

FROM PLAN DATED: MAY 2018

BUILDER: BAYVIEW WELLINGTON

SITE: PASSAGE ON THE CANAL

MODEL: SD-2-B34 THE HUDSON 5

ELEVATION: A

LOT:

CITY: ST.CATHERINES

SALESMAN: M D

DESIGNER: AJ

REVISION:

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

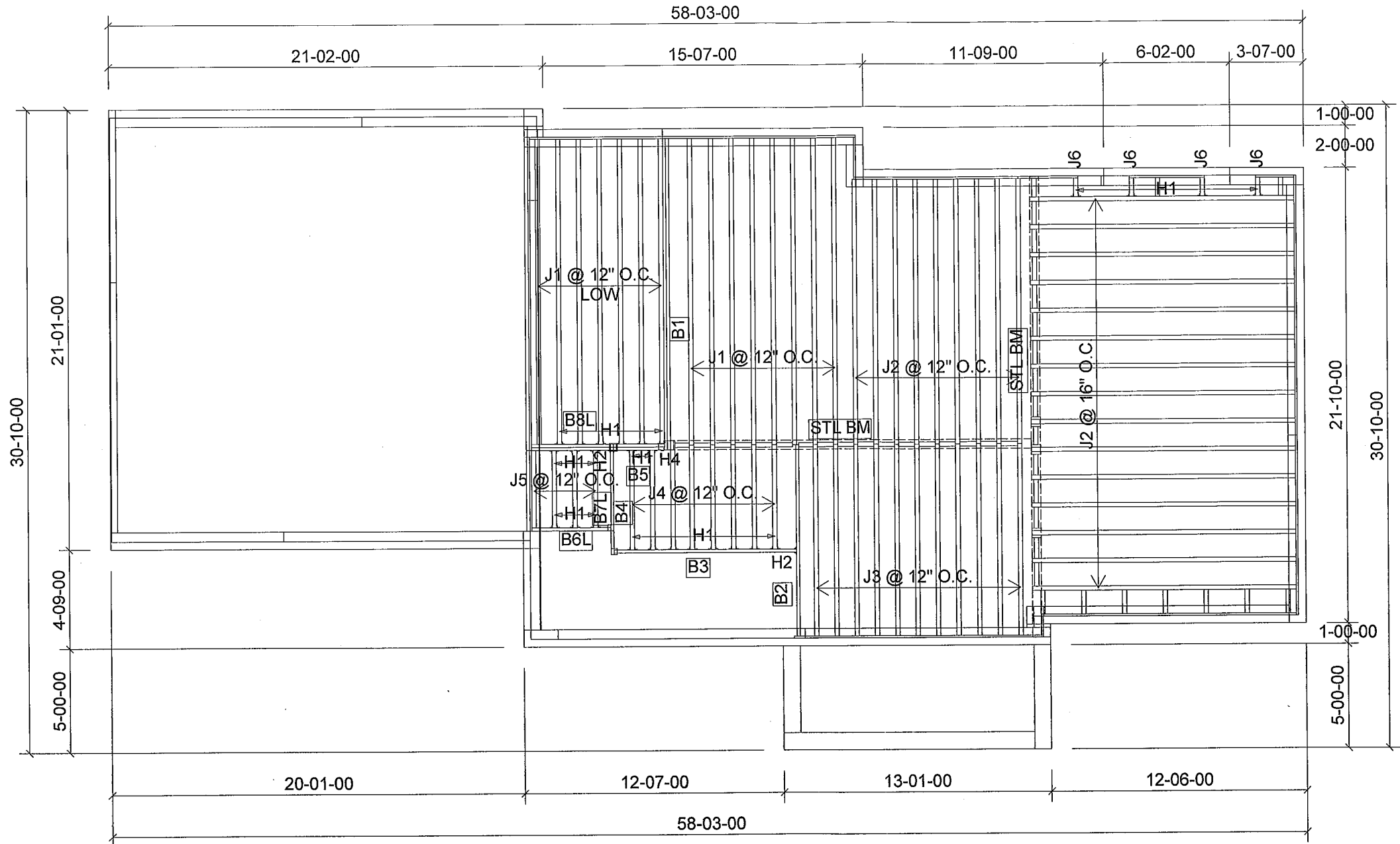
DEAD LOAD: 15.0 lb/ft²

TILED AREAS: 20 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2019-01-29

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	15
J2	14-00-00	9 1/2" NI-40x	1	24
J3	10-00-00	9 1/2" NI-40x	1	11
J4	6-00-00	9 1/2" NI-40x	1	8
J5	4-00-00	9 1/2" NI-40x	1	4
J6	2-00-00	9 1/2" NI-40x	1	4
B1	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B4	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6L	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7L	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

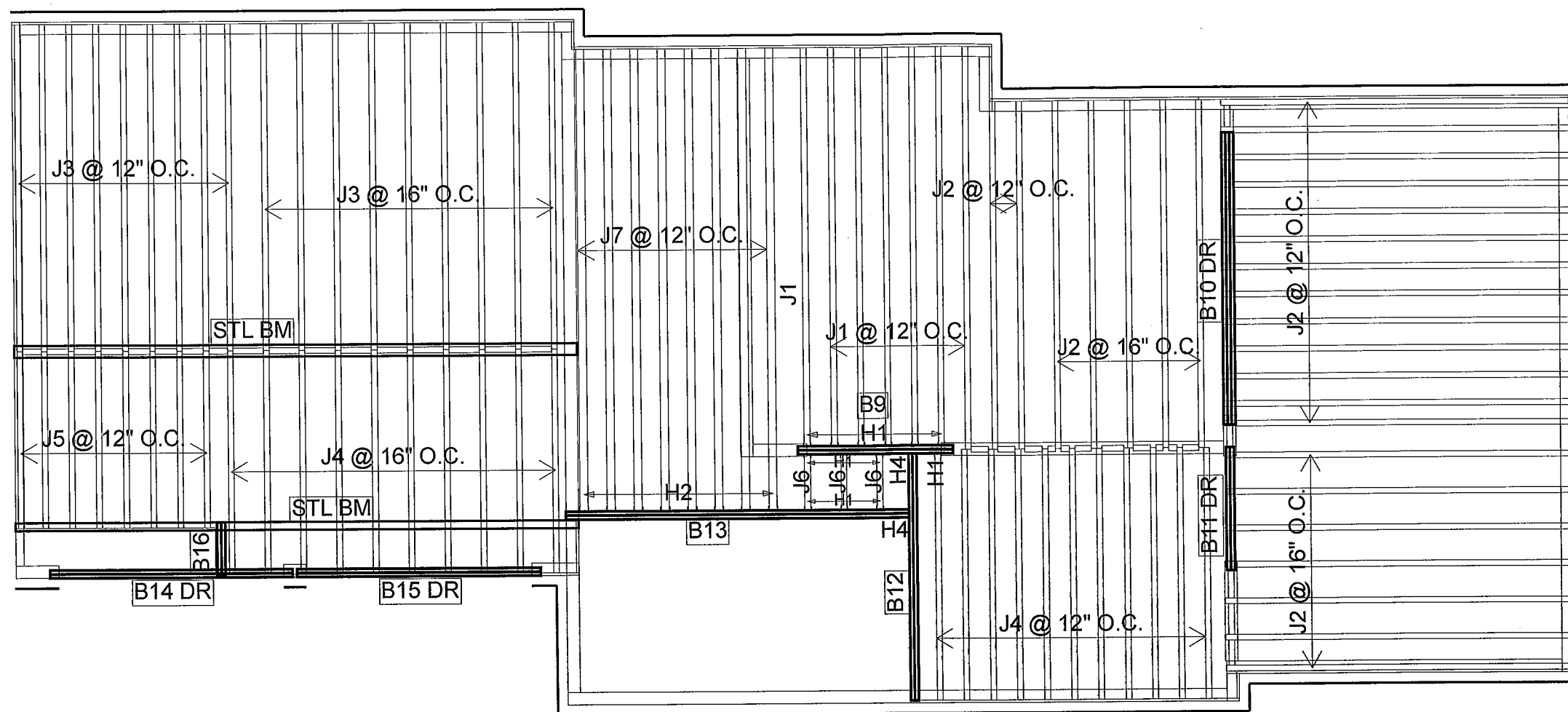
Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
1	H2	HUS1.81/10
1	H2	HUS1.81/10
1	H4	HUC410

FROM PLAN DATED: MAY 2018
BUILDER: BAYVIEW WELLINGTON
SITE: PASSAGE ON THE CANAL
MODEL: SD-2-B34 THE HUDSON 5
ELEVATION: A
LOT:
CITY: ST.CATHERINES
SALESMAN: M D
DESIGNER: AJ
REVISION:

NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F. REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS. SEE
FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURE 7 TABLES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7 TABLES 1 & 2 OF THE
INSTALLATION GUIDE. CERAMIC TILE
APPLICATION AS PER O.B.C. 9.30.6
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 5/8" GLUED AND NAILED


DATE: 10/23/2018

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	7
J2	14-00-00	9 1/2" NI-40x	1	27
J3	12-00-00	9 1/2" NI-40x	1	18
J4	10-00-00	9 1/2" NI-40x	1	21
J5	8-00-00	9 1/2" NI-40x	1	8
J6	4-00-00	9 1/2" NI-40x	1	3
J7	18-00-00	9 1/2" NI-80	1	8
B13	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B12	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11 DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2


Connector Summary		
Qty	Manuf	Product
13	H1	IUS2.56/9.5
8	H2	IUS3.56/9.5
2	H4	HGUS410



NORDIC
ENGINEERED WOOD

www.nordicwp.com

N-C303 / April 2014



FSC
www.fsc.org
Certified by
S-COC-1412

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 cantrel line of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centered 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-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.

- 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
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"	4-2"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-5"	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"	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"	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"	1-0"	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"	4-2"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-5"	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"	---	---	---

- Above table may be used for I-joist 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.

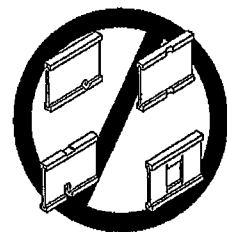
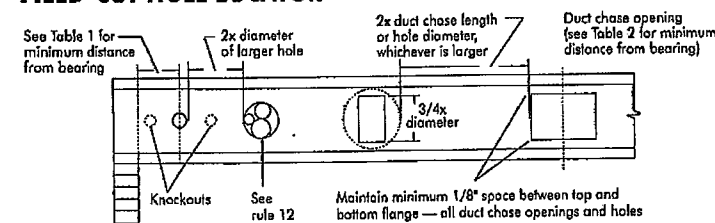
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.)											
		Duct Chase Length (in.)											
		8	10	12	14	16	18	20	22	24			
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---
	NI-70	5-11"	5-6"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	---	---	---
	NI-80	5-9"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"	---	---	---
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-8"	---	---	---
14"	NI-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-7"	10-11"	---	---	---
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"	---	---	---
	NI-60	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-3"	13-0"	---	---	---
	NI-70	9-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---
16"	NI-20	9-2"	9-8"	10-0"	10-6"	10-11"	11-5"	11-9"	12-4"	12-11"	---	---	---
	NI-40x	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---
	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---
	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-3"	14-0"	---	---	---
	NI-80	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-8"	14-4"	---	---	---

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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




Never stock building materials over unshelved I-joists. Once shelved, do not over-stress I-joists with concentrated loads from building materials.

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

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

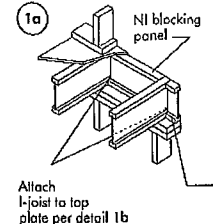


CHANTIERS CHIBOUGAMAU

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.



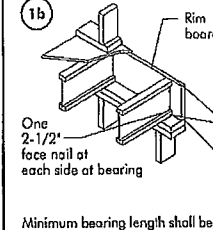
1a

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.

Attach I-joist to top plate per detail 1b

2-1/2" nails at 6" o.c. to top plate (when used for lateral shear transfer, nail to bearing plate with same nailing as required for decking)



1b

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

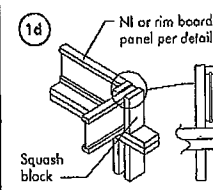
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

One 2-1/2" face nail at each side of bearing

Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c.

To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

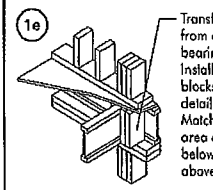
Minimum bearing length shall be 1-3/4" for the end bearings, and 3-1/2" for the intermediate bearings when applicable.



1d

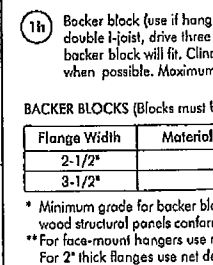
Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

Provide lateral bracing per detail 1a or 1b



1e

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



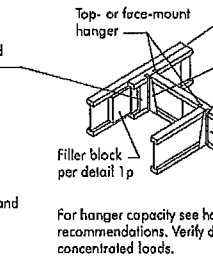
1h

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

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-PF No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C325 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

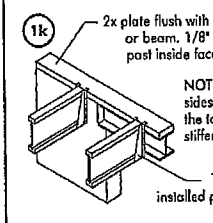
Top- or face-mount hanger

Double I-joist header

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

Backer block required (both sides for face-mount hangers)

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

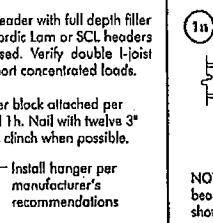


1k

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

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

Top-mount hanger installed per manufacturer's recommendations



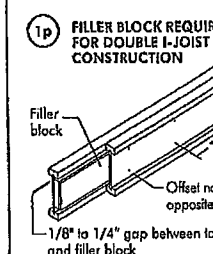
1m

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

Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible.

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

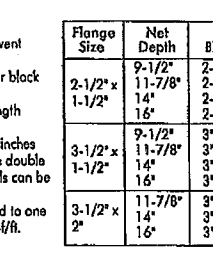


1p

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Offset nails from opposite faces by 6"

1/8" to 1/4" gap between top flange and filler block



1s

One 2-1/2" nail at top and bottom flange

2x4 min. (1/8" gap minimum)

Two 2-1/2" nails from each web to lumber piece

1-1/2" nail one side only

NOTE: In some local codes, blocking is prescriptively required in the first joist space for first and second joist space, next to the starter joist. Where required, see local code requirements for spacing of the blocking.

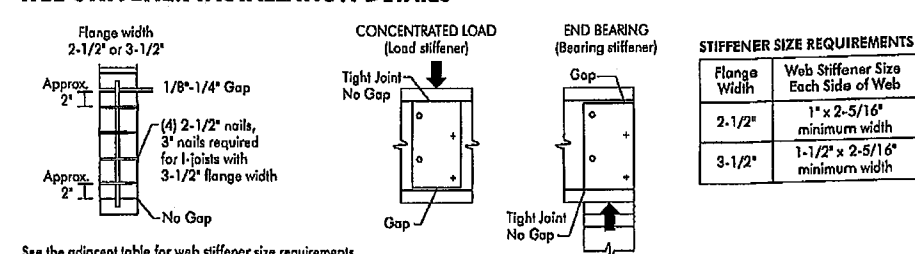
All nails are common spiral in this detail.

WEB STIFFENERS

RECOMMENDATIONS:

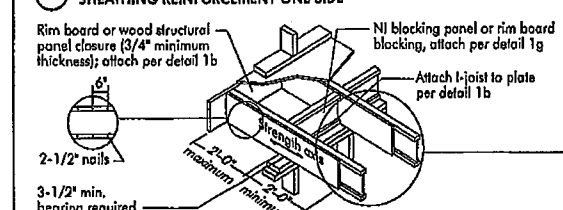
- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joist 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

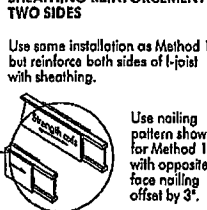


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE



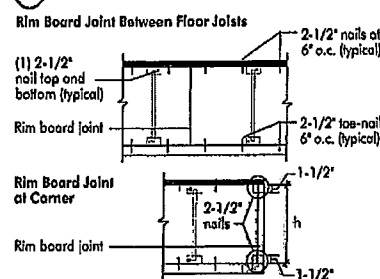
Method 2 — SHEATHING REINFORCEMENT TWO SIDES



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

RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

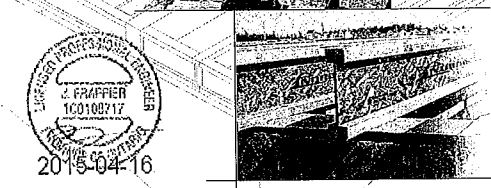
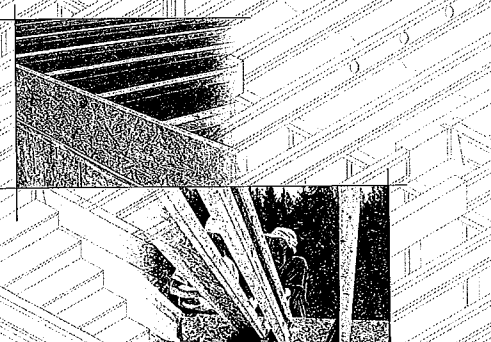


NORDIC

ENGINEERED WOOD

INSTALLATION GUIDE

FOR RESIDENTIAL FLOORS



Distributed by:

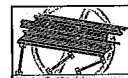


NC301 / November 2014

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

WARNING

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

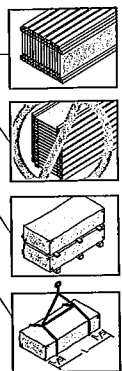
Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

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



MAXIMUM FLOOR SPANS

1. Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.5L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of 1/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans On centre spacing				Multiple spans On centre spacing			
		12'	14'	16'	18'	12'	14'	16'	18'
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	NI-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-5"	15'-10"	15'-5"
	NI-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	16'-1"
	NI-70	17'-1"	16'-1"	15'-6"	15'-7"	18'-7"	17'-4"	16'-9"	16'-10"
11-7/8"	NI-20	17'-3"	16'-9"	16'-9"	16'-9"	18'-10"	17'-6"	16'-11"	17'-0"
	NI-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-6"	17'-9"	17'-7"
	NI-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
	NI-70	19'-4"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
14"	NI-20	19'-9"	18'-3"	17'-6"	17'-7"	21'-9"	20'-2"	19'-3"	19'-4"
	NI-40x	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	NI-60	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	NI-70	21'-1"	19'-3"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
16"	NI-20	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
	NI-40x	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	NI-60	22'-7"	20'-11"	19'-11"	20'-0"	25'-0"	23'-1"	22'-0"	22'-2"
	NI-70	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	23'-0"
18"	NI-20	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	23'-0"
	NI-40x	24'-5"	22'-4"	21'-5"	21'-6"	26'-11"	24'-10"	23'-9"	23'-9"
	NI-60	24'-8"	22'-9"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"

CCMC EVALUATION REPORT 13032-R

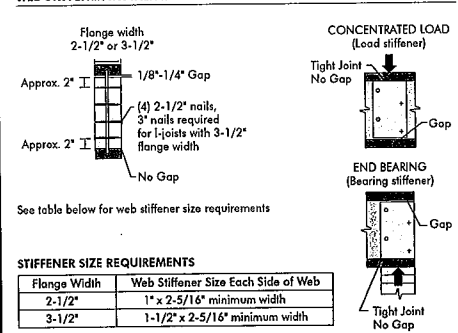
WEB STIFFENERS

RECOMMENDATIONS:

- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joist 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.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

NORDIC I-JOIST SERIES

Series	Material	Length	Weight	Spacing
NI-20	2x4	12'	33 pieces	12'
NI-40x	2x6	12'	33 pieces	12'
NI-60	2x8	12'	33 pieces	12'
NI-70	2x10	12'	33 pieces	12'
NI-80	2x12	12'	33 pieces	12'
NI-90	2x14	12'	33 pieces	12'
NI-90x	2x16	12'	33 pieces	12'

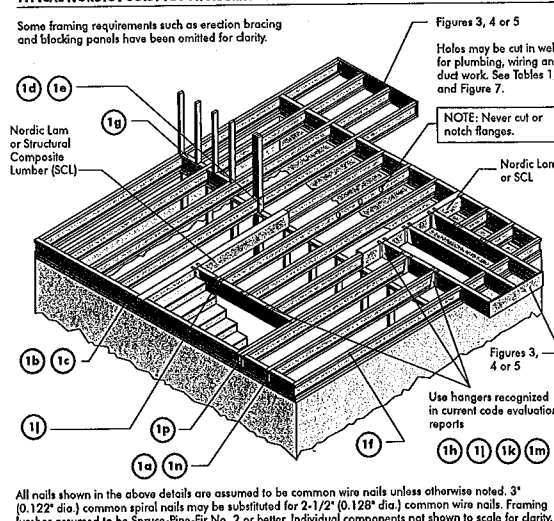
Chantiers Chibougamau Ltd. harvests its own trees, which enables us to produce products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to finished product, reflects our commitment to quality.

Nordic Engineered Wood I-joists use only finger-jointed lumber in their flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.

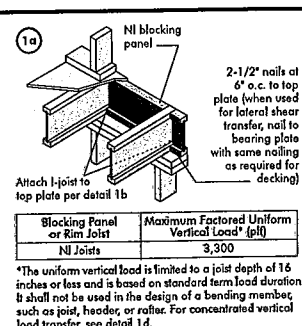
INSTALLING NORDIC I-JOISTS

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

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

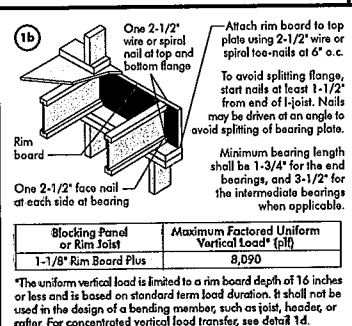


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" x 10" (22" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



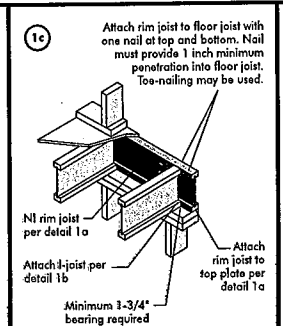
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joist	3,300

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



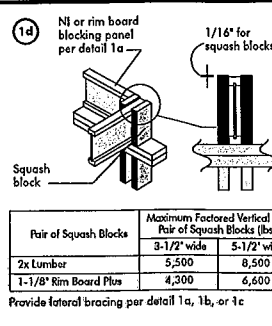
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



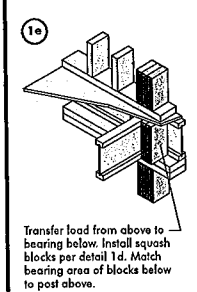
Pair of Squash Blocks	Maximum Factored Vertical Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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

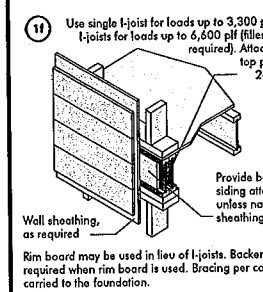


Pair of Squash Blocks	Maximum Factored Vertical Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

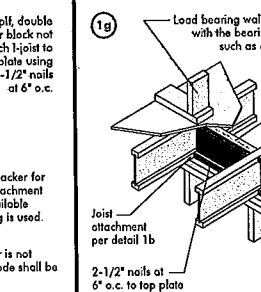
Provide lateral bracing per detail 1a, 1b, or 1c



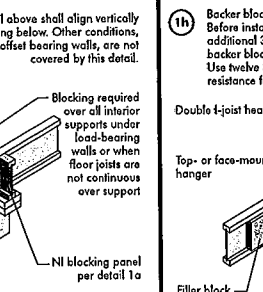
Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.



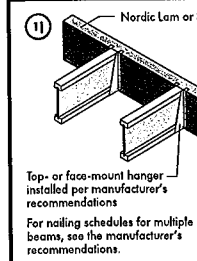
Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2 inch nails at 6 inch o.c.



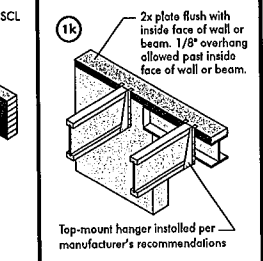
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.



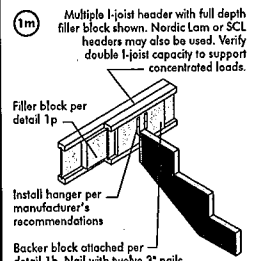
Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3 inch nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3 inch nails, clinched when possible.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



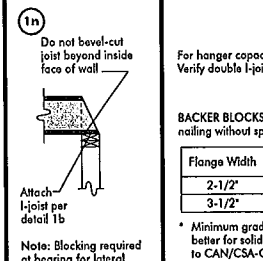
Top- or face-mount hanger installed per manufacturer's recommendations.



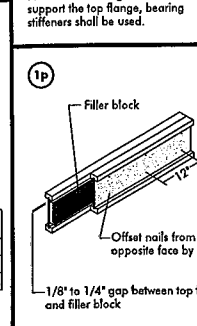
Top-mount hanger installed per manufacturer's recommendations.



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

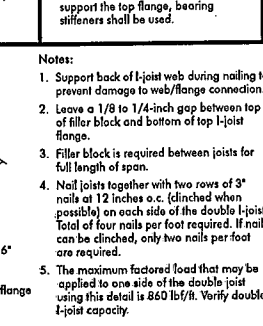


Do not bevel-cut joint beyond inside face of wall.



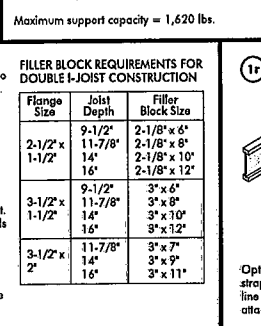
Flange Size	Joist Depth	Filler Block Size
2-1/2"	9-1/2"	2-1/8" x 6"
1-1/2"	11-7/8"	2-1/8" x 8"
	14"	2-1/8" x 10"
	16"	2-1/8" x 12"
3-1/2"	9-1/2"	3" x 6"
1-1/2"	11-7/8"	3" x 8"
	14"	3" x 10"
	16"	3" x 12"
3-1/2"	11-7/8"	3" x 7"
2"	14"	3" x 9"
	16"	3" x 11"

Offset nails from opposite face by 6"



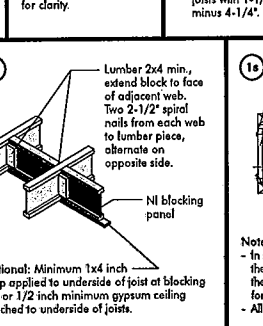
Flange Size	Joist Depth	Filler Block Size
2-1/2"	9-1/2"	2-1/8" x 6"
1-1/2"	11-7/8"	2-1/8" x 8"
	14"	2-1/8" x 10"
	16"	2-1/8" x 12"
3-1/2"	9-1/2"	3" x 6"
1-1/2"	11-7/8"	3" x 8"
	14"	3" x 10"
	16"	3" x 12"
3-1/2"	11-7/8"	3" x 7"
2"	14"	3" x 9"
	16"	3" x 11"

Offset nails from opposite face by 6"



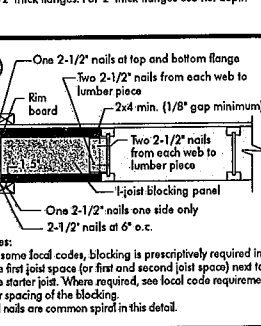
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joist	3,300

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



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

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

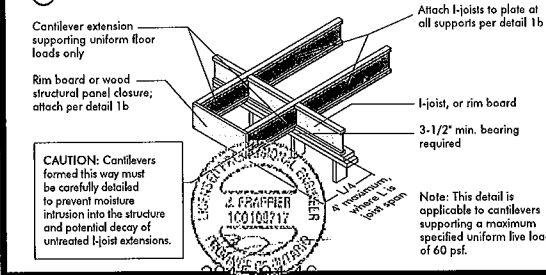


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joist	3,300

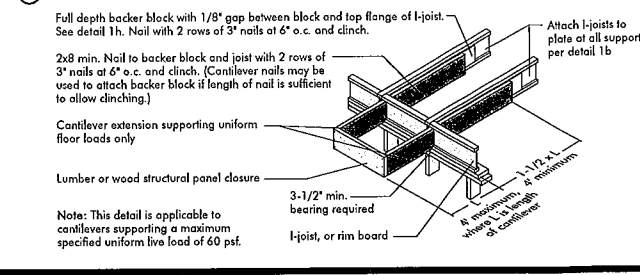
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

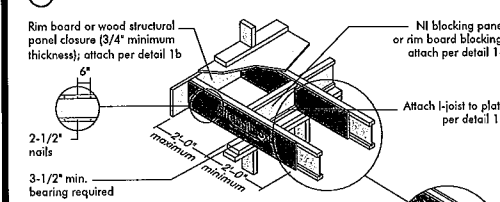


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

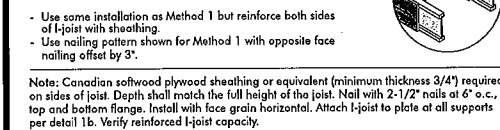


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES



4b) Alternate Method 2 — DOUBLE I-JOIST

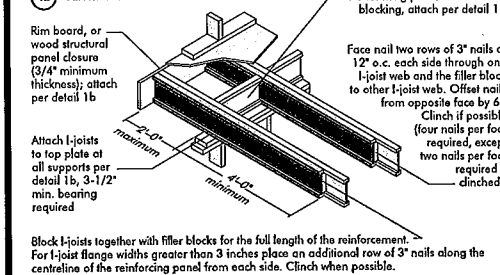
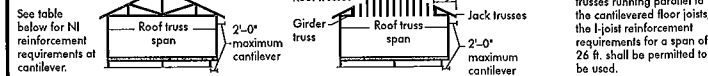


FIGURE 4 (continued)



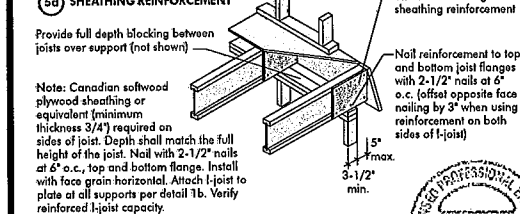
CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1
11-7/8"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1
14"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1
16"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1

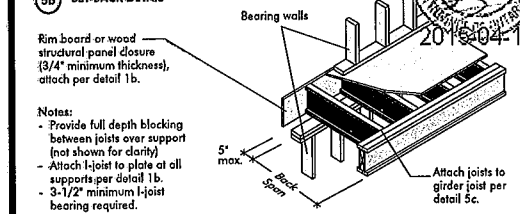
- N = No reinforcement required.
- Ni reinforced with 3/4" wood structural panel on one side only.
- Ni reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf per dead load, 55 psf floor total load,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

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

5a) SHEATHING REINFORCEMENT



5b) SET-BACK DETAIL



5c) SET-BACK CONNECTION

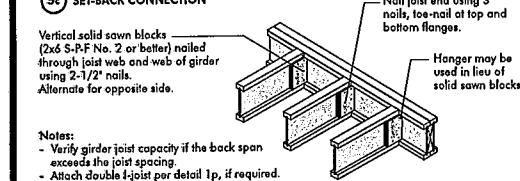
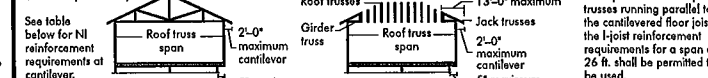


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1
11-7/8"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1
14"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1
16"	26	N	N	N	1	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1	N	N	N	1

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

WEB HOLES

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-joist 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-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
- 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 shall be 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.)											
		2	3	4	5	6	6-1/4	7	8	8-3/8	9	10	10-3/4
9-1/2"	N10	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10X	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10S	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10L	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10H	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
11-7/8"	N10	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10X	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10S	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10L	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10H	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
14"	N10	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10X	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10S	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10L	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10H	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
16"	N10	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10X	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10S	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10L	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
	N10H	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2

- Above table may be used for I-joist 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.

OPTIONAL:

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

Reduced = $\frac{\text{Actual} \times D}{\text{Max}}$

Where:

- Reduced = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span application.
- Actual = The actual measured span distance between the inside faces of supports (ft.).
- Max = Maximum span distance given in this table.
- D = The minimum distance from the inside face of any support to centre of hole from this table.

If Reduced is greater than 1, use 1 in the above calculation for Reduced.

FIGURE 7
FIELD-CUT HOLE LOCATOR

NORDIC STRUCTURES

COMPANY
J9 1ST FLOOR
Oct. 23, 2018 17:12

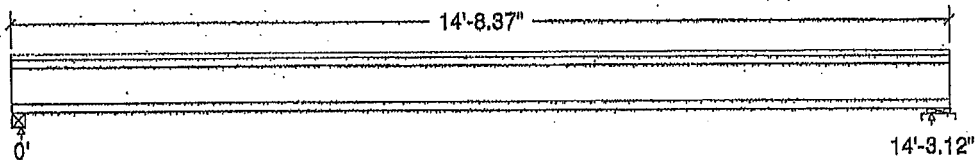
PROJECT
J1 1ST FLOOR
J1 1ST FLOOR

Design Check Calculation Sheet Nordic Sizer - Canada 7.1

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	143		143
Live	285		285
Factored:			
Total	606		606
Bearing:			
Resistance			
Joist	1869		1893
Support	-		6734
Des ratio			
Joist	0.32		0.32
Support	-		0.09
Load case	#2		#2
Length	2-5/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	-		769
Kzcp sup	-		1.00



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

Supports: 1 - Steel Beam, W; 2 - Lumber Sill plate, No.1/No.2;

Total length: 14'-8.37"; Clear span: 14'-1.37"; 5/8" nailed and glued OSB sheathing

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	$V_f = 606$	$V_r = 1895$	lbs	$V_f/V_r = 0.32$
Moment (+)	$M_f = 2160$	$M_r = 4824$	lbs-ft	$M_f/M_r = 0.45$
Perm. Defl'n	$0.08 = < L/999$	$0.48 = L/360$	in	0.17
Live Defl'n	$0.16 = < L/999$	$0.36 = L/480$	in	0.46
Total Defl'n	$0.25 = L/696$	$0.71 = L/240$	in	0.34
Bare Defl'n	$0.19 = L/898$	$0.48 = L/360$	in	0.40
Vibration	$L_{max} = 14'-3.1$	$L_v = 16'-3.4$	ft	0.88
Defl'n	$= 0.031$	$= 0.047$	in	0.66

DWG NO. TAM2364-19H
STRUCTURAL
COMPONENT ONLY

T-1902418

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

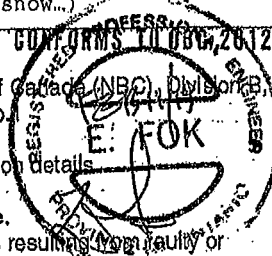
All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:Deflection: $EI_{eff} = 258e06 \text{ lb-in}^2$ $K = 4.94e06 \text{ lbs}$

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



1602
 DWG NO. YAW 2364-18H
 STRUCTURAL
 COMPONENT ONLY

T-190241861

NORDIC STRUCTURES

COMPANY
J9 1ST FLOOR
Oct. 23, 2018 17:09

PROJECT
J7 2ND FLOOR
J7 2ND FLOOR

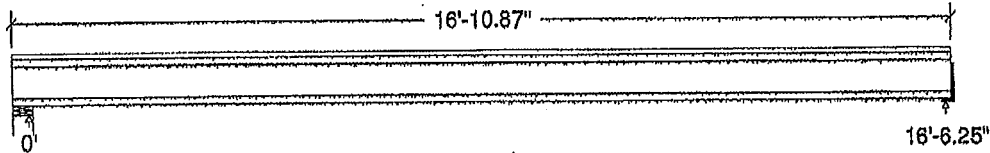
Design Check Calculation Sheet

Nordic Sizer -- Canada 7.1

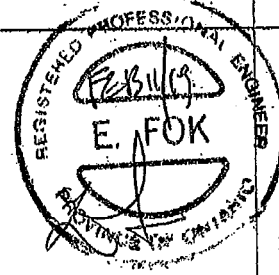
Loads:

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	165		165
Live	330		330
Factored:			
Total	702		702
Bearing:			
Resistance			
Joist	1893		1893
Support	10841		-
Des ratio			
Joist	0.37		0.37
Support	0.06		-
Load case	#2		#2
Length	4-3/8		2
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.15		-



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

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

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

Total length: 16'-10.87"; Clear span: 16'-4.5"; 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	$V_f = 702$	$V_r = 1895$	lbs	$V_f/V_r = 0.37$
Moment (+)	$M_f = 2900$	$M_r = 8958$	lbs-ft	$M_f/M_r = 0.32$
Perm. Defl'n	$0.10 = L/999$	$0.55 = L/360$	in	0.19
Live Defl'n	$0.21 = L/948$	$0.41 = L/480$	in	0.51
Total Defl'n	$0.31 = L/632$	$0.83 = L/240$	in	0.38
Bare Defl'n	$0.23 = L/849$	$0.55 = L/360$	in	0.42
Vibration	$L_{max} = 16'-6.3$	$L_v = 17'-9.5$	ft	0.93
Defl'n	$= 0.031$	$= 0.039$	in	0.79

DWG NO. YAM 2365-18H
STRUCTURAL
COMPONENT ONLY

T. 1902419

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
ET	324.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

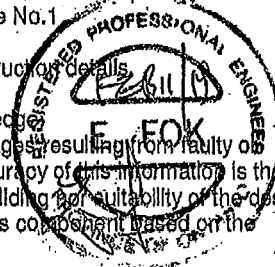
CALCULATIONS:Deflection: E_{eff} = 367e06 lb-in² K = 4.94e06 lbs

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

CONFORMS TO UBC 2012

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC), Division B, 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 Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic 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 for suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



DWG NO. YAW 2365-184
 STRUCTURAL
 COMPONENT ONLY

T. Wong 19/03



Bofss Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLOOR FRAMING\Flush Beams\B1(I851)**

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

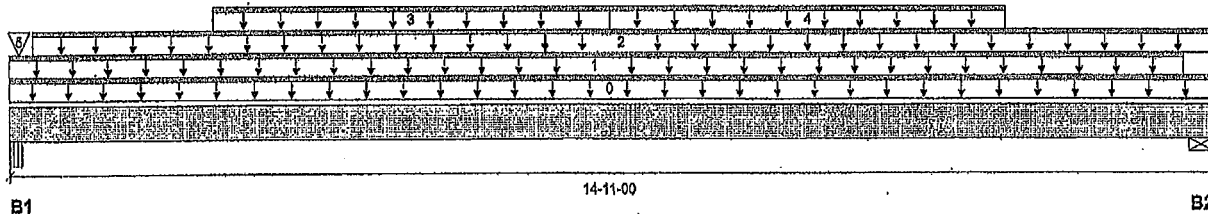
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B1(I851)

Specifier:

Designer: AJ

Company:

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

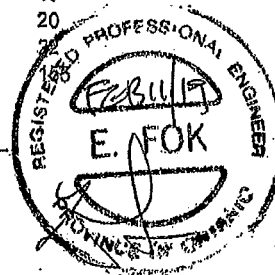
Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	747 / 0	1,041 / 0		
B2, 4-3/8"	444 / 0	856 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-11-00	Top		10			00-00-00
1	7(I283)	Unf. Lin. (lb/ft)	L	00-00-00	14-06-10	Top		81			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-08	14-11-00	Top	29	15			n/a
3	7(I283)	Unf. Lin. (lb/ft)	L	02-06-10	07-05-06	Top	45	20			n/a
4	7(I283)	Unf. Lin. (lb/ft)	L	07-05-06	12-04-02	Top	48				n/a
5	-	Conc. Pt. (lbs)	L	00-01-07	00-01-07	Top	311				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,408 ft-lbs	15,093 ft-lbs	29.2%	0	07-06-06
End Shear	1,069 lbs	7,521 lbs	14.2%	0	13-09-02
Total Load Deflection	L/476 (0.359")	n/a	50.4%	4	07-05-06
Live Load Deflection	L/1,317 (0.13")	n/a	27.3%	5	07-05-06
Max Defl.	0.359"	n/a	n/a	4	07-05-06
Span / Depth	18.0				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	2,422 lbs	30.9%	10.8%	Unspecified
B2 Wall/Plate	4-3/8" x 3-1/2"	1,198 lbs	28.2%	9.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

OWB NO. YAW 2366-18H
STRUCTURAL
COMPONENT ONLY

T. 1902420



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B1(1851)**

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

BC CALC® Member Report

Buld' 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

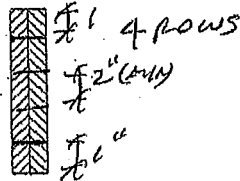
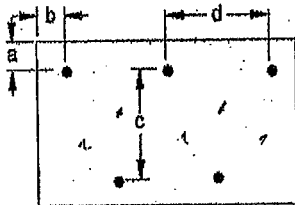
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B1(1851)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member

a minimum = 1/2"
b minimum = 3"

c = 7-1/2"
d = 12"

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

Connectors are: 1 Nails

3/4" ARDOX SPIRAL

**Disclosure**

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

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

DWG NO. YAW 2366-1811
STRUCTURAL
COMPONENT ONLY

T. (904)2061



Boise Cascade



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B2(1855)

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

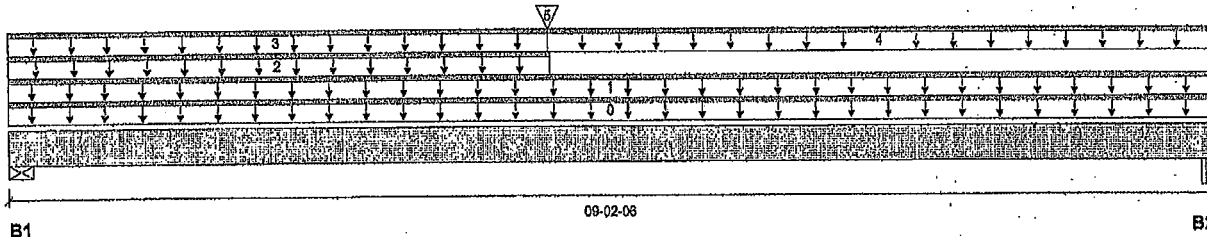
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B2(1855)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 09-02-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	1,169 / 0	818 / 0		
B2, 2-5/8"	554 / 0	308 / 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	09-02-06	Top	1.00	0.65	1.00	1.16	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-02-06	Top	18	9			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	04-01-09	Top	240	120			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-01-06	Top	9	4			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-01-06	09-02-06	Top	22	11			n/a
5	B3(1848)	Conc. Pt. (lbs)	L	04-01-06	04-01-06	Top	421	231			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,817 ft-lbs	11,610 ft-lbs	41.5%	1	04-01-06
End Shear	1,865 lbs	5,785 lbs	32.2%	1	01-01-14
Total Load Deflection	L/627 (0.167")	n/a	38.3%	4	04-04-10
Live Load Deflection	L/999 (0.109")	n/a	n/a	5	04-04-10
Max Defl.	0.167"	n/a	n/a	4	04-04-10
Span / Depth	11.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	2,526 lbs	77.2%	27.0%	Unspecified
B2	Beam 2-5/8" x 1-3/4"	1,216 lbs	62.0%	21.7%	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 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Disclosure

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

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

DWONG, YAM 2367-194
STRUCTURAL
COMPONENT ONLY

T. L. Gomez



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B3(1848)

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 8475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

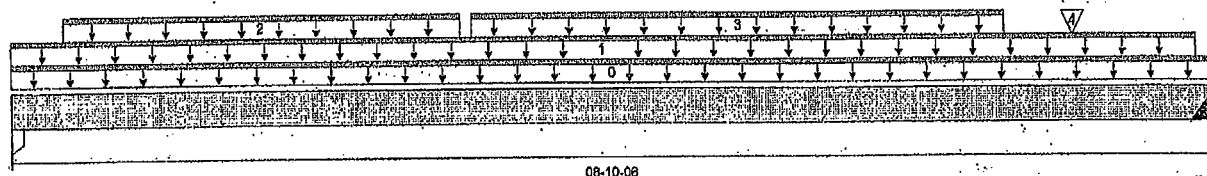
File name: SD2-B34 EL.A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B3(1848)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 08-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	431 / 0	236 / 0		
B2, 2"	422 / 0	232 / 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	08-10-08	Top	5				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-08-10	Top	8	3			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-12	03-03-12	Top	102	50			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	03-04-12	07-03-12	Top	101	50			n/a
4	J4(1830)	Conc. Pt. (lbs)	L	07-09-12	07-09-12	Top	107	53			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,180 ft-lbs	11,610 ft-lbs	18.8%	1	04-09-12
End Shear	912 lbs	5,785 lbs	15.8%	1	00-11-04
Total Load Deflection	L/999 (0.084")	n/a	n/a	4	04-05-04
Live Load Deflection	L/999 (0.054")	n/a	n/a	5	04-05-04
Max Defl.	0.084"	n/a	n/a	4	04-05-04
Span / Depth	11.0				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	941 lbs	47.3%	25.2%	Unspecified
B2	Hanger 2" x 1-3/4"	922 lbs	n/a	21.6%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

DWG NO. TAM 2368-18H
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

T. G. Goupin



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B4(1842)

Dry | 1 span | No cent.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 0475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

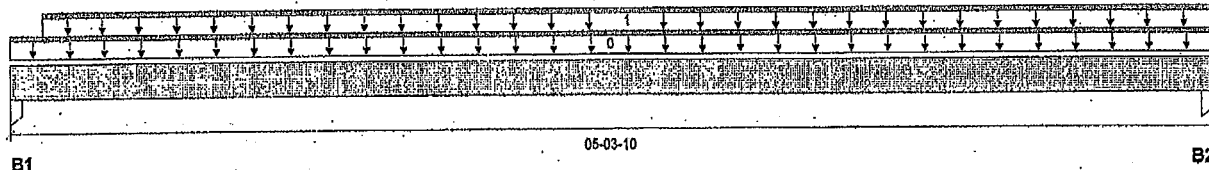
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B4(1842)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 05-03-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	52 / 0	39 / 0		
B2, 3-1/2"	55 / 0	40 / 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	05-03-10	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-01-12	05-03-10	Top	21	10			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	147 ft-lbs	11,810 ft-lbs	1.3%	1	02-07-13
End Shear	79 lbs	5,785 lbs	1.4%	1	01-01-00
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	02-07-13
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	02-07-13
Max Defl.	0.002"	n/a	n/a	4	02-07-13
Span / Depth	6.1				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	127 lbs	3.2%	1.7%	Unspecified
B2	Column 3-1/2" x 1-3/4"	133 lbs	3.4%	1.8%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

BC CALC® analysis is based on Canadian Limit States Design, as per NBC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO CBC 2012

Disclosure

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

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

DWG NO. TAW 2369-184
STRUCTURAL
COMPONENT ONLY

T. V. G. 2013



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B5(1846)****PASSED**

BC CALC® Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

January 29, 2019 13:48:08

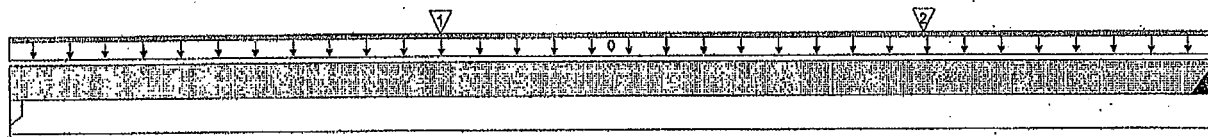
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B5(1846)

Specifier:

Designer: AJ

Company:



B1

02-06-00

B2

Total Horizontal Product Length = 02-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	95 / 0	69 / 0		
B2, 2"	123 / 0	73 / 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	02-06-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	J4(1843)	Conc. Pt. (lbs)	L	00-10-12	00-10-12	Top	110	55			n/a
2	J4(1854)	Conc. Pt. (lbs)	L	01-10-12	01-10-12	Top	107	53			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	170 ft-lbs	23,220 ft-lbs	0.7%	1	00-10-12
End Shear	192 lbs	11,571 lbs	1.7%	1	00-11-04
Total Load Deflection	L/999 (0")	n/a	n/a	4	01-02-14
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-02-14
Max Defl.	0"	n/a	n/a	4	01-02-14
Span / Depth	2.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Column	1-3/4" x 3-1/2"	216 lbs	5.4%	2.9%	Unspecified
B2 Hanger	2" x 3-1/2"	276 lbs	n/a	3.2%	HUC410

Cautions

Header for the hanger HUC410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HUC410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO CBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

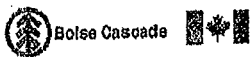
Importance Factor: Normal Part code: Part 9

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



DWG NO. TAM 2370-18H
STRUCTURAL
COMPONENT ONLY

T-1902444



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B5(1846)

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

File name: SD2-B34 EL A.mmdl

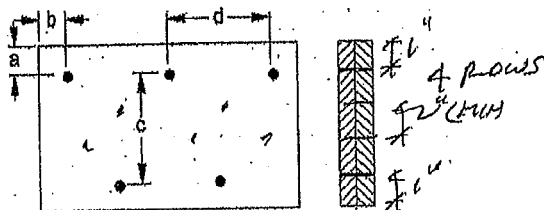
Description: 1ST FLOOR FRAMING\Flush Beams\B5(1846)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member



a minimum = 1/2"
b minimum = 3"

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

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

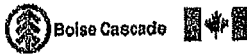


Disclosure

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

BC CALC®, BC FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,
DWG NO. TAW 2370-18H
STRUCTURAL
COMPONENT ONLY

T. Gorep (v)



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B6L\I799

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

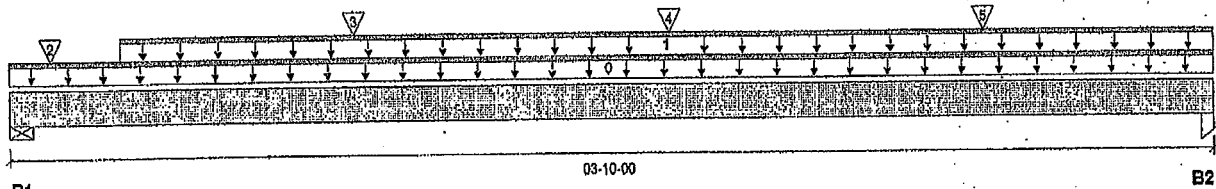
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B6L\I799

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 03-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	515 / 0	282 / 0		
B2, 1-3/4"	555 / 0	287 / 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	03-10-00	Top	6				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-04-08	03-10-00	Top	240	120			n/a
2	1(I275)	Conc. Pt. (lbs)	L	00-01-10	00-01-10	Top		16			n/a
3	J5(I738)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	80	40			n/a
4	J5(I738)	Conc. Pt. (lbs)	L	02-01-04	02-01-04	Top	80	40			n/a
5	J5(I736)	Conc. Pt. (lbs)	L	03-01-04	03-01-04	Top	75	38			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,030 ft-lbs	11,810 ft-lbs	8.9%	1	02-01-04
End Shear	680 lbs	5,785 lbs	11.7%	1	01-01-14
Total Load Deflection	L/999 (0.006")	n/a	n/a	4	02-00-03
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	02-00-03
Max Defl.	0.006"	n/a	n/a	4	02-00-03
Span / Depth	4.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	1,125 lbs	34.4%	12.0%	Unspecified
B2	Column 1-3/4" x 1-3/4"	1,191 lbs	59.8%	31.9%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA Q86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA Q86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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

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

DWG NO. YAM 2371-18H
 STRUCTURAL
 COMPONENT ONLY

T. Vancura



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B7L(I732)

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

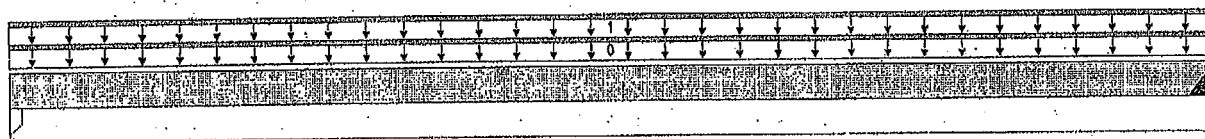
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B7L(I732)

Specifier:

Designer: AJ

Company:



B1

03-10-06

B2

Total Horizontal Product Length = 03-10-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	35 / 0	27 / 0		
B2, 2"	33 / 0	25 / 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	03-10-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-10-06	Top	18	9			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	87 ft-lbs	11,610 ft-lbs	0.6%	1	01-11-15
End Shear	39 lbs	5,785 lbs	0.7%	1	01-01-00
Total Load Deflection	L/999 (0")	n/a	n/a	4	01-11-15
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-11-15
Max Defl.	0"	n/a	n/a	4	01-11-15
Span / Depth	4.5				

Bearing Supports

			Demand/Resistance Support	Demand/Resistance Member	Material
Bearing Supports	Dim. (LxW)	Demand			
B1	Column	3-1/2" x 1-3/4"	86 lbs	2.2%	1.2%
B2	Hanger	2" x 1-3/4"	81 lbs	n/a	1.9%
					HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

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: 00-00-00, Bottom: 00-00-00.
Hanger Manufacturer: Unassigned
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 2015 and CSA Q86.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9

CONFORMS TO CBC 2012

Disclosure

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

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

DWG NO. YAW 2372-18H
STRUCTURAL
COMPONENT ONLY

T-190246



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B8L(1859)**

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports:

CCMC 12472-R

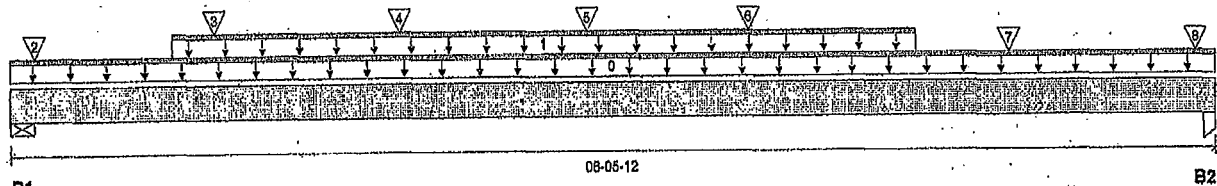
File name: SD2-B34 EL A.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B8L(1859)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 06-05-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	950 / 0	552 / 0		
B2, 3-1/2"	1,129 / 0	622 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-05-12	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-08	04-10-08	Top	294	146			n/a
2	1(1275)	Conc. Pt. (lbs)	L	00-01-10	00-01-10	Top		29			n/a
3	J5(1738)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	80	40			n/a
4	J6(1738)	Conc. Pt. (lbs)	L	02-01-04	02-01-04	Top	80	40			n/a
5	J5(1736)	Conc. Pt. (lbs)	L	03-01-04	03-01-04	Top	73	36			n/a
6	-	Conc. Pt. (lbs)	L	03-11-10	03-11-10	Top	184	138			n/a
7	J1(1729)	Conc. Pt. (lbs)	L	05-04-08	05-04-08	Top	314	157			n/a
8	J1(1740)	Conc. Pt. (lbs)	L	06-04-08	06-04-08	Top	166	82			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,806 ft-lbs	23,220 ft-lbs	16.4%	1	03-04-08
End Shear	2,108 lbs	11,571 lbs	18.2%	1	05-04-12
Total Load Deflection	L/999 (0.034")	n/a	n/a	4	03-03-11
Live Load Deflection	L/999 (0.022")	n/a	n/a	5	03-03-11
Max Defl.	0.034"	n/a	n/a	4	03-03-11
Span / Depth	7.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	2,115 lbs	32.3%	11.3%	Unspecified
B2	Column 3-1/2" x 3-1/2"	2,471 lbs	31.1%	16.5%	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. **CONFORMS TO OBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

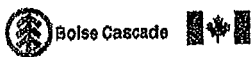
Importance Factor: Normal Part code: Part 9

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



DWONG, YAM 2373-18H
STRUCTURAL
COMPONENT ONLY

T. 190247



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLOOR FRAMING\Flush Beams\B&L(1859)

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

File name: SD2-B34 EL A.mmdl

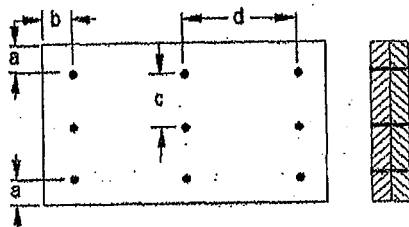
Description: 1ST FLOOR FRAMING\Flush Beams\B&L(1859)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 2-3/4"
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.
Connectors are: 1 Nails

3/4" ARDOX SPIRAL



Disclosure

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

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

11/08/18, TAB 2373-18H
STRUCTURAL
COMPONENT ONLY

T-19042761

**Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR FRAMING\Dropped Beams\B10 DR(I743)**

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALC® Member Report

Bulld 6476

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

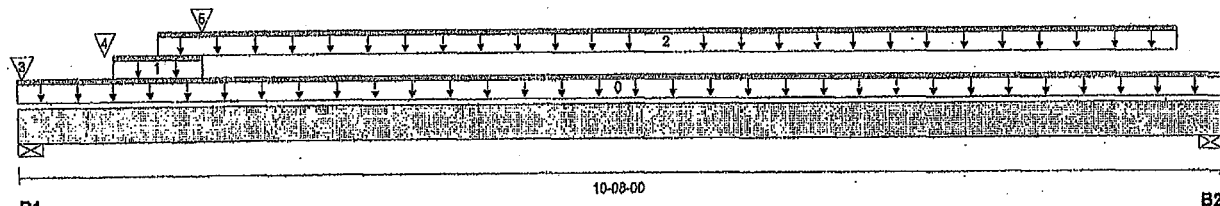
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Dro...ed Beams\B10 DR(I743)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	2,156 / 0	1,154 / 0		
B2, 4"	1,296 / 0	725 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.16	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-08-00	Top		14			00-00-00
1	Bk1(I486)	Unf. Lin. (lb/ft)	L	00-10-08	01-07-14	Top	773	386			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-02	10-03-02	Top	248	124			n/a
3	J2(I762)	Conc. Pt. (lbs)	L	00-00-08	00-00-08	Top	234	117			n/a
4		Conc. Pt. (lbs)	L	00-09-07	00-09-07	Top	294	146			n/a
5	Bk1(I486)	Conc. Pt. (lbs)	L	01-07-14	01-07-14	Top	81	40			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7,843 ft-lbs	36,222 ft-lbs	21.7%	1	04-09-02
End Shear	3,894 lbs	17,356 lbs	22.4%	1	01-01-08
Total Load Deflection	L/877 (0.139")	n/a	27.4%	4	05-03-02
Live Load Deflection	L/999 (0.089")	n/a	n/a	5	05-03-02
Max Defl.	0.139"	n/a	n/a	4	05-03-02
Span / Depth	12.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 5-1/4"	4,676 lbs	34.3%	18.3%	Unspecified
B2	Wall/Plate 4" x 5-1/4"	2,850 lbs	20.9%	11.1%	Unspecified

Notes

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

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

Calculations assume unbraced length of Top: 00-02-08, Bottom: 00-02-08.

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Nailing schedule applies to both sides of the member.

Member has no side loads.

DWG NO. TAM 2374-1811
STRUCTURAL
COMPONENT ONLY

T. G. 2018



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING/Dropped Beams/B10 DR(I743)

PASSED

BC CALC® Member Report
Build 6475

Dry | 1 span | No cant.

January 29, 2019 13:48:08

Job name:

File name: SD2-B34 EL A.mmdl

Address:

Description: 2ND FLOOR FRAMING/Dro...ed Beams/B10 DR(I743)

City, Province, Postal Code: ST...NES

Specifier:

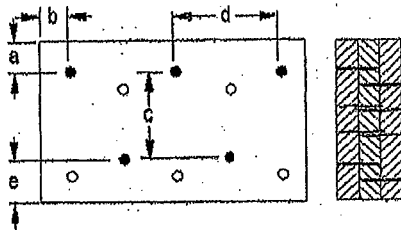
Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 1"
b minimum = 3"

c = 6 1/2"
d = 6"
e minimum = 2"

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

Nailing schedule applies to both sides of the member.

Member has no side loads.

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



Disclosure

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

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

DWG NO. TAM 2374-18H
STRUCTURAL
COMPONENT ONLY

T. (902) 428611



Bolse Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING/Dropped Beams/B11 DR(I287)

PASSED

BC CALCO Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

January 29, 2019 13:48:08

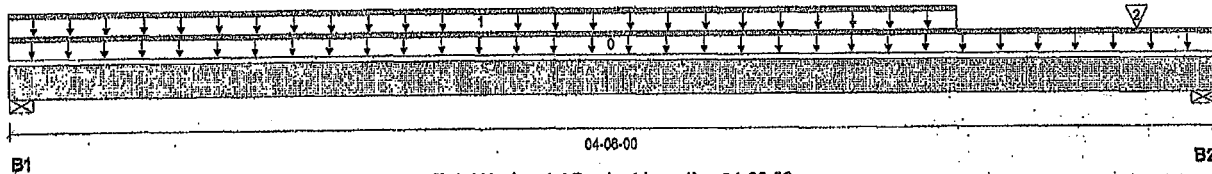
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING/Dro...ed Beams/B11 DR(I287)

Specifier:

Designer: AJ

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	669 / 0	356 / 0		
B2, 4"	631 / 0	337 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.16	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-06-00	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	Top	280	140			n/a
2	J2(I348)	Conc. Pt. (lbs)	L	04-02-08	04-02-08	Top	310	155			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	959 ft-lbs	23,220 ft-lbs	4.1%	1	02-10-08
End Shear	733 lbs	11,571 lbs	6.3%	1	01-01-08
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	02-03-00
Live Load Deflection	L/889 (0.003")	n/a	n/a	5	02-03-00
Max Defl.	0.004"	n/a	n/a	4	02-03-00
Span / Depth	5.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	1,448 lbs	15.9%	8.5%	Unspecified
B2	Wall/Plate 4" x 3-1/2"	1,389 lbs	15.1%	8.0%	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: 00-01-15, Bottom: 00-01-15.

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 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Member has no side loads.

CONFORMS TO OBC 2012



DUONG, YAM 25119-184
STRUCTURAL
COMPONENT ONLY

T. 1902429



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Dropped Beams\B11 DR(I287)**

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

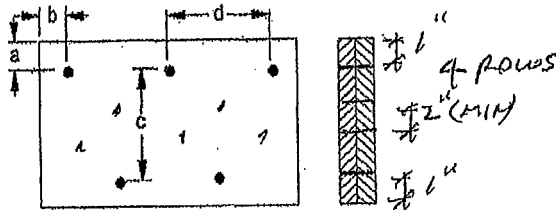
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Dro...ed Beams\B11 DR(I287)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member

a minimum = 1"

b minimum = 3"

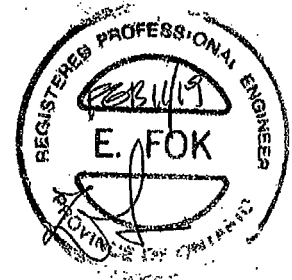
c = 1-1/2"

d = 8"

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**

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™, BC®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

NO. 2325-184
STRUCTURAL
COMPONENT ONLY

T-19024296



BC CALCO Member Report



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING/Dropped Beams/B14 DR(I796)

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

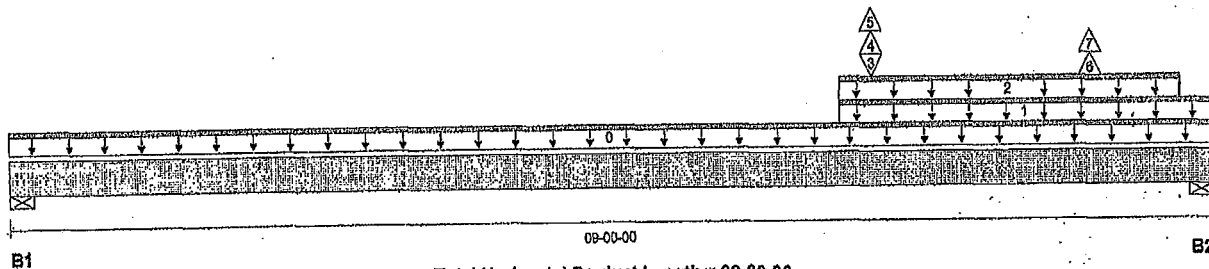
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING/Dro...ed Beams/B14 DR(I796)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 09-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	52 / 34	116 / 0	70 / 0	
B2, 4"	220 / 195	353 / 0	258 / 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	09-00-00	Top	10	81			00-00-00
1	R1(I357)	Unf. Lin. (lb/ft)	L	06-02-08	09-00-00	Top	33	30	63		n/a
2	R1(I357)	Unf. Lin. (lb/ft)	L	06-02-08	09-00-00	Top	135	151	168		n/a
3	-	Conc. Pt. (lbs)	L	06-05-07	06-05-07	Top		-35			n/a
4	-	Conc. Pt. (lbs)	L	06-05-07	06-05-07	Top		-104			n/a
5	-	Conc. Pt. (lbs)	L	06-05-07	06-05-07	Top		54			n/a
6	J4(I317)	Conc. Pt. (lbs)	L	08-01-00	08-01-00	Top		-125			n/a
7	J4(I317)	Conc. Pt. (lbs)	L	08-01-00	08-01-00	Top					n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,597 ft-lbs	20,792 ft-lbs	7.7%	25	06-04-04
Neg. Moment	-21 ft-lbs	-20,792 ft-lbs	0.1%	24	08-01-00
End Shear	763 lbs	11,571 lbs	6.6%	25	07-10-08
Total Load Deflection	L/999 (0.026")	n/a	n/a	88	04-11-04
Live Load Deflection	L/999 (0.016")	n/a	n/a	85	04-11-04
Max Defl.	0.026"	n/a	n/a	58	04-11-04
Span / Depth	10.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	303 lbs	3.3%	1.8%	Unspecified
B2	Wall/Plate 4" x 3-1/2"	1,049 lbs	11.5%	6.1%	Unspecified



DWYNDYAN 2376 1941
STRUCTURAL
COMPONENT ONLY

T-1902430



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING/Dropped Beams/B14 DR(I796)

PASSED

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

January 29, 2019 13:48:08

File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING/Dro...ed Beams/B14 DR(I796)

Specifier:

Designer: AJ

Company:

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: 05-10-08, Bottom: 05-10-08.

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

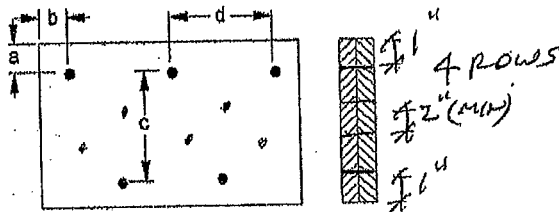
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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.

Connection Diagram: Full Length of Member



a minimum = 1"
b minimum = 3"

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

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

Member has no side loads.

Connectors are: 3" Nails
3" ARDOX SPIRAL



Disclosure

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

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

DWG NO. YAM 2376-18H
STRUCTURAL COMPONENT ONLY

T-1902430(2)



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING/Dropped Beams/B15 DR(I295)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

January 29, 2019 13:48:08

Build 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

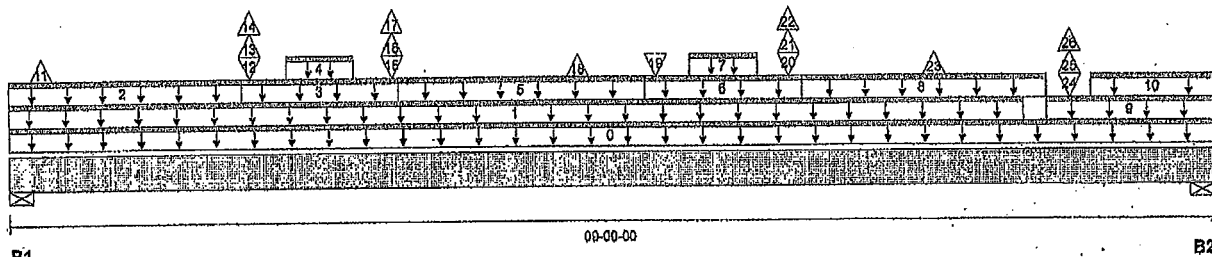
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING/Dro...ed Beams/B15 DR(I295)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 09-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	761 / 463	709 / 0	1,071 / 0	
B2, 4"	815 / 412	827 / 0	1,217 / 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	09-00-00	Top	1.00	0.66	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	07-07-00	Top	43	41			n/a
2	R1(I357)	Unf. Lin. (lb/ft)	L	00-00-00	01-09-00	Top		81			n/a
3	R1(I357)	Unf. Lin. (lb/ft)	L	01-09-00	02-11-00	Top	33				n/a
4	R1(I357)	Unf. Lin. (lb/ft)	L	02-01-00	02-07-00	Top		41			n/a
5	R1(I357)	Unf. Lin. (lb/ft)	L	02-11-00	04-09-00	Top		81			n/a
6	R1(I357)	Unf. Lin. (lb/ft)	L	04-09-00	05-11-00	Top	33				n/a
7	R1(I357)	Unf. Lin. (lb/ft)	L	05-01-00	05-07-00	Top		41			n/a
8	R1(I357)	Unf. Lin. (lb/ft)	L	05-11-00	07-09-00	Top		81			n/a
9	R1(I357)	Unf. Lin. (lb/ft)	L	07-09-00	09-00-00	Top	110	100	210		n/a
10	R1(I357)	Unf. Lin. (lb/ft)	L	08-01-00	09-00-00	Top	-125	-35			n/a
11	J4(I347)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	373	358	713		n/a
12	-	Conc. Pt. (lbs)	L	01-09-11	01-09-11	Top	-125	-35			n/a
13	-	Conc. Pt. (lbs)	L	01-09-11	01-09-11	Top	-125	-35			n/a
14	-	Conc. Pt. (lbs)	L	01-09-11	01-09-11	Top	43	57	81		n/a
15	-	Conc. Pt. (lbs)	L	02-10-08	02-10-08	Top		-35			n/a
16	-	Conc. Pt. (lbs)	L	02-10-08	02-10-08	Top	-125	-35			n/a
17	-	Conc. Pt. (lbs)	L	02-10-08	02-10-08	Top	-125	-35			n/a
18	J4(I328)	Conc. Pt. (lbs)	L	04-03-00	04-03-00	Top	40	55	78		n/a
19	R1(I357)	Conc. Pt. (lbs)	L	04-10-00	04-10-00	Top	517	489	988		n/a
20	-	Conc. Pt. (lbs)	L	05-09-12	05-09-12	Top	-125	-35			n/a
21	-	Conc. Pt. (lbs)	L	05-09-12	05-09-12	Top	-125	-35			n/a
22	-	Conc. Pt. (lbs)	L	05-09-12	05-09-12	Top	-125	-35			n/a
23	J4(I359)	Conc. Pt. (lbs)	L	06-11-00	06-11-00	Top	145	102	174		n/a
24	-	Conc. Pt. (lbs)	L	07-11-02	07-11-02	Top	-125	-35			n/a
25	-	Conc. Pt. (lbs)	L	07-11-02	07-11-02	Top	-125	-35			n/a
26	-	Conc. Pt. (lbs)	L	07-11-02	07-11-02	Top	-125	-35			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7,821 ft-lbs	23,220 ft-lbs	33.7%	25	05-10-00
End Shear	3,337 lbs	11,571 lbs	28.8%	25	07-10-08
Total Load Deflection	L/670 (0.151")	n/a	35.8%	58	04-06-00
Live Load Deflection	L/999 (0.108")	n/a	n/a	85	04-06-00

STRUCTURAL
COMPONENT ONLY

T. 190243 |



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING\Dropped Beams\B15 DR(I295)

PASSED

BC CALC® Member Report
Build 6475

Dry | 1 span | No cant.

January 29, 2019 13:48:08

Job name:
Address:
City, Province, Postal Code: ST...NES
Customer:
Code reports: CCMC 12472-R

File name: SD2-B34 EL A.mmdl
Description: 2ND FLOOR FRAMING\Dro...ed Beams\B15 DR(I295)
Specifier:
Designer: AJ
Company:

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Max Defl.	0.161"	n/a	n/a	58	04-08-00
Span / Depth	10.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	3,253 lbs	35.8%	18.0%	Unspecified
B2	Wall/Plate 4" x 3-1/2"	3,673 lbs	40.4%	21.5%	Unspecified

Cautions

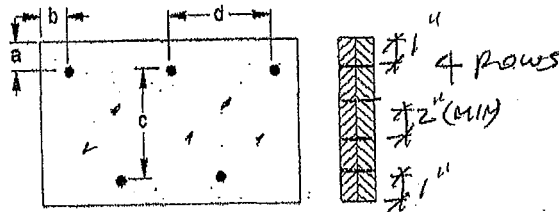
Uplift of 57 lbs found at span 1 - Left. *(2x-3 1/2" ARDOX SPIRAL TOE NAILS @ ST. B1)*

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 NBC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9
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.

CONFORMS TO OBC 2012

Connection Diagram: Full Length of Member



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

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

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



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®, AJSTM, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, BC FloorVault®, VERSA-LAM®, VERSA-RIM PLUS®

DWG NO. YAM2377-19H
STRUCTURAL
COMPONENT ONLY

T. 1902431(1)



Bolsa Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B12(1288)**

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

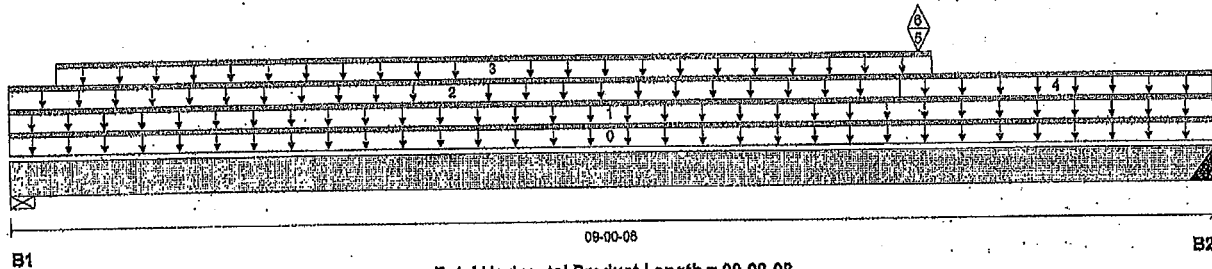
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B12(1288)

Specifier:

Designer: AJ

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	317 / 70	422 / 0		
B2, 3"	793 / 226	527 / 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	09-00-08	Top	10	10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-00-08	Top	19	10			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-08-06	Top	6	3			n/a
3	WALL	Unf. Lin. (lb/ft)	L	00-04-06	06-11-04	Top		60			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	06-08-06	09-00-08	Top	25	12			n/a
5	B13(1289)	Conc. Pt. (lbs)	L	06-10-02	06-10-02	Top	840	332			n/a
6	B13(1289)	Conc. Pt. (lbs)	L	06-10-02	06-10-02	Top	-296				n/a

Controls Summary

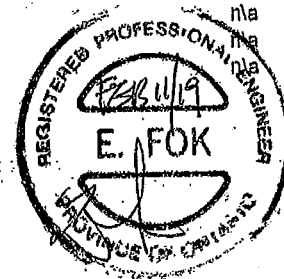
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,452 ft-lbs	23,220 ft-lbs	14.9%	1	06-10-02
End Shear	1,738 lbs	11,571 lbs	15.0%	1	08-00-00
Total Load Deflection	L/999 (0.06")	n/a	n/a	6	04-10-09
Live Load Deflection	L/999 (0.032")	n/a	n/a	8	04-11-09
Max Defl.	0.06"	n/a	n/a	6	04-10-09
Span / Depth	10.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	1,003 lbs	16.3%	5.4%	Unspecified
B2	Hanger 3" x 3-1/2"	1,848 lbs	n/a	14.4%	HGUS410

Cautions

Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWD NO. YAM2378-18H

STRUCTURAL
COMPONENT ONLY

T-1902432



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B12\1288****PASSED**

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

January 29, 2019 13:48:08

File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B12\1288

Specifier:

Designer: AJ

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

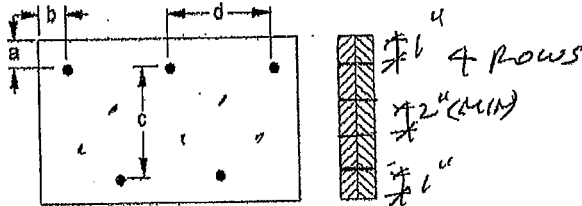
Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Connection Diagram: Full Length of Membera minimum = 1/2"
b minimum = 3"c = 1/2"
d = 6"

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

Connectors are: 3" Nails

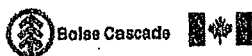
3 1/2" ARDOX SPIRAL**Disclosure**

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

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

DWG NO. TAW 237B-18H
STRUCTURAL
COMPONENT ONLY

T. G. 2019/01/29



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING\Flush Beams\B13(i289)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

January 29, 2019 13:48:08

Build 6475

Job name:

File name: SD2-B34 EL A.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B13(i289)

City, Province, Postal Code: ST...NES

Specifier:

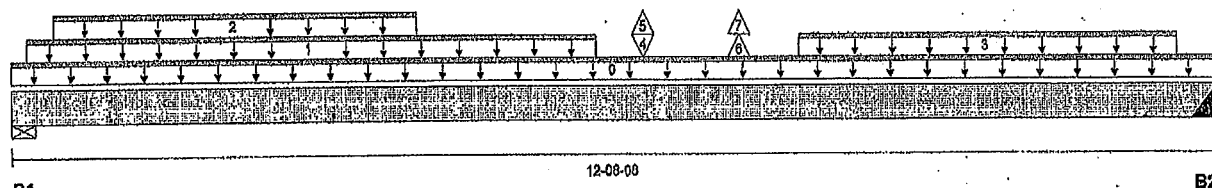
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 12-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2,463 / 205	1,181 / 0		
B2, 3"	858 / 300	340 / 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	12-08-08	Top	10				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-02-00	06-02-00	Top	344	172			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	00-05-08	04-03-08	Top	240	120			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	08-03-08	12-03-08	Top	52	26			n/a
4	J7(i607)	Conc. Pt. (lbs)	L	06-08-00	06-08-00	Top	59				n/a
5	J7(i607)	Conc. Pt. (lbs)	L	06-08-00	06-08-00	Top	-35				n/a
6	J7(i608)	Conc. Pt. (lbs)	L	07-08-00	07-08-00	Top	62	-204			n/a
7	J7(i608)	Conc. Pt. (lbs)	L	07-08-00	07-08-00	Top	-470				n/a

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10,133 ft-lbs	23,220 ft-lbs	43.6%	1	04-08-00
Neg. Moment	-1,054 ft-lbs	-23,220 ft-lbs	4.5%	4	07-08-00
End Shear	4,210 lbs	11,571 lbs	36.4%	1	01-03-00
Total Load Deflection	L/431 (0.337")	n/a	55.6%	6	05-11-00
Live Load Deflection	L/610 (0.239")	n/a	59.0%	8	05-11-00
Max Defl.	0.337"	n/a	n/a	6	05-11-00
Span / Depth	15.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Wall/Plate	5-1/2" x 3-1/2"	5,184 lbs	63.0%	22.1%	Unspecified
B2 Hanger	3" x 3-1/2"	1,712 lbs	n/a	13.4%	HGUS410
B2 Uplift		144 lbs			

Cautions

Uplift of 144 lbs found at span 1 - Right.
 Hanger B2 cannot handle uplift of 144 lbs.) - (SIMPSON HGUS410 @ ST. B2)
 Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
 Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



OWNED, YAW 2379-18H
 STRUCTURAL
 COMPONENT ONLY

T-1902433



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING\Flush Beams\B13(i289)

PASSED

BC CALC® Member Report

Build 8475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports:

CCMC 12472-R

Dry | 1 span | No cant.

January 29, 2019 13:48:08

File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B13(i289)

Specifier:

Designer: AJ

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

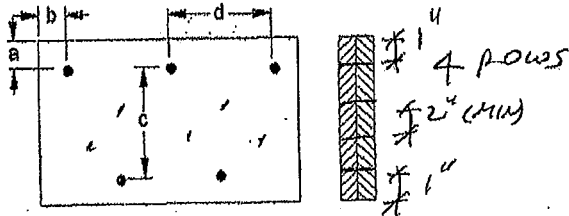
CONFORMS TO DBC 2012

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Connection Diagram: Full Length of Member

a minimum = 1/2"
b minimum = 3"

c = 1/2"
d = 6"

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

Connectors are: 3x Nails

3/4" ARDOX SPIRAL**Disclosure**

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

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

STRUCTURAL
COMPONENT ONLY

T. 902433(1)



Bolse Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLOOR FRAMING\Flush Beams\B16(1296)

Dry | 1 span | No cant.

January 29, 2019 13:48:08

BC CALCO Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: ST....NES

Customer:

Code reports: CCMC 12472-R

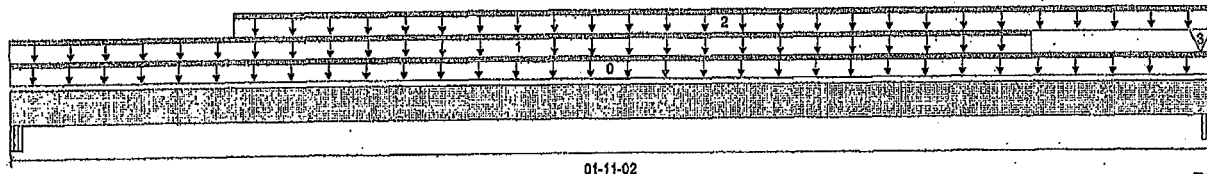
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B16(1296)

Specifier:

Designer: AJ

Company:



01-11-02

B2

Total Horizontal Product Length = 01-11-02

Reaction Summary (Down / Uplift) (lbs)

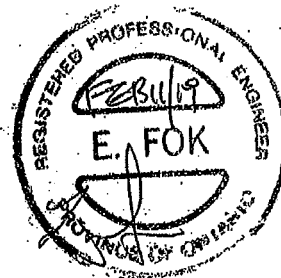
Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	56 / 0	101 / 0	84 / 0	
B2, 3-1/2"	99 / 0	190 / 0	170 / 0	

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	01-11-02	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-07-10	Top	14	7			n/a
2	E18(1613)	Unf. Lin. (lb/ft)	L	00-04-06	01-11-02	Top	77	151	147		n/a
3	E18(1613)	Conc. Pt. (lbs)	L	01-10-14	01-10-14	Top	13	25	24		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	152 ft-lbs	23,220 ft-lbs	0.7%	13	00-11-03
End Shear	274 lbs	11,571 lbs	2.4%	13	00-11-14
Total Load Deflection	L/999 (0")	n/a	n/a	35	00-11-00
Live Load Deflection	L/999 (0")	n/a	n/a	51	00-11-00
Max Defl.	0"	n/a	n/a	35	00-11-00
Span / Depth	2.0				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 2-3/8" x 3-1/2"	308 lbs	4.2%	3.0%	Unspecified
B2	Beam 3-1/2" x 3-1/2"	591 lbs	11.3%	4.0%	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, CONFORMS TO OBC 2012

BC CALCO analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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.

OWB NO. YAM 238218H
STRUCTURAL
COMPONENT ONLY

T. 1902434



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING\Flush Beams\B16(1296)

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

File name: SD2-B34 EL A.mmdl

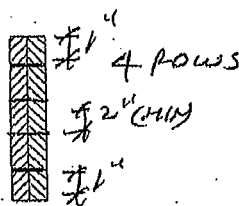
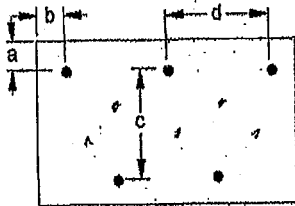
Description: 2ND FLOOR FRAMING\Flush Beams\B16(1296)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member



a minimum = 8"
b minimum = 3"

c = 7-1/2"
d = 6"

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

Connectors are: 3/4" ARDOX SPIRAL Nails



Disclosure

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

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

DWNGO.YAM2380.18H
STRUCTURAL
COMPONENT ONLY

T.19043465



Bolsa Cascaie

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B9\I285****PASSED**

BC CALCO® Member Report

Dry | 1 span | No cant.

January 29, 2019 13:48:08

Build 6475

Job name:

File name: SD2-B34 EL A.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B9\I285

City, Province, Postal Code: ST...NES

Specifier:

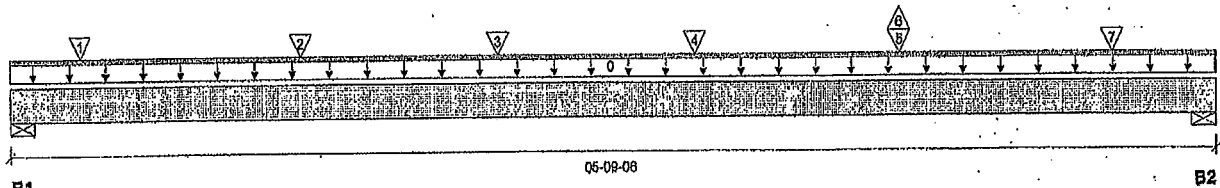
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 05-09-06

Reaction Summary (Down / Uplift) (lbs)

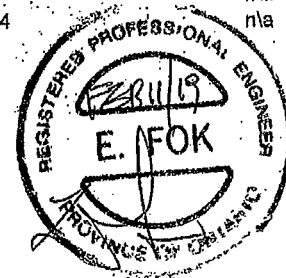
Bearing	Live	Dead	Snow	Wind
B1, 4"	1,226 / 49	669 / 0		
B2, 5-3/8"	1,693 / 168	971 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-09-06	Top		10			00-00-00
1	-	Conc. Pt. (lbs)	L	00-04-02	00-04-02	Top	396	198			n/a
2	-	Conc. Pt. (lbs)	L	01-04-13	01-04-13	Top	353	177			n/a
3	J1(I513)	Conc. Pt. (lbs)	L	02-04-02	02-04-02	Top	291	146			n/a
4	-	Conc. Pt. (lbs)	L	03-03-07	03-03-07	Top	351	176			n/a
5	-	Conc. Pt. (lbs)	L	04-03-04	04-03-04	Top	1,060	653			n/a
6	-	Conc. Pt. (lbs)	L	04-03-04	04-03-04	Top	-217				n/a
7	-	Conc. Pt. (lbs)	L	05-03-07	05-03-07	Top	468	234			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,610 ft-lbs	23,220 ft-lbs	15.1%	1	03-04-02
End Shear	2,808 lbs	11,571 lbs	24.3%	1	04-06-08
Total Load Deflection	L/999 (0.023")	n/a	n/a	6	02-11-02
Live Load Deflection	L/999 (0.015")	n/a	n/a	8	02-11-02
Max Defl.	0.023"	n/a	n/a	6	02-11-02
Span / Depth	6.5				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	2,675 lbs	44.7%	15.7%	Unspecified
B2	Wall/Plate 5-3/8" x 3-1/2"	3,753 lbs	46.7%	16.4%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

CONFORMS TO OBC 2012.

BC CALCO® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

DWG NO. TAN 2381-18H
STRUCTURAL
COMPONENT ONLY

T. 1902425

p6 12



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

2ND FLOOR FRAMING\Flush Beams\B9(1285)

Dry | 1 span | No cant.

PASSED

January 29, 2019 13:48:08

BC CALC® Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

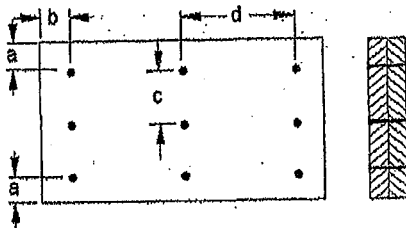
File name: SD2-B34 EL A.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B9(1285)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member

a minimum = 2"

b minimum = 3"

c = 2-3/4"

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.

Connectors are: Nails

3 1/2" ARDOX SPIRAL

**Disclosure**

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

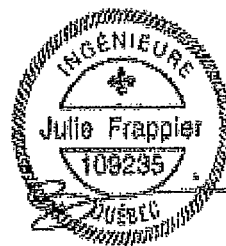
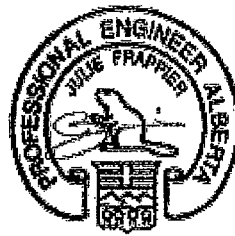
BC CALC®, BC-FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

NO. 2381-1811
STRUCTURAL
COMPONENT ONLY

T. Goups (v)

Maximum Floor Spans

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

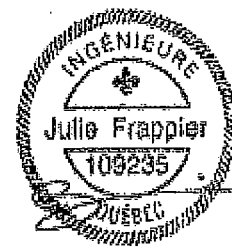
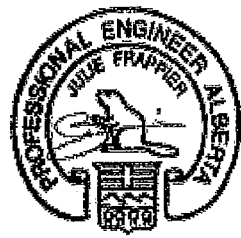


Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

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

Maximum Floor Spans

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



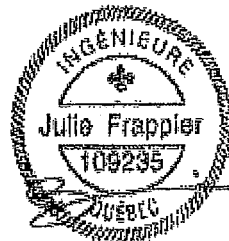
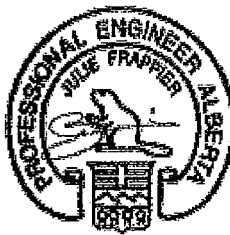
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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

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

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

Maximum Floor Spans

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



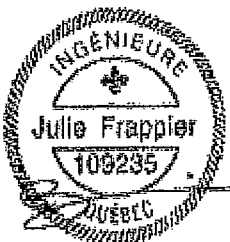
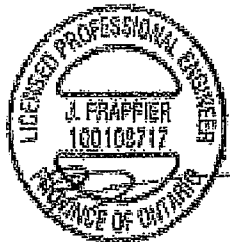
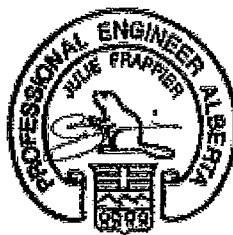
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

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

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

Maximum Floor Spans

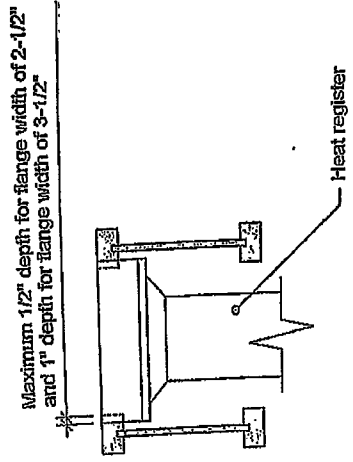
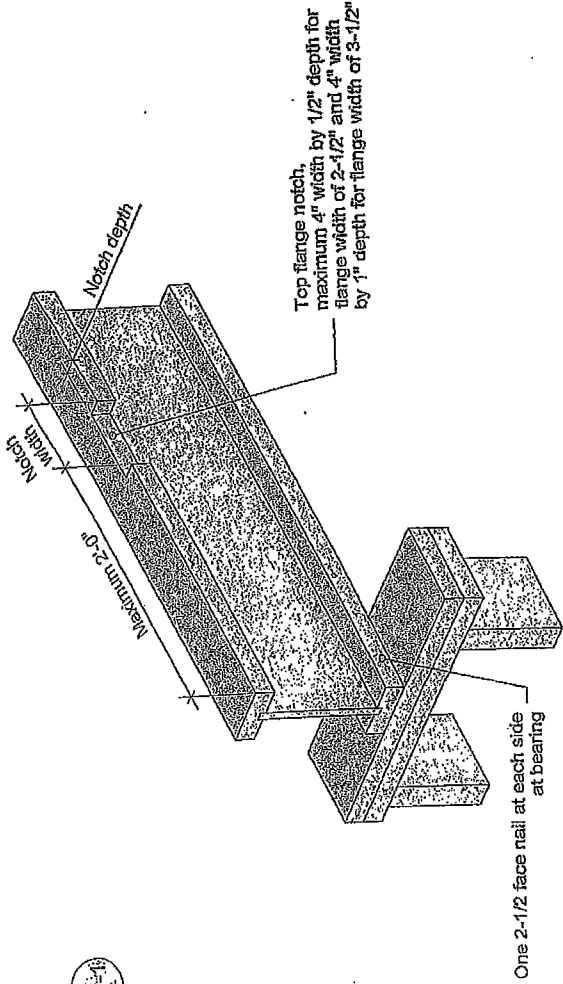
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing



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

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

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



- 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.

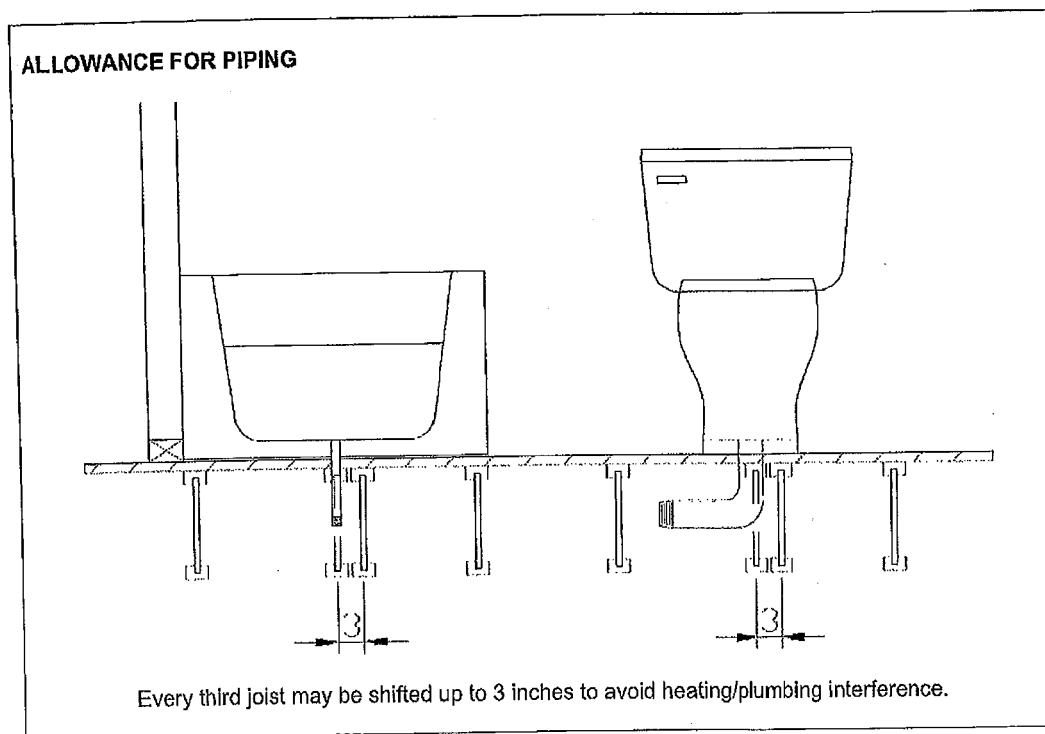
NORDIC STRUCTURES	T 514-871-8528 1 866 817-3418 nordic.ca	TITLE	DOCUMENT	NUMBER
		Notch in I-joist for Heat Register	-	
		CATEGORY	DATE	
		I-joist - Typical Floor Framing and Construction Details	2018-04-10	144-1

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