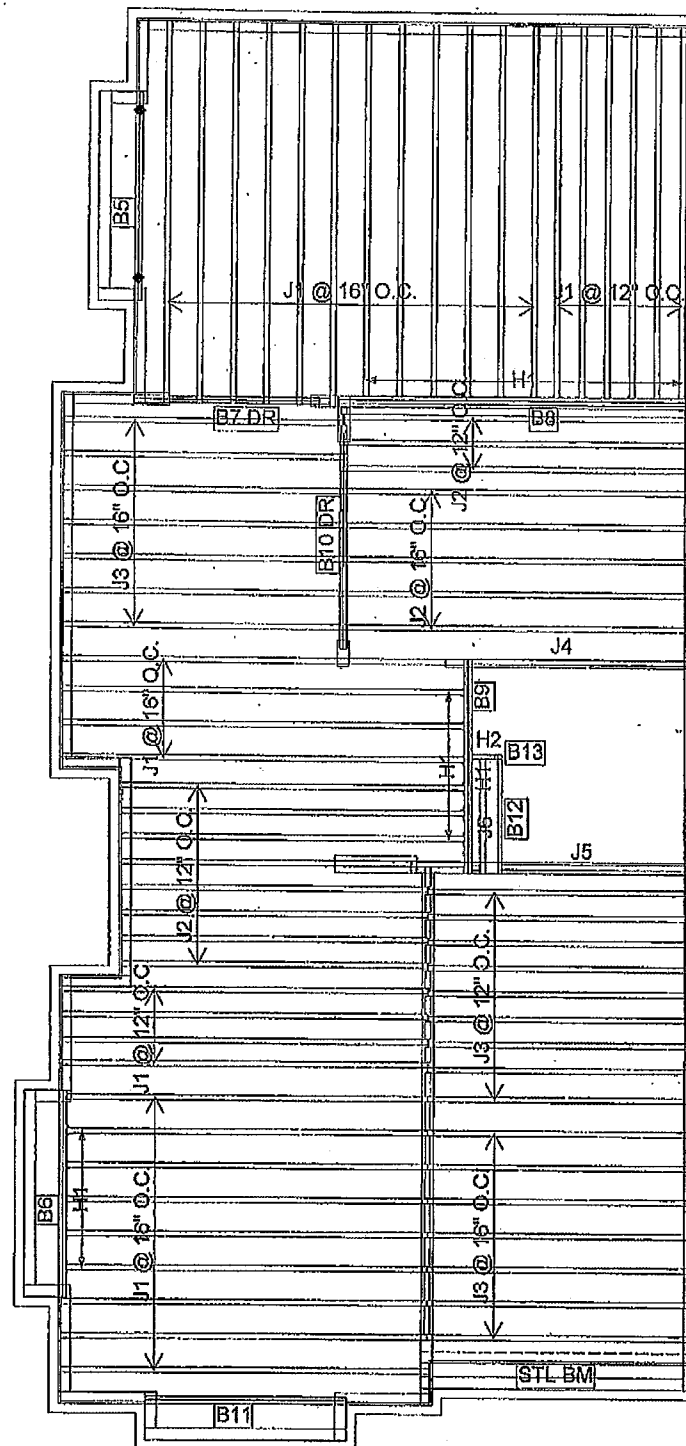


Products				
PlotID	Length	Product	Piles	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	3
J1DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	24
J2DJ	16-00-00	11 7/8" NI-40x	2	4
J3	14-00-00	11 7/8" NI-40x	1	17
J4	12-00-00	11 7/8" NI-40x	1	9
J4DJ	12-00-00	11 7/8" NI-40x	2	4
J5	10-00-00	11 7/8" NI-40x	1	6
J6	8-00-00	11 7/8" NI-40x	1	6
J7	4-00-00	11 7/8" NI-40x	1	6
J8	2-00-00	11 7/8" NI-40x	1	2
B1	16-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B4	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	HUS1.81/10

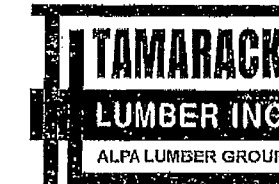
FIRM BCIN 28103  
DESIGNER BCIN 23991



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	11 7/8" NI-40x	1	35
J2	14-00-00	11 7/8" NI-40x	1	16
J3	12-00-00	11 7/8" NI-40x	1	23
J4	10-00-00	11 7/8" NI-40x	1	1
J5	8-00-00	11 7/8" NI-40x	1	1
J6	6-00-00	11 7/8" NI-40x	1	1
B8	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B10 DR	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B6	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7 DR	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B12	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
1	H1	IUS2.56/11.88
11	H1	IUS2.56/11.88
12	H1	IUS2.56/11.88
1	H2	HUS1.81/10

FIRM BCIN 28103  
 DESIGNER BCIN 23981



FROM PLAN DATED:

BUILDER: ROYAL PINE HOMES

SITE: FORESTSIDE ESTATES

MODEL: UNIT 2204 T4

ELEVATION: A

LOT:

CITY: BRAMPTON

SALESMAN: M D

DESIGNER: AJ

REVISION:

#### NOTES:

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

#### LOADING:

DESIGN LOADS: L/480.000

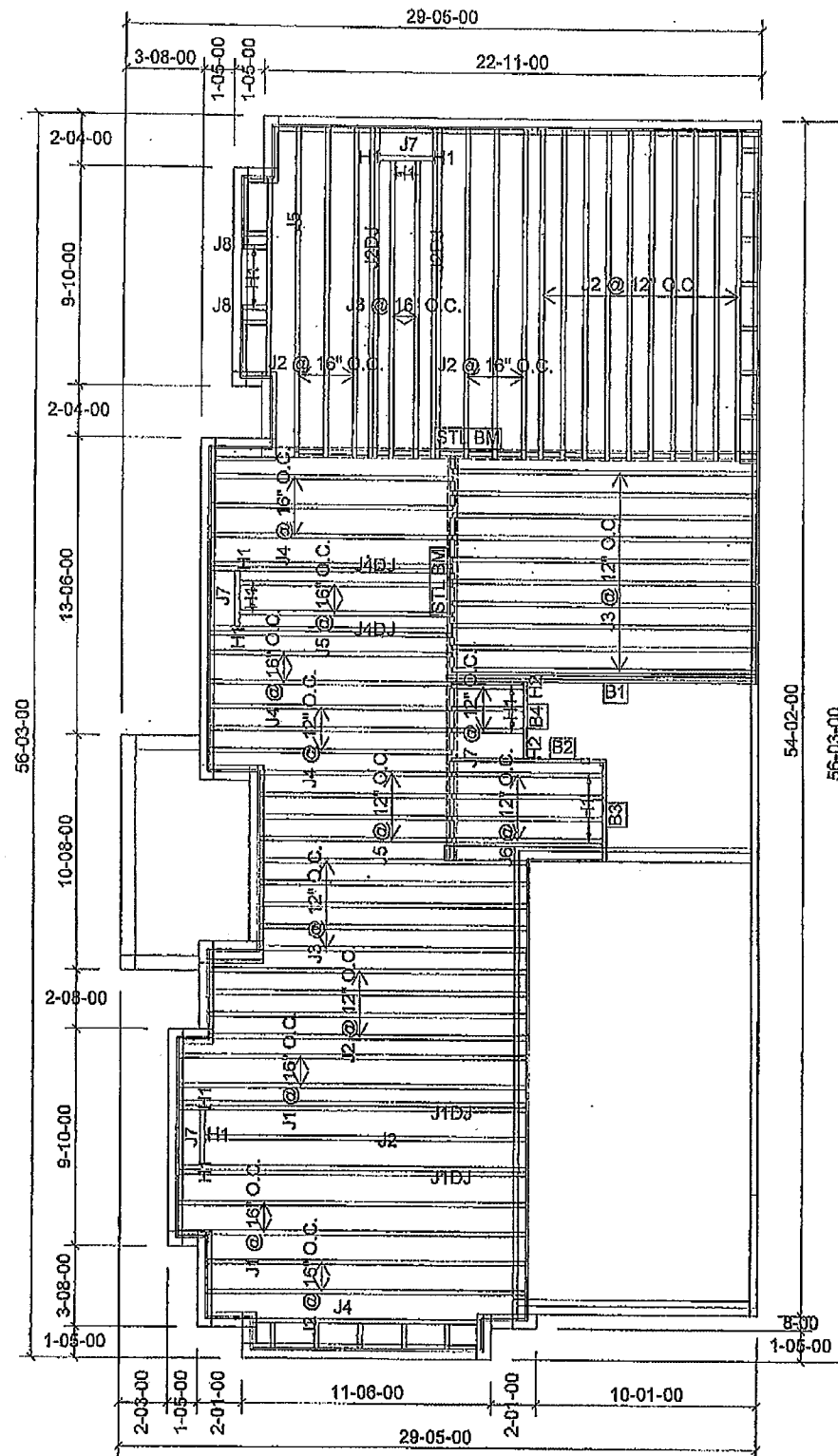
LIVE LOAD: 40.0 lb/ft<sup>2</sup>

DEAD LOAD: 20.0 lb/ft<sup>2</sup>

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2019-04-04

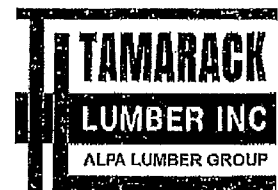
2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	4
J1DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	23
J2DJ	16-00-00	11 7/8" NI-40x	2	4
J3	14-00-00	11 7/8" NI-40x	1	17
J4	12-00-00	11 7/8" NI-40x	1	9
J4DJ	12-00-00	11 7/8" NI-40x	2	4
J5	10-00-00	11 7/8" NI-40x	1	7
J6	8-00-00	11 7/8" NI-40x	1	4
J7	4-00-00	11 7/8" NI-40x	1	6
J8	2-00-00	11 7/8" NI-40x	1	2
B1	16-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B4	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	HUS1.81/10

FIRM BCIN 28103  
DESIGNER BCIN 23991



FROM PLAN DATED:

BUILDER: ROYAL PINE HOMES

SITE: FORESTSIDE ESTATES

MODEL: UNIT 2204 T4

ELEVATION: B

LOT:

CITY: BRAMPTON

SALESMAN: M D

DESIGNER: AJ

REVISION:

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

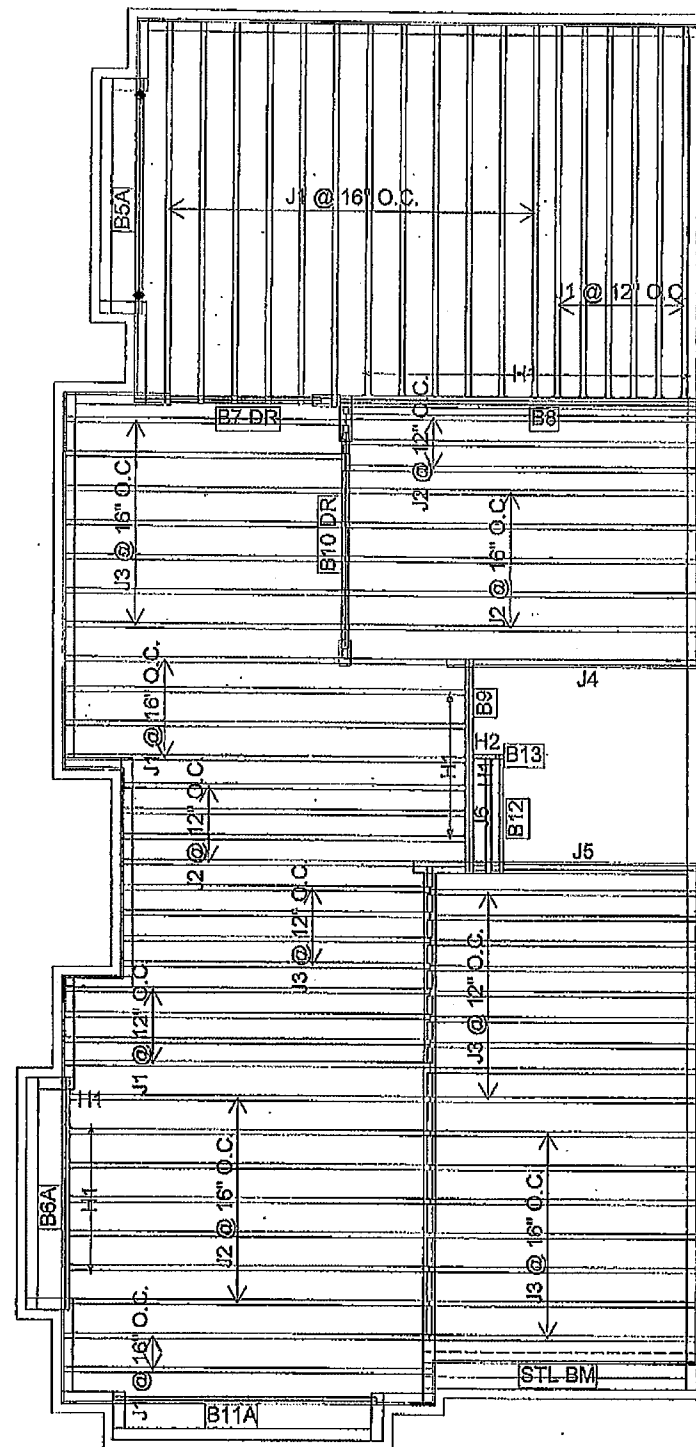
LIVE LOAD: 40.0 lb/ft<sup>2</sup>

DEAD LOAD: 20.0 lb/ft<sup>2</sup>

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2019-04-04

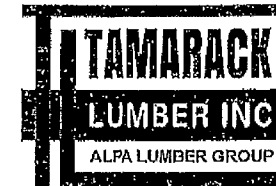
1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	11 7/8" NI-40x	1	28
J2	16-00-00	11 7/8" NI-40x	1	7
J2	14-00-00	11 7/8" NI-40x	1	12
J3	14-00-00	11 7/8" NI-40x	1	4
J3	12-00-00	11 7/8" NI-40x	1	23
J4	10-00-00	11 7/8" NI-40x	1	1
J5	8-00-00	11 7/8" NI-40x	1	1
J6	6-00-00	11 7/8" NI-40x	1	1
B8	16-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	3	3
B11A	12-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B10 DR	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B5A	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B6A	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B7 DR	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B12	6-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B13	2-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
1	H1	IUS2.56/11.88
12	H1	IUS2.56/11.88
12	H1	IUS2.56/11.88
1	H2	HUS1.81/10

FIRM BCIN 28103  
DESIGNER BCIN 23991



FROM PLAN DATED:

BUILDER: ROYAL PINE HOMES

SITE: FORESTSIDE ESTATES

MODEL: UNIT 2204 T4

ELEVATION: B

LOT:

CITY: BRAMPTON

SALESMAN: M D

DESIGNER: AJ

REVISION:

NOTES:

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

DEAD LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2019-04-04

2nd FLOOR

# CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / April 2014



Refer to the *Installation Guide for Residential Floors* for additional information.  
CCMC EVALUATION REPORT 13032-R

## WEB HOLE SPECIFICATIONS

### RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- 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.
- I-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joint flange.

- 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.
- 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.
- 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.
- Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

- 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.
- 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.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- 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.

TABLE 1

## LOCATION OF CIRCULAR HOLES IN JOIST WEBS

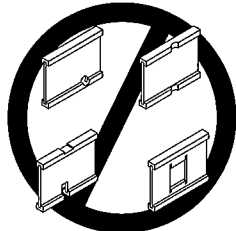
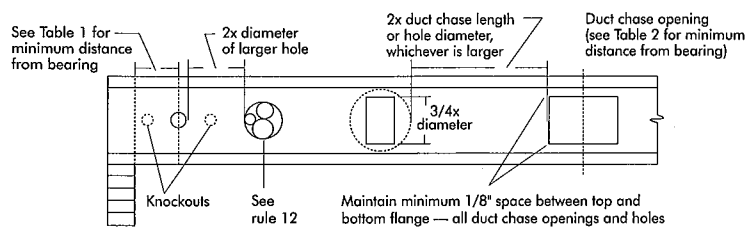
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)													
		Round Hole Diameter (in.)													
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	---	---	---
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---	---	---
	NI-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	---	---	---	---	---	---	---	---
	NI-80	2-3"	3-6"	5-0"	6-6"	8-2"	8-8"	---	---	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-5"	7-0"	8-4"	---	---	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	---	---	---	---	---
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	---	---	---	---	---
14"	NI-20	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	---	---	---	---	---
	NI-40x	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---	---	---
	NI-60	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"	---	---
	NI-70	0-7"	0-8"	1-8"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	8-8"	10-4"	11-9"	---	---
	NI-80	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"	---	---
16"	NI-20	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	---	---	---	---	---
	NI-40x	0-7"	0-8"	0-10"	2-5"	4-0"	4-5"	5-9"	7-5"	8-8"	9-4"	11-4"	12-11"	---	---
	NI-60	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"	---	---	---	---
	NI-70	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"	12-2"
	NI-80	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"	12-4"	14-0"

- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7

## FIELD-CUT HOLE LOCATOR



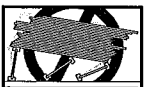
Knockouts are prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joint. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

Holes in webs should be cut with a sharp saw.

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

## 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:

- Brace and nail each I-joint 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.
- 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-joint 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-joint. 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.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
- Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
- Never install a damaged I-joint.

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.

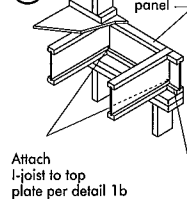


## PRODUCT WARRANTY

*Chantiers Chibougamau guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.*

*Furthermore, Chantiers Chibougamau 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.*

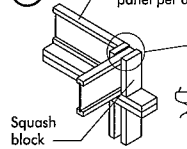
1a



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.

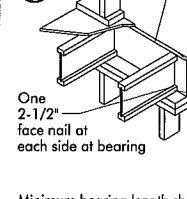
1d



Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)	
	3-1/2" wide	5-1/2" wide
2x Lumber	5,500	8,500
1-1/8" Rim Board Plus	4,300	6,600

Provide lateral bracing per detail 1a or 1b

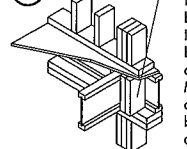
1b



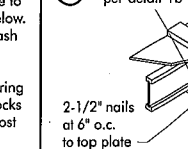
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

\*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.

1e



1g



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

1h

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

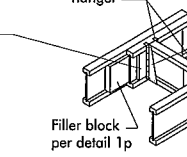
BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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

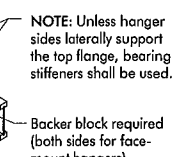
\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

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

1i

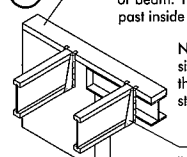


1j

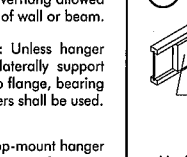


For nailing schedules for multiple beams, see the manufacturer's recommendations.

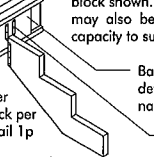
1k



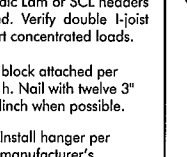
1m



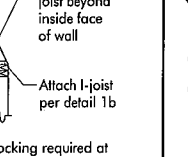
1n



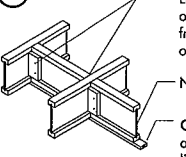
1o



1p

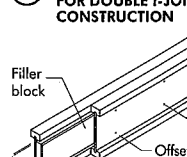


1q

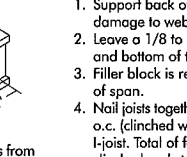


NOTE: Blocking required at bearing for lateral support, not shown for clarity.

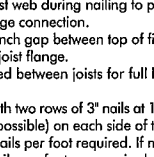
1r



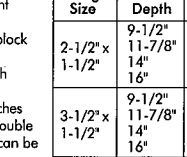
1s



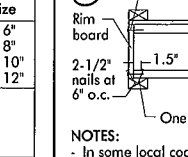
1t



1u



1v



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

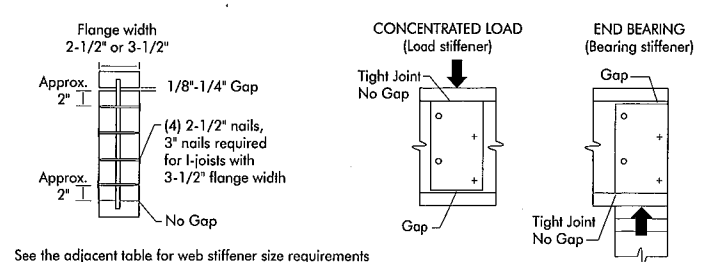
## WEB STIFFENERS

### RECOMMENDATIONS:

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

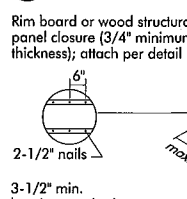
FIGURE 2

## WEB STIFFENER INSTALLATION DETAILS

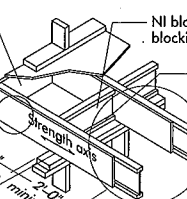


## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

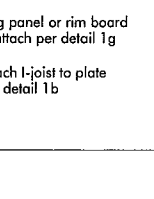
4a



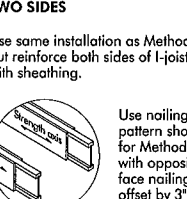
4b



4c

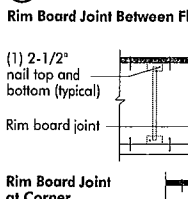


4d

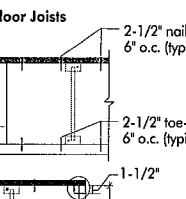


## RIM BOARD INSTALLATION DETAILS

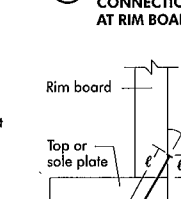
8a



8b



8c



## Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information		Application number:	
Building number, street name		Unit no.	Lot/con.
Municipality CITY OF BRAMPTON	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name <u>EDWIN C. FOK</u>		Firm <u>ESTRACON ENGINEERING INC.</u>	
Street address <u>69, GRAYDON CRES.</u>		Unit no.	Lot/con.
Municipality <u>RICHMOND HILL</u>	Postal code <u>L4B3W1</u>	Province <u>ONTARIO</u>	E-mail
Telephone number <u>(905) 882-2250</u>	Fax number <u>(905) 832-2086</u>	Cell number	
C. Design activities undertaken by individual identified in Section B. (Building Code Table 3.5.2.1. of Division C)			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings		<input type="checkbox"/> HVAC -- House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection	
		<input checked="" type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing -- House <input type="checkbox"/> Plumbing -- All Buildings <input type="checkbox"/> On-site Sewage Systems	
Description of designer's work <u>ROYAL PINE HOMES - FOREST SIDE - MODEL UNIT 2204 - 1st FLOOR</u> <u>2ND FLOOR - STANDARD (SCHEDULE IS NOT ISSUED AS LOT SPECIFIC)</u> REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY TAMARACK ROOF TRUSSES INC. (SEE DWG #TAM31018-18 DATED 11-12-18). SUPPORTING STRUCTURE TO BE REVIEWED AND VERIFIED BY QUALIFIED BUILDING DESIGNER.			
D. Declaration of Designer			
I, <u>EDWIN C. FOK</u> declare that (choose one as appropriate): (print name)			
<input checked="" type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.			
Individual BCIN: <u>23991</u>			
Firm BCIN: <u>28103</u>			
<input type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.			
Individual BCIN: _____			
Basis for exemption from registration: _____			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.			
Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge.			
2. I have submitted this application with the knowledge and consent of the firm.			
Date <u>April 17, 2019</u>		Signature of Designer <u>Edwin C. Fok</u>	

### NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
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## Schedule 1: Designer Information

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Building number, street name		Unit no.	Lot/con.
Municipality CITY OF BRAMPTON	Postal code	Plan number/ other description	
<b>B. Individual who reviews and takes responsibility for design activities</b>			
Name <u>EDWIN C. FOK</u>		Firm <u>STRACON ENGINEERING INC.</u>	
Street address <u>69, GRAYDON CRGS.</u>		Unit no.	Lot/con.
Municipality <u>RICHMOND HILL</u>	Postal code <u>L4B3W1</u>	Province <u>ONTARIO</u>	E-mail
Telephone number <u>(905) 832-2250</u>	Fax number <u>(905) 832-2286</u>	Cell number	
<b>C. Design activities undertaken by individual identified in Section B. (Building Code Table 3.5.2.1. of Division C)</b>			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings		<input type="checkbox"/> HVAC - House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection	
		<input checked="" type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing - House <input type="checkbox"/> Plumbing - All Buildings <input type="checkbox"/> On-site Sewage Systems	
Description of designer's work <u>ROYAL PINE HOMES - FOREST SIDE - MODEL UNIT 2204 - 14' ELEV. A</u> <u>2ND FLOOR - STANDARD (SCHEDULE IS NOT ISSUED AS LOT SPECIFIC)</u> REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY TAMARACK ROOF TRUSSES INC. (SEE DWG #TAM31018-18 DATED 11-12-18). SUPPORTING STRUCTURE TO BE REVIEWED AND VERIFIED BY QUALIFIED BUILDING DESIGNER.			
<b>D. Declaration of Designer</b>			
I, <u>EDWIN C. FOK</u> declare that (choose one as appropriate): (print name)			
<input checked="" type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.			
Individual BCIN: <u>23991</u>			
Firm BCIN: <u>28103</u>			
<input type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.			
Individual BCIN: _____			
Basis for exemption from registration: _____			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.			
Basis for exemption from registration and qualification: _____			
I certify that:			
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2. I have submitted this application with the knowledge and consent of the firm.			
Date <u>April 17, 2019</u>		Signature of Designer <u>Edwin C. Fok</u>	

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<b>A. Project Information</b>		Application number:	
Building number, street name		Unit no.	Lot/con.
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Street address <u>69, GRAYDON CRES.</u>		Unit no.	Lot/con.
Municipality <u>RICHMOND HILL</u>	Postal code <u>L4B3W1</u>	Province <u>ONTARIO</u>	E-mail
Telephone number <u>(905) 882-2250</u>	Fax number <u>(905) 832-2086</u>	Cell number	
<b>C. Design activities undertaken by individual identified in Section B. (Building Code Table 3.3.2.1 of Division C)</b>			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings		<input type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection	
		<input checked="" type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems	
Description of designer's work: <u>ROYAL PINE HOMES – FOREST SIDE – MODEL UNIT 2204 – 1<sup>ST</sup> FLOOR</u> <b>1<sup>ST</sup> FLOOR – STANDARD (SCHEDULE IS NOT ISSUED AS LOT SPECIFIC)</b> REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY TAMARACK ROOF TRUSSES INC. (SEE DWG #TAM31018-18 DATED 11-12-18). SUPPORTING STRUCTURE TO BE REVIEWED AND VERIFIED BY QUALIFIED BUILDING DESIGNER.			
<b>D. Declaration of Designer</b>			
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Firm BCIN: <u>28103</u>			
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Basis for exemption from registration: _____			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.			
Basis for exemption from registration and qualification: _____			
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Date <u>April 17, 2019</u>		Signature of Designer <u>[Signature]</u>	

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Municipality CITY OF BRAMPTON	Postal code	Plan number/ other description		
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Name <u>EDWIN C. FOK</u>		Firm <u>STRACON ENGINEERING INC.</u>		
Street address <u>69, GRAYDON CRES.</u>		Unit no.	Lot/con.	
Municipality <u>RICHMOND HILL</u>	Postal code <u>L4B3W7</u>	Province <u>ONTARIO</u>	E-mail	
Telephone number <u>(905) 882-2250</u>	Fax number <u>(905) 832-0286</u>	Cell number		
C. Design activities undertaken by individual identified in Section B. (Building Code Table 3.5.2.1 of Division C)				
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings		<input type="checkbox"/> HVAC - House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection		<input checked="" type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing - House <input type="checkbox"/> Plumbing - All Buildings <input type="checkbox"/> On-site Sewage Systems
Description of designer's work <u>ROYAL PINE HOMES - FOREST SIDE - MODEL UNIT 2204 TG - ELEV. A</u> <b>1ST FLOOR - STANDARD (SCHEDULE IS NOT ISSUED AS LOT SPECIFIC)</b> REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY TAMARACK ROOF TRUSSES INC. (SEE DWG #TAM31018-18 DATED 11-12-18). SUPPORTING STRUCTURE TO BE REVIEWED AND VERIFIED BY QUALIFIED BUILDING DESIGNER.				
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Firm BCIN: <u>28103</u>				
<input type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.				
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Basis for exemption from registration: _____				
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.				
Basis for exemption from registration and qualification: _____				
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Date <u>April 17, 2019</u>		Signature of Designer <u>Edwin C. Fok</u>		

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# NORDIC STRUCTURES

**COMPANY**  
TAMARACK LUMBER INC.  
3289 NORTH SERVICE ROAD  
BURLINGTON ONTARIO  
Apr. 26, 2017 09:54

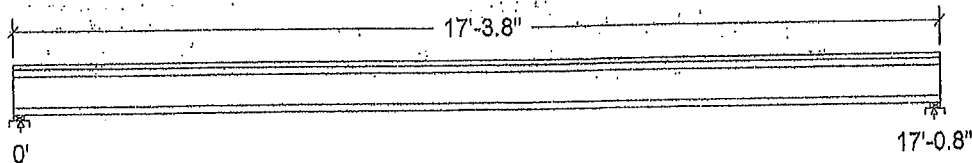
**PROJECT**  
J4 2ND FLOOR  
J1 1ST FLOOR END

## Design Check Calculation Sheet Nordic Sizer - Canada 6.4

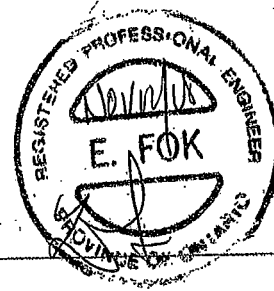
### Loads:

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

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



Unfactored:			
Dead	171		171
Live	341		341
Factored:			
Total	725		725
Bearing:			
Resistance			
Joist	1893		1893
Support	5112		5112
Des ratio			
Joist	0.38		0.38
Support	0.14		0.14
Load case	#2		#2
Length	2-3/8		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.00		1.00



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

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

Total length: 17'-3.8"; 3/4" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 725	Vr = 1895	lbs	Vf/Vr = 0.38
Moment (+)	Mf = 3094	Mr = 8958	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = <L/999	0.57 = L/360	in	0.20
Live Defl'n	0.23 = L/884	0.43 = L/480	in	0.54
Total Defl'n	0.35 = L/589	0.85 = L/240	in	0.41
Bare Defl'n	0.26 = L/776	0.57 = L/360	in	0.46
Vibration	Lmax = 17'-1	Lv = 18'-10	ft	
Defl'n	= 0.028	= 0.037	in	0.76

DWING TAM 8570184 p6 1/2  
STRUCTURAL  
COMPONENT ONLY

T-1811356

**Additional Data:**

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

**CRITICAL LOAD COMBINATIONS:**

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

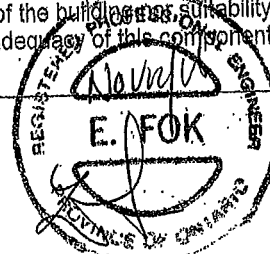
**CALCULATIONS:**

Deflection:  $EI_{eff} = 375e06 \text{ lb-in}^2$   $K = 4.94e06 \text{ lbs}$   
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-14 Engineering Design in Wood standard (May 2014 edition).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building or suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

CONFORMS TO OBC 2012



DWG NO. FAW B5791814  
 STRUCTURAL  
 COMPONENT ONLY

T-1811356(1)

# NORDIC STRUCTURES

COMPANY  
Apr. 26, 2017 09:55

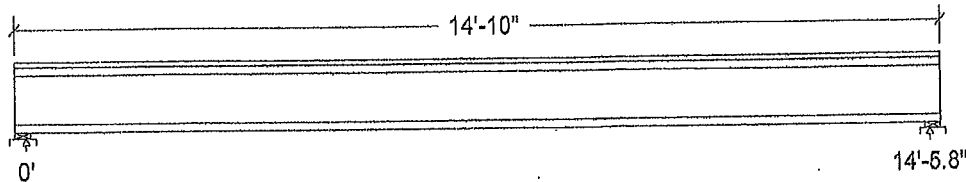
PROJECT  
J1 2nd FLOOR  
NORDIC SIZER

## Design Check Calculation Sheet Nordic Sizer - Canada 6.4

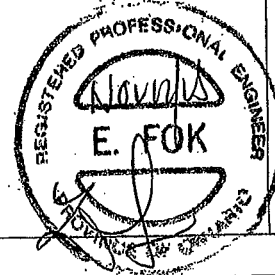
### Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf
Self-weight	Dead	Full UDL			2.9	plf

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



Unfactored:			
Dead	214		214
Live	386		386
Factored:			
Total	846		846
Bearing:			
Resistance			
Joist	2189		2189
Support	5304		5304
Des ratio			
Joist	0.39		0.39
Support	0.16		0.16
Load case	#2		#2
Length	3		3
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.15



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

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

Total length: 14'-10.0"; 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 = 846	Vr = 2336	lbs	Vf/Vr = 0.36
Moment (+)	Mf = 3064	Mr = 6255	lbs-ft	Mf/Mr = 0.49
Perm. Defl'n	0.08 = <L/999	0.48 = L/360	in	0.16
Live Defl'n	0.14 = <L/999	0.36 = L/480	in	0.39
Total Defl'n	0.22 = L/801	0.72 = L/240	in	0.30
Bare Defl'n	0.16 = <L/999	0.48 = L/360	in	0.34
Vibration	Lmax = 14'-6	Lv = 17'-8	ft	
Defl'n	= 0.024	= 0.046	in	0.53

DWG NO. TAM 0571-18 04  
STRUCTURAL  
COMPONENT ONLY

T-1811357

**Additional Data:**

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

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanant)

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

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

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

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

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

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake  
L=live(use,occupancy) Ls=live(storage,equipment) f=fire

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

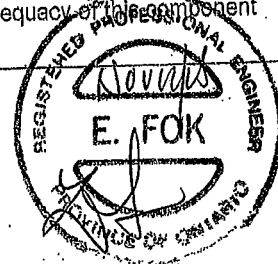
**CALCULATIONS:**Deflection: E<sub>ieff</sub> = 448e06 lb-in<sup>2</sup> K= 6.18e06 lbs

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

**Design Notes:**

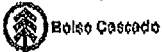
1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1.
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of the component based on the design criteria and loadings shown.

CONFORMS TO QBC 2012



DWG NO. TAM 0571-1814  
STRUCTURAL  
COMPONENT ONLY

T-18135761



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B1(11466)

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

April 26, 2017 09:35:23

BC CALC® Design Report

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

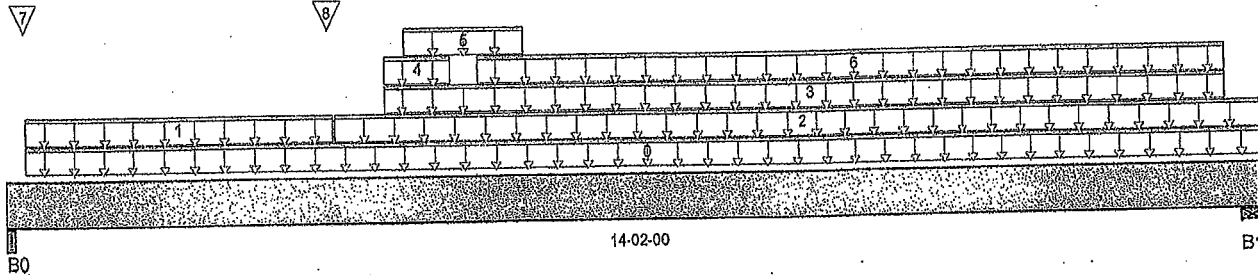
Description: Designs\Flush Beams\Basement\Flush Beams\B1(11466)

Specifier:

Designer: AJ

Company:

Misc:



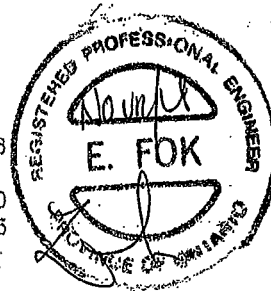
Total Horizontal Product Length = 14-02-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	1,744 / 0	1,224 / 0		
B1, 2-3/8"	904 / 0	959 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	14-02-00	8	4			n/a
1 FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	03-08-06	8				n/a
2 FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-08-06	14-02-00	6	3			n/a
3 8(1917)	Unf. Lin. (lb/ft)	L	04-03-04	13-09-10		65			n/a
4 8(1917)	Unf. Lin. (lb/ft)	L	04-03-04	05-00-04	189				n/a
5 8(1917)	Unf. Lin. (lb/ft)	L	04-05-14	05-09-14	957	516			n/a
6 8(1917)	Unf. Lin. (lb/ft)	L	05-03-10	13-09-10	35	23			n/a
7 8(1914)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	241	150			n/a
8 B4(11467)	Conc. Pt. (lbs)	L	03-07-08	03-07-08	492	255			n/a



Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	14,435 ft-lbs	38,727 ft-lbs	37.3%	1	05-03-10
End Shear	3,534 lbs	14,464 lbs	24.4%	1	01-05-02
Total Load Defl.	L/509 (0.322")	0.683"	47.2%	4	06-10-02
Live Load Defl.	L/918 (0.178")	0.455"	39.2%	5	06-07-08
Max Defl.	0.322"	n/a	n/a	4	06-10-02
Span / Depth	13.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5-1/4" x 3-1/2"	4,146 lbs	52.8%	18.5%	Unspecified
B1 Wall/Plate	2-3/8" x 3-1/2"	2,554 lbs	71.9%	25.2%	Unspecified

## Notes

DWNG. YAM B57210 H  
STRUCTURAL  
COMPONENT ONLY

TU811378



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B1(I1466)

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

April 26, 2017 09:35:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(I1466

Specifier:

Designer: AJ

Company:

Msc:

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

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

Calculations assume member is fully braced.

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

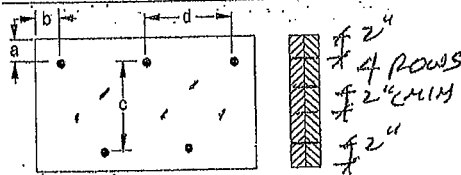
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## Connection Diagram



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

b minimum = 3" d = 6"

Calculated Side Load = 74.6 lb/ft

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

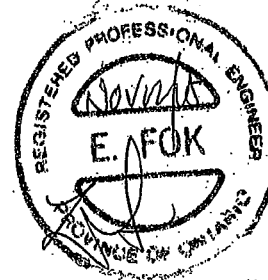
Connectors are: Nails

3-1/2" ARDOX SPIRAL

## Disclosure

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

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DWG NO. YAM 051218H  
STRUCTURAL  
COMPONENT ONLY

T-181135861





Boise Cascade

## Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(11468)

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

April 26, 2017 09:35:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

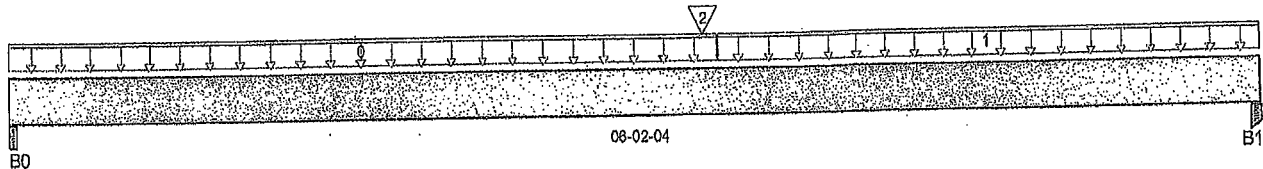
Description: Designs\Flush Beams\Basement\Flush Beams\B2(11468)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 06-02-04

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

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	321/0	184/0		
B1, 1-3/4"	332/0	190/0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Trib.
0 FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-05-12	40	20	n/a
1 FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-05-12	06-02-04	21	11	n/a
2 B4(11467)	Conc. Pt. (lbs)	L	03-04-14	03-04-14	456	238	n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,777 ft-lbs	19,364 ft-lbs	9.2%	1	03-04-14
End Shear	675 lbs	7,232 lbs	9.3%	1	05-00-10
Total Load Defl.	L/999 (0.014")	n/a	n/a	4	03-02-06
Live Load Defl.	L/999 (0.009")	n/a	n/a	5	03-02-06
Max Defl.	0.014"	n/a	n/a	4	03-02-06
Span / Depth	6	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	2-5/8" x 1-3/4"	712 lbs	36.3%	12.7%	Unspecified
B1 Post	1-3/4" x 1-3/4"	735 lbs	36.9%	19.7%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

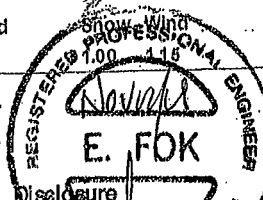
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



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

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DRGNO. TAM 0573-18H  
STRUCTURAL  
COMPONENT ONLY

T-1811359



# Boise Cascade Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams\B3(I1469)

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

April 26, 2017 09:35:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2204 T4.mxd

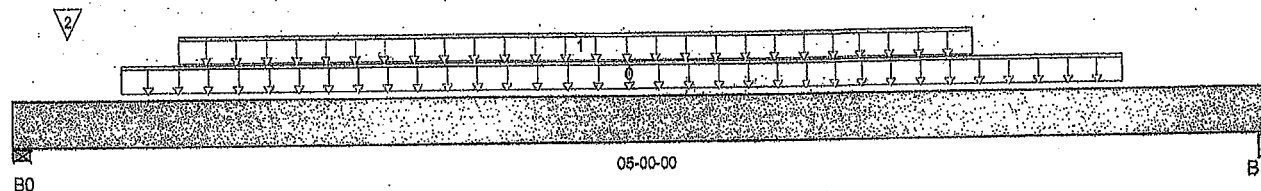
Description: Designs\Flush Beams\Basement\Flush Beams\B3(I1469)

Specifier:

Designer: AJ

Company:

Msc:



Total Horizontal Product Length = 05-00-00

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

Bearing	Live	Dead	Snow	Wind
B0; 5-1/2"	913 / 0	1,112 / 0		
B1; 3-1/2"	561 / 0	295 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0 Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-04	04-05-04	126	63			
1 User Load	Unf. Lin. (lb/ft)	L	00-08-00	03-10-00	240	120			
2 2(905)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	207	744			

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,757 ft-lbs	19,364 ft-lbs	9.1%	1	02-06-12
End Shear	1,373 lbs	7,232 lbs	19%	1	01-05-06
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-06-12
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-06-12
Max Defl.	0.009"	n/a	n/a	4	02-06-12
Span / Depth	4.4	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	2,760 lbs	67.1%	23.5%	Unspecified
B1 Post	3-1/2" x 1-3/4"	1,209 lbs	30.4%	16.2%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## Disclosure

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

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OWG NO. TAM 0574-104  
STRUCTURAL  
COMPONENT ONLY

T-181360



# Boise Cascade Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B4(11467)

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

April 26, 2017 09:35:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

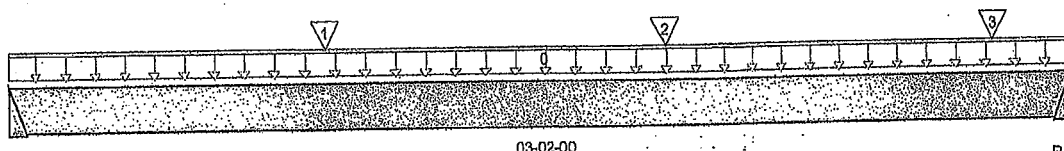
Description: Designs\Flush Beams\Basement\Flush Beams\B4(11467)

Specifier:

Designer: AJ

Company:

Misc:



B0

B1

Total Horizontal Product Length = 03-02-00

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

Bearing	Live	Dead	Snow	Wind
B0	459 / 0	239 / 0		
B1	489 / 0	254 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	240	120			n/a
1	J6(11184)	Conc. Pt. (lbs)	L	00-11-04	00-11-04	70	35			n/a
2	J6(11184)	Conc. Pt. (lbs)	L	01-11-04	01-11-04	70	35			n/a
3	J6(11163)	Conc. Pt. (lbs)	L	02-11-04	02-11-04	48	24			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	718 ft-lbs	19,364 ft-lbs	3.7%	1	01-07-02
End Shear	357 lbs	7,232 lbs	4.9%	1	02-00-02
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-07-02
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-07-02
Max Defl.	0.002"	n/a	n/a	4	01-07-02
Span / Depth	3	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	987 lbs	n/a	23.1%	Hanger
B1 Hanger	2" x 1-3/4"	1,051 lbs	n/a	24.6%	Hanger

## Notes

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

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

Calculations assume member is fully braced.

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

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

O86.

Design based on Dry Service Condition.

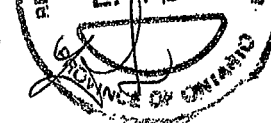
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## Disclosure

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

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DWG NO. TAM B578184  
STRUCTURAL  
COMPONENT ONLY

T-L81361



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B5(1465)

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

April 26, 2017 09:35:24

BC CALC@ Design Report

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

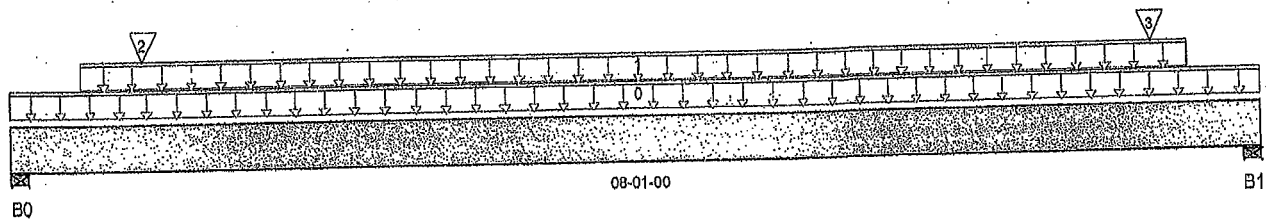
Description: Designs\Flush Beams\1st Floor\Flush Beams\B5(1465)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 08-01-00

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

Bearing	Live	Dead	Snow	Wind
B0, 6-1/2"	1,197 / 0	1,165 / 0	1,496 / 0	
B1, 6-1/2"	704 / 0	1,457 / 0	1,240 / 0	

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0. FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	27	13			n/a
1 User Load	Unf. Lin. (lb/ft)	L	00-05-08	07-07-08		100			n/a
2 User Load	Conc. Pt. (lbs)	L	00-10-08	00-10-08	1,141	708	1,546		n/a
3 User Load	Conc. Pt. (lbs)	L	07-04-08	07-04-08	545	992	1,190		n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,584 ft-lbs	38,727 ft-lbs	6.7%	13	03-04-12
End Shear	1,924 lbs	14,464 lbs	13.3%	13	01-05-06
Total Load Defl.	L/999 (0.021")	n/a	n/a	45	03-11-08
Live Load Defl.	L/999 (0.01")	n/a	n/a	61	03-10-08
Max Defl.	0.021"	n/a	n/a	45	03-11-08
Span / Depth	7.4	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	6-1/2" x 3-1/2"	4,298 lbs	52.3%	18.3%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	4,034 lbs	49%	17.2%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results, per CSA Q86.

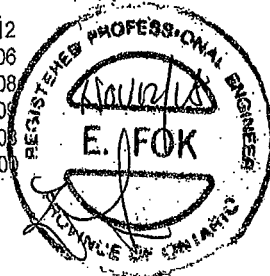
BC CALC@ analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA

Q86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9



DWG NO. YAM 05701814  
STRUCTURAL  
COMPONENT ONLY

T-6811362



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\B5(11465)

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

April 26, 2017 09:35:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2204 T4.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B5(11465)

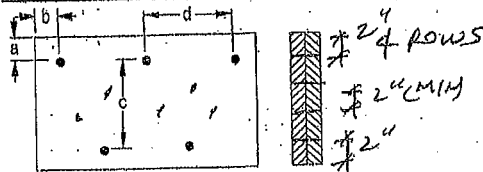
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 6"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record. Member has no side loads.

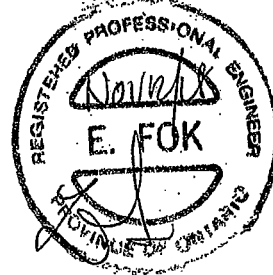
Connectors are: 16d 1: Nails

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

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DWG NO. FAM 0576-181+  
STRUCTURAL  
COMPONENT ONLY

T-181362(2)



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B6(11445)

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

April 26, 2017 09:35:25

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

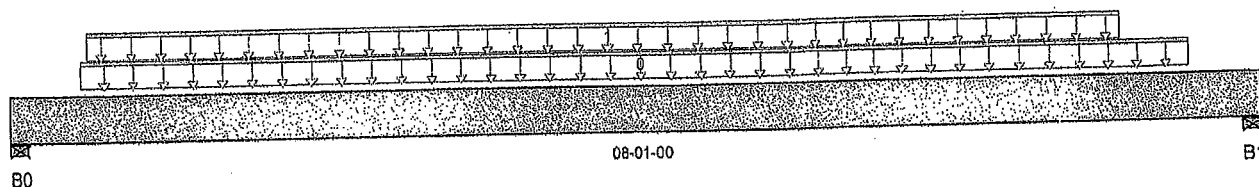
Description: Designs\Flush Beams\1st Floor\Flush Beams\B6(11445)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 08-01-00

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

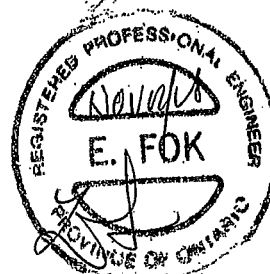
Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,012 / 0	914 / 0		
B1, 5-1/2"	903 / 0	859 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trlb.
0	User Load	Unf. Lin. (lb/ft)	L	00-05-08	07-07-08	100				n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-00	07-02-00	287	144			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,068 ft-lbs	38,727 ft-lbs	13.1%	1	03-10-00
End Shear	2,284 lbs	14,464 lbs	15.8%	1	01-05-08
Total Load Defl.	L/999 (0.035")	n/a	n/a	4	04-00-00
Live Load Defl.	L/999 (0.019")	n/a	n/a	5	04-00-00
Max Defl.	0.035"	n/a	n/a	4	04-00-00
Span / Depth	7.4	n/a	n/a		00-00-00



## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	2,861 lbs	32.4%	11.3%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	2,429 lbs	29.5%	10.3%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

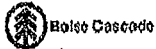
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

DWG NO. TAN 0571014  
STRUCTURAL  
COMPONENT ONLY

T-180863



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor... \B6(I1445)

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

April 26, 2017 09:35:25

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B6(I1445)

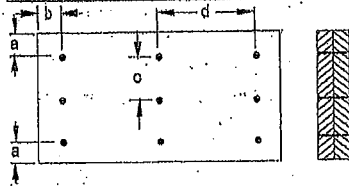
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



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

Calculated Side Load = 503.8 lb/ft

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

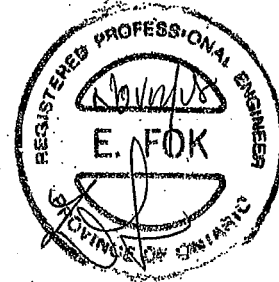
Connectors are: 16d 1 Nails

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

## Disclosure

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

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DWG NO. TAM 0577-104  
STRUCTURAL  
COMPONENT ONLY

T-181136361





Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor Flush Beams B7(1961)**

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

April 26, 2017 09:35:25

## BC CALC® Design Report



Bulld 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

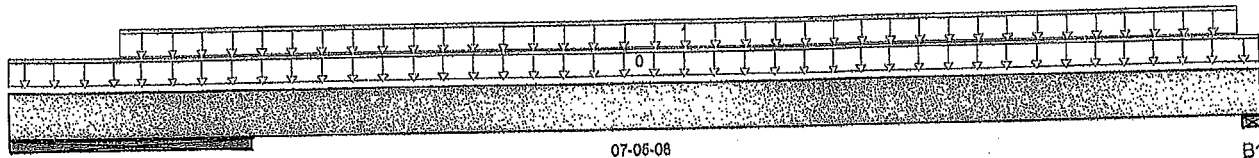
Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(1961)

Specifier:

Designer: AJ

Company:

Misc:



B0

07-05-08

B1

Total Horizontal Product Length = 07-05-08

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

Bearing	Live	Dead	Snow	Wind
B0, 17-1/2"	1,218 / 0	659 / 0		
B1, 4"	990 / 0	532 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-05-08	37	18			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	07-04-00	290	145			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,014 ft-lbs	38,727 ft-lbs	7.8%	1	04-00-00
End Shear	1,602 lbs	14,464 lbs	11.1%	1	02-05-08
Total Load Defl.	L/999 (0.013")	n/a	n/a	4	04-04-00
Live Load Defl.	L/999 (0.008")	n/a	n/a	5	04-04-00
Max Defl.	0.013"	n/a	n/a	4	04-04-00
Span / Depth	5.9	n/a	n/a		00-00-00
Distributed Load(B0)	78 lb/ft	57,845 lb/ft	0.1%	0	n/a
Concentrated Load(B0)	822 lbs	16,813 lbs	4.9%	0	n/a



Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	17-1/2" x 3-1/2"	2,650 lbs	10.1%	3.5%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,150 lbs	35.9%	12.6%	Unspecified

**Notes**

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

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

Calculations assume member is fully braced.

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

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

O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition:

Importance Factor: Normal Part code: Part 9

DWG NO. TAM 0578.18  
STRUCTURAL  
COMPONENT ONLY

T-1811364



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B7(1961)**

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

April 26, 2017 09:35:25

BC CALCO® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2204 T4.mmd

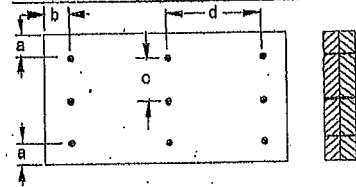
Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(1961)

Specifier:

Designer: AJ

Company:

Misc:

**Connection Diagram**

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

Calculated Side Load = 550.9 lb/ft

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

Connectors are: 16d Nails

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

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

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DWG NO. TAM 057818  
 STRUCTURAL  
 COMPONENT ONLY

T-181136461



# Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B8(1945)

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

April 26, 2017 09:35:25

BC CALCO® Design Report



Bulld 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

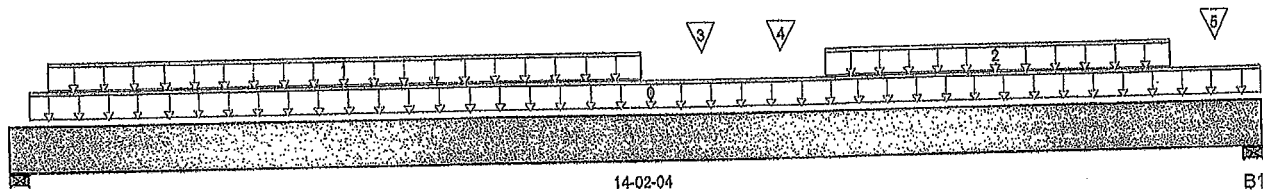
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(1945)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 14-02-04

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

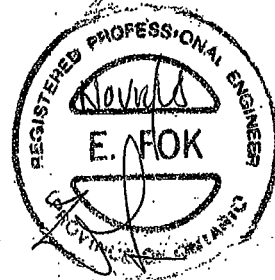
Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	2,028 / 0	1,143 / 0		
B1, 4-3/8"	2,080 / 0	1,169 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0 FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	14-02-04	12	6			n/a
1 Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-06	07-01-06	291	146			n/a
2 Smoothed Load	Unf. Lin. (lb/ft)	L	09-02-02	13-02-02	291	146			n/a
3 J1 (1986)	Conc. Pt. (lbs)	L	07-09-06	07-09-06	325	162			n/a
4 J1 (1313)	Conc. Pt. (lbs)	L	08-08-02	08-08-02	276	138			n/a
5 J1 (1295)	Conc. Pt. (lbs)	L	13-08-02	13-08-02	234	117			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	15,114 ft-lbs	60,415 ft-lbs	25%	1	07-03-06
End Shear	4,128 lbs	21,696 lbs	19%	1	01-05-06
Total Load Defl.	L/673 (0.241")	0.674"	35.7%	4	07-01-06
Live Load Defl.	L/1,050 (0.154")	0.45"	34.3%	5	07-01-06
Max Defl.	0.241"	n/a	n/a	4	07-01-06
Span / Depth	13.6	n/a	n/a		00-00-00



## Bearing Supports

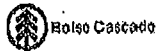
	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 5-1/4"	4,470 lbs	36.2%	12.7%	Unspecified
B1 Wall/Plate	4-3/8" x 5-1/4"	4,581 lbs	46.7%	16.3%	Unspecified

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALCO analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor: Normal Part code: Part 9

DWNO. TAM 0579-18  
 STRUCTURAL  
 COMPONENT ONLY

T-1811305



# Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor Flush Beams B8(1945)

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

April 26, 2017 09:35:25

BC CALCO® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(1945)

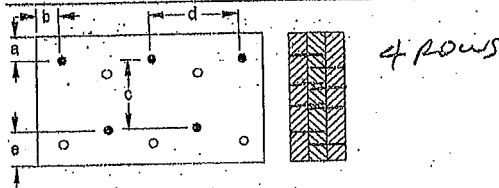
Specifier:

Designer: AJ

Company:

Msc:

## Connection Diagram



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

Calculated Side Load = 590.1 lb/ft

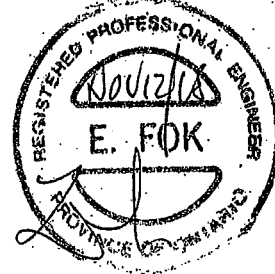
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record. Nailing schedule applies to both sides of the member.

Connectors are: 1 Nails  
3-1/2" ARDOX SPIRAL

## Disclosure

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

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DWG NO. TAM 0574 18 17  
STRUCTURAL  
COMPONENT ONLY

T-18126567



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B9(11426)

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

April 26, 2017 09:35:25

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

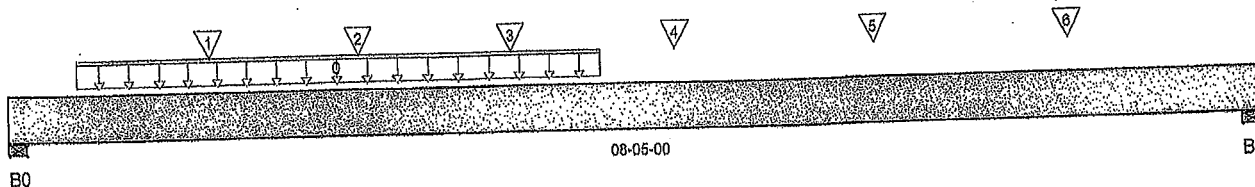
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(11426)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 08-05-00

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

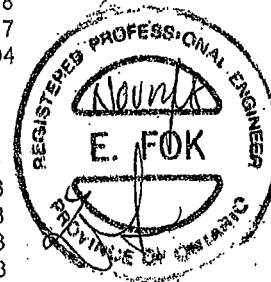
Bearing	Live	Dead	Snow	Wind
B0, 6-1/2"	1,662 / 0	883 / 0		
B1, 3-1/2"	1,276 / 0	688 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-05-08	03-11-08	240	120			n/a
1	J2(11391)	Conc. Pt. (lbs)	L	01-04-04	01-04-04	276	138			n/a
2	J2(11379)	Conc. Pt. (lbs)	L	02-04-04	02-04-04	279	139			n/a
3	J2(11392)	Conc. Pt. (lbs)	L	03-04-04	03-04-04	294	147			n/a
4	J1(11210)	Conc. Pt. (lbs)	L	04-05-08	04-05-08	395	198			n/a
5	J1(11231)	Conc. Pt. (lbs)	L	05-09-08	05-09-08	434	217			n/a
6	J1(11195)	Conc. Pt. (lbs)	L	07-01-08	07-01-08	407	204			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,681 ft-lbs	38,727 ft-lbs	17.3%	1	03-09-11
End Shear	3,012 lbs	14,464 lbs	20.8%	1	01-05-08
Total Load Defl.	L/999 (0.053")	n/a	n/a	4	04-02-08
Live Load Defl.	L/999 (0.034")	n/a	n/a	5	04-02-08
Max Defl.	0.053"	n/a	n/a	4	04-02-08
Span / Depth	7.9	n/a	n/a		00-00-00



## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	3,597 lbs	43.7%	15.3%	Unspecified
B1 Wall/Plate	3-1/2" x 3-1/2"	2,775 lbs	53%	18.6%	Unspecified

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

DWG NO. TAM B580.8 H  
 STRUCTURAL  
 COMPONENT ONLY

T-1811266



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B9(i1426)

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

April 26, 2017 09:35:25

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i1426)

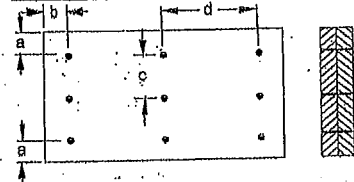
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



a minimum = 2" c = 3-15/16"  
b minimum = 3" d = 4"

Calculated Side Load = 526.5 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: 1 r Nails

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

## Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6899 before installation.

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DWG NO. TAM 0500-1814  
STRUCTURAL  
COMPONENT ONLY

T-1813666



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...IB11(i1436)

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

April 26, 2017 09:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

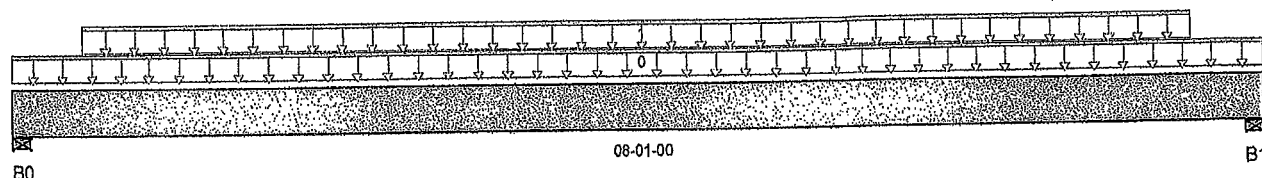
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i1436)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 08-01-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	108 / 0	461 / 0		
B1, 5-1/2"	108 / 0	461 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.66	Snow 1.00	Wind 1.16	Trib.
0 FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	27	13			n/a
1 User Load	Unf. Lin. (lb/ft)	L	00-05-08	07-07-08		100			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,166 ft-lbs	25,173 ft-lbs	4.6%	0	04-00-08
End Shear	455 lbs	9,401 lbs	4.8%	0	01-05-08
Total Load Defl.	L/999 (0.01")	n/a	n/a	4	04-00-08
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	04-00-08
Max Defl.	0.01"	n/a	n/a	4	04-00-08
Span / Depth	7.4	n/a	n/a		00-00-00



Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	645 lbs	12.1%	4.2%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	645 lbs	12.1%	4.2%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

DWG NO. TAM0580-1814  
STRUCTURAL  
COMPONENT ONLY

T-1811767





Boise Cascade

# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...IB11(11436)

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

April 26, 2017 09:35:26

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2204 T4.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\IB11(11436)

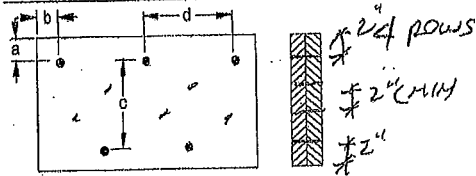
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



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

Member has no side loads.

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

## Disclosure

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

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P624  
DWG NO. TAM B58018H  
STRUCTURAL  
COMPONENT ONLY

T-4811367(V)



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...B10 DR(11046)

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

April 26, 2017 09:35:26

BC CALC® Design Report



Buld 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

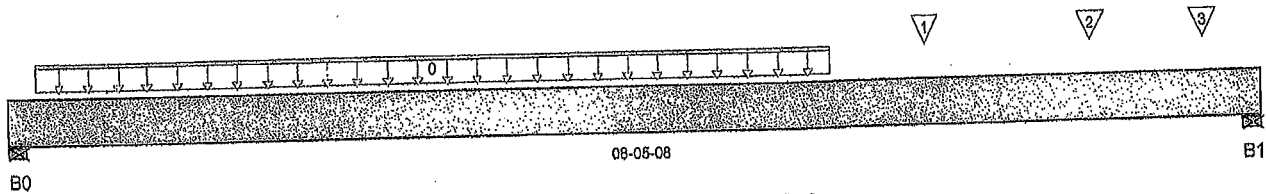
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B10

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 08-05-08

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

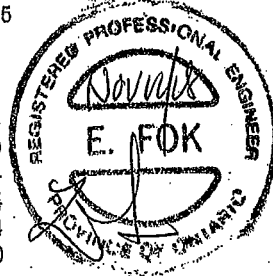
Bearing	Live	Dead	Snow	Wind
B0, 4"	1,988 / 0	1,045 / 0		
B1, 4"	2,141 / 0	1,122 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0 Smoothed Load	Unf. Lin. (lb/ft)	L	00-02-04	05-06-04	493	246			n/a
1	Conc. Pt. (lbs)	L	06-02-04	06-02-04	598	299			n/a
2	Conc. Pt. (lbs)	L	07-03-12	07-03-12	552	276			n/a
3 J2(1330)	Conc. Pt. (lbs)	L	08-01-00	08-01-00	349	175			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,309 ft-lbs	38,727 ft-lbs	21.5%	1	04-10-04
End Shear	3,842 lbs	14,464 lbs	25.2%	1	07-01-10
Total Load Defl.	L/999 (0.068")	n/a	n/a	4	04-02-04
Live Load Defl.	L/999 (0.045")	n/a	n/a	5	04-02-04
Max Defl.	0.068"	n/a	n/a	4	04-02-04
Span / Depth	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" x 3-1/2"	4,288 lbs	47.1%	25.1%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	4,614 lbs	50.7%	27%	Unspecified

## Notes

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume unbraced length of Top: 00-04-00, Bottom: 00-04-00.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

DWG NO. TAM 058-218 H  
STRUCTURAL  
COMPONENT ONLY

T-181368



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B10 DR(11046)

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

April 26, 2017 09:35:26

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4.mmdl

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

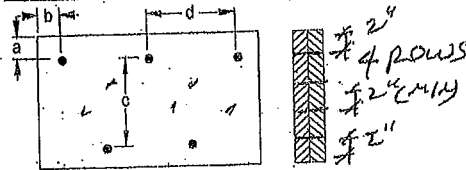
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



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

b minimum = 3" d = 6"

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

Member has no side loads.

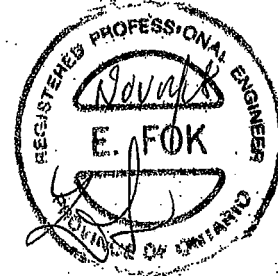
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

## Disclosure

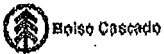
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P62  
DWG NO. TAM 050210 H  
STRUCTURAL  
COMPONENT ONLY

T-L 81136861



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B5A(1877)

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

April 26, 2017 09:53:39

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4 EL-B.mmd

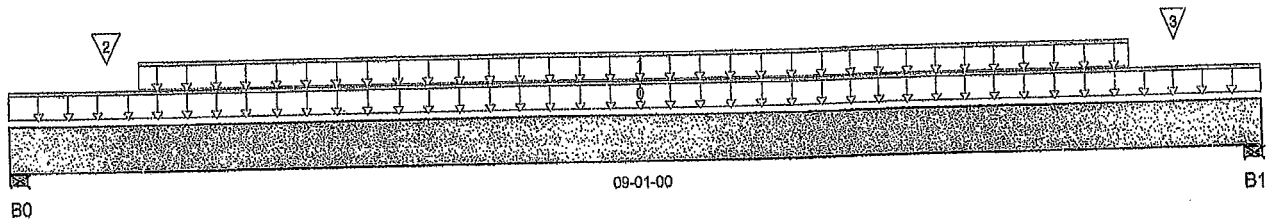
Description: Designs\Flush Beams\1st Floor\Flush Beams\B5A(1877)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 09-01-00

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

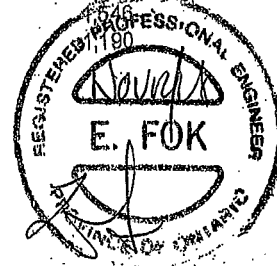
Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,233 / 0	1,183 / 0	1,520 / 0	
B1, 5-1/2"	695 / 0	1,465 / 0	1,216 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-01-00	27	13			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-11-08	08-01-08		100			n/a
2	User Load	Conc. Pt. (lbs)	L	00-08-10	00-08-10	1,141	708			n/a
3	User Load	Conc. Pt. (lbs)	L	08-05-06	08-05-06	545	992			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,810 ft-lbs	25,173 ft-lbs	7.2%	0	04-06-08
End Shear	1,521 lbs	14,464 lbs	10.5%	13	01-05-06
Total Load Defl.	L/999 (0.027")	n/a	n/a	35	04-05-05
Live Load Defl.	L/999 (0.01")	n/a	n/a	51	04-04-03
Max Defl.	0.027"	n/a	n/a	35	04-05-05
Span / Depth	8.4	n/a	n/a		00-00-00



## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	4,375 lbs	53.2%	18.6%	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	4,002 lbs	48.7%	17%	Unspecified

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
 Unbalanced snow loads determined from building geometry were used in selected products verification.  
 Design based on Dry Service Condition.  
 Importance Factor: Normal. Part code: Part 9

CONFORMS TO OBC 2012

DWG NO. FAN B5B 1877  
 STRUCTURAL  
 COMPONENT ONLY

T-1811369



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor L.B5A(11877)

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

April 26, 2017 09:53:39

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4 EL-B.mmdl

Description: Design Flush Beams 1st Floor Flush Beams B5A(11877)

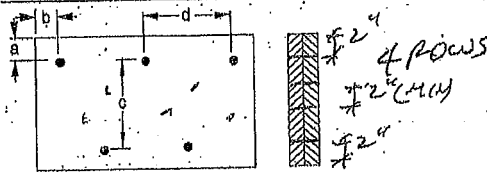
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record. Member has no side loads.

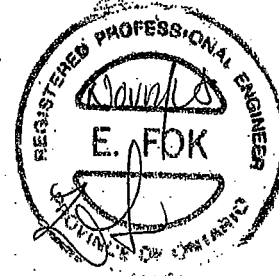
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

## Disclosure

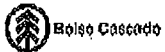
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current installation guide and applicable building codes. To obtain installation guide or ask questions, please call 1-800-904-6999 before installation.

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P622  
DWG NO. TAM B5B3 H  
STRUCTURAL  
COMPONENT ONLY

T-1811869(U)



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B6A(1845)

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

April 26, 2017 09:53:40

BCALC@ Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2204 T4 EL-B.mmdl

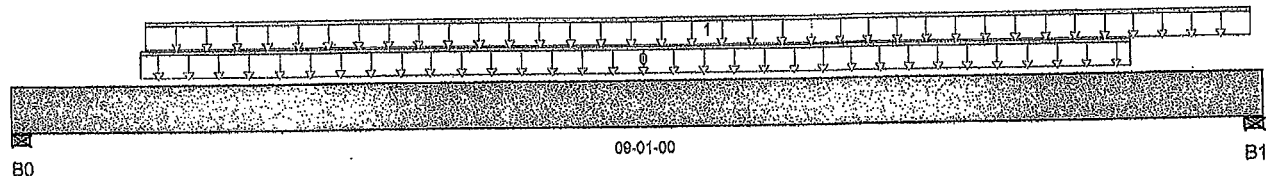
Description: Designs\Flush Beams\1st Floor\Flush Beams\B6A(1845)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 09-01-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,022 / 0	925 / 0		
B1, 5-1/2"	1,276 / 0	1,053 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-11-08	08-01-08	100				n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-00-00	09-00-00	287	144			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,480 ft-lbs	38,727 ft-lbs	16.7%	1	04-04-00
End Shear	2,668 lbs	14,464 lbs	18.4%	1	01-05-08
Total Load Defl.	L/999 (0.059")	n/a	n/a	4	04-06-00
Live Load Defl.	L/999 (0.031")	n/a	n/a	5	04-06-00
Max Defl.	0.059"	n/a	n/a	4	04-06-00
Span / Depth	8.4	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	2,690 lbs	32.7%	11.5%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	3,230 lbs	39.3%	13.8%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

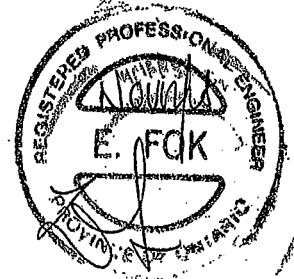
BCALC@ analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA

O86.

CONFORMS TO OBC 2012

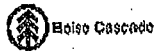
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9



DWG NO. TAM B58418 H  
STRUCTURAL  
COMPONENT ONLY

T-1811370



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B6A(1845)

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

April 26, 2017 09:53:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2204 T4 EL-B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B6A(1845)

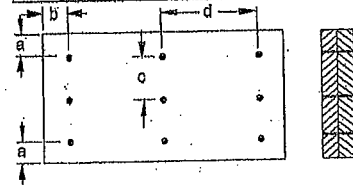
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



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

Calculated Side Load = 538.0 lb/ft

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

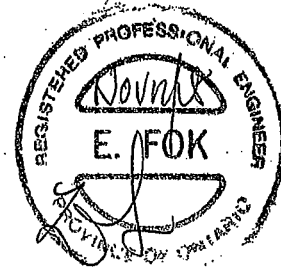
Connectors are: Nails

3-1/2" ARDOX SPIRAL

## Disclosure

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1624  
DWONG.TAM B58318H  
STRUCTURAL  
COMPONENT ONLY

T-L8(13706)





# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...B11A(i1772)

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

April 26, 2017 09:53:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2204 T4 EL-B.mmdl

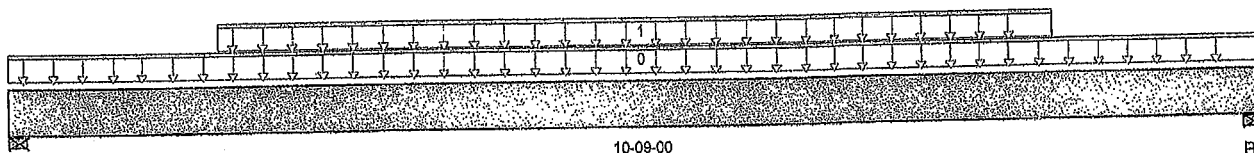
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11A(i1772)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 10-09-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	143 / 0	495 / 0		
B1, 5-1/2"	143 / 0	495 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-09-00	27	13			n/a
1	User Load	Unf. Lin. (lb/ft)	L	01-09-08	08-11-08		100			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,040 ft-lbs	25,173 ft-lbs	8.1%	0	05-04-08
End Shear	641 lbs	9,401 lbs	6.8%	0	01-05-06
Total Load Defl.	L/999 (0.032")	n/a	n/a	4	05-04-08
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	05-04-08
Max Defl.	0.032"	n/a	n/a	4	05-04-08
Span / Depth	10.1	n/a	n/a		00-00-00

## Bearing Supports

	Dim: (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	693 lbs	13%	4.5%	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	693 lbs	13%	4.5%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

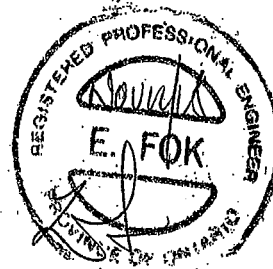
Resistance Factor phi has been applied to all presented results per CSA O86.

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9



P642  
DWG NO. TAM B585-104  
STRUCTURAL  
COMPONENT ONLY

T-181371



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B11A(1772)

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

April 26, 2017 09:53:40

## BQ CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2204 T4 EL-B.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11A(17

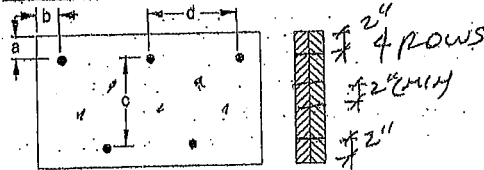
Specifier:

Designer: AJ

Company:

Misc:

## Connection Diagram



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

Member has no side loads.

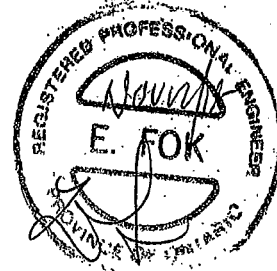
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

## Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-8999 before installation.

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



DWG NO. TAM B50818 H  
STRUCTURAL  
COMPONENT ONLY

T-181 137164



Boise Cascade



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

1st Floor Flush Beams\B12(i2483)

Dry | 1 span | No cant.

PASSED

April 4, 2019 10:50:27

BC CALC® Member Report

Build 6766

Job name:

Address:

City, Province, Postal Code: BRA...ON

Customer:

Code reports: CCMC 12472-R

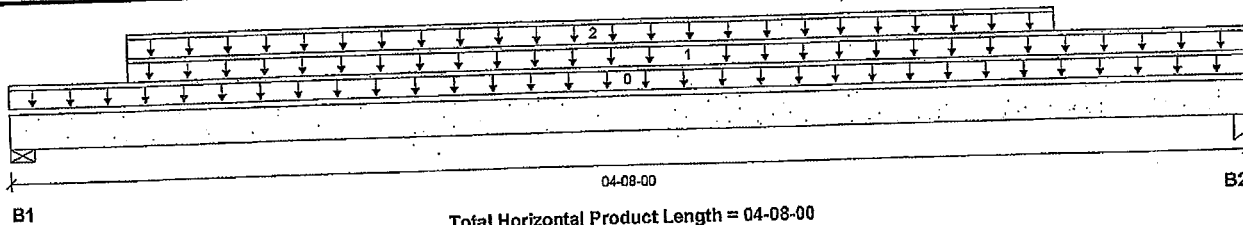
File name: UNIT 2204 T4 EL-B.mmdl

Description: 1st Floor Flush Beams\B12(i2483)

Specifier:

Designer: AJ

Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	501 / 0	265 / 0		
B2, 1-3/4"	389 / 0	208 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-08-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	04-08-00	Top	12	6			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-05-08	03-11-08	Top	240	120			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,139 ft-lbs	17,696 ft-lbs	6.4%	1	02-05-02
End Shear	806 lbs	7,232 lbs	11.2%	1	03-08-06
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	02-05-14
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-05-14
Max Defl.	0.005"	n/a	n/a	4	02-05-14
Span / Depth	4.2				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	1,083 lbs	21.1%	9.2%	Unspecified
B2	Column 1-3/4" x 1-3/4"	843 lbs	33.9%	22.6%	Unspecified

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9

## Disclosure

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

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

T.19041011



Boise Cascade



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

1st Floor\Flush Beams\B13(i2437)

Dry | 1 span | No cant.

PASSED

April 4, 2019 10:50:27

BC CALC® Member Report

Build 6766

Job name:

Address:

City, Province, Postal Code: BRA...ON

Customer:

Code reports: CCMC 12472-R

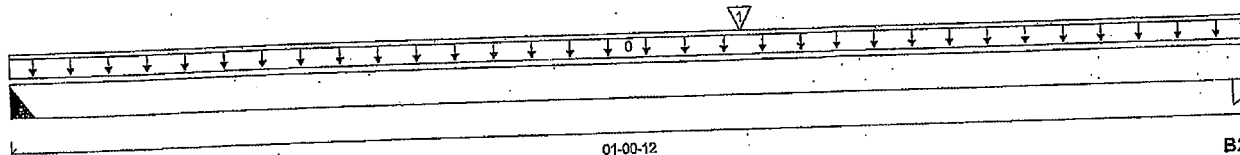
File name: UNIT 2204 T4 EL-B.mmdl

Description: 1st Floor\Flush Beams\B13(i2437)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 01-00-12

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	25 / 0	15 / 0		
B2, 1-3/4"	36 / 0	21 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-00-12	Top	1.00	0.65	1.00	1.15	00-00-00
1	J6(i2398)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	Top	61	30			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	28 ft-lbs	17,696 ft-lbs	0.2%	1	00-07-08
End Shear	14 lbs	7,232 lbs	0.2%	1	01-01-14
Span / Depth	0.9				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	56 lbs	n/a	1.3%	HUS1.81/10
B2	Column 1-3/4" x 1-3/4"	81 lbs	3.3%	2.2%	Unspecified



## Cautions

Header for the hanger HUS1.81/10 at B1 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF.

## Notes

Calculations assume member is fully braced.  
 Hanger Manufacturer: Unassigned  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor: Normal Part code: Part 9

## Disclosure

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 Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods.  
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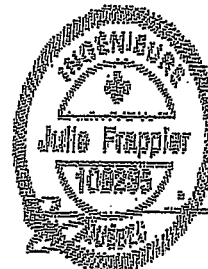
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T.19041012



## Maximum Floor Spans

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

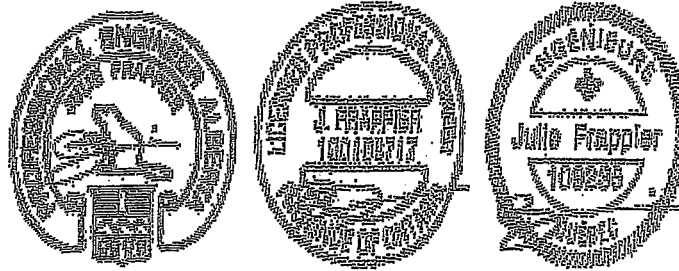


Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of  $1.50L + 1.25D$ . The serviceability limit states include the consideration for floor vibration, a live load deflection limit of  $L/480$  and a total load deflection limit of  $L/240$ .
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.



## Maximum Floor Spans

Live Load = 40 psf Dead Load = 15 psf  
Simple spans 1/480 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'-6"	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'-9"	16'-7"	15'-11"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-6"	18'-6"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-6"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
14"	NI-40x	21'-5"	19'-10"	18'-11"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
16"	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	23'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

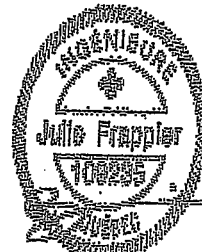
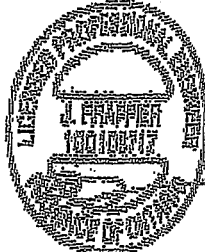
  

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-10"	15'-5"	14'-6"	13'-5"	16'-10"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-8"	17'-2"	16'-3"	15'-2"	18'-10"	17'-2"	16'-3"	15'-2"
	NI-60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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.

## Maximum Floor Spans

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



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

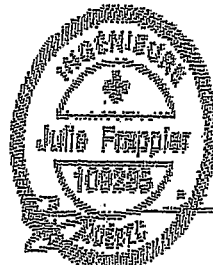
  

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	17'-9"	16'-1"	15'-1"	N/A	17'-9"	16'-1"	15'-4"	N/A
	NI-60	18'-1"	16'-4"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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.

## 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'-8"	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.





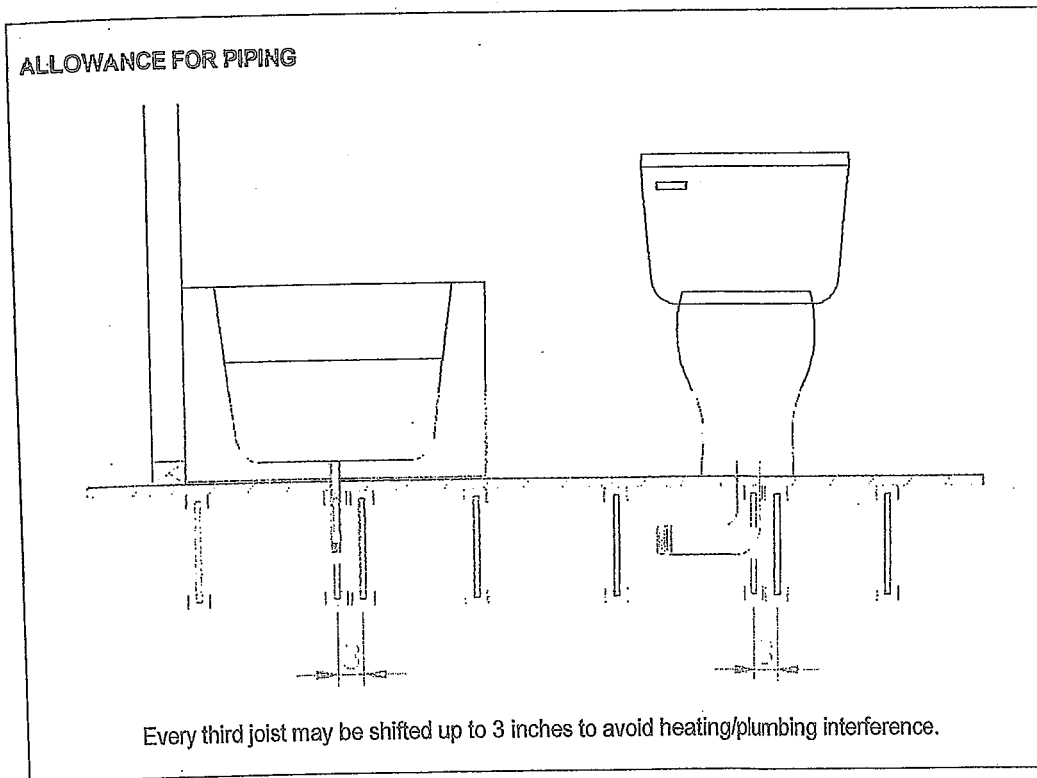
## Construction Detail Limit States Design

### Allowance for Piping (Installation Notes)

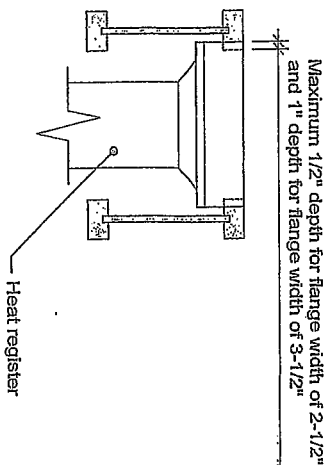
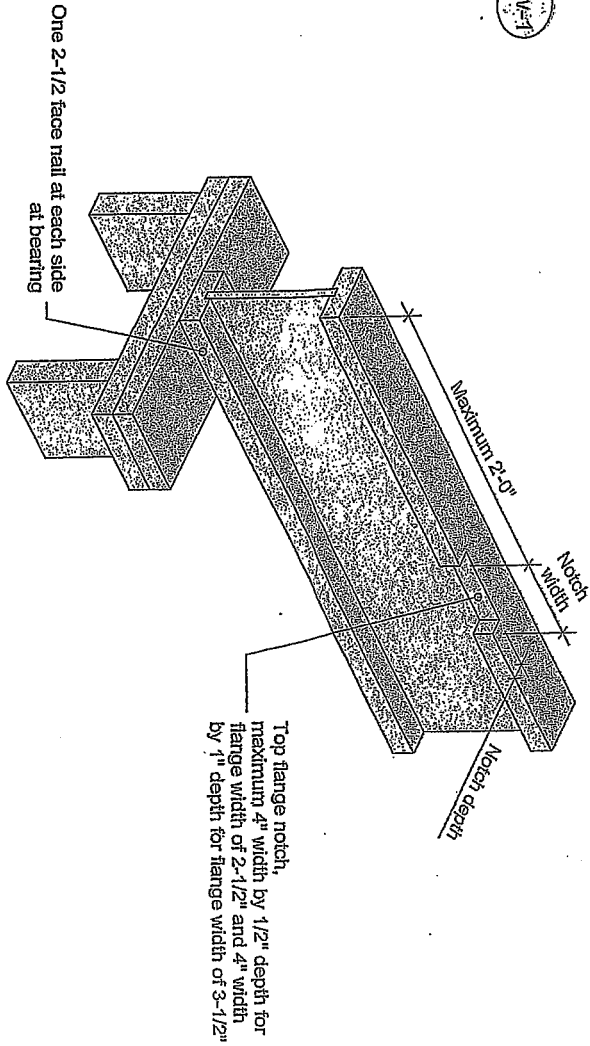
The floor layouts have usually not been checked for heating and/or plumbing interference. On-site adjustment of joists of up to 3 inches is permitted to avoid interferences. When moving a joist, the subfloor thickness shall be checked with code requirements when the joist spacing exceeds 19.2 inches. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.

Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced for shorter spans; contact your distributor for additional information.

The detail below shows the 3-inch allowance for piping. Every third joist may be shifted up to 3 inches to avoid heating/plumbing interference. For other applications, please contact your distributor.



Revised April 12, 2012



- Notes:
1. Blocking required at bearing for lateral support, not shown for clarity.
  2. The maximum dimensions for a notch on the side of the top flange are 4-inch width by 1/2-inch depth for flange width of 2-1/2 inches, and 4-inch width by 1-inch depth for flange width of 3-1/2 inches.
  3. This detail applies to simple-span joists and multiple-span joists where the notch is located at the end half-span.
  4. For other applications, contact Nordic Structures.

This document supersedes all previous versions. If the document has been in effect for more than one year, consult nordic.ca or contact Nordic Structures.

All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.144 inch for 3-inch nails. Individual components not shown to scale for clarity.

TITLE

Notch in Joist for Heat Register

CATEGORY

Joist - Typical Floor Framing and Construction Details

DATE

2018-04-10

NUMBER

1W-1

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T 514-871-8526  
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