. Pt. (lbs)	L	09-02-14	09-02-14	-5				n/a
12	J4(i1582)	Conc. Pt. (lbs)	L	10-06-14	10-06-14	221	77	-63		n/a
13	J4(i1582)	Conc. Pt. (lbs)	L	10-06-14	10-06-14	-23				n/a
14	J3(i1581)	Conc. Pt. (lbs)	L	11-10-14	11-10-14	157	77			n/a
15	J3(i1581)	Conc. Pt. (lbs)	L	11-10-14	11-10-14	-3				n/a
16	B10CANT(i1578)	Conc. Pt. (lbs)	L	12-05-10	12-05-10	110	78	-18		n/a
17	B10CANT(i1578)	Conc. Pt. (lbs)	L	12-05-10	12-05-10	-6				n/a
18	J3(i1357)	Conc. Pt. (lbs)	L	13-02-14	13-02-14	171	85			n/a
19	J3(i1387)	Conc. Pt. (lbs)	L	14-06-14	14-06-14	177	88			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,743 ft-lbs	25,408 ft-lbs	42.3%	21	07-10-14
End Shear	2,774 lbs	11,571 lbs	24%	21	01-01-14
Total Load Defl.	L/302 (0.58")	0.729"	79.5%	56	07-06-14
Live Load Defl.	L/462 (0.379")	0.486"	78%	83	07-06-14
Max Defl.	0.58"	n/a	n/a	56	07-06-14
Span / Depth	18.4	n/a	n/a		00-00-00



DWG NO. TAM 45353-17
 STRUCTURAL
 COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELAB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(157

Specifier:

Designer:

Company:

Misc:

Bearing Supports	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	2,840 lbs	43.4%	15.2%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	3,005 lbs	36.5%	12.8%	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.

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

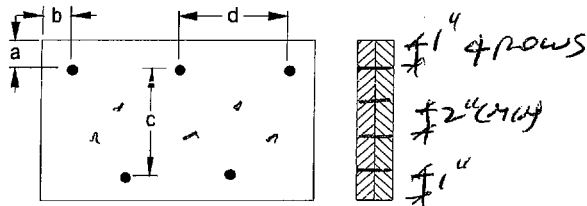
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO DBC 2012

Connection Diagram



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

Calculated Side Load = 313.1 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 Nail 3-1/2 in.

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



BOONE, YAM 45353-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELAB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9 CANT

Specifier:

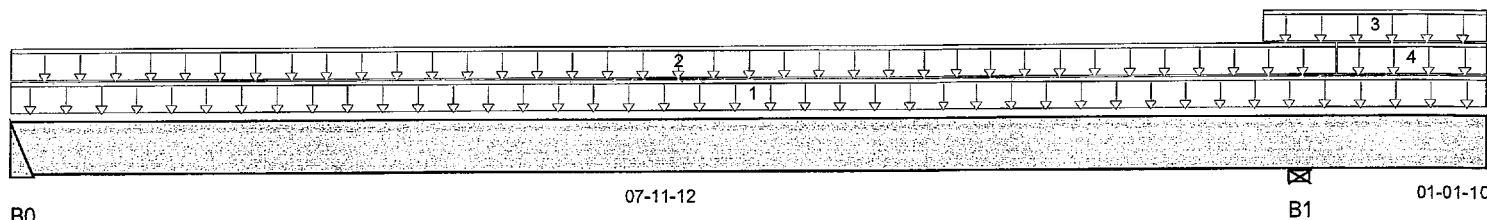
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:57:59 AM kgervais



Total Horizontal Product Length = 09-01-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	216 / 7	133 / 0	0 / 15	
B1, 5-1/2"	330 / 0	392 / 0	267 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-01-06	23	11			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-02-08	30	15			n/a
3	User Load	Unf. Lin. (lb/ft)	L	07-09-00	09-01-06	55	150	185		n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	08-02-08	09-01-06	6				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	906 ft-lbs	25,408 ft-lbs	3.6%	44	03-10-06
Neg. Moment	-347 ft-lbs	-25,408 ft-lbs	1.4%	64	07-11-12
Neg. Moment	-347 ft-lbs	-25,408 ft-lbs	1.4%	64	07-11-12
End Shear	370 lbs	11,571 lbs	3.2%	44	00-11-08
Cont. Shear	401 lbs	11,571 lbs	3.5%	16	06-11-08
Total Load Defl.	L/999 (0.014")	n/a	n/a	107	03-11-08
Live Load Defl.	L/999 (0.009")	n/a	n/a	159	04-00-10
Total Neg. Defl.	2xL/1,998 (-0.006")	n/a	n/a	107	09-01-06
Max Defl.	0.014"	n/a	n/a	107	03-11-08
Span / Depth	9.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	490 lbs	n/a	5.7%	HGUS410
B1 Wall/Plate	5-1/2" x 3-1/2"	1,118 lbs	13.6%	4.8%	Unspecified

Notes



DWG NO. TAM 45354-17
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9 CAN

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume Member is Fully Braced.

Hanger Manufacturer: Unassigned

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.

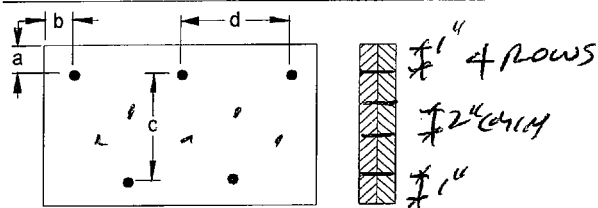
Design based on Dry Service Condition.

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 1-800-964-6999 before installation.

Connection Diagram

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

Member has no side loads.

Connectors are: 16d Nails
3 1/2" ARDOX SPIRAL

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



DWONG, YAM 45354-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10CANT

Specifier:

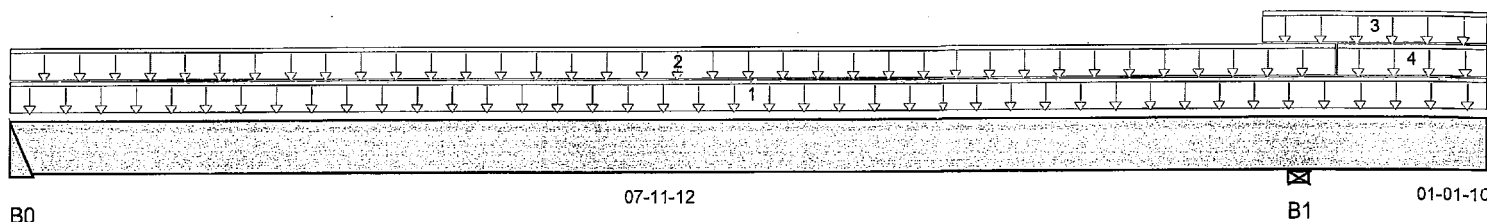
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:58:01 AM kgervais



Total Horizontal Product Length = 09-01-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	108 / 6	80 / 0	0 / 15	
B1, 5-1/2"	207 / 0	330 / 0	267 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-01-06	11	6			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-02-08	15	8			n/a
3	User Load	Unf. Lin. (lb/ft)	L	07-09-00	09-01-06	55	150	185		n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	08-02-08	09-01-06	6				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	470 ft-lbs	25,408 ft-lbs	1.9%	44	03-09-04
Neg. Moment	-338 ft-lbs	-25,408 ft-lbs	1.3%	49	07-11-12
Neg. Moment	-338 ft-lbs	-25,408 ft-lbs	1.3%	49	07-11-12
End Shear	196 lbs	11,571 lbs	1.7%	44	00-11-08
Cont. Shear	234 lbs	11,571 lbs	2%	16	06-11-08
Total Load Defl.	L/999 (0.007")	n/a	n/a	107	03-11-08
Live Load Defl.	L/999 (0.005")	n/a	n/a	159	04-00-10
Total Neg. Defl.	2xL/1,998 (-0.003")	n/a	n/a	107	09-01-06
Max Defl.	0.007"	n/a	n/a	107	03-11-08
Span / Depth	9.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	261 lbs	n/a	3.1%	HGUS410
B1 Wall/Plate	5-1/2" x 3-1/2"	918 lbs	11.2%	3.9%	Unspecified

Notes


p614

 DWG NO. TAM45355-17
 STRUCTURAL
 COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA.B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10CAI

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume Member is Fully Braced.

Hanger Manufacturer: Unassigned

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.

CONFORMS TO OBC 2012

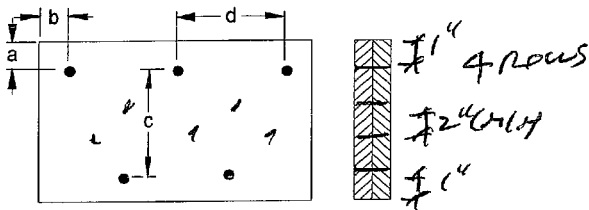
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

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.

Connection Diagram

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

Member has no side loads.

Connectors are: 16d Nails
3 1/2" ARDOX SPIRAL

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



DWG NO. YAM 4535617
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:,

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

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

Specifier:

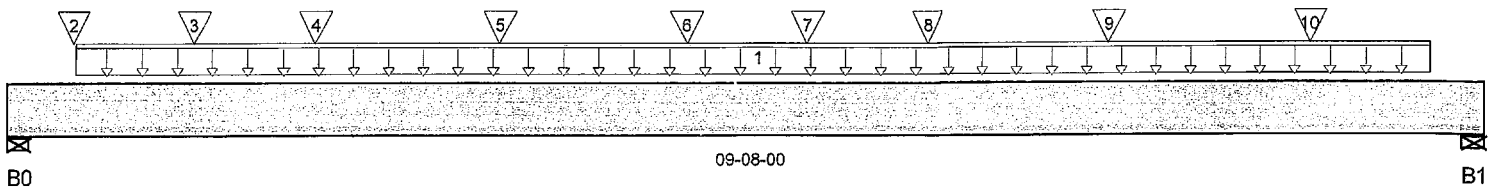
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:58:04 AM kgervais



Total Horizontal Product Length = 09-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,526 / 0	1,572 / 0		
B1, 4"	2,189 / 0	1,409 / 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	00-05-04	09-04-00		60			n/a
2 -	Conc. Pt. (lbs)	L	00-05-01	00-05-01	594	297			n/a
3 J2(i1416)	Conc. Pt. (lbs)	L	01-02-08	01-02-08	216	108			n/a
4 -	Conc. Pt. (lbs)	L	01-11-15	01-11-15	596	297			n/a
5 -	Conc. Pt. (lbs)	L	03-02-08	03-02-08	597	298			n/a
6 -	Conc. Pt. (lbs)	L	04-05-01	04-05-01	594	297			n/a
7 J2(i1416)	Conc. Pt. (lbs)	L	05-02-08	05-02-08	216	108			n/a
8 -	Conc. Pt. (lbs)	L	05-11-15	05-11-15	596	297			n/a
9 -	Conc. Pt. (lbs)	L	07-02-08	07-02-08	633	316			n/a
10 -	Conc. Pt. (lbs)	L	08-06-08	08-06-08	669	334			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	12,044 ft-lbs	25,408 ft-lbs	47.4%	1	04-06-08
End Shear	4,972 lbs	11,571 lbs	43%	1	08-06-08
Total Load Defl.	L/427 (0.256")	0.456"	56.2%	4	04-07-12
Live Load Defl.	L/699 (0.157")	0.304"	51.5%	5	04-07-12
Max Defl.	0.256"	n/a	n/a	4	04-07-12
Span / Depth	11.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	5,754 lbs	63.3%	33.7%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	5,046 lbs	55.5%	29.5%	Unspecified

Notes



DWG NO. TAM 4535617
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

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

Specifier:

Designer:

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.

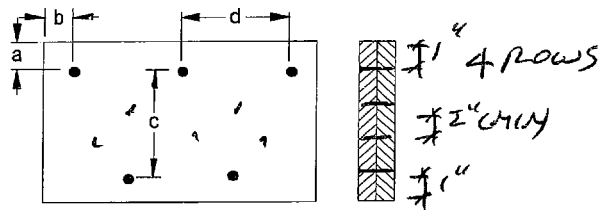
Resistance Factor phi has been applied to all presented results per CSA 086.

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

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 2012**Connection Diagram**

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

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



DWG NO. TAM 45356-17
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

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

Specifier:

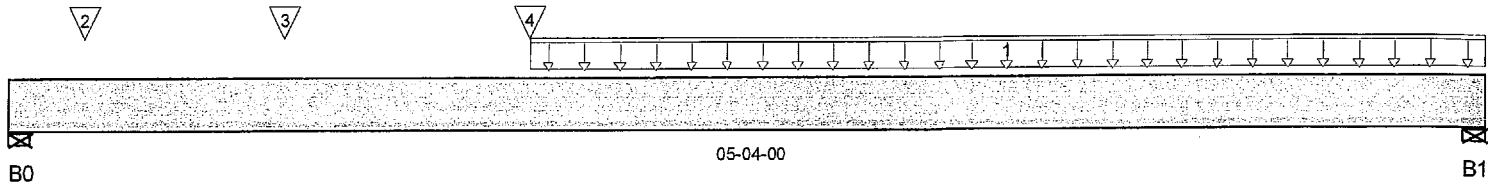
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:58:08 AM kgervais



Total Horizontal Product Length = 05-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,193 / 0	1,133 / 0		
B1, 4"	903 / 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	01-10-08	05-04-00	302	151			n/a
2	B5(i1558)	Conc. Pt. (lbs)	L	00-03-04	00-03-04	509	766			n/a
3	-	Conc. Pt. (lbs)	L	00-11-14	00-11-14	327	163			n/a
4	J2(i1314)	Conc. Pt. (lbs)	L	01-10-08	01-10-08	215	107			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,956 ft-lbs	25,408 ft-lbs	7.7%	1	02-10-08
End Shear	1,326 lbs	11,571 lbs	11.5%	1	01-01-08
Total Load Defl.	L/999 (0.011")	n/a	n/a	4	02-08-08
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	02-08-08
Max Defl.	0.011"	n/a	n/a	4	02-08-08
Span / Depth	6.1	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	3,205 lbs	35.2%	18.8%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	1,949 lbs	21.4%	11.4%	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 OBC 2012



P614

DWG NO. TAM45357.17
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

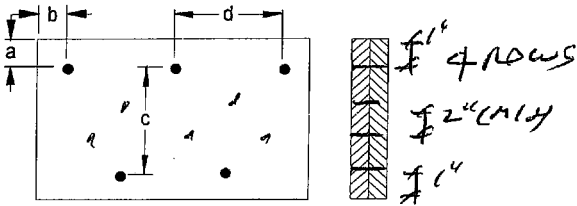
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B

Specifier:

Designer:

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 45357-17
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i1307

Specifier:

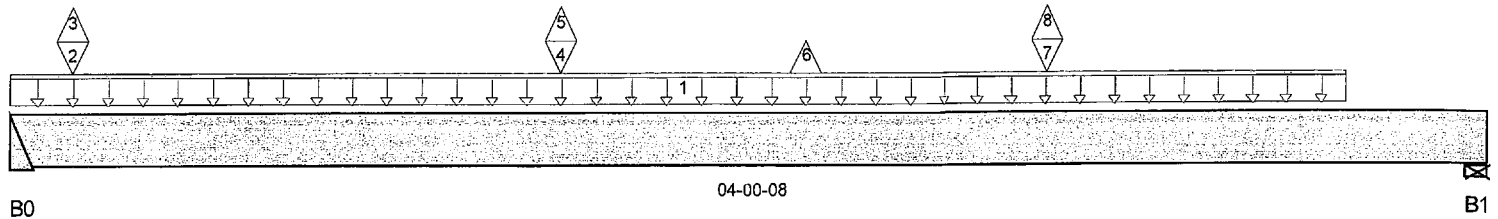
Designer:

Company:

Misc:

Town of Innisfil Certified Model

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Total Horizontal Product Length = 04-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	804 / 16	413 / 0		
B1, 5-1/2"	651 / 12	341 / 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	00-00-00	03-08-00	114	54			n/a
2	-	Conc. Pt. (lbs)	L	00-02-00	00-02-00	244	122			n/a
3	-	Conc. Pt. (lbs)	L	00-02-00	00-02-00	-7				n/a
4	-	Conc. Pt. (lbs)	L	01-05-15	01-05-15	395	198			n/a
5	-	Conc. Pt. (lbs)	L	01-05-15	01-05-15	-7				n/a
6	J2(i1322)	Conc. Pt. (lbs)	L	02-02-00	02-02-00	-7				n/a
7	-	Conc. Pt. (lbs)	L	02-10-01	02-10-01	395	198			n/a
8	-	Conc. Pt. (lbs)	L	02-10-01	02-10-01	-7				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,334 ft-lbs	25,408 ft-lbs	5.2%	1	01-06-00
End Shear	1,238 lbs	11,571 lbs	10.7%	1	02-09-08
Total Load Defl.	L/999 (0.004")	n/a	n/a	6	01-10-08
Live Load Defl.	L/999 (0.003")	n/a	n/a	8	01-10-08
Max Defl.	0.004"	n/a	n/a	6	01-10-08
Span / Depth	4.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,723 lbs	n/a	20.2%	HUC410
B1 Wall/Plate	5-1/2" x 3-1/2"	1,403 lbs	17.1%	6%	Unspecified

Notes



DWG NO. TAM4535B17
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELA,B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i13

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume Member is Fully Braced.

Hanger Manufacturer: Unassigned

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.

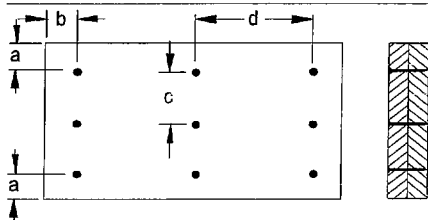
Importance Factor : Normal Part code : Part 9

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.

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

Connection Diagram

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

Calculated Side Load = 563.2 lb/ft

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

Connectors are: 16d Nails 3 1/4" x 3 1/4"

3 1/2" ARDOX SPIRAL

DWG NO. TAM 4535B17
STRUCTURAL
COMPONENT ONLY



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-4-10-ELAB.-SUNKEN.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B16L(i17

Specifier:

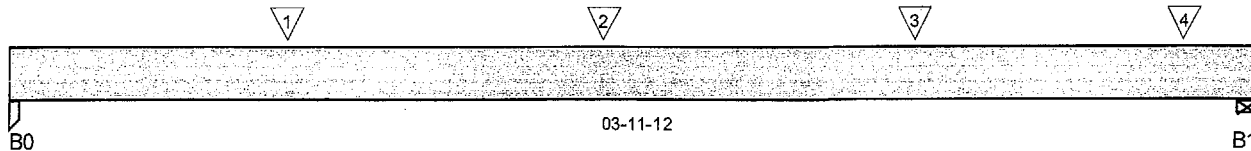
Designer:

Company:

Misc:

Town of Innisfil Certified Model

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Total Horizontal Product Length = 03-11-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	165 / 0	91 / 0		
B1, 5-1/2"	231 / 0	133 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1 J5(i1772)	Conc. Pt. (lbs)	L	00-10-10	00-10-10	95	47			n/a
2 J5(i1768)	Conc. Pt. (lbs)	L	01-10-10	01-10-10	123	61			n/a
3 J5(i1767)	Conc. Pt. (lbs)	L	02-10-10	02-10-10	128	64			n/a
4 3(i955)	Conc. Pt. (lbs)	L	03-09-00	03-09-00	50	33			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	387 ft-lbs	12,704 ft-lbs	3.1%	1	01-10-10
End Shear	335 lbs	5,785 lbs	5.8%	1	02-08-12
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-10-15
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-10-15
Max Defl.	0.002"	n/a	n/a	4	01-10-15
Span / Depth	4.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	362 lbs	7.3%	4.8%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	512 lbs	10%	4.4%	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 OBC 2012

DWG NO. TAM 45359-17
 STRUCTURAL
 COMPONENT ONLY

Disclosure

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Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B15(i1616)

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

July 22, 2016 09:26:10



BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-4-10-ELAB.-SUNKEN.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B15(i161

Specifier:

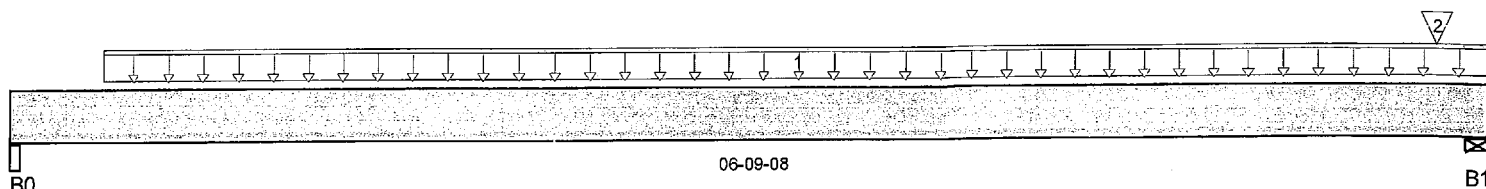
Designer:

Company:

Misc:

Town of Innisfil Certified Model

05/01/2018 10:58:17 AM kgervais



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5"	52 / 0	47 / 0		
B1, 6"	1,085 / 0	885 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-05-00	06-09-08	17	8			n/a
2	2(i956)	Conc. Pt. (lbs)	L	06-06-12	06-06-12	1,022	835			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	188 ft-lbs	12,704 ft-lbs	1.5%	1	03-04-04
End Shear	90 lbs	5,785 lbs	1.6%	1	01-02-08
Total Load Defl.	L/999 (0.004")	n/a	n/a	4	03-04-04
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	03-04-04
Max Defl.	0.004"	n/a	n/a	4	03-04-04
Span / Depth	7.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5" x 1-3/4"	137 lbs	2.9%	1.3%	Unspecified
B1 Wall/Plate	6" x 1-3/4"	2,733 lbs	18.4%	21.3%	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 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 OBC 2012

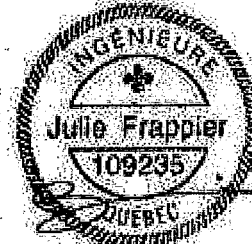
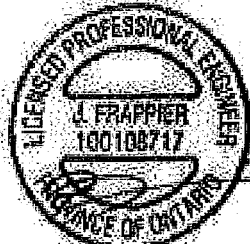
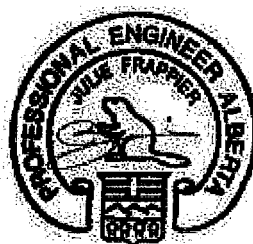
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DWG NO. TAM 45362-17
 STRUCTURAL
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Maximum Floor Spans

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

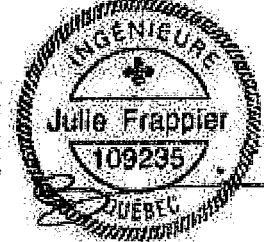
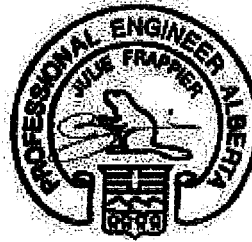
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

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

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

Maximum Floor Spans

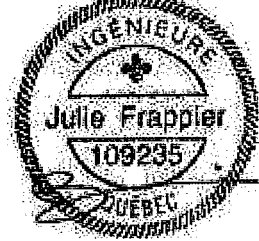
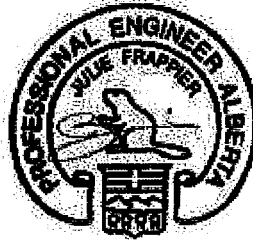
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing



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

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

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



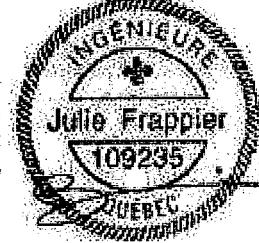
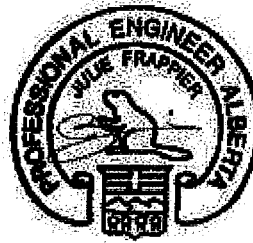
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

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

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

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	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"
	NI-90x	24'-3"	22'-6"	21'-3"	19'-7"	24'-8"	22'-7"	21'-3"	19'-7"
14"	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"
	NI-90x	27'-3"	25'-4"	24'-1"	22'-4"	27'-9"	25'-10"	24'-3"	22'-4"
16"	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.

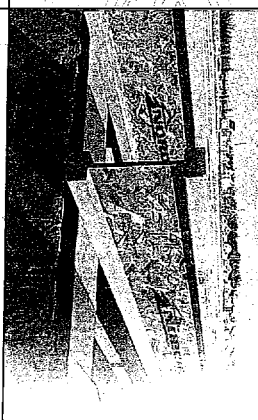
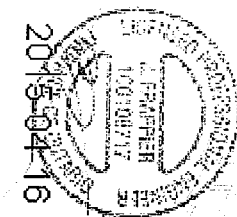
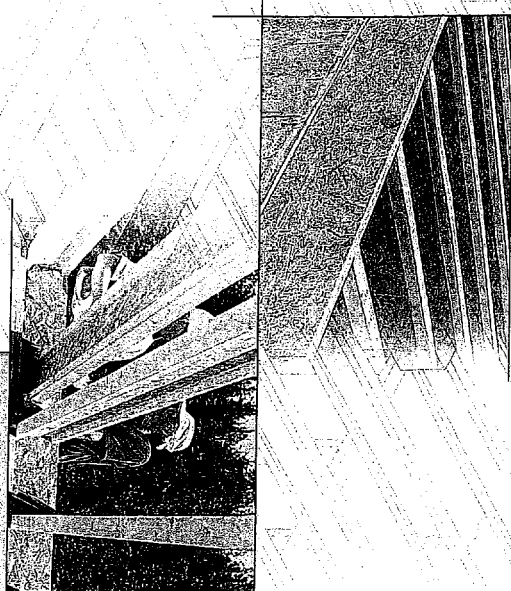
NORDIC

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:

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.

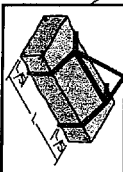
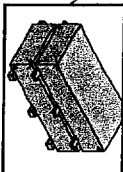
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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



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

STORAGE AND HANDLING GUIDELINES

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



I-JOIST HANGERS

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

I-JOIST HANGERS

CCMC EVALUATION REPORT 13032-R

NORDIC I-JOIST SERIES

NORDIC I-JOIST SERIES

END BEARING
(Bearing stiffener)

STIFFENER SIZE REQUIREMENTS

A diagram showing a cross-section of a tight joint. A thick black arrow points from the text "Tight Joint No Gap" to the interface between two materials. The materials are labeled "Gap" and "Tight Joint". The joint is shown as a single, continuous block with no visible gap.

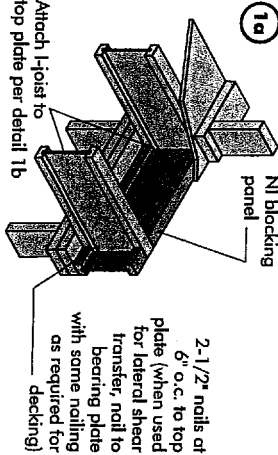
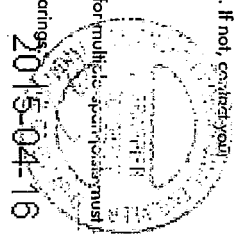
Chambers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

	S-PF No.2	1950F MSR	2100F MSR	1950G MSR	2100G MSR	2400F MSR	NPG Lumber
33 pieces Per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit

2015-04-16

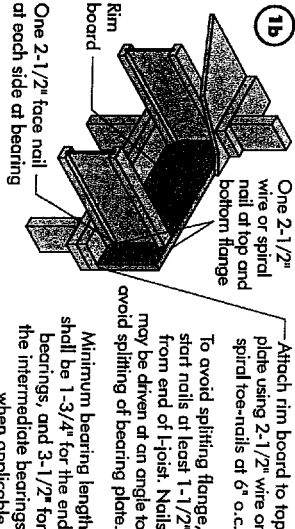
INSTALLING NORDIC I-JOISTS

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



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.

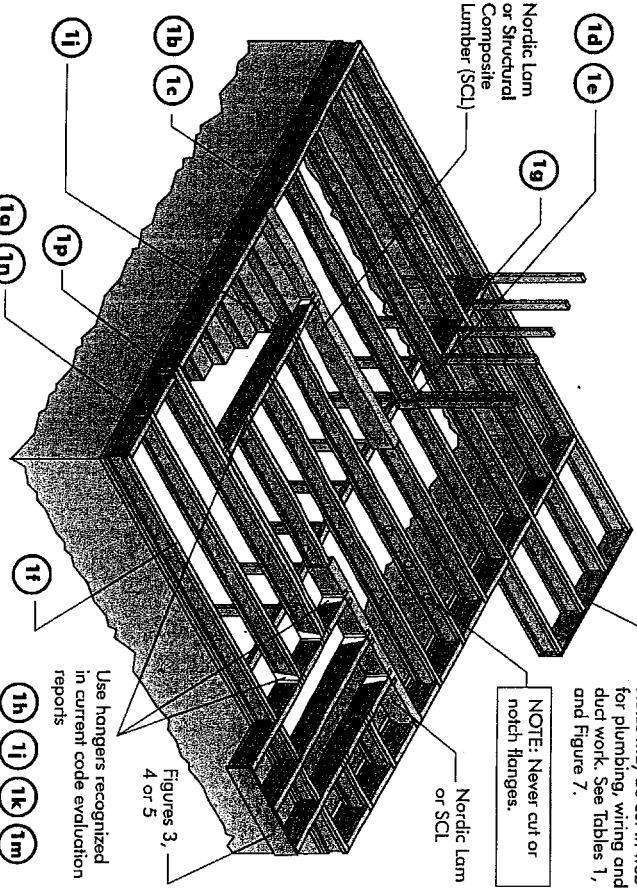


FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

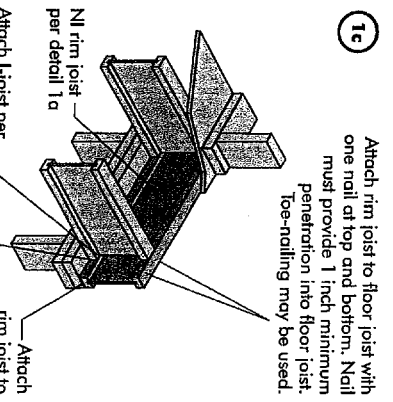
Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.

Figures 3, 4 or 5

NOTE: Never cut or notch flanges.

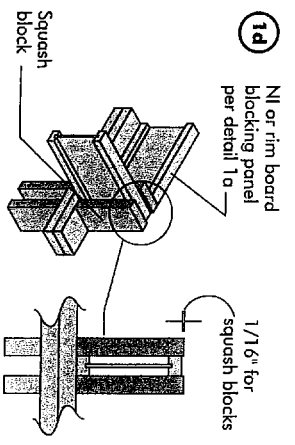
Use hangers recognized in current code evaluation reports

Figures 3, 4 or 5



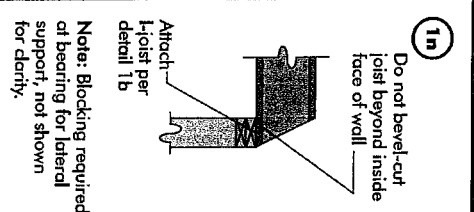
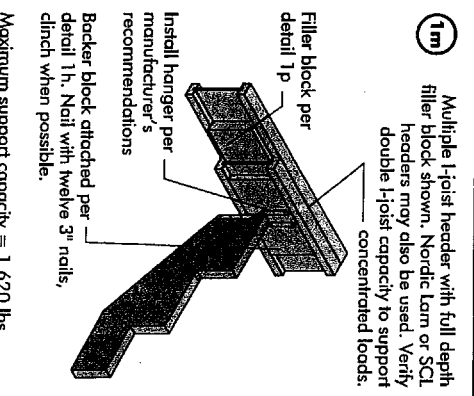
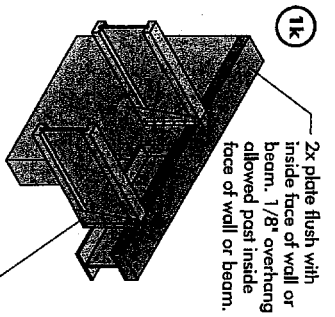
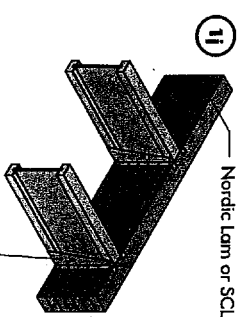
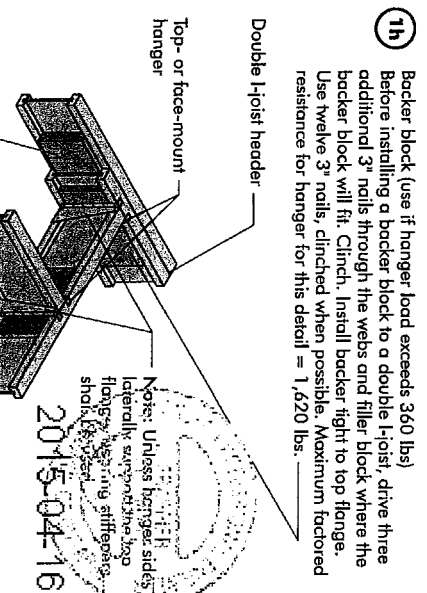
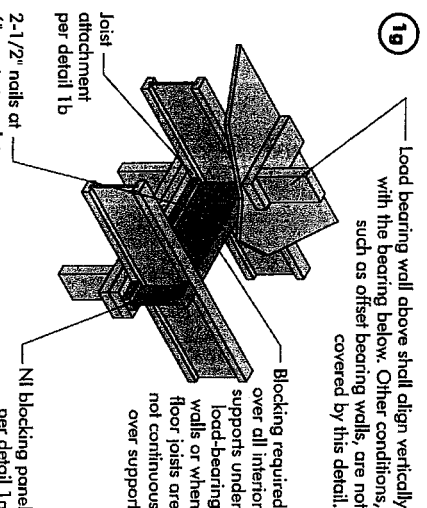
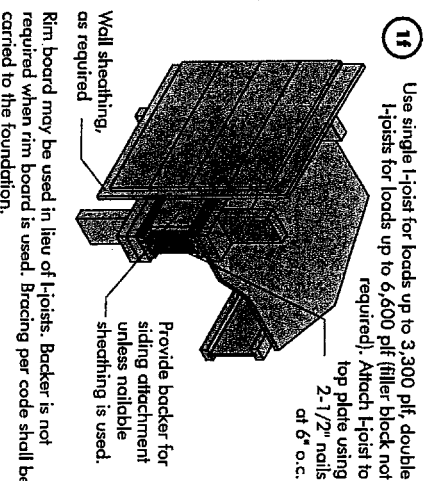
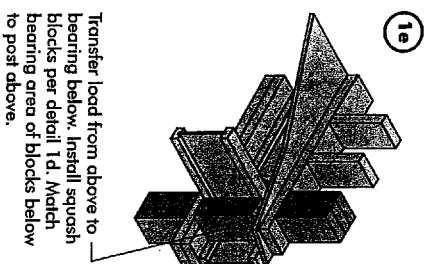
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI rim joist per detail 1a	Minimum 1-3/4"

Attach I-joist per detail 1b



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

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



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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard.

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

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

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

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

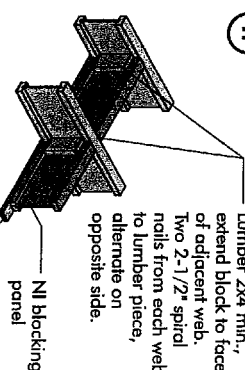
Notes:

1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails 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.

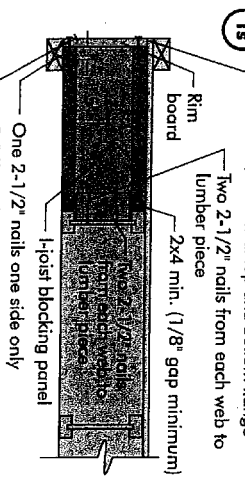
FILTER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

1r



1s

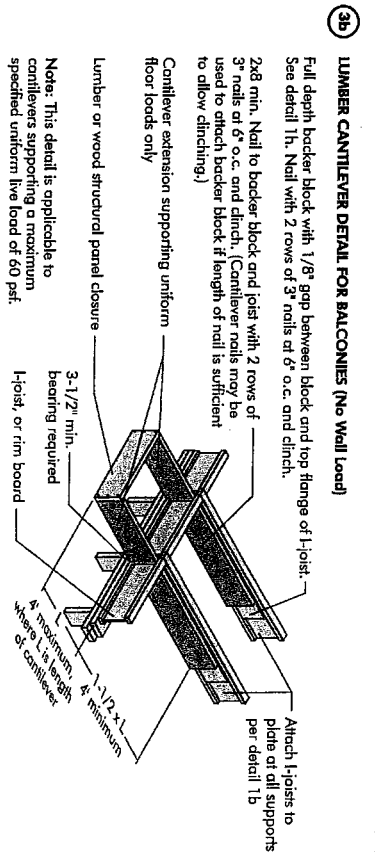
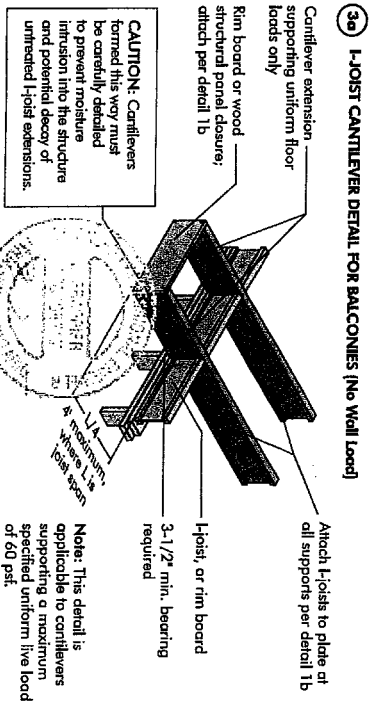


Optional: Minimum 1x4 inch strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

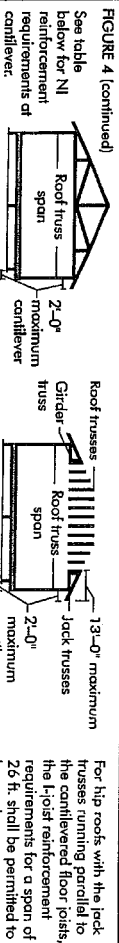
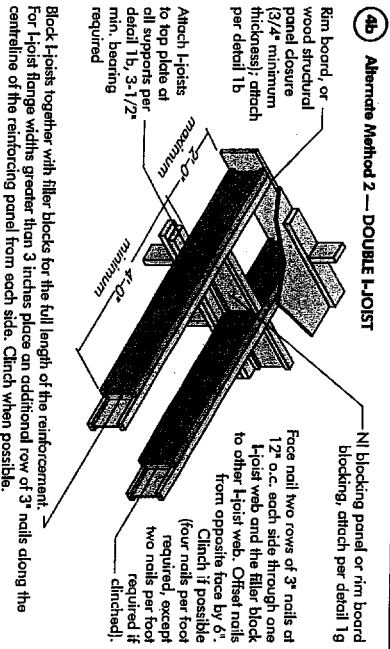
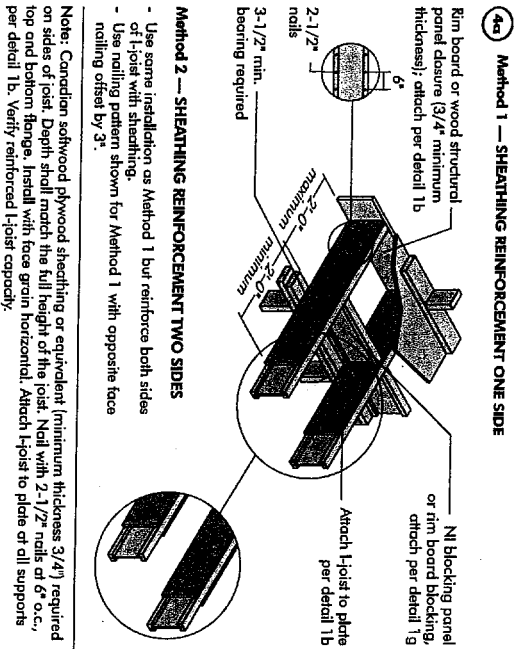
Notes:

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

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS		ROOF LOADING (UNFACTORED)			
	LL = 30 psf, DL = 15 psf	JOIST SPACING (in.)	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	LL = 60 psf, DL = 15 psf	LL = 70 psf, DL = 15 psf
12	12	16	12	16	12	16
16	16	19.2	16	19.2	16	19.2
19.2	19.2	24	19.2	24	19.2	24
24	24	24	24	24	24	24
28	28	28	28	28	28	28
30	30	30	30	30	30	30
32	32	32	32	32	32	32
34	34	34	34	34	34	34
36	36	36	36	36	36	36
38	38	38	38	38	38	38
40	40	40	40	40	40	40
42	42	42	42	42	42	42

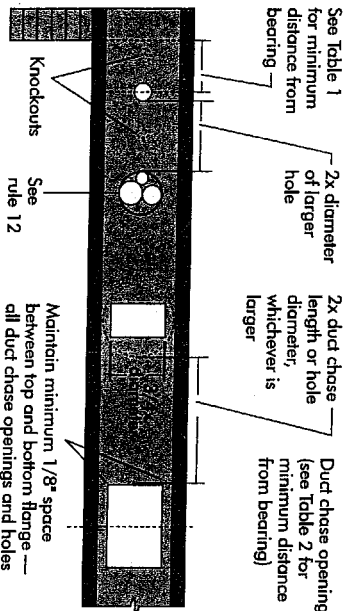
1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. X = Try a deeper joist or closer spacing. Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3-0" maximum width window or door opening.
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. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
6. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)												Span adjustment Factor		
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4		11	12
10	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
12	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
14	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
16	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
18	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
20	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
22	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
24	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
26	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
28	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
30	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
32	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
34	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
36	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
38	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
40	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
42	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
44	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
46	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
48	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
50	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
52	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
54	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
56	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
58	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
60	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
62	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
64	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
66	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
68	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
70	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
72	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
74	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
76	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
78	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
80	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
82	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
84	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
86	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
88	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
90	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
92	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
94	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
96	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
98	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9
100	2	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9

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

OPTIONAL:

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

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

Where:

- D_{reduced} = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft).
- L_{actual} = The actual measured span distance between the inside faces of supports (ft).
- L_{span} = Span Adjustment Factor given in this table.
- D = The minimum distance from the inside face of any support to centre of hole from this table.
- If D_{reduced} is greater than 1, use 1 in the above calculation for D_{reduced} .

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

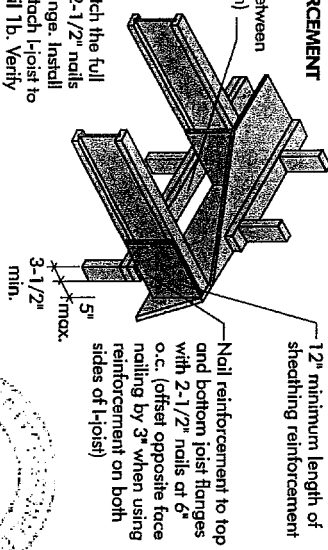
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
10	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
12	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
14	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
16	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
18	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
20	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
22	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
24	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
26	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
28	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
30	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
32	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
34	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
36	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
38	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
40	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
42	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
44	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
46	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
48	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
50	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
52	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
54	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
56	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
58	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
60	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
62	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
64	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
66	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
68	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
70	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
72	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
74	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
76	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
78	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
80	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
82	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
84	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
86	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
88	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
90	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
92	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
94	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
96	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
98	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5
100	2	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5

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

5a SHEATHING REINFORCEMENT

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

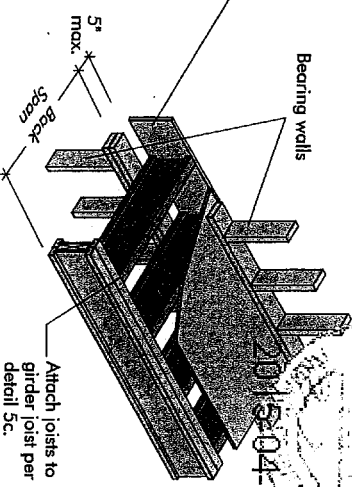
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

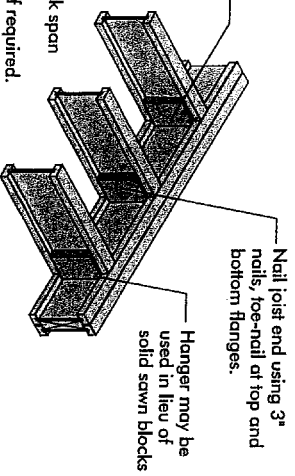
Notes:
- Provide full depth blocking between joists over support (not shown for clarity)
- Attach I-joist to plate of all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.



5c SET-BACK CONNECTION

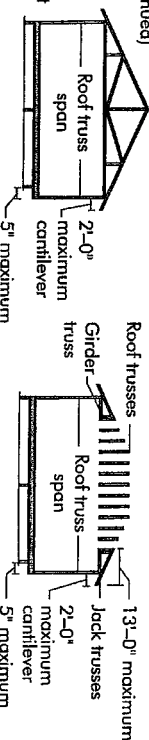
Vertical solid sawn blocks (2x6 S-P-F No. 2 or better) nailed through joist web and web of girder using 2-1/2" nails.

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)



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS				ROOF LOADING (UNFACTORED)				LL = 50 psf, DL = 15 psf			
	SPAN (ft)	LL = 30 psf, DL = 15 psf	JOIST SPACING (in.)		SPAN (ft)	LL = 40 psf, DL = 15 psf	JOIST SPACING (in.)		SPAN (ft)	LL = 50 psf, DL = 15 psf	JOIST SPACING (in.)	
9-1/2"	26	1	12	X	26	2	12	X	26	2	12	X
	28	1	16	X	28	2	16	X	28	2	16	X
	30	1	19.2	X	30	2	19.2	X	30	2	19.2	X
	32	1	24	X	32	2	24	X	32	2	24	X
	34	1		X	34	2		X	34	2		X
	36	1		X	36	2		X	36	2		X
11-7/8"	26	1	12	X	26	2	12	X	26	2	12	X
	28	1	16	X	28	2	16	X	28	2	16	X
	30	1	19.2	X	30	2	19.2	X	30	2	19.2	X
	32	1	24	X	32	2	24	X	32	2	24	X
	34	1		X	34	2		X	34	2		X
	36	1		X	36	2		X	36	2		X
	38	1		X	38	2		X	38	2		X
	40	1		X	40	2		X	40	2		X
16"	26	1	12	X	26	2	12	X	26	2	12	X
	28	1	16	X	28	2	16	X	28	2	16	X
	30	1	19.2	X	30	2	19.2	X	30	2	19.2	X
	32	1	24	X	32	2	24	X	32	2	24	X
	34	1		X	34	2		X	34	2		X
	36	1		X	36	2		X	36	2		X
	38	1		X	38	2		X	38	2		X
	40	1		X	40	2		X	40	2		X
	42	1		X	42	2		X	42	2		X

1. N = No reinforcement required.
1 = NI reinforced with 3/4" wood structural panel on one side only.
2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
X = Try a deeper joist or closer spacing.
2. Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
3. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

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

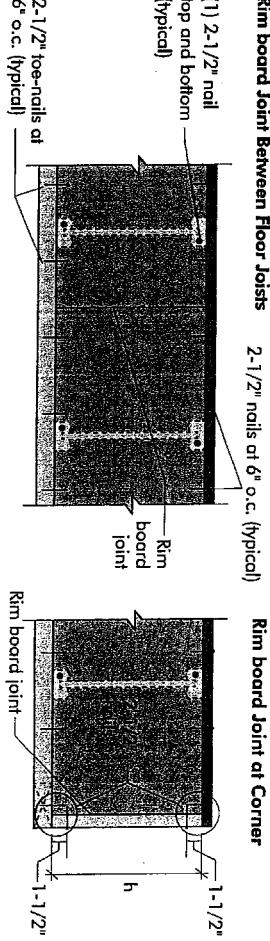
1. Fasteners of sheathing and subflooring shall conform to the above table.
2. Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
3. Flooring screws shall not be less than 1/8-inch in diameter.
4. Special conditions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

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

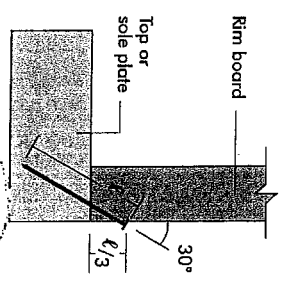
IMPORTANT NOTE:
Floor sheathing must be field glued to the I-joint flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joint spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

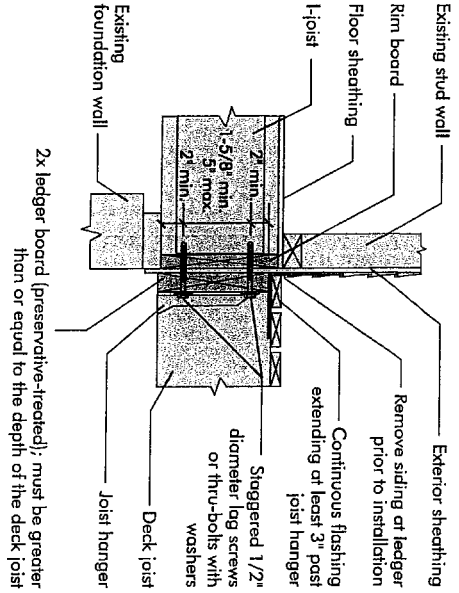
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD



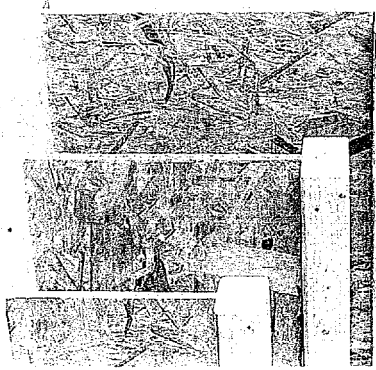
8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



2015-04-16

PRODUCT WARRANTY

Chamberlain
Chamberlain guarantees that, in accordance with our specifications, North products are free from manufacturing defects in material and workmanship.
Furthermore, Chamberlain warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.

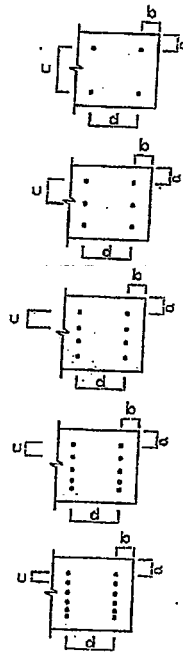


MICRO CITY ENGINEERING SERVICES INC.

TEL: (519) 287 - 2242

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

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



NOTES:

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



DWG NO TAMN/001.14

STRUCTURAL

COMPONENT ONLY

TO BE USED ONLY
WITH BEAM CALCS
BEARING THE
STAMP BELOW

PROVIDE NAILING
DETAIL # X SEE
DWG # TAMN1001-14