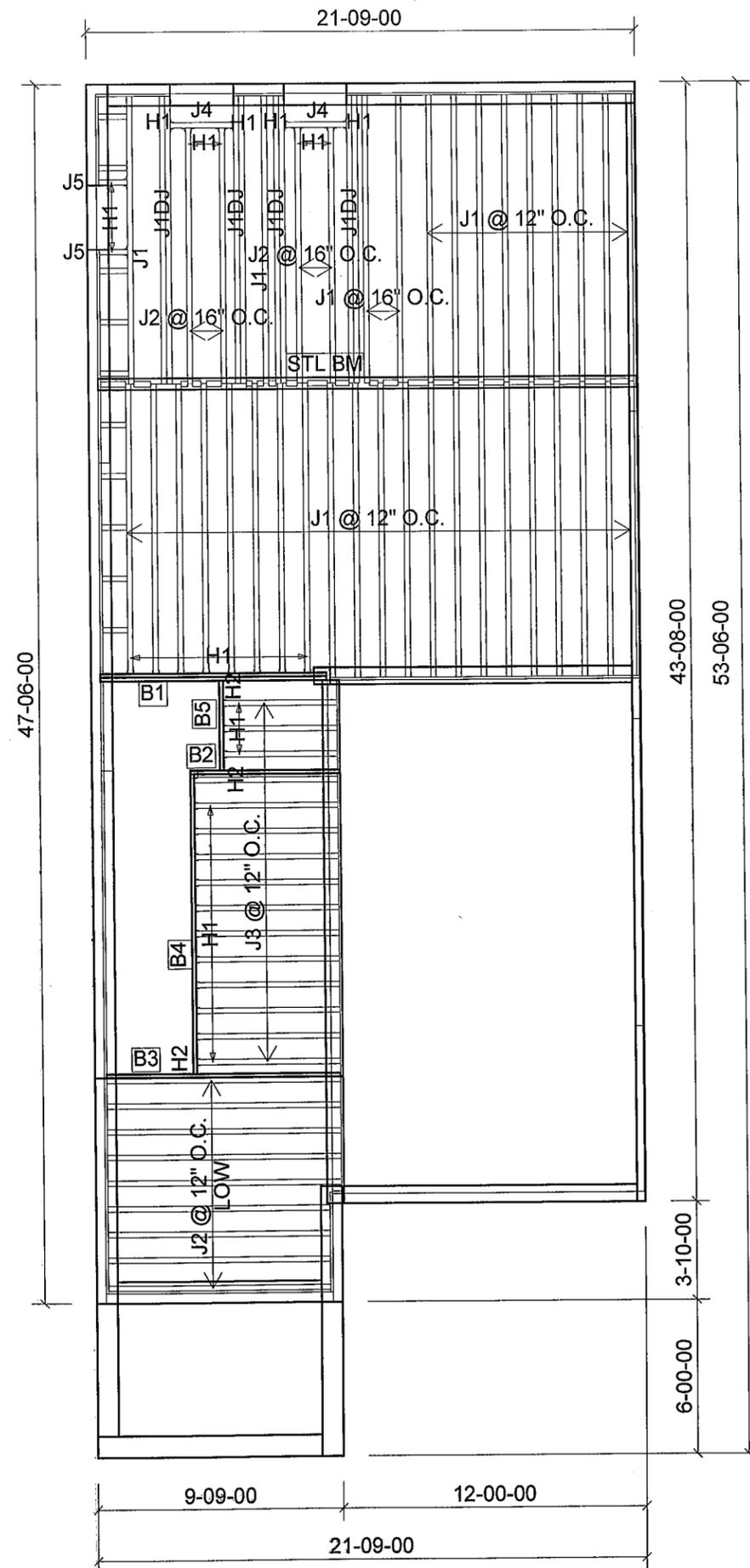


FROM PLAN DATED:  
 BUILDER: BAYVIEW WELLINGTON  
 SITE: PASSAGE ON THE CANAL  
 MODEL: TH6E  
 ELEVATION: A B  
 LOT:  
 CITY: ST CATHERINES  
 SALESMAN: M D  
 DESIGNER: AJ  
 REVISION:

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/ft<sup>2</sup>  
 DEAD LOAD: 15.0 lb/ft  
 TILED AREAS: 20 lb/ft  
 SUBFLOOR: 5/8" GLUED AND NAILED

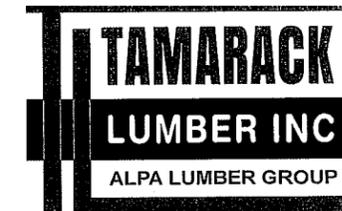
DATE: 10/27/2018

# 1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-40x	1	34
J1DJ	12-00-00	9 1/2" NI-40x	2	8
J2	10-00-00	9 1/2" NI-40x	1	13
J3	6-00-00	9 1/2" NI-40x	1	15
J4	4-00-00	9 1/2" NI-40x	1	2
J5	2-00-00	9 1/2" NI-40x	1	2
B4	12-00-00	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
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H2	HUS1.81/10
1	H2	HUS1.81/10



FROM PLAN DATED:  
 BUILDER: BAYVIEW WELLINGTON

SITE: PASSAGE ON THE CANAL

MODEL: TH6E  
 ELEVATION: A, B

LOT:  
 CITY: ST CATHERINES

SALESMAN: M D  
 DESIGNER: AJ  
 REVISION:

NOTES:  
 REFER TO THE NORDIC  
 INSTALLATION GUIDE FOR PROPER  
 STORAGE AND INSTALLATION.  
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 UNIFORM LOAD BEARING WALLS.  
 MULTIPLE SQUASH BLOCKS REQ'D  
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 FIGURE 1. CANTILEVERED JOISTS  
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 I-JOIST BLOCKING ALONG BEARING  
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 SEE FIGURES 4 & 5 FOR  
 REINFORCEMENT REQUIREMENTS.  
 FOR HOLES INCLUDING DUCT  
 CHASE AND FIELD CUT OPENINGS  
 SEE FIGURE 7, TABLES 1 & 2.  
 CERAMIC TILE APPLICATION AS PER  
 O.B.C 9.30.6.

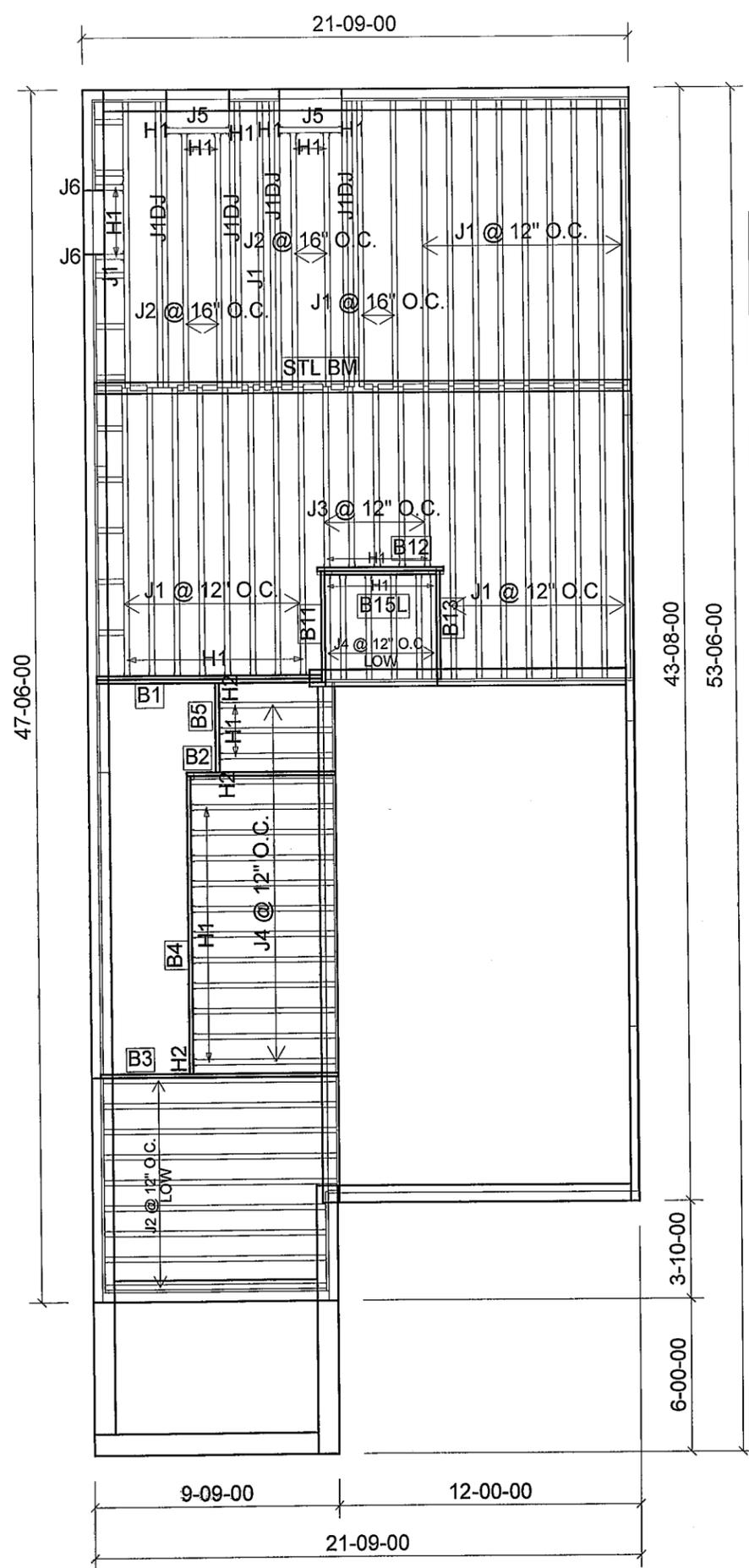
LOADING:  
 DESIGN LOADS: L/480.000  
 LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
 DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
 TILED AREAS: 20 lb/ft<sup>2</sup>

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 10/27/2018

# 1st FLOOR

SUNKEN



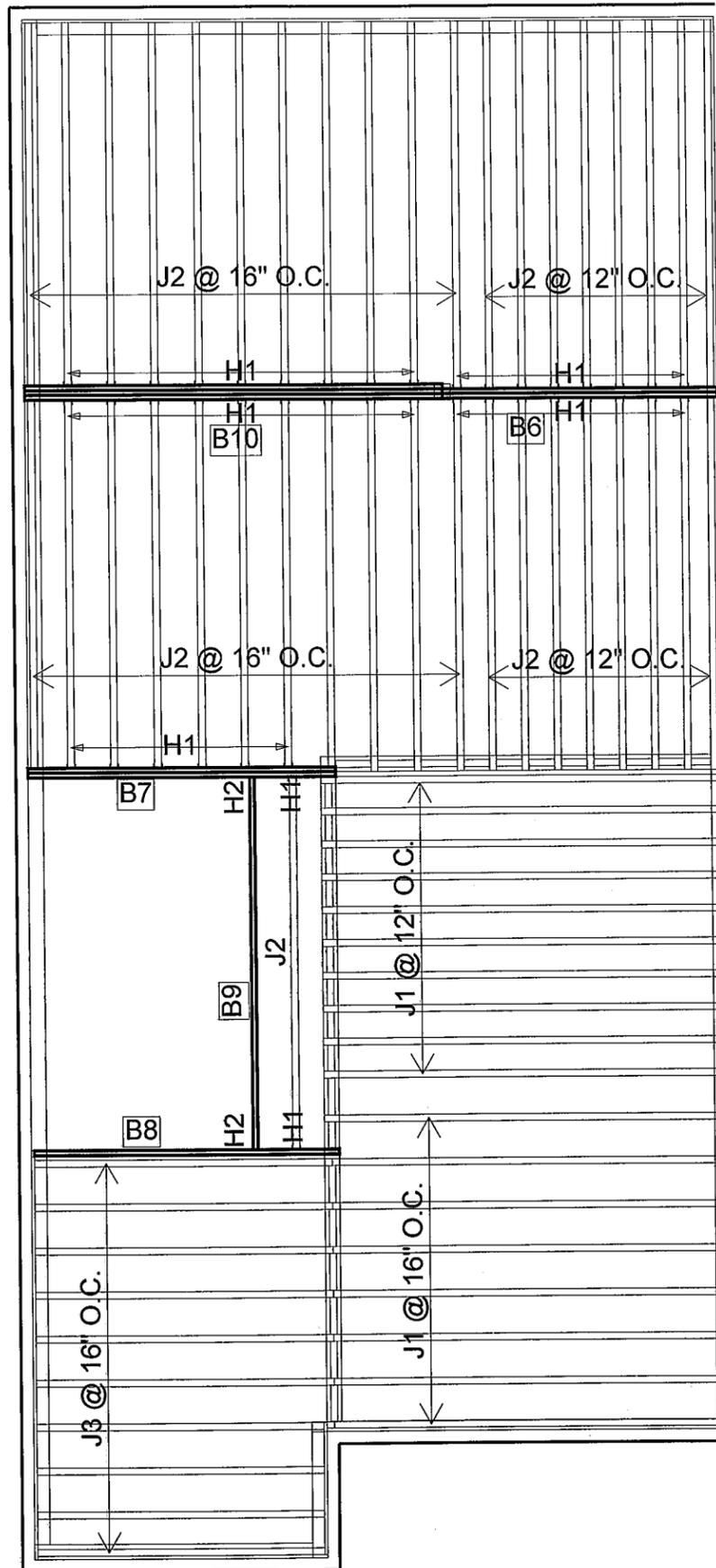
Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-40x	1	29
J1DJ	12-00-00	9 1/2" NI-40x	2	8
J2	10-00-00	9 1/2" NI-40x	1	13
J3	8-00-00	9 1/2" NI-40x	1	5
J4	6-00-00	9 1/2" NI-40x	1	21
J5	4-00-00	9 1/2" NI-40x	1	2
J6	2-00-00	9 1/2" NI-40x	1	2
B4	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B3	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B11	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B12	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B13	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B15L	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B2	6-00-00	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	1	1

Connector Summary		
Qty	Manuf	Product
25	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H2	HUS1.81/10
1	H2	HUS1.81/10

FROM PLAN DATED:  
 BUILDER: BAYVIEW WELLINGTON  
 SITE: PASSAGE ON THE CANAL

MODEL: TH6E  
 ELEVATION: A B  
 LOT:  
 CITY: ST CATHERINES  
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 FOR HOLES INCLUDING DUCT  
 CHASE AND FIELD CUT OPENINGS  
 SEE FIGURE 7 TABLES 1 & 2 OF THE  
 INSTALLATION GUIDE. CERAMIC TILE  
 APPLICATION AS PER O.B.C. 9.30.6  
 LOADING:  
 DESIGN LOADS: L/480.000  
 LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
 DEAD LOAD: 15.0 lb/ft  
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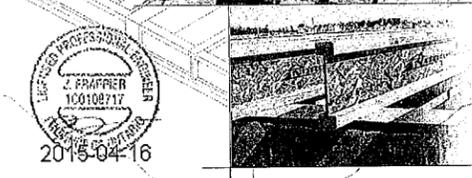
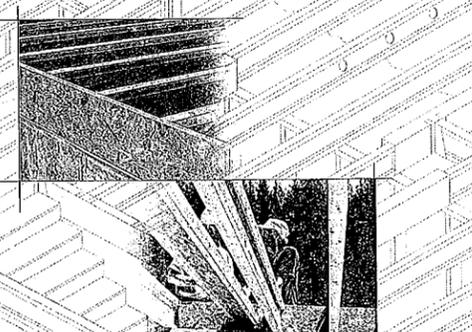
Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	18
J2	12-00-00	9 1/2" NI-40x	1	39
J3	10-00-00	9 1/2" NI-40x	1	10
B10	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B9	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
1	H1	IUS2.56/9.5
23	H1	IUS2.56/9.5
18	H1	IUS2.56/9.5
1	H2	HUS1.81/10
1	H2	HUS1.81/10

DATE: 10/27/2018

**2nd FLOOR**

## INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:

### SAFETY AND CONSTRUCTION PRECAUTIONS

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

**Avoid Accidents by Following these Important Guidelines:**

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuously 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 center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
  - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
- Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack 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.

### STORAGE AND HANDLING GUIDELINES

- Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
- Store, stack, and handle I-joists vertically and level only.
- Always stack and handle I-joists in the upright position only.
- Do not store I-joists in direct contact with the ground and/or flatwise.
- Protect I-joists from weather, and use spacers to separate bundles.
- Handled units should be kept intact until time of installation.
- 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.
- Do not handle I-joists in a horizontal orientation.
- 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 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.

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

Joist Depth	Joist Series	Simple spans On centre spacing				Multiple spans On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-5"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	NI-40x	16'-1"	15'-2"	14'-6"	14'-6"	17'-5"	16'-5"	15'-10"	15'-5"
	NI-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	15'-11"
	NI-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-7"	17'-4"	16'-9"	16'-10"
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	15'-6"	18'-4"	17'-3"	16'-8"	16'-7"
	NI-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-9"	17'-9"	17'-7"
	NI-60	18'-4"	17'-3"	16'-9"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
	NI-70	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
14"	NI-80	19'-9"	18'-3"	17'-6"	17'-7"	21'-9"	20'-2"	19'-3"	19'-4"
	NI-90	20'-2"	18'-7"	17'-11"	18'-0"	22'-3"	20'-7"	19'-8"	19'-9"
	NI-90x	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	NI-40x	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-6"	19'-8"	19'-4"
16"	NI-60	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-1"	20'-1"
	NI-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	21'-1"	21'-2"	21'-2"
	NI-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
	NI-90	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
18"	NI-90x	22'-7"	20'-11"	19'-11"	20'-0"	25'-0"	23'-1"	22'-0"	22'-2"
	NI-40x	22'-3"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	23'-1"	23'-0"
	NI-60	23'-11"	21'-1"	21'-1"	21'-2"	26'-5"	24'-5"	23'-4"	23'-4"
	NI-70	24'-5"	22'-4"	21'-6"	21'-6"	28'-11"	24'-10"	23'-9"	23'-9"
20"	NI-80	24'-8"	22'-9"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"
	NI-90x	24'-8"	22'-9"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"

### I-JOIST HANGERS

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

### 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 (C10). 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**

**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

Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from the raw log to the 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

- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
- Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
- I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple spans must be level.
- Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
- When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
- Leave a 1/16-inch gap between the I-joist end and a header.
- 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.
- Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
- Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
- 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.
- 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.
- 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.
- 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.
- Nail spacing: Splice 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

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

**FIGURES 3, 4 or 5**  
Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.

**NOTE: Never cut or notch flanges.**

**FIGURES 3, 4 or 5**  
Use hangers recognized in current code evaluation reports.

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

**1a** 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** Attach rim board to top plate using 2-1/2" wide 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.

**1c** Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

**1d** NI or rim board blocking panel per detail 1a. 1/16" for squash blocks.

**1e** Attach rim joist to top plate per detail 1a. Minimum 1-3/4" bearing required.

**1f** Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations.

**1g** Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

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

**1i** Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support.

**1j** Do not bevel-cut joist beyond inside face of wall.

**1k** Top-mount hanger installed per manufacturer's recommendations. Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible. Maximum support capacity = 1,620 lbs.

**1l** Attach I-joist per detail 1b.

**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.

**1n** Note: Blocking required at bearing for lateral support, not shown for clarity.

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

**1p** Filler block. 1/8" to 1/4" gap between top flange and filler block.

**1q** Provide backer for siding attachment unless nailable sheathing is used.

**1r** Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side. Optional: Minimum 1x4 inch strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joist.

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

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

\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA O325 or CAN/CSA O437 Standard.  
\*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300
1-1/8" Rim Board Plus	8,090

\*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.

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

\*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.

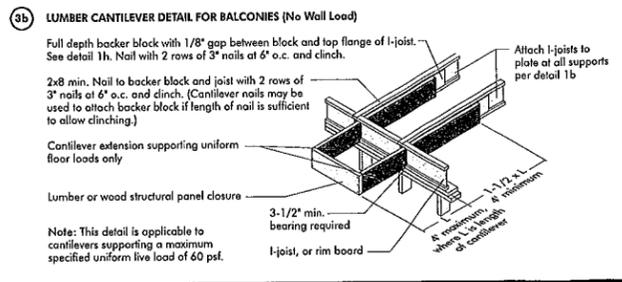
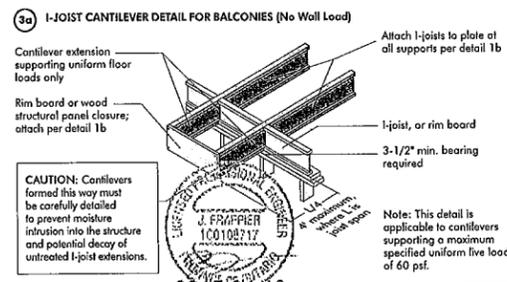
### FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

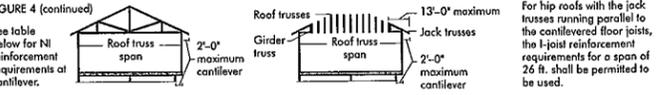
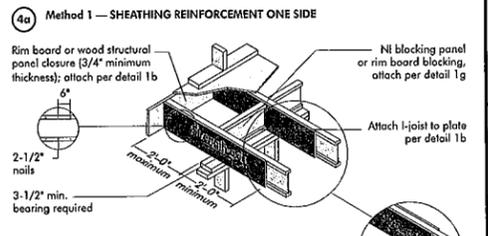
**1s** One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum). One 2-1/2" nails one side only. 2-1/2" nails at 6" o.c.

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

**CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)**



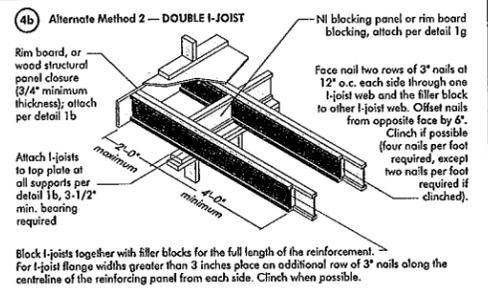
**CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED ONE SIDE)**



**Method 2 — SHEATHING REINFORCEMENT TWO SIDES**

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

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

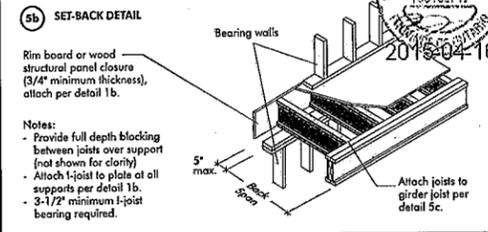
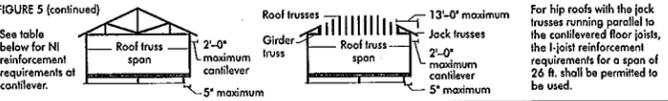
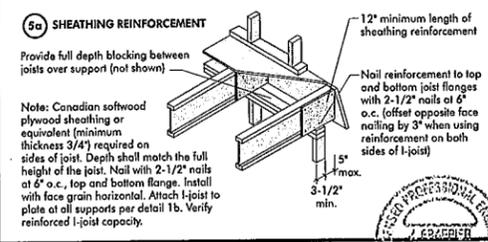


**CANTILEVER REINFORCEMENT METHODS ALLOWED**

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

1. N = No reinforcement required.  
 2. = NI reinforced with 3/4\" wood structural panel on one side only.  
 3. = NI reinforced with 3/4\" wood structural panel on both sides, or double I-joint.  
 4. = Try a deeper joist or closer spacing.  
 5. = Maximum design load shall be 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3-0\" maximum width window or door openings.

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



**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							
		JOIST SPACING (in.)		JOIST SPACING (in.)		JOIST SPACING (in.)		JOIST SPACING (in.)					
		12	16	19.2	24	12	16	19.2	24				
9-1/2"	26	1	X	X	X	2	X	X	X	X	X	X	X
	28	1	X	X	X	2	X	X	X	X	X	X	X
	30	2	X	X	X	2	X	X	X	X	X	X	X
	32	2	X	X	X	X	2	X	X	X	X	X	X
11-7/8"	26	N	2	X	X	1	X	X	X	2	X	X	X
	28	N	2	X	X	1	X	X	X	2	X	X	X
	30	N	2	X	X	1	X	X	X	2	X	X	X
	32	N	2	X	X	1	X	X	X	2	X	X	X
14"	26	N	1	2	X	N	2	X	X	N	2	X	X
	28	N	2	X	X	1	2	X	X	1	2	X	X
	30	N	1	2	X	N	2	X	X	1	2	X	X
	32	N	2	X	X	1	2	X	X	1	2	X	X
16"	26	N	2	X	X	1	2	X	X	1	2	X	X
	28	N	2	X	X	1	2	X	X	1	2	X	X
	30	N	2	X	X	1	2	X	X	1	2	X	X
	32	N	2	X	X	1	2	X	X	1	2	X	X

1. N = No reinforcement required.  
 2. = NI reinforced with 3/4\" wood structural panel on one side only.  
 3. = NI reinforced with 3/4\" wood structural panel on both sides, or double I-joint.  
 4. = Try a deeper joist or closer spacing.  
 5. = Maximum design load shall be 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3-0\" maximum width window or door openings.

**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-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joint flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller 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**

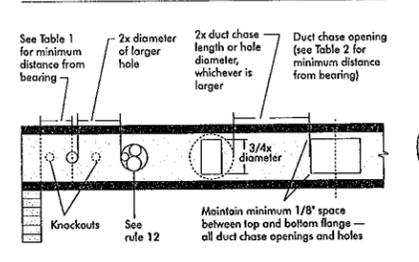
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft.-in.)												Span adjustment Factor			
		2	3	4	5	6	7	8	9	10	10-3/4	11	12		12-3/4		
9-1/2"	NI-20	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	NI-40	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	NI-70	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	NI-90	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

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

**OPTIONAL:**

The above table is based on the I-joists used at their maximum span. If the I-joists are placed at less than their full maximum span (see Manufacturer's literature) the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:  
 D reduced =  $\frac{\text{Actual Span}}{\text{Maximum Span}} \times D$   
 Where:  
 D reduced = Actual span distance from inside face of support to centre of hole.  
 D = The actual measured span distance between the inside faces of supports (ft.).  
 SAF = Span Adjustment Factor given in this table.  
 D = The minimum distance from the inside face of any support to centre of hole from this table.  
 If Actual is greater than 1, use 1 in the above calculation for D reduced.  
 SAF

**FIGURE 7 FIELD-CUT HOLE LOCATOR**



Knockouts are predrilled holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joint. Where possible, it is preferable to use knockouts instead of field-cut holes.  
 Never drill, cut or notch the flange, or over-cut the web.  
 Holes in webs should be cut with a sharp saw.  
 For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joint.

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft.-in.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24			
9-1/2"	NI-20	4.1	4.5	4.10	5.4	5.8	6.1	6.5	7.1	7.5			
	NI-40	5.3	5.8	6.0	6.5	6.10	7.3	7.8	8.2	8.8			
	NI-70	5.1	5.5	5.10	6.3	6.7	7.1	7.6	8.1	8.4			
	NI-90	5.0	5.4	5.9	6.1	6.0	7.0	7.5	8.0	8.4			
11-7/8"	NI-20	4.8	5.2	5.8	6.1	6.5	6.9	7.3	7.8	8.2			
	NI-40	6.0	6.5	6.8	7.3	7.8	8.1	8.6	9.1	9.6			
	NI-70	5.8	6.2	6.7	7.0	7.5	7.9	8.3	8.7	9.1			
	NI-90	5.7	6.1	6.6	6.9	7.4	7.8	8.2	8.6	9.0			
14"	NI-20	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5			
	NI-40	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8			
	NI-70	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6			
	NI-90	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5			
16"	NI-20	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2			
	NI-40	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5			
	NI-70	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3			
	NI-90	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2			

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

**INSTALLING THE GLUED FLOOR SYSTEM**

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

**FASTENERS FOR SHEATHING AND SUBFLOORING(1)**

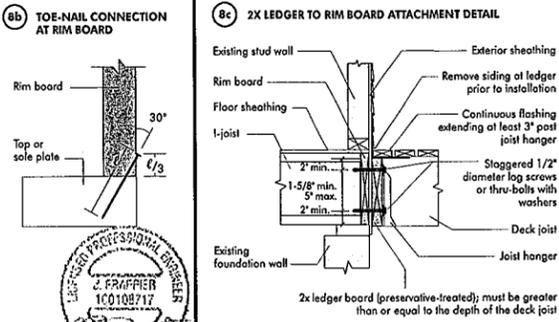
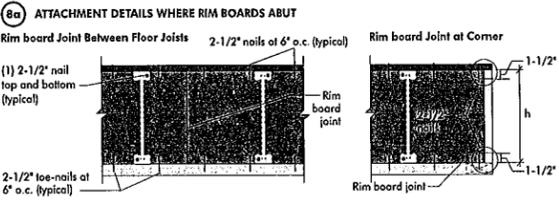
Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing of Fasteners (Edges, Intern. Supports)
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	
16	5/8	2"	1-3/4"	2"	6'
20	5/8	2"	1-3/4"	2"	6'
24	3/4	2"	1-3/4"	2"	6'

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

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

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

**RIM BOARD INSTALLATION DETAILS**



**DIAMETERS CHIRODOLANAU**

**PRODUCT WARRANTY**

Chirodolanau guarantees that, in accordance with our specifications, Diameters products are free from manufacturing defects in material and workmanship.

Furthermore, Chirodolanau 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.



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

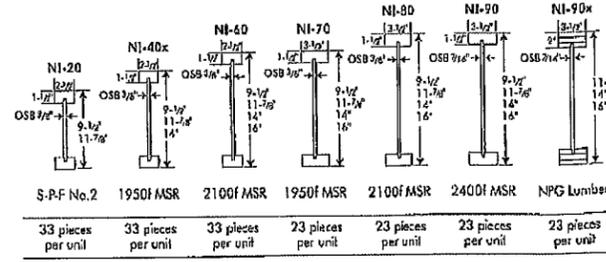
## WEB HOLE SPECIFICATIONS

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

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joint flange.

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the largest 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 of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.



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

## 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	8-3/8	9	10	10-3/4	11	12	12-3/4	
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	2-8"	3-6"	5-0"	6-4"	8-0"	8-4"	---	---	---	---	---	---	---	---	---	---

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

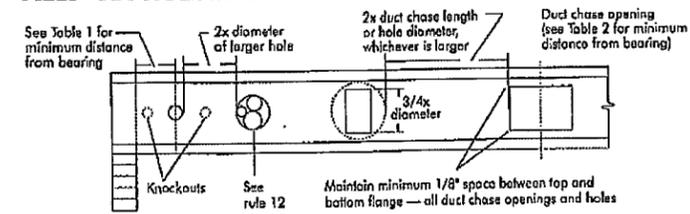
## TABLE 2 DUCT CHASE OPENING SIZES AND LOCATIONS

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"	4-4"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	8-2"	8-6"	8-9"
	NI-40x	5-2"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	8-9"	8-9"	8-9"
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-7"	8-7"	8-7"	8-7"
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	8-4"	8-4"	8-4"
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	8-6"	8-6"	8-6"

- Above table may be used for I-joint 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 1/180.
- 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 predrilled holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joint. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

Holes in webs should be cut with a sharp saw.

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

## SAFETY AND CONSTRUCTION PRECAUTIONS



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



Never stack building materials over unsharpened I-joists. Once sheathed, 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-joint as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joint rollover or buckling.
  - Temporary bracing or struts must be 1x1 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joint. Nail the bracing to a lateral restraint at the end of each bay.
  - 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-bracing.
- Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
- Never install a damaged I-joint.

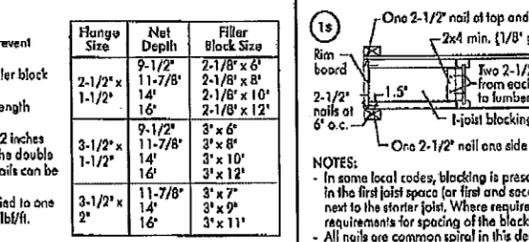
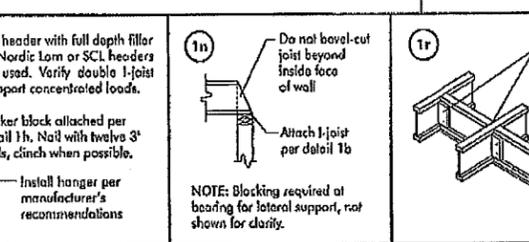
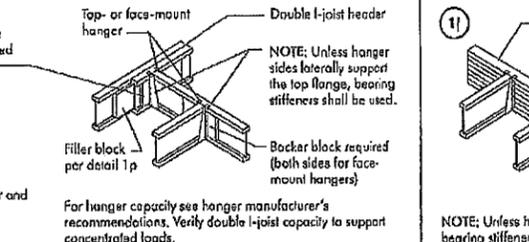
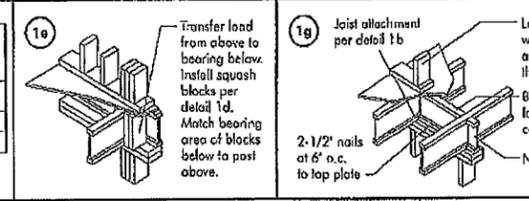
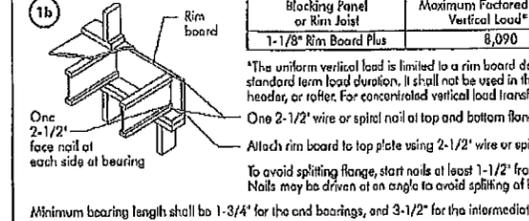
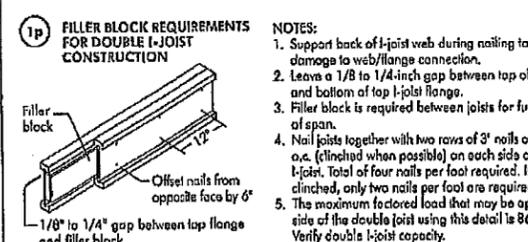
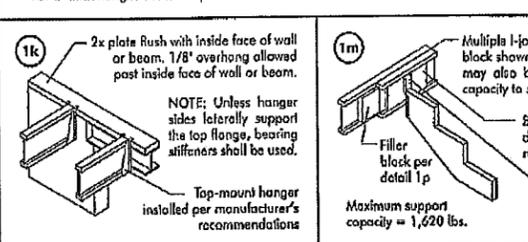
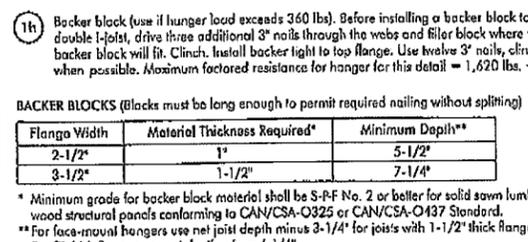
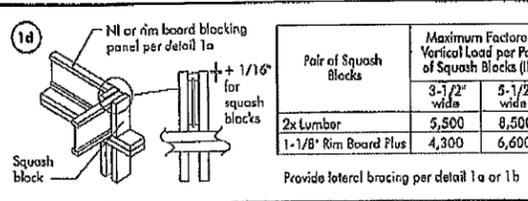
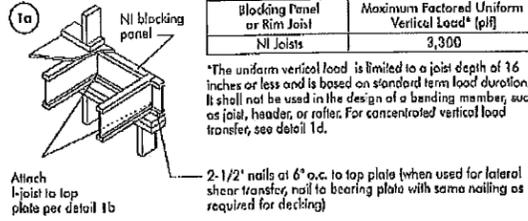
Inproper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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

**CHANTERS CHIBOUGAHOU**

## PRODUCT WARRANTY

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

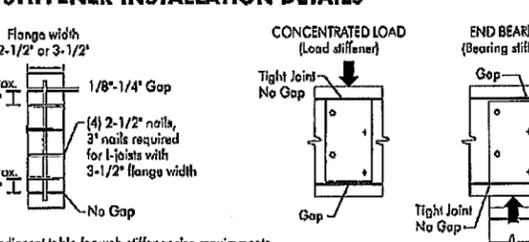
*Furthermore, Chanters Chibougaou warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.*



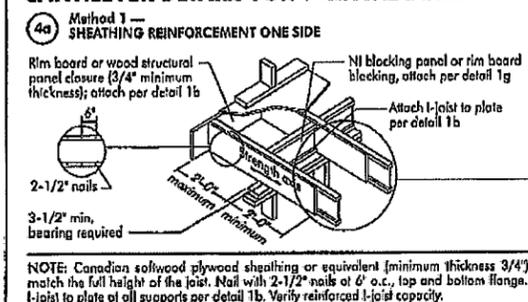
## WEB STIFFENERS

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

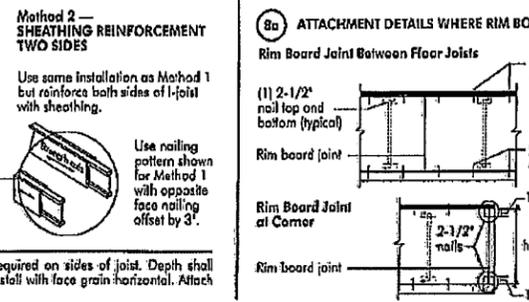
## FIGURE 2 WEB STIFFENER INSTALLATION DETAILS

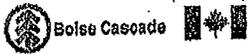


## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET



## RIM BOARD INSTALLATION DETAILS





**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**1ST FLOOR FRAMING\Flush Beams\B1(i1499)**

**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:14:02

Buld 6475

Job name:

File name: TH6E SUNKEN.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B1(i1499)

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

Specifier:

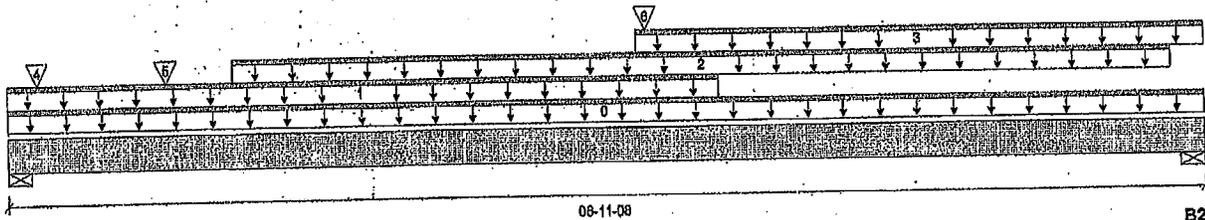
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 08-11-08

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2,366 / 0	1,822 / 0		
B2, 6"	1,337 / 0	807 / 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	08-11-08	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	05-03-14	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-08-08	08-08-08	Top	230	115			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	04-08-08	08-11-08	Top	20	10			n/a
4	E1(1035)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	1,199	960			n/a
5	J1(i1491)	Conc. Pt. (lbs)	L	01-02-08	01-02-08	Top	259	130			n/a
6	B5(i1516)	Conc. Pt. (lbs)	L	04-09-06	04-09-06	Top	544	281			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7,085 ft-lbs	23,220 ft-lbs	30.5%	1	04-09-06
End Shear	2,890 lbs	11,571 lbs	23.2%	1	01-03-00
Total Load Deflection	L/999 (0.113")	n/a	n/a	4	04-05-08
Live Load Deflection	L/999 (0.068")	n/a	n/a	5	04-05-08
Max Defl.	0.113"	n/a	n/a	4	04-05-08
Span / Depth	10.3				



**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	5,826 lbs	56.7%	24.8%	Unspecified
B2	Wall/Plate 6" x 3-1/2"	3,014 lbs	26.9%	11.8%	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 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.

**CONFORMS TO DBC 2012**

DWG NO. YAM 2246-1811  
**STRUCTURAL COMPONENT ONLY**

T-1902320



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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B1(11499)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports: CQMC 12472-R

File name: TH6E SUNKEN.mmdl

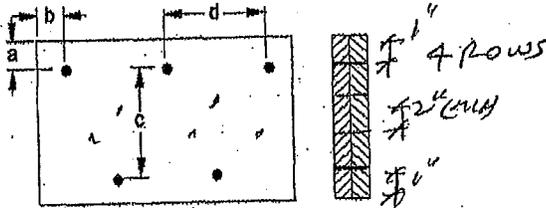
Description: 1ST FLOOR FRAMING\Flush Beams\B1(11499)

Specifier:

Designer:

Company:

### Connection Diagram: Full Length of Member



a minimum = 1"  
 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.

Connectors are: Nails  
 3/8" 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. FAM 2146-18 H  
 STRUCTURAL COMPONENT ONLY

T-1902320 (v)



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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B11(11494)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

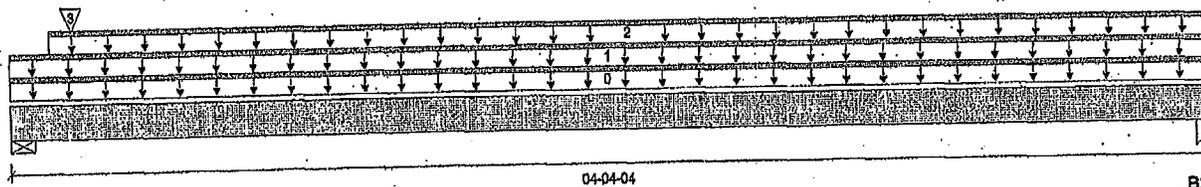
File name: TH6E SUNKEN.rmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B11(11494)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 04-04-04

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1,853 / 0	1,278 / 0		
B2, 1-3/4"	280 / 0	150 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-04-04	Top	1,00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	04-04-04	Top	120	60			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-01-12	04-04-04	Top	18	9			n/a
3	2(1045)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	1,534	1,107			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	561 ft-lbs	11,610 ft-lbs	4.8%	1	02-04-00
End Shear	324 lbs	5,785 lbs	5.6%	1	01-03-00
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	02-04-00
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-04-00
Max Defl.	0.004"	n/a	n/a	4	02-04-00
Span / Depth	4.9				

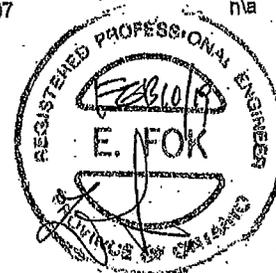
### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	4,377 lbs	86.2%	37.3%	Unspecified
B2	Column 1-3/4" x 1-3/4"	606 lbs	24.4%	16.2%	Unspecified

### Notes

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor : Normal Part code : Part 9

**CONFORMS TO DBO 2012**



### Disclosure

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

DOB NO. YAW 2047-18H  
**STRUCTURAL COMPONENT ONLY**

T-190221



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

**PASSED**

## 1ST FLOOR FRAMING (Flush Beams) B12 (1647)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

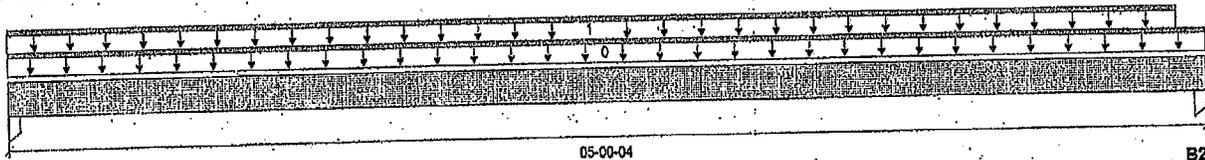
File name: THE SUNKEN.mrdl

Description: 1ST FLOOR FRAMING (Flush Beams) B12 (1647)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 05-00-04

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	380 / 0	202 / 0		
B2, 3-1/2"	344 / 0	184 / 0		

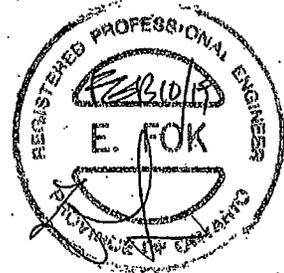
### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-00-04	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-10-12	Top	147	74			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	842 ft-lbs	11,810 ft-lbs	7.3%	1	02-04-12
End Shear	660 lbs	5,785 lbs	9.7%	1	03-11-04
Total Load Deflection	L/999 (0.009")	n/a	n/a	4	02-06-04
Live Load Deflection	L/999 (0.009")	n/a	n/a	6	02-06-04
Max Defl.	0.009"	n/a	n/a	4	02-06-04
Span / Depth	5.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	822 lbs	18.5%	11.0%	Unspecified
B2	Column 3-1/2" x 1-3/4"	746 lbs	15.0%	10.0%	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.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2016 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor: Normal Part code: Part 9.

CONFORMS TO OBC 2012

### Disclosure

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

DWGHU.TAM 204818H  
STRUCTURAL  
COMPONENT ONLY

T-190232



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

**PASSED**

**1ST FLOOR FRAMING\Flush Beams\B13(11551)**

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

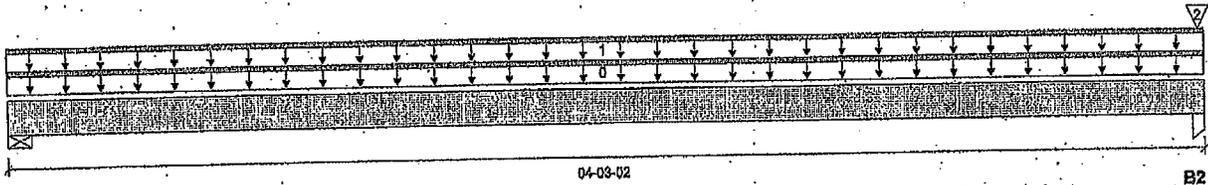
File name: TH6E SUNKEN.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B13(11551)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 04-03-02

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	30 / 0	26 / 0		
B2, 1-3/4"	28 / 0	24 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-02	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-03-02	Top	13	7			n/a
2	FC1 Floor Material	Conc. Pt. (lbs)	L	04-02-14	04-02-14	Top	1				n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	64 ft-lbs	11,610 ft-lbs	0.6%	1	02-02-14
End Shear	37 lbs	6,786 lbs	0.6%	1	01-01-14
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	02-02-14
Live Load Deflection	L/999 (0")	n/a	n/a	6	02-02-14
Max Def.	0.001"	n/a	n/a	4	02-02-14
Span / Depth	4.9				



**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Support	Demand/Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	77 lbs	1.9%	0.8%	Unspecified
B2	Column 1-3/4" x 1-3/4"	71 lbs	2.8%	1.9%	Unspecified

**Notes**

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor: Normal Part code: Part 9

**CONFORMS TO OBC 2012**

**Disclosure**

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

DWR NO. 2249-18H  
**STRUCTURAL COMPONENT ONLY**

T-192323



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

**PASSED**

**1ST FLOOR FRAMING\Flush Beams\B15L(11303)**

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC.CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

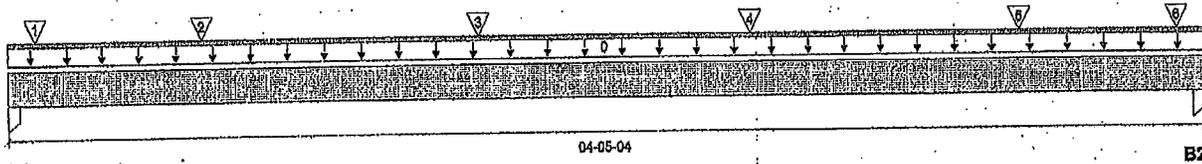
File name: TH6E SUNKEN.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B15L(11303)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 04-05-04

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	182 / 0	102 / 0		
B2, 3-1/2"	182 / 0	102 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
							1.00	0.85	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-05-04	Top		5			00-00-00
1	J4(11319)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	30	15			n/a
2	J4(11320)	Conc. Pt. (lbs)	L	00-08-12	00-08-12	Top	72	36			n/a
3	J4(11312)	Conc. Pt. (lbs)	L	01-09-00	01-09-00	Top	83	41			n/a
4	J4(11317)	Conc. Pt. (lbs)	L	02-09-00	02-09-00	Top	82	41			n/a
5	J4(11316)	Conc. Pt. (lbs)	L	03-09-00	03-09-00	Top	69	35			n/a
6	J4(11318)	Conc. Pt. (lbs)	L	04-04-00	04-04-00	Top	28	14			n/a

**Controls Summary**

Pos. Moment	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
End Shear	346 ft-lbs	11,610 ft-lbs	3.0%	1	01-09-12
Total Load Deflection	282 lbs	5,785 lbs	4.5%	1	01-01-00
Live Load Deflection	L/999 (0.003")	n/a	n/a	4	02-02-10
Max Def.	L/999 (0.002")	n/a	n/a	5	02-02-10
Span / Depth	0.003"	n/a	n/a	4	02-02-10



**Bearing Supports**

Bearing	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	400 lbs	8.0%	6.4%	Unspecified
B2	Column 3-1/2" x 1-3/4"	400 lbs	8.0%	6.4%	Unspecified

**Disclosure**

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**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**

**BOISE CASCADE 2050-10H  
STRUCTURAL  
COMPONENT ONLY**

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

T-1902324



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B2(11505)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

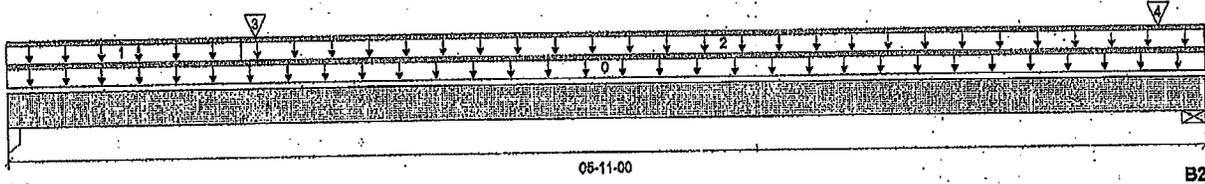
File name: TH6E SUNKEN.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B2(11505)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 05-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	491 / 0	266 / 0		
B2, 6-1/2"	199 / 0	128 / 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	05-11-00	Top					00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-02-00	Top	7	4			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	01-02-00	05-11-00	Top	20	10			n/a
3	B5(11618)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	553	285			n/a
4	1(11044)	Conc. Pt. (lbs)	L	05-08-04	05-08-04	Top	34	29			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,065 ft-lbs	11,810 ft-lbs	9.2%	1	01-02-14
End Shear	1,046 lbs	6,785 lbs	18.1%	1	01-01-00
Total Load Deflection	L/999 (0.012")	n/a	n/a	4	02-06-15
Live Load Deflection	L/999 (0.008")	n/a	n/a	6	02-06-15
Max Defl.	0.012"	n/a	n/a	4	02-06-15
Span / Depth	6.7				



Bearing Supports

Bearing	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	1,070 lbs	21.5%	14.3%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	459 lbs	8.9%	3.9%	Unspecified

Notes

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Disclosure

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OWN NO. YAM 22518H  
STRUCTURAL  
COMPONENT ONLY

T-1902215



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B3(11525)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

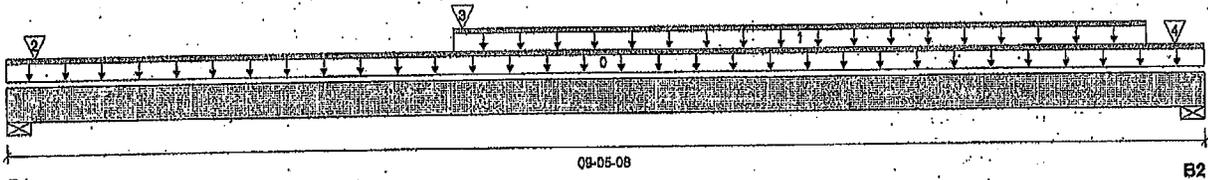
File name: THE SUNKEN.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B3(11525)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 09-05-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1,881 / 0	1,635 / 0		
B2, 5-1/2"	1,912 / 0	1,349 / 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	09-05-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-06-08	09-00-00	Top	14	7			n/a
2	E1(11035)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	1,443	1,374			n/a
3	B4(11549)	Conc. Pt. (lbs)	L	03-07-06	03-07-06	Top	832	346			n/a
4	1(11044)	Conc. Pt. (lbs)	L	09-02-12	09-02-12	Top	1,624	1,171			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,047 ft-lbs	11,610 ft-lbs	26.2%	1	03-07-06
End Shear	961 lbs	5,785 lbs	16.6%	1	01-03-00
Total Load Deflection	L/999 (0.095")	n/a	n/a	4	04-05-11
Live Load Deflection	L/999 (0.06")	n/a	n/a	5	04-05-11
Max Defl.	0.095"	n/a	n/a	4	04-05-11
Span / Depth	10.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	4,866 lbs	94.7%	41.4%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	4,554 lbs	88.6%	38.8%	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 NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



Disclosure

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OWNED, PART 2052-18H  
STRUCTURAL  
COMPONENT ONLY

T-1902316



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

**PASSED**

1ST FLOOR FRAMING\Flush Beams\B4(11549)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

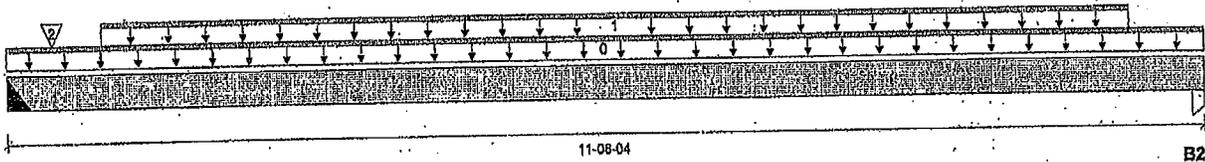
File name: TH6E SUNKEN.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B4(11549)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 11-08-04

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	638 / 0	350 / 0		
B2, 1-3/4"	578 / 0	320 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
							1.00	0.65	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-08-04	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-08	10-11-08	Top	113	57			n/a
2	J4(11498)	Conc. Pt. (lbs)	L	00-05-08	00-05-08	Top	87	43			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,055 ft-lbs	11,810 ft-lbs	34.9%	1	05-05-08
End Shear	1,274 lbs	5,785 lbs	22.0%	1	00-11-08
Total Load Deflection	L/506 (0.273")	n/a	47.5%	4	05-10-00
Live Load Deflection	L/782 (0.176")	n/a	46.0%	5	05-10-00
Max Def.	0.273"	n/a	n/a	4	05-10-00
Span / Depth	14.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1,398 lbs	n/a	32.7%	Hanger
B2	Column 1-3/4" x 1-3/4"	1,266 lbs	50.9%	33.9%	Unspecified



**Cautions**

Hanger model Hanger was not found. 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 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**

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BOISE CASCADE 2018  
STRUCTURAL COMPONENT - ONLY

T-1902327



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

**PASSED**

**1ST FLOOR FRAMING\Flush Beams\B5(11516)**

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALC® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

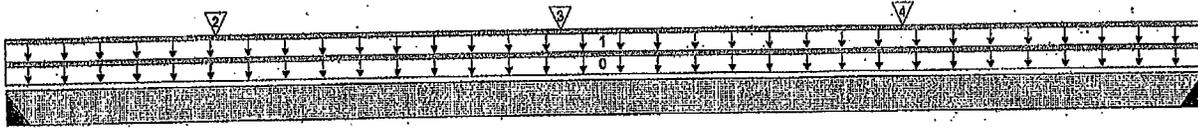
File name: TH6E SUNKEN.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B5(11516)

Specifier:

Designer:

Company:



B1

Total Horizontal Product Length = 03-06-00

B2

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	554 / 0	285 / 0		
B2, 2"	543 / 0	280 / 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	03-06-00	Top	6				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top	240	120			n/a
2	J4(11522)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	Top	76	38			n/a
3	J4(11504)	Conc. Pt. (lbs)	L	01-07-08	01-07-08	Top	90	45			n/a
4	J4(11552)	Conc. Pt. (lbs)	L	02-07-08	02-07-08	Top	91	46			n/a

**Controls Summary**

Pos. Moment	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
End Shear	966 ft-lbs	11,610 ft-lbs	8.3%	1	01-07-08
Total Load Deflection	651 lbs	5,785 lbs	11.2%	1	02-06-08
Live Load Deflection	L/999 (0.005")	n/a	n/a	4	01-08-14
Max Defl.	L/999 (0.003")	n/a	n/a	5	01-08-14
Span / Depth	0.005"	n/a	n/a	4	01-08-14
	4.2				

**Bearing Supports**

Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger 2" x 1-3/4"	1,187 lbs	n/a	27.8%	HUS1.81/10
B2 Hanger 2" x 1-3/4"	1,166 lbs	n/a	27.3%	HUS1.81/10

**Cautions**

Header for the hanger HUS1.81/10 at B1 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.  
 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.

**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

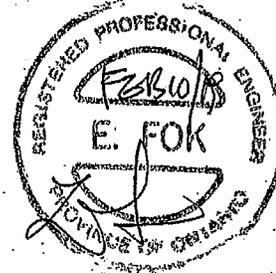
**Disclosure**

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

DWG NO. YAW 2054-18H  
 STRUCTURAL  
 COMPONENT ONLY

T-190228





**Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B10(I1418)**

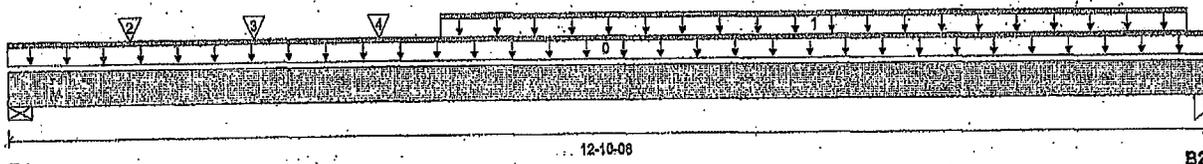
**PASSED**

BC CALC® Member Report  
 Build 6475  
 Job name:  
 Address:  
 City, Province, Postal Code: ST ...NES  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

October 27, 2018 09:14:02

File name: TH6E SUNKEN.mmdl  
 Description: 2ND FLOOR FRAMING\Flush Beams\B10(I1418)  
 Specifier:  
 Designer:  
 Company:



Total Horizontal Product Length = 12-10-08

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

Bearing	Live	Dead	Snow	Wind
B1, 6-1/2"	2,636 / 0	1,413 / 0		
B2, 3"	2,781 / 0	1,482 / 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	12-10-08	Top		14			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	04-08-00	12-08-00	Top	454	227			n/a
2	-	Conc. Pt. (lbs)	L	01-04-00	01-04-00	Top	682	282			n/a
3	-	Conc. Pt. (lbs)	L	02-08-00	02-08-00	Top	608	304			n/a
4	-	Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	608	304			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	18,758 ft-lbs	36,222 ft-lbs	51.8%	1	08-08-00
End Shear	5,733 lbs	17,368 lbs	33.0%	1	11-10-00
Total Load Deflection	L/309 (0.478")	n/a	77.7%	4	08-08-00
Live Load Deflection	L/473 (0.312")	n/a	76.1%	6	08-08-00
Max Defl.	0.478"	n/a	n/a	4	08-08-00
Span / Depth	16.5				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 6-1/2" x 5-1/4"	6,720 lbs	37.1%	16.2%	Unspecified
B2	Column 3" x 5-1/4"	6,024 lbs	47.1%	31.4%	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.  
 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.

**CONFORMS TO Q86 2012**



DWG NO. YAW 2255-18/H  
 STRUCTURAL  
 COMPONENT ONLY

T-1902329



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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B10(1418)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC CALO® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

File name: TH6E SUNKEN.mmd

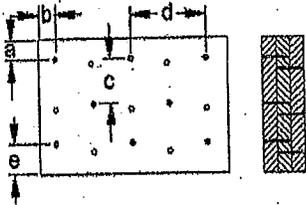
Description: 2ND FLOOR FRAMING\Flush Beams\B10(1418)

Specifier:

Designer:

Company:

### Connection Diagram: Full Length of Member



a minimum = 2"  
b minimum = 3"

c = 2-1/4"  
d = 4"  
e minimum = 3"

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

Nailing schedule applies to both sides of the member.

Connectors are: Nails

3/4" ARQUX SPIRAL



### Disclosure

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

PG 2  
BWB NO. FAM 2055-18H  
STRUCTURAL  
COMPONENT ONLY

T-19.02329(V)



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B6(11392)**

**PASSED**

BC CALCO® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:14:02

Build 6475

Job name:

File name: TH6E SUNKEN.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B6(11392)

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

Specifier:

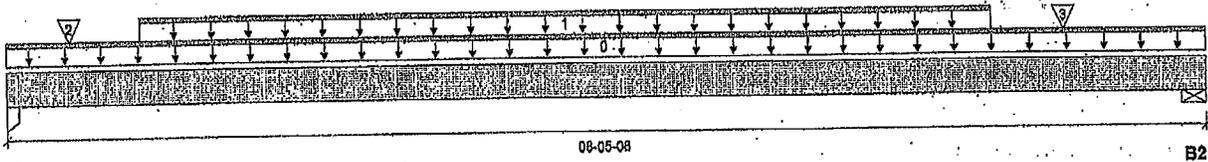
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 08-08-08

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

Bearing	Live	Dead	Snow	Wind
B1, 3"	1,984 / 0	1,034 / 0		
B2, 3-1/2"	1,854 / 0	870 / 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	08-05-08	Top	10				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-08	06-11-08	Top	451	228			n/a
2	-	Conc. Pt. (lbs)	L	00-05-08	00-05-08	Top	524	262			n/a
3	-	Conc. Pt. (lbs)	L	07-05-08	07-05-08	Top	406	204			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7,889 ft-lbs	23,220 ft-lbs	34.0%	1	04-05-08
End Shear	3,464 lbs	11,571 lbs	29.9%	1	07-04-08
Total Load Deflection	L/748 (0.129")	n/a	32.1%	4	04-02-08
Live Load Deflection	L/999 (0.085")	n/a	n/a	5	04-02-08
Max Defl.	0.129"	n/a	n/a	4	04-02-08
Span / Depth	10.2				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3" x 3-1/2"	4,268 lbs	50.1%	33.3%	Unspecified
B2	Wall/Plate 3-1/2" x 3-1/2"	3,568 lbs	54.5%	23.9%	Unspecified

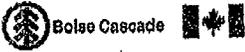
**Notes**

- 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 DBC 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. YAW 2256-18H  
**STRUCTURAL COMPONENT ONLY**

T-1902330



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B6(11392)**

**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:14:02

Build 6475

Job name:

File name: TH6E SUNKEN.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B6(11392)

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

Specifier:

Customer:

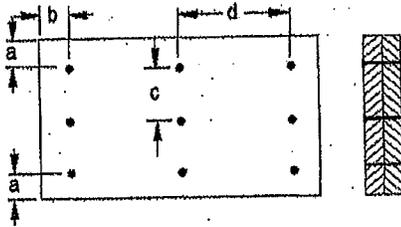
Designer:

Code reports:

CCMC 12472-R

Company:

**Connection Diagram: Full Length of Member**

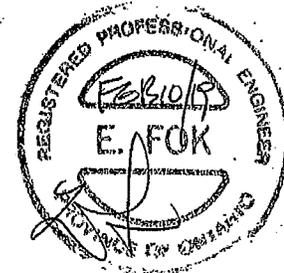


a minimum = 2"      c = 2-3/4"  
 b minimum = 3"      d = 6"

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

Connectors are: 1 Nails

3/2" ARDOX SPIRAL

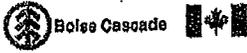


**Disclosure**

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162  
 DWA ND.YAW 2256-18H  
**STRUCTURAL COMPONENT ONLY**

T-1902330(1)



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B7(11528)**

**PASSED**

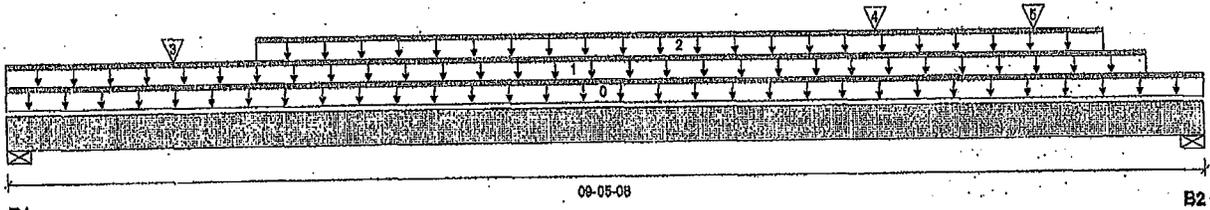
BC CALC® Member Report  
 Build 6476

Dry | 1 span | No cant.

October 27, 2018 09:14:02

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

File name: TH6E SUNKEN.mmdl  
 Description: 2ND FLOOR FRAMING\Flush Beams\B7(11528)  
 Specifier:  
 Designer:  
 Company:



Total Horizontal Product Length = 09-05-08

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1,198 / 0	936 / 0		
B2, 5-1/2"	1,920 / 0	1,282 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
							1.00	0.65	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-05-08	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	09-00-00	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	02-00-00	08-08-00	Top	234	117			n/a
3	J2(11347)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	Top	291	145			n/a
4	B9(11555)	Conc. Pt. (lbs)	L	06-10-08	06-10-08	Top	889	472			n/a
5	J2(11550)	Conc. Pt. (lbs)	L	08-01-08	08-01-08	Top	378	189			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8,275 ft-lbs	23,220 ft-lbs	35.6%	1	05-04-00
End Shear	4,405 lbs	11,571 lbs	38.1%	1	08-02-08
Total Load Deflection	L/652 (0.16")	n/a	36.8%	4	04-10-00
Live Load Deflection	L/999 (0.094")	n/a	n/a	5	05-00-00
Max Defl.	0.16"	n/a	n/a	4	04-10-00
Span / Depth	10.9				



**Bearing Supports**

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	2,966 lbs	28.9%	12.6%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	4,482 lbs	43.6%	19.1%	Unspecified

**Notes**

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

225218H  
 STRUCTURAL  
 COMPONENT ONLY

T-190233 |



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP  
2ND FLOOR FRAMING\Flush Beams\B7(11528)

PASSED

BC CALC® Member Report  
Build 6476

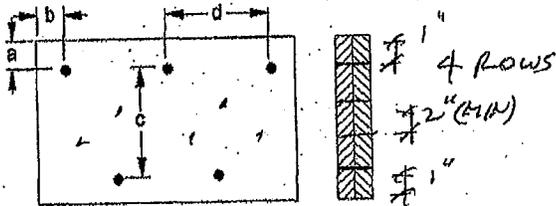
Dry | 1 span | No cant

October 27, 2018 09:14:02

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

File name: TH6E SUNKEN.mmdl  
Description: 2ND FLOOR FRAMING\Flush Beams\B7(11528)  
Specifier:  
Designer:  
Company:

Connection Diagram: Full Length of Member



a minimum = 1"  
b minimum = 3"  
c = 7-1/2"  
d = 4"

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

3/8" ARDOX SPIRAL



Disclosure

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STRUCTURAL COMPONENT ONLY

T-1902331(1)



**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B8(11503)**

**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:14:02

Buld 6475

Job name:

File name: TH6E SUNKEN.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B8(11503)

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

Specifier:

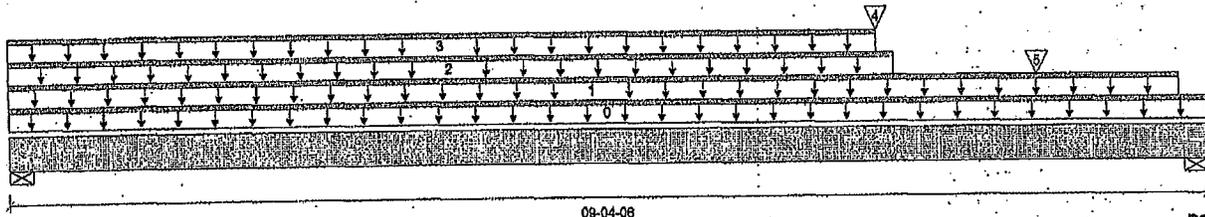
Customer:

Designer:

Code reports:

CCMC 12472-R.

Company:



Total Horizontal Product Length = 09-04-06

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

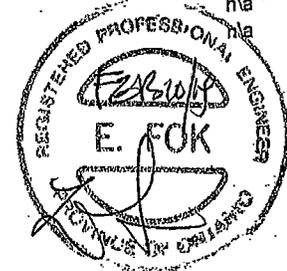
Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	180 / 0	373 / 0		
B2, 5-1/2"	598 / 0	493 / 0		

**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	09-04-06	Top		6			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-01-10	Top	8	3			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-10-15	Top		60			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-09-06	Top	3				n/a
4	B9(11555)	Conc. Pt. (lbs)	L	08-09-06	06-09-06	Top	306	180			n/a
5	J2(11550)	Conc. Pt. (lbs)	L	08-00-06	08-00-06	Top	373	187			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,260 ft-lbs	11,610 ft-lbs	19.5%	1	06-09-06
End Shear	1,492 lbs	5,785 lbs	25.8%	1	08-01-06
Total Load Deflection	L/999 (0.084")	n/a	n/a	4	04-11-01
Live Load Deflection	L/999 (0.036")	n/a	n/a	6	05-01-02
Max Defl.	0.084"	n/a	n/a	4	04-11-01
Span / Depth	10.9				



**Bearing Supports**

Bearing	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	522 lbs	19.6%	8.6%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	1,513 lbs	29.4%	12.9%	Unspecified

**Notes**

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor: Normal Part code: Part 9

**CONFORMS TO OBC 2012**

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

DWG NO. TAM 2150-18H  
**STRUCTURAL COMPONENT ONLY**

T-190232



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

**PASSED**

## 2ND FLOOR FRAMING/Flush Beams\B9(i1655)

Dry | 1 span | No cant.

October 27, 2018 09:14:02

BC.CALC® Member Report

Buld 6476

Job name:

Address:

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

Customer:

Code reports: COMC 12472-R

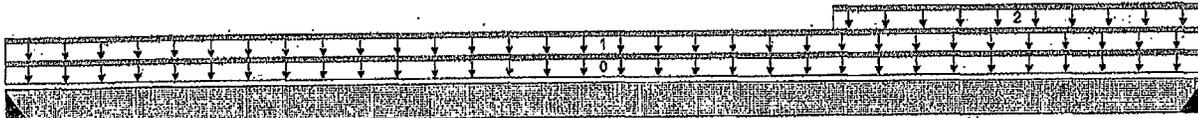
File name: TH6E SUNKEN.mmdl

Description: 2ND FLOOR FRAMING/Flush Beams\B9(i1655)

Specifier:

Designer:

Company:



B1 11-04-00 B2  
Total Horizontal Product Length = 11-04-00

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	299 / 0	177 / 0		
B2, 2"	890 / 0	472 / 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	11-04-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-04-00	Top	31	15			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	07-10-00	11-04-00	Top	240	120			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,991 ft-lbs	11,610 ft-lbs	25.8%	1	07-11-15
End Shear	1,369 lbs	5,785 lbs	23.7%	1	10-04-08
Total Load Deflection	L/760 (0.176")	n/a	31.6%	4	06-01-06
Live Load Deflection	L/999 (0.113")	n/a	n/a	5	06-01-06
Max Defl.	0.176"	n/a	n/a	4	06-01-06
Span / Depth	14.1				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	670 lbs	n/a	15.7%	Hanger
B2	Hanger 2" x 1-3/4"	1,926 lbs	n/a	45.1%	Hanger

### Cautions

Hanger model Hanger was not found. 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



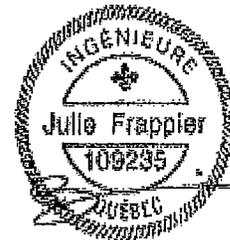
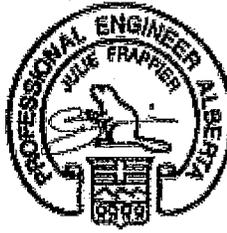
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BC.CALC®, BC.FRAMER®, AJS™, ALLJOIST®, BC.RIM BOARD™, BCI®, BOISE.GLULAM™, BC.FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

DWENN, TAM 2259184  
STRUCTURAL  
COMPONENT ONLY

T-1902333



### Maximum Floor Spans

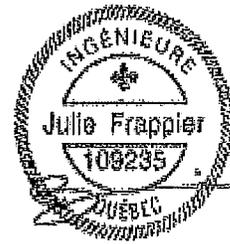
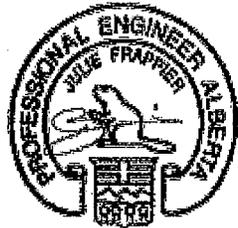
Live Load = 40 psf, Dead Load = 30 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report L3032-R and APA Product Report PR-L274C.



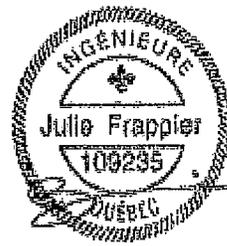
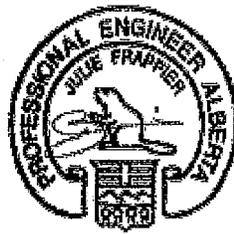
### Maximum Floor Spans

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

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

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

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



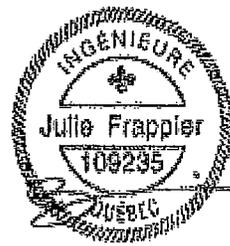
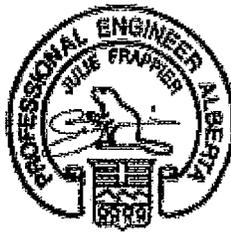
### Maximum Floor Spans

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

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

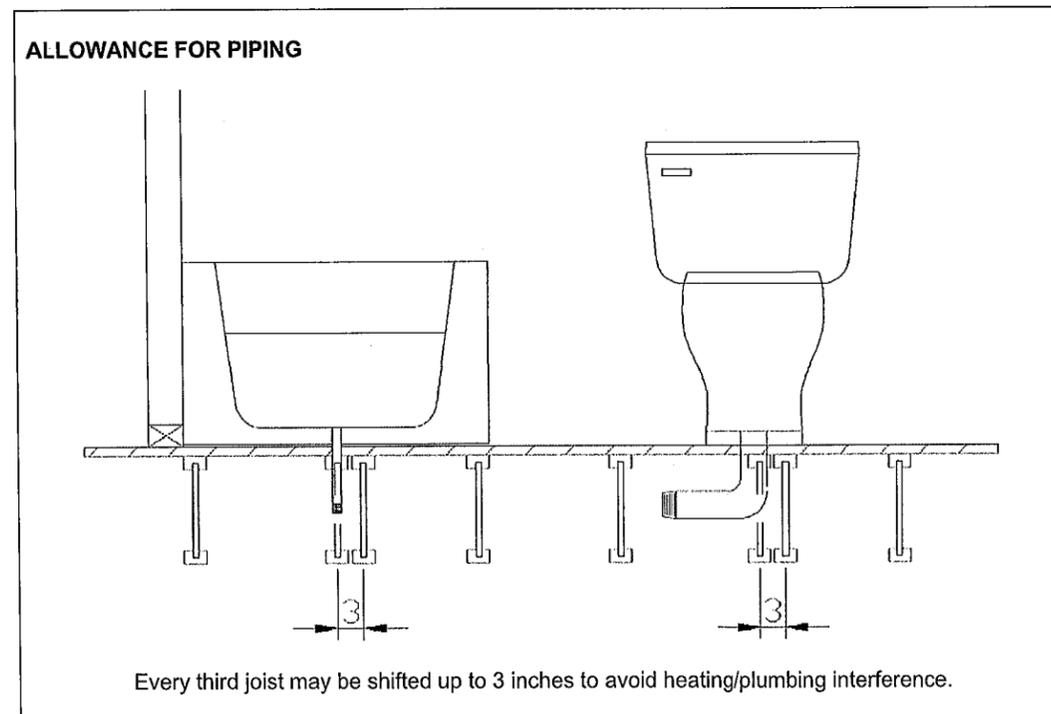
1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load 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 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.
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.

## 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.

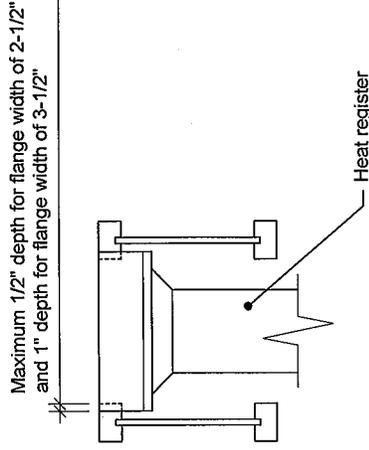
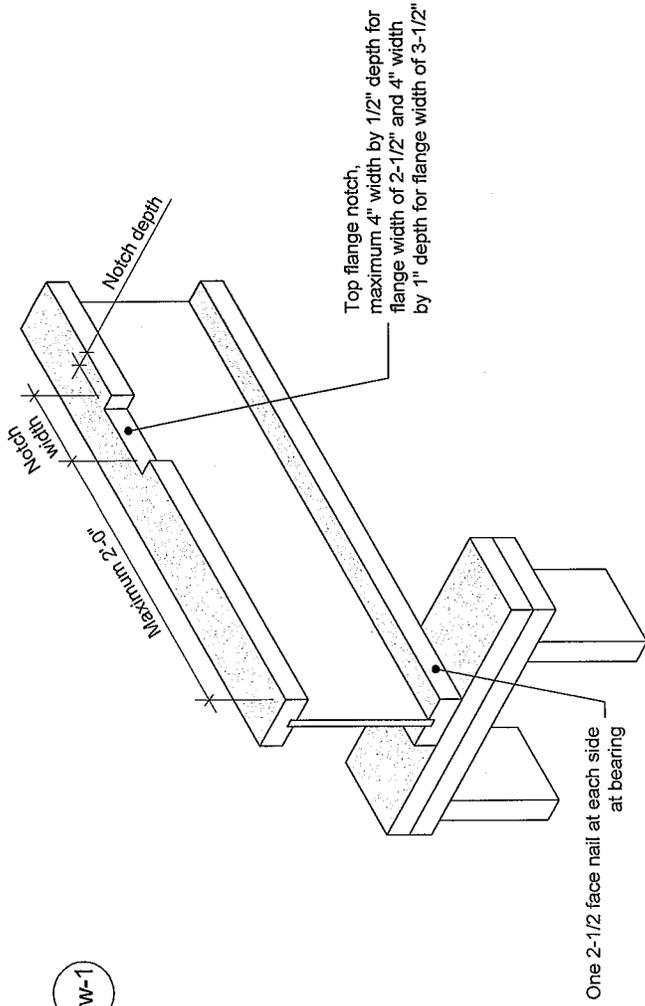
Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced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



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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](http://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.

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