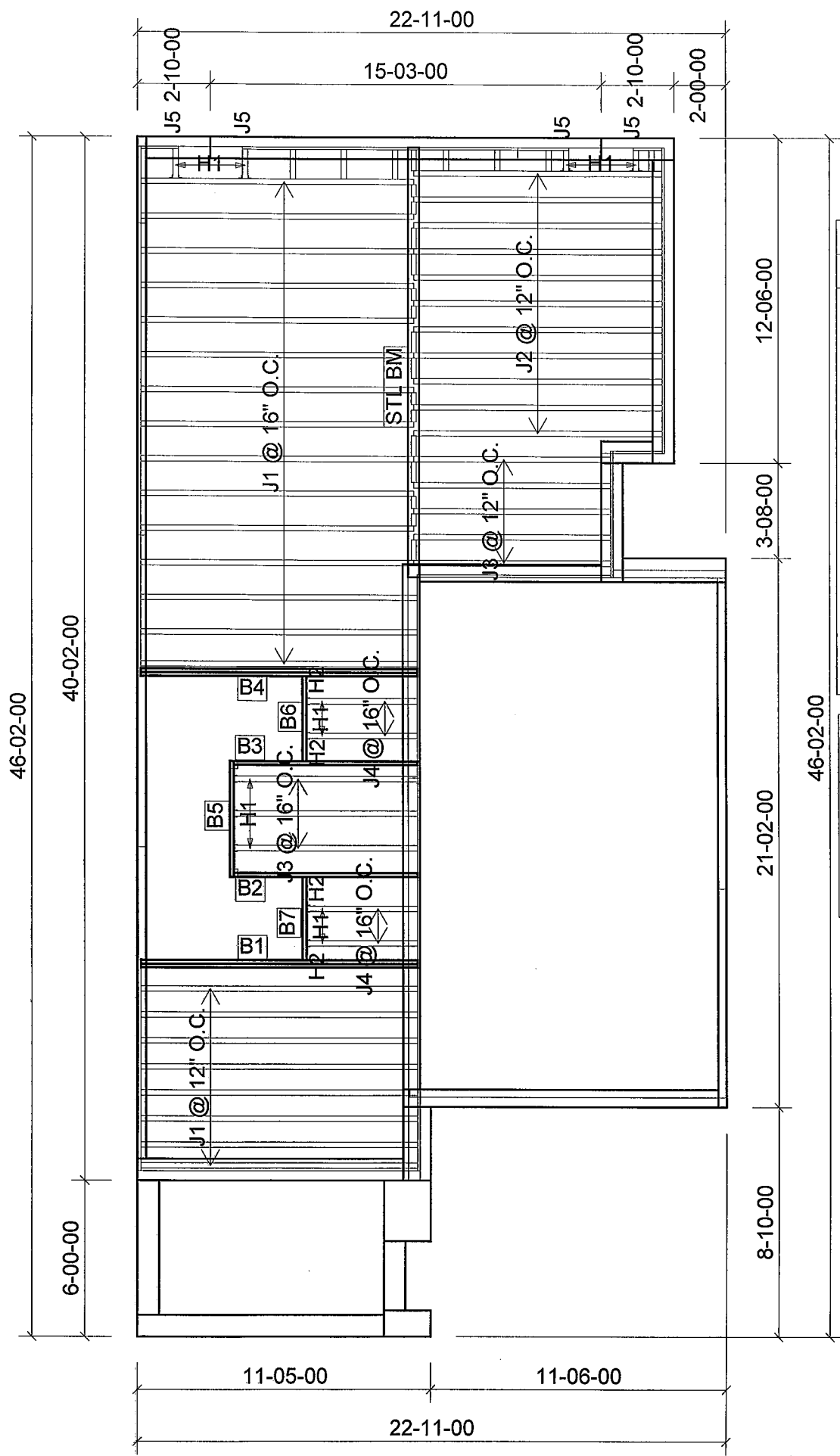


FROM PLAN DATED:  
 BUILDER: BAYVIEW WELLINGTON  
 SITE: PASSAGE ON THE CANAL  
 MODEL: TH1  
 ELEVATION: A, B  
 LOT:  
 CITY: ST CATHERINES  
 SALESMAN: M D  
 DESIGNER: AJ  
 REVISION:

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

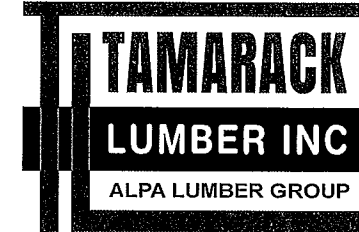
DATE: 10/23/2018

# 1st FLOOR

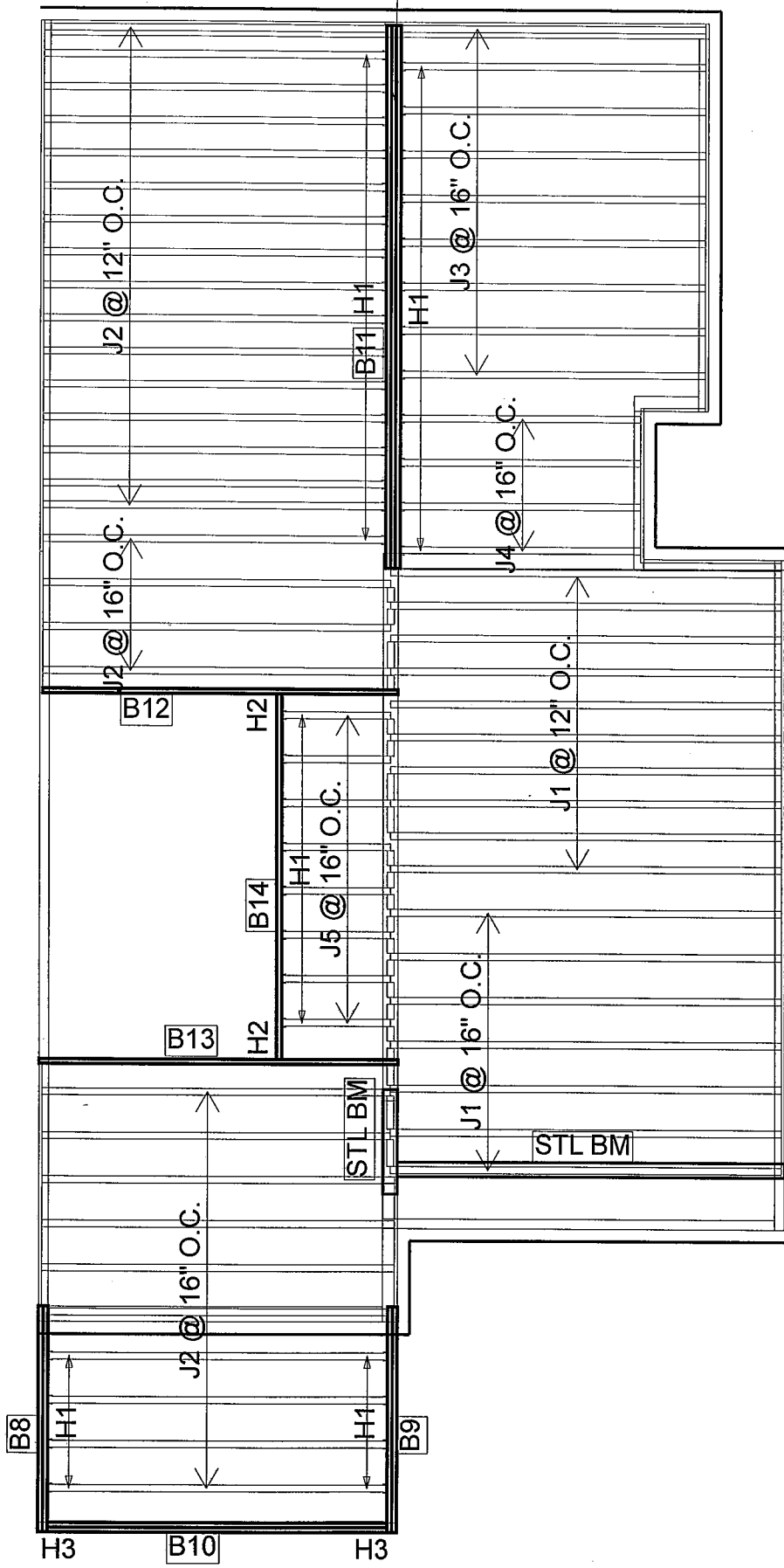


Products				
PlotID	Length	Product	Plies	Net Qty
J1	12-00-00	9 1/2" NI-40x	1	23
J2	10-00-00	9 1/2" NI-40x	1	11
J3	8-00-00	9 1/2" NI-40x	1	8
J4	6-00-00	9 1/2" NI-40x	1	4
J5	2-00-00	9 1/2" NI-40x	1	4
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B4	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B5	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B7	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
2	H2	HUS1.81/10
2	H2	HUS1.81/10



11 7/8" 3-PLY LVL REQ'D  
OR BEAM BY OTHER



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	17
J2	12-00-00	9 1/2" NI-40x	1	30
J3	10-00-00	9 1/2" NI-40x	1	9
J4	8-00-00	9 1/2" NI-40x	1	4
J5	4-00-00	9 1/2" NI-40x	1	8
B12	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3

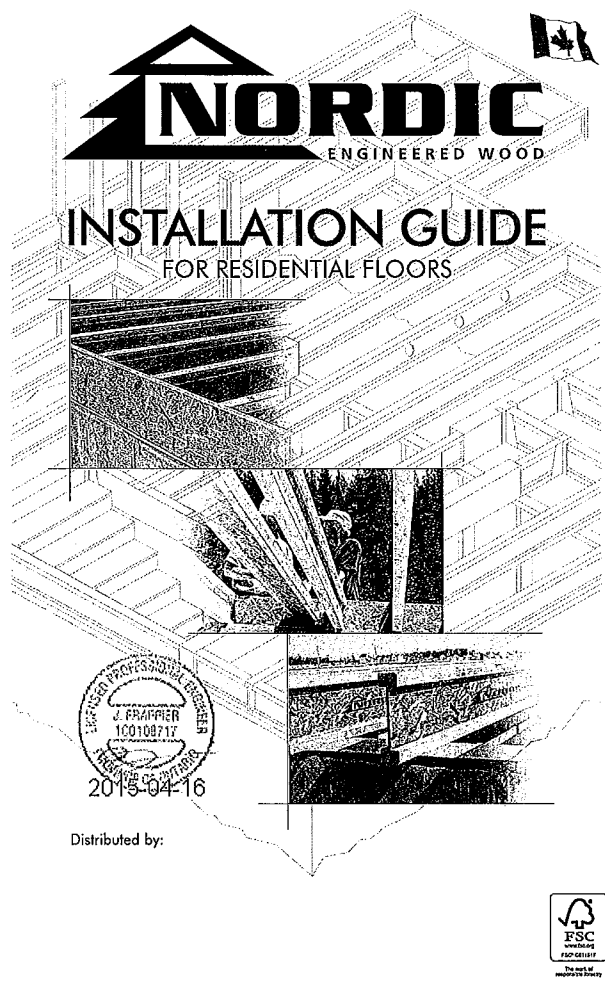
Connector Summary		
Qty	Manuf	Product
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8	H1	IUS2.56/9.5
28	H1	IUS2.56/9.5
2	H2	HUS1.81/10
2	H3	HUC410

FROM PLAN DATED:  
 BUILDER: BAYVIEW WELLINGTON  
 SITE: PASSAGE ON THE CANAL  
 MODEL: TH1  
 ELEVATION: A, B  
 LOT:  
 CITY: ST CATHERINES  
 SALESMAN: M D  
 DESIGNER: AJ  
 REVISION:

NOTES:  
 REFER TO THE NORDIC  
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 SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2  
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 FIGURE 1. CANTILEVERED JOISTS  
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 SEE FIGURE 7 TABLES 4 & 5 FOR  
 REINFORCEMENT REQUIREMENTS.  
 FOR HOLES INCLUDING DUCT  
 CHASE AND FIELD CUT OPENINGS  
 SEE FIGURE 7 TABLES 1 & 2 OF THE  
 INSTALLATION GUIDE. CERAMIC TILE  
 APPLICATION AS PER O.B.C. 9.30.6  
 LOADING:  
 DESIGN LOADS: L/480.000  
 LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
 DEAD LOAD: 15.0 lb/ft  
 TILED AREAS: 20 lb/ft  
 SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 10/27/2018

## 2nd FLOOR



### 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 joint ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
  - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of adjoining bracing over at least two I-joists.
  - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-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, stock, 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.
- Bundled 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 1.5L + 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'-9"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	NI-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-5"	15'-10"	15'-5"
	NI-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	16'-1"
	NI-70	17'-1"	16'-1"	15'-6"	15'-7"	18'-7"	17'-4"	16'-9"	16'-10"
11-7/8"	NI-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-10"	17'-6"	16'-11"	17'-0"
	NI-20	16'-11"	16'-0"	15'-5"	15'-6"	18'-4"	17'-3"	16'-6"	16'-7"
	NI-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-6"	17'-9"	17'-7"
	NI-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
14"	NI-70	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
	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'-10"	17'-11"	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"
16"	NI-40x	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-6"	19'-8"	19'-4"
	NI-60	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
	NI-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	21'-1"	21'-1"	21'-2"
	NI-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
18"	NI-90	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	NI-90x	22'-7"	20'-11"	19'-11"	19'-11"	25'-0"	23'-1"	22'-0"	22'-2"
	NI-60	22'-3"	20'-8"	19'-9"	19'-10"	24'-9"	22'-9"	21'-9"	21'-10"
	NI-70	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	23'-0"
20"	NI-80	23'-11"	22'-1"	21'-1"	21'-2"	26'-5"	24'-5"	23'-3"	23'-4"
	NI-90	24'-5"	22'-6"	21'-5"	21'-6"	26'-11"	24'-10"	23'-9"	23'-9"
	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 Joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

**FIGURE 2 WEB STIFFENER INSTALLATION DETAILS**

**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 Chibougamou 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 forest 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 the 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-span joists 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 beams) 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 an 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: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

NOTE: Never cut or notch flanges.

Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.

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.

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

1f Wall sheathing, as required. Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

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

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

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

1k 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.

1l Do not bevel-cut joint beyond inside face of wall.

1m Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible. Maximum support capacity = 1,620 lbs.

1n Attach I-joist per detail 1b.

1o Backer block required (both sides for face-mount hangers). For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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 some nailing as required for decking).

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

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

1b One 2-1/2" wire or spiral nail at top and bottom flange.

Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c. To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

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

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

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

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.

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

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

1e Top- or face-mount hanger installed per manufacturer's recommendations.

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

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

1f Wall sheathing, as required.

Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

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.

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

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.

Double I-joist header.

Top- or face-mount hanger.

Filler block per detail 1p.

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

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

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 nail joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use nail depth minus 4-1/4".

1i Top- or face-mount hanger installed per manufacturer's recommendations.

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

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

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

1k 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.

1l Do not bevel-cut joint beyond inside face of wall.

1m Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible. Maximum support capacity = 1,620 lbs.

1n Attach I-joist per detail 1b.

1o Backer block required (both sides for face-mount hangers). For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

1p Filler block.

Offset nails from opposite face by 6".

1-8/16" gap between top flange and filler block.

1q 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 joists.

1r One 2-1/2" nails at top and bottom flange.

Rim board.

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

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

I-joist blocking panel.

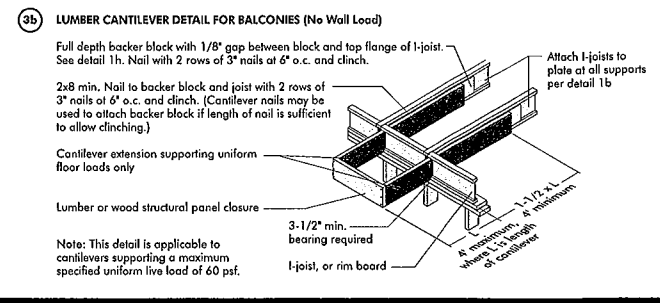
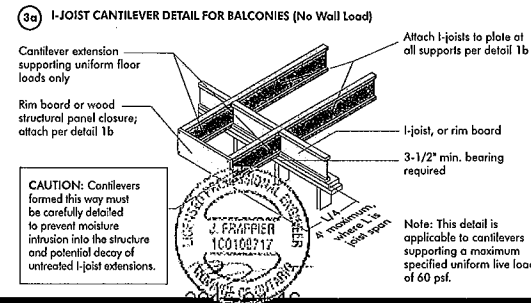
One 2-1/2" nails one side only.

2-1/2" nails at 6" o.c.

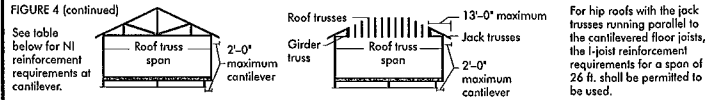
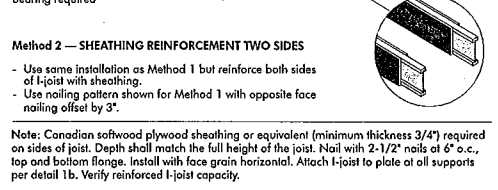
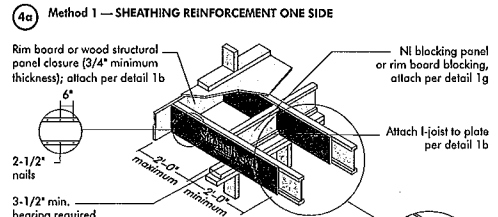
Notes:

- 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 WALL LOAD)

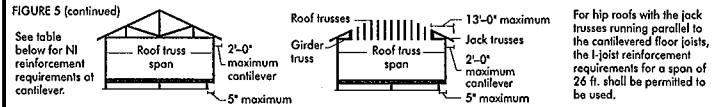
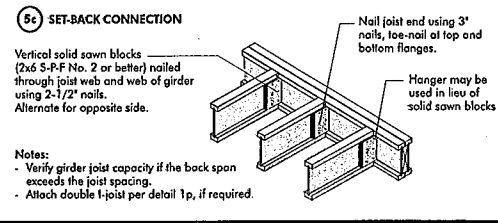
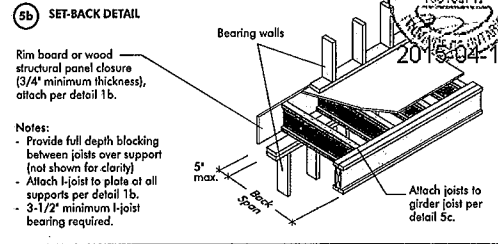
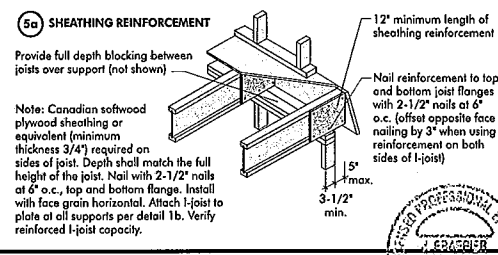


CANTILEVER REINFORCEMENT METHODS ALLOWED

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

1. N = No reinforcement required.  
 2. = N1 reinforced with 3/4" wood structural panel on one side only.  
 3. = N1 reinforced with 3/4" wood structural panel on both sides, or double I-joint.  
 X = Try a deeper joist or closer spacing.  
 4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall or a truss in use.  
 5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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		LL = 50 psf, DL = 15 psf							
		JOIST SPACING (in.)											
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X	2	X	X	X
11-7/8"	26	N	2	X	X	1	X	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X	1	X	X	X
	30	N	2	X	X	1	X	X	X	1	X	X	X
	32	N	2	X	X	1	X	X	X	1	X	X	X
	34	N	2	X	X	1	X	X	X	1	X	X	X
14"	26	N	1	2	X	N	1	2	X	N	1	2	X
	28	N	1	2	X	N	1	2	X	N	1	2	X
	30	N	1	2	X	N	1	2	X	N	1	2	X
	32	N	1	2	X	N	1	2	X	N	1	2	X
	34	N	1	2	X	N	1	2	X	N	1	2	X
16"	26	N	1	2	X	N	1	2	X	N	1	2	X
	28	N	1	2	X	N	1	2	X	N	1	2	X
	30	N	1	2	X	N	1	2	X	N	1	2	X
	32	N	1	2	X	N	1	2	X	N	1	2	X
	34	N	1	2	X	N	1	2	X	N	1	2	X

1. N = No reinforcement required.  
 2. = N1 reinforced with 3/4" wood structural panel on one side only.  
 3. = N1 reinforced with 3/4" wood structural panel on both sides, or double I-joint.  
 X = Try a deeper joist or closer spacing.  
 4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam.  
 5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-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.

FIGURE 7 FIELD-CUT HOLE LOCATOR

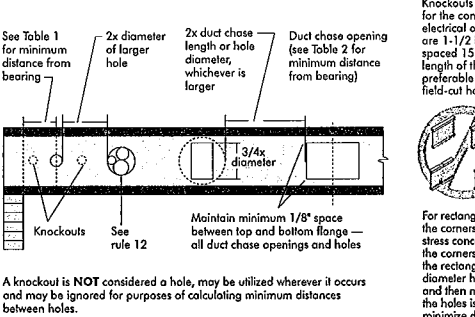


TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS  
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

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 3/8	7	8	9	10	10 3/4	11	12	12 3/4	
9-1/2"	N1-20	0-7"	1-0"	2-10"	4-3"	5-8"	6-4"	...	...	...	...	...	...	...	...	13-0"
	N1-40x	1-9"	1-6"	3-0"	4-4"	6-0"	6-4"	...	...	...	...	...	...	...	...	14-9"
	N1-70	2-0"	2-4"	4-9"	6-3"	8-0"	8-4"	...	...	...	...	...	...	...	...	15-7"
	N1-80	2-2"	2-6"	5-0"	6-4"	8-0"	8-4"	...	...	...	...	...	...	...	...	15-6"
	N1-90	2-4"	2-8"	5-2"	6-6"	8-2"	8-6"	...	...	...	...	...	...	...	...	15-6"
11-7/8"	N1-20	0-7"	0-8"	1-0"	1-2"	1-4"	1-6"	...	...	...	...	...	...	...	...	17-11"
	N1-40x	0-7"	0-8"	1-3"	1-8"	2-0"	2-4"	...	...	...	...	...	...	...	...	16-6"
	N1-70	1-0"	1-2"	1-8"	2-0"	2-6"	3-0"	...	...	...	...	...	...	...	...	17-5"
	N1-80	1-2"	1-4"	2-2"	3-0"	3-6"	4-0"	...	...	...	...	...	...	...	...	17-5"
	N1-90	1-4"	1-6"	2-4"	3-2"	3-8"	4-2"	...	...	...	...	...	...	...	...	17-11"
14"	N1-20	0-7"	0-8"	1-0"	1-2"	1-4"	1-6"	...	...	...	...	...	...	...	...	18-11"
	N1-40x	0-7"	0-8"	1-10"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	18-2"
	N1-70	1-0"	1-2"	1-10"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	19-2"
	N1-80	1-2"	1-4"	1-10"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	19-2"
	N1-90	1-4"	1-6"	1-10"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	19-2"
16"	N1-20	0-7"	0-8"	1-0"	1-2"	1-4"	1-6"	...	...	...	...	...	...	...	...	19-10"
	N1-40x	0-7"	0-8"	1-2"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	20-10"
	N1-70	1-0"	1-2"	1-6"	1-8"	1-10"	1-12"	...	...	...	...	...	...	...	...	21-0"
	N1-80	1-2"	1-4"	1-10"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	21-0"
	N1-90	1-4"	1-6"	1-10"	1-4"	1-6"	1-8"	...	...	...	...	...	...	...	...	21-0"

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	15	18	20	22	24	26	28	30	
9-1/2"	N1-20	4-11"	4-5"	4-10"	5-4"	5-8"	6-11"	6-5"	7-1"	7-5"	8-1"	8-5"	
	N1-40x	5-3"	5-8"	6-2"	6-6"	6-10"	6-5"	7-3"	7-8"	8-3"	8-8"	9-3"	
	N1-70	6-1"	6-5"	6-10"	6-5"	6-7"	7-1"	7-6"	8-1"	8-6"	9-1"	9-6"	
	N1-80	6-3"	6-8"	6-10"	6-5"	6-10"	7-5"	7-8"	8-3"	8-8"	9-3"	9-8"	
	N1-90	6-5"	6-8"	6-10"	6-5"	6-7"	7-1"	7-6"	8-1"	8-6"	9-1"	9-6"	
11-7/8"	N1-20	4-7"	4-9"	5-1"	5-3"	5-5"	5-7"	5-9"	6-1"	6-3"	6-5"	6-7"	
	N1-40x	6-8"	7-2"	7-6"	8-1"	8-5"	9-1"	9-6"	10-1"	10-6"	11-1"	11-6"	
	N1-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-6"	11-1"	11-6"	
	N1-80	7-4"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-6"	11-1"	11-6"	12-1"	
	N1-90	7-7"	8-1"	8-6"	9-0"	9-4"	9-8"	10-2"	10-6"	11-0"	11-4"	11-8"	
14"	N1-20	6-11"	6-7"	7-0"	7-4"	7-8"	8-2"	8-6"	9-0"	9-4"	9-8"	10-2"	
	N1-40x	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	13-1"	13-6"	
	N1-70	9-7"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	13-1"	13-6"	
	N1-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	13-1"	13-6"	
	N1-90	9-4"	9-3"	10-0"	10-1"	11-1"	11-5"	11-9"	12-3"	12-7"	13-1"	13-5"	
16"	N1-20	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-0"	13-5"	14-1"	14-6"	15-0"	
	N1-40x	11-9"	11-10"	11-11"	11-11"	12-1"	12-11"	12-12"	13-1"	13-11"	14-1"	14-11"	
	N1-70	10-4"	10-9"	11-3"	11-8"	12-1"	12-7"	13-1"	13-6"	14-1"	14-6"	15-0"	
	N1-80	11-1"	11-6"	12-0"	12-4"	12-10"	13-4"	13-9"	14-3"	14-8"	15-2"	15-7"	
	N1-90	11-4"	11-5"	11-10"	11-4"	12-10"	13-4"	13-9"	14-3"	14-8"	15-2"	15-7"	

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 in 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 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,





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

**WEB HOLE SPECIFICATIONS**

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

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

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

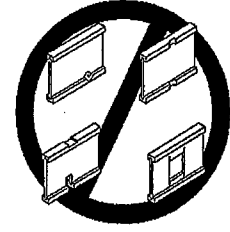
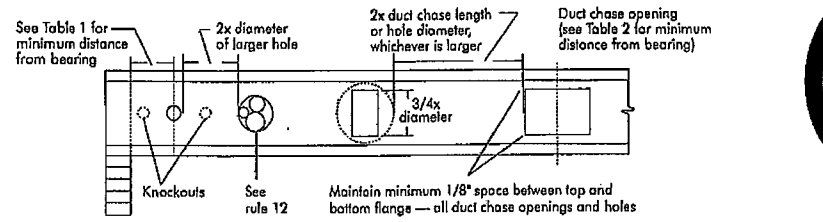
- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joints being used at their maximum spans.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

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

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.)												
		Duct Chase Length (in.)												
		8	10	12	14	16	18	20	22	24				
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-6"	7'-1"	7'-5"	---	---	---	---
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	---	---	---	---
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	8'-3"	8'-9"	---	---	---	---
	NI-70	5'-1"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-6"	8'-1"	8'-4"	---	---	---	---
	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	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 L/480.
- The above table is based on the I-joints being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

**FIGURE 7**  
**FIELD-CUT HOLE LOCATOR**



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

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

Holes in webs should be cut with a sharp saw.

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

**SAFETY AND CONSTRUCTION PRECAUTIONS**

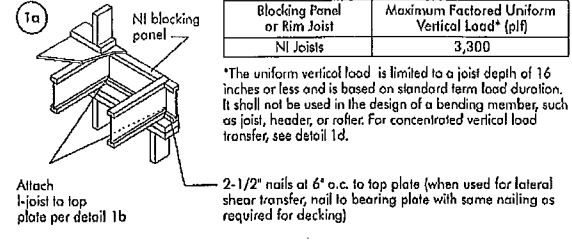
- WARNING:** I-joints are not stable until completely installed, and will not carry any load until fully braced and sheathed.
- AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:**
- Brace and nail each I-joint as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joints 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-joints. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joint rollover or buckling.
    - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joint. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joints.
    - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joints at the end of the bay.
  - For cantilevered I-joints, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
  - Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
  - Never install a damaged I-joint.
- Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joints, 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 CHIBONGANAM**

**PRODUCT WARRANTY**

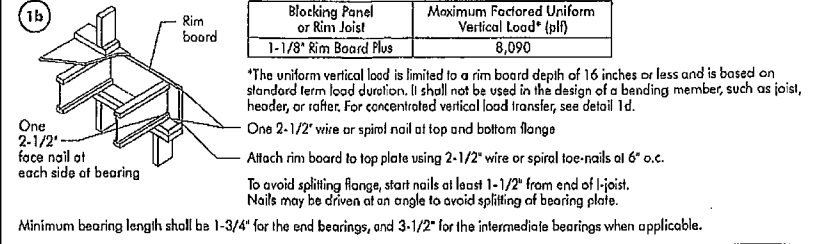
Chanters Chibonganam guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

Furthermore, Chanters Chibonganam 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.



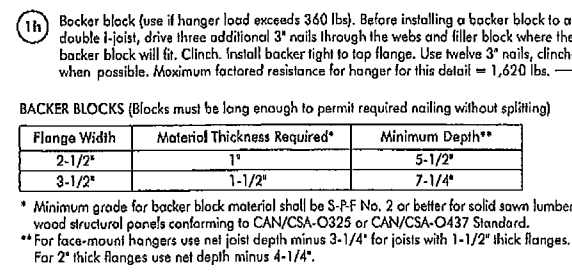
Blocking Panel or Rim Joist	Maximum Factored Vertical Load* (plf)
NI Joists	3,300

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



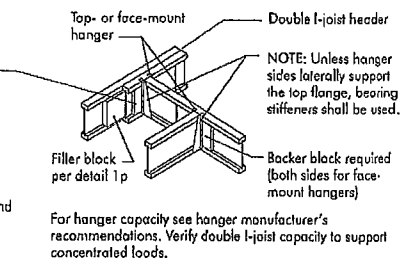
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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

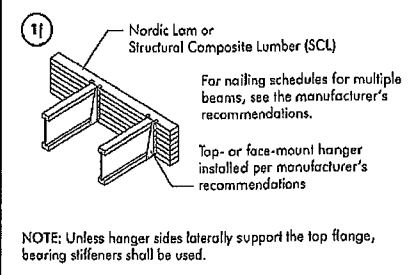


Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
3-1/2" wide	5,500
5-1/2" wide	8,500
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300
6,600	

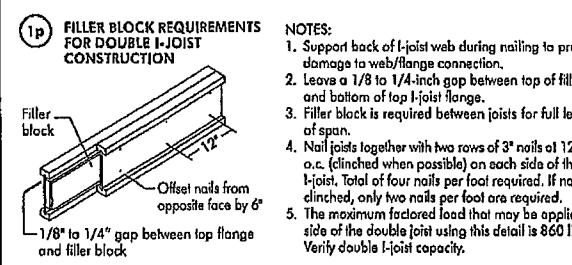
Provide lateral bracing per detail 1a or 1b



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



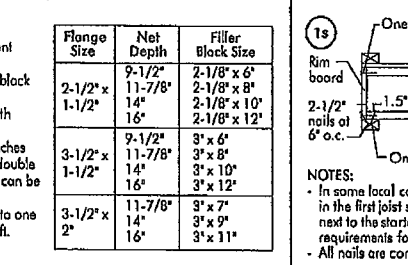
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail. Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support.



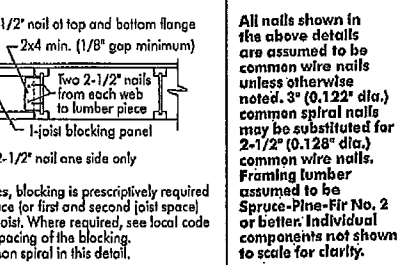
**BACKER BLOCKS** (Blocks must be long enough to permit required nailing without splitting)

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

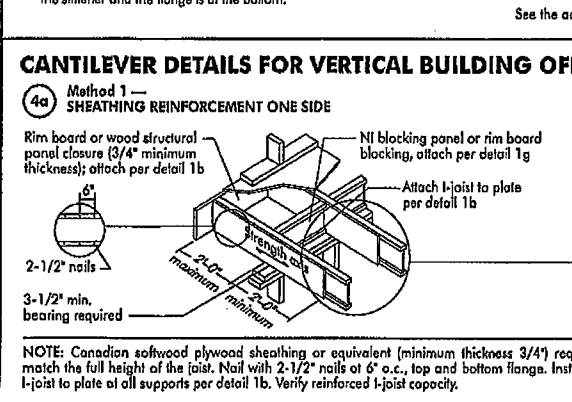
\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.  
\*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use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



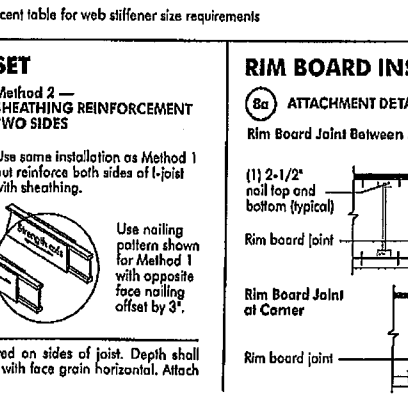
Double I-joint header. NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



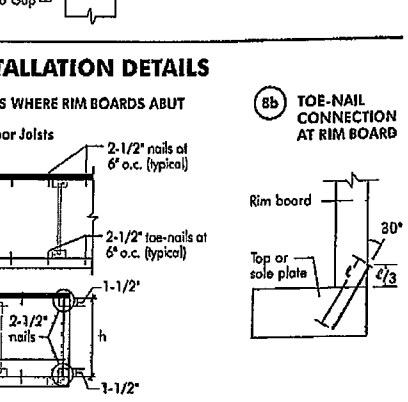
Nordic Lam or Structural Composite Lumber (SCL). For nailing schedules for multiple beams, see the manufacturer's recommendations.



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



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

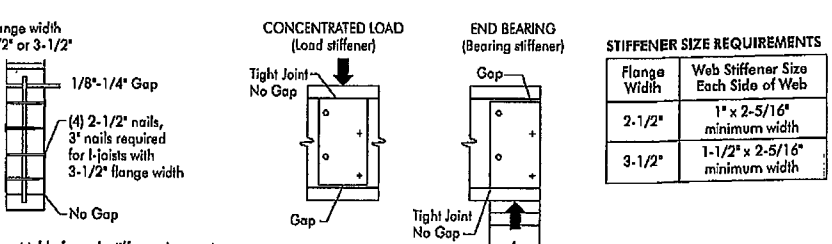


Do not bevel-cut joist beyond inside face of wall. Attach I-joint per detail 1b.

**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 I-joint Construction Guide (C101). The gap between the stiffener and the flange is at the top.
  - A **load 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.

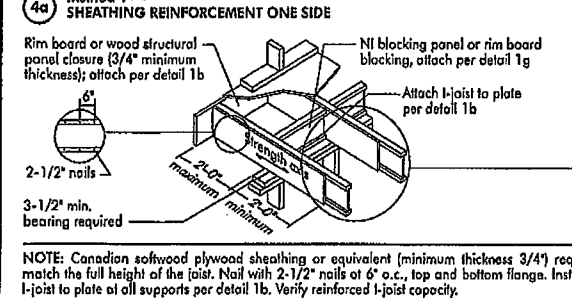
**FIGURE 2**  
**WEB STIFFENER INSTALLATION DETAILS**



**STIFFENER SIZE REQUIREMENTS**

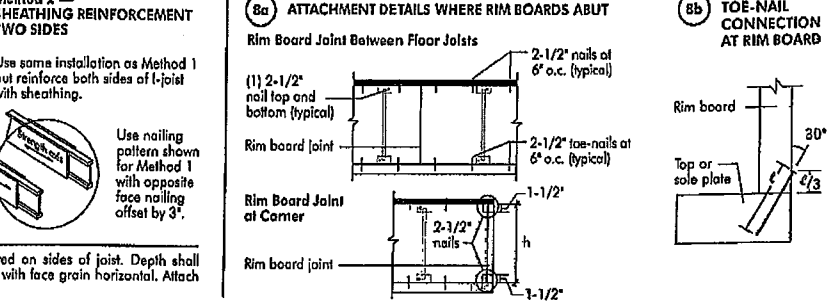
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

**CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET**



Method 1 — SHEATHING REINFORCEMENT ONE SIDE. Rim board or wood structural panel closure (3/4" minimum thickness) attach per detail 1b.

**RIM BOARD INSTALLATION DETAILS**



Attachment details where rim boards abut. Rim board joint between floor joists. Rim board joint at center.



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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B1(11001)

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:06:05

Buld 6476

Job name:

File name: TH1.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B1(11001)

City, Province, Postal Code: ST. JENES

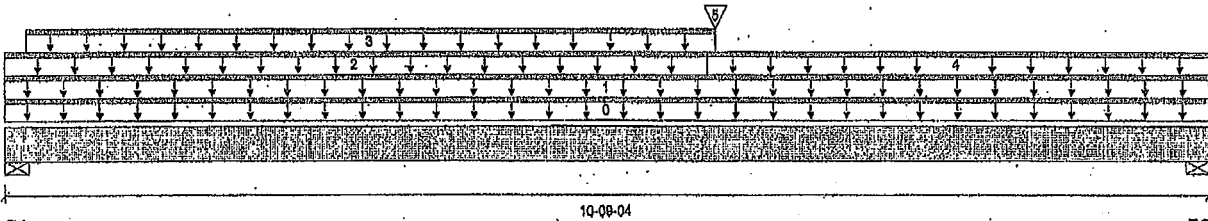
Specifier:

Customer:

Designer:

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 10-09-04

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

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	341 / 0	482 / 0		
B2, 4-3/8"	475 / 0	407 / 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	10-09-04	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-09-04	Top	19	10			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-03-06	Top	6	3			n/a
3	WALL	Unf. Lin. (lb/ft)	L	00-02-06	06-04-04	Top		60			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	06-03-06	10-09-04	Top	16	8			n/a
5	B7(1899)	Conc. Pt. (lbs)	L	06-04-04	06-04-04	Top	502	259			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,190 ft-lbs	23,220 ft-lbs	18.0%	1	06-04-04
End Shear	1,122 lbs	11,571 lbs	9.7%	1	09-07-06
Total Load Deflection	L/999 (0.104")	n/a	n/a	4	05-05-07
Live Load Deflection	L/999 (0.052")	n/a	n/a	5	05-07-07
Max Defl.	0.104"	n/a	n/a	4	05-05-07
Span / Depth	13.1				



### Bearing Supports

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/8" x 3-1/2"	1,114 lbs	31.4%	11.0%	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	1,222 lbs	18.7%	6.5%	Unspecified

### Notes

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 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 UBC 2012

OWEN YAM 2467-1814  
STRUCTURAL  
COMPONENT ONLY

T. L. 2018/10/27



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B1(11001)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

File name: TH1.mmdl

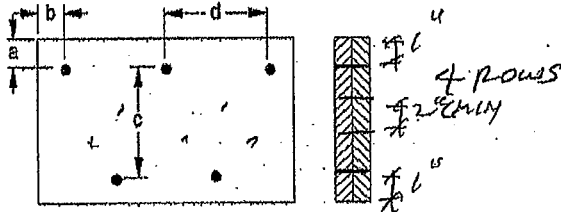
Description: 1ST FLOOR FRAMING\Flush Beams\B1(11001)

Specifier:

Designer:

Company:

Connection Diagram: Full Length of Member



$a$  minimum = 4"  
 $b$  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: 3/4" ARDUX SPIRAL Nails

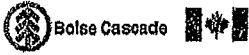


Disclosure

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

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

T. V. 202566



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

**PASSED**

1ST FLOOR FRAMING\Flush Beams\B2(I970)

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BUILD 6475

Job name:

File name: TH1.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B2(I970)

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

Specifier:

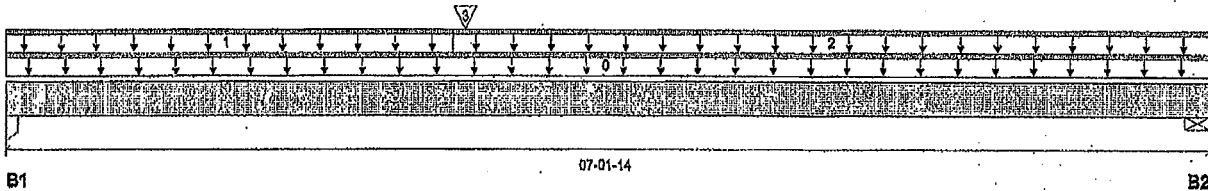
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 07-01-14

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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	396 / 0	220 / 0		
B2, 4-3/8"	346 / 0	194 / 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	07-01-14	Top	1.00	0.66	1.00	1.16	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-08-00	Top	22	11			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	02-08-00	07-01-14	Top	47	23			n/a
3	B7(I899)	Conc. Pt. (lbs)	L	02-08-14	02-08-14	Top	474	245			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,111 ft-lbs	11,610 ft-lbs	18.2%	1	02-08-14
End Shear	820 lbs	5,785 lbs	14.2%	1	00-11-04
Total Load Deflection	L/999 (0.042")	n/a	n/a	4	03-04-03
Live Load Deflection	L/999 (0.027")	n/a	n/a	5	03-04-03
Max Defl.	0.042"	n/a	n/a	4	03-04-03
Span / Depth	8.6				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	869 lbs	43.7%	23.3%	Unspecified
B2	Wall/Plate 4-3/8" x 1-3/4"	761 lbs	23.3%	8.2%	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 0

**CONFORMS TO OBC 2012**



### Disclosure

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC1®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®.

BY AND FOR THE ENGINEER  
**STRUCTURAL COMPONENT ONLY**

T-1902257





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

PASSED

1ST FLOOR FRAMING\Flush Beams\B3(1016)

Dry | 1 span | No cant.

October 27, 2018 09:08:05

BC CALC® Member Report

Build 6475

Job name:

File name: TH1.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B3(1016)

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

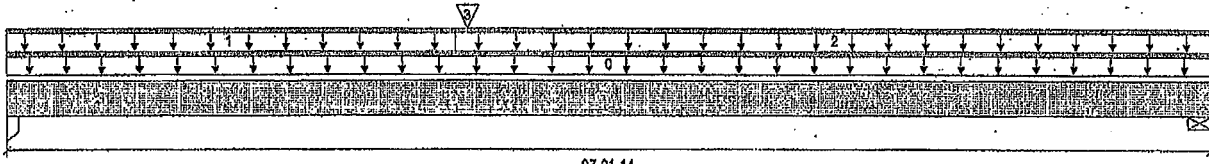
Specifier:

Customer:

Designer:

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 07-01-14

Reaction Summary (Down / Uplift) (lbs)

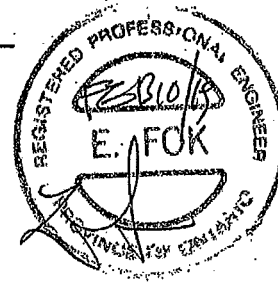
Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	374 / 0	209 / 0		
B2, 4-3/8"	308 / 0	175 / 0		

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	07-01-14	Top		6			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-08-00	Top	14	7			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	02-08-00	07-01-14	Top	33	17			n/a
3	B6(1871)	Conc. Pt. (lbs)	L	02-08-14	02-08-14	Top	496	256			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,053 ft-lbs	11,610 ft-lbs	17.7%	1	02-08-14
End Shear	790 lbs	5,785 lbs	13.6%	1	00-11-04
Total Load Deflection	L/999 (0.04")	n/a	n/a	4	03-04-03
Live Load Deflection	L/999 (0.028")	n/a	n/a	5	03-04-03
Max Defl.	0.04"	n/a	n/a	4	03-04-03
Span / Depth	8.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	823 lbs	41.3%	22.0%	Unspecified
B2	Wall/Plate 4-3/8" x 1-3/4"	681 lbs	20.8%	7.3%	Unspecified

Notes

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

CONFORMS TO OBC 2012

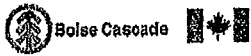
Disclosure

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

DWG NO. TAM 2469-18H  
STRUCTURAL  
COMPONENT ONLY

T. V. 2018



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

**PASSED**

1ST FLOOR FRAMING\Flush Beams\B4(1993)

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:06:05

Build 6476

Job name:

File name: TH1.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B4(1993)

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

Specifier:

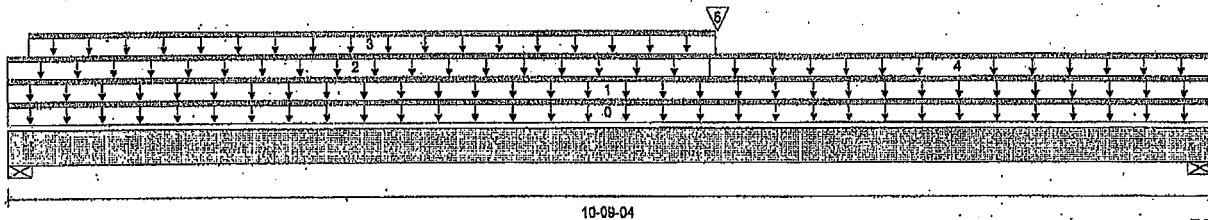
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-09-04

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

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	278 / 0	450 / 0		
B2, 4-3/8"	427 / 0	383 / 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	10-09-04	Top	10				00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-09-04	Top	7	3			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-03-06	Top	6	3			n/a
3	WALL	Unf. Lin. (lb/ft)	L	00-02-06	06-04-01	Top		60			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	06-03-06	10-09-04	Top	22	11			n/a
5	B6(1971)	Conc. Pt. (lbs)	L	06-04-04	06-04-04	Top	498	267			n/a

**Controls Summary**

Pos. Moment	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,896 ft-lbs	23,220 ft-lbs	16.8%	1	06-04-04
End Shear	1,036 lbs	11,671 lbs	8.9%	1	09-07-06
Total Load Deflection	L/999 (0.096")	n/a	n/a	4	06-06-07
Live Load Deflection	L/999 (0.047")	n/a	n/a	6	06-07-07
Max Defl.	0.096"	n/a	n/a	4	06-06-07
Span / Depth	13.1				



**Bearing Supports**

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/8" x 3-1/2"	980 lbs	27.8%	9.7%	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	1,119 lbs	17.1%	6.0%	Unspecified

**Notes**

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**
- BC 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.

PG 1/2

OWG NO. FPM 2470-18/H  
STRUCTURAL  
COMPONENT ONLY

T.190259



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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B4(1993)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

File name: TH1.mmdl

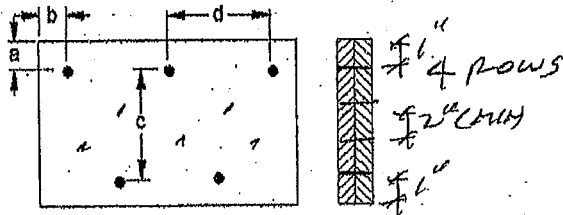
Description: 1ST FLOOR FRAMING\Flush Beams\B4(1993)

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

3/4" ARDOX SPIRAL



### Disclosure

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

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

STRUCTURAL COMPONENT ONLY

T-190259(W)



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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B5(1919)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 6475

Job name:

File name: TH1.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B5(1919)

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

Specifier:

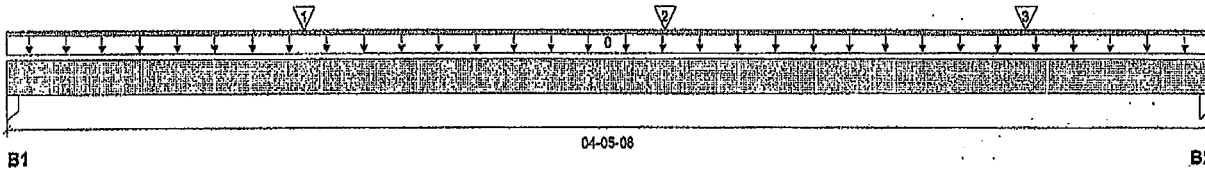
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	237 / 0	129 / 0		
B2, 3-1/2"	270 / 0	145 / 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	04-05-08	Top		5			00-00-00
1	J3(1995)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	173	86			n/a
2	J3(1980)	Conc. Pt. (lbs)	L	02-05-04	02-05-04	Top	191	95			n/a
3	J3(1999)	Conc. Pt. (lbs)	L	03-09-04	03-09-04	Top	143	71			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	634 ft-lbs	11,610 ft-lbs	5.5%	1	02-05-04
End Shear	510 lbs	5,785 lbs	8.8%	1	01-01-00
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	02-02-12
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-02-12
Max Defl.	0.005"	n/a	n/a	4	02-02-12
Span / Depth	5.1				

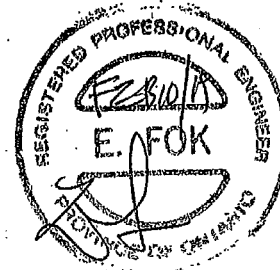
### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	516 lbs	13.0%	6.9%	Unspecified
B2	Column 3-1/2" x 1-3/4"	586 lbs	14.7%	7.8%	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 DBC 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®,

DWUNG TAM 2471-18  
STRUCTURAL  
COMPONENT ONLY

T.1902260



**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**1ST FLOOR FRAMING\Flush Beams\B6(1971)**

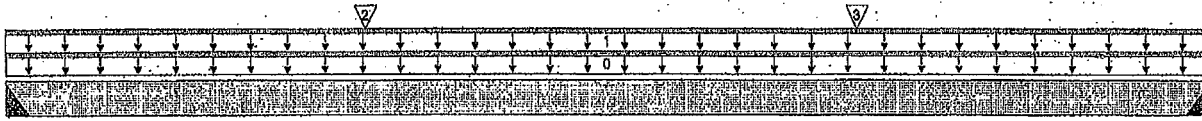
**PASSED**

BC CALC® Member Report  
 Build 0475  
 Job name:  
 Address:  
 City, Province, Postal Code: ST...NES  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

October 27, 2018 09:08:05

File name: TH1.mmdl  
 Description: 1ST FLOOR FRAMING\Flush Beams\B6(1971)  
 Specifier:  
 Designer:  
 Company:



03-03-04  
 B1 Total Horizontal Product Length = 03-03-04 B2

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	498 / 0	253 / 0		
B2, 2"	498 / 0	257 / 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	03-03-04	Top	1.00	0.85	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-03-04	Top	240	120			n/a
2	J4(1989)	Conc. Pt. (lbs)	L	00-11-12	00-11-12	Top	103	52			n/a
3	J4(1935)	Conc. Pt. (lbs)	L	02-03-12	02-03-12	Top	103	53			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	797 ft-lbs	11,810 ft-lbs	6.9%	1	01-07-12
End Shear	575 lbs	5,785 lbs	9.9%	1	02-03-12
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	01-07-12
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	01-07-12
Max Defl.	0.004"	n/a	n/a	4	01-07-12
Span / Depth	3.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1,063 lbs	n/a	24.9%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1,069 lbs	n/a	25.0%	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 QBC 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®

DWANO, TAN 2472-18H  
**STRUCTURAL COMPONENT ONLY**

T-190226 |





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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B7(1899)

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:06:05

Buld 6475

Job name:

File name: TH1.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B7(1899)

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

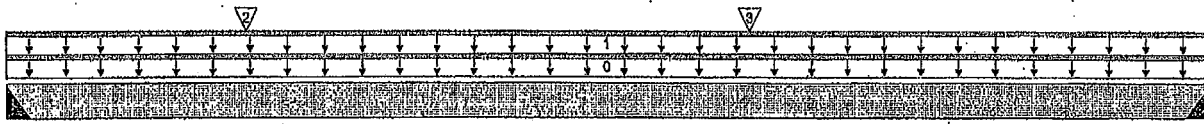
Specifier:

Customer:

Designer:

Code reports: CCMC 12472-R

Company:



03-02-08  
B1 Total Horizontal Product Length = 03-02-08 B2

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	503 / 0	259 / 0		
B2, 2"	473 / 0	244 / 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	03-02-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-02-08	Top	240	120			n/a
2	J4(1978)	Conc. Pt. (lbs)	L	00-07-12	00-07-12	Top	92	46			n/a
3	J4(1894)	Conc. Pt. (lbs)	L	01-11-12	01-11-12	Top	114	57			n/a

### Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
End Shear	772 ft-lbs	11,610 ft-lbs	6.7%	1	01-08-11
Total Load Deflection	520 lbs	5,785 lbs	9.0%	1	02-03-00
Live Load Deflection	L/999 (0.004")	n/a	n/a	4	01-07-02
Max Defl.	L/999 (0.002")	n/a	n/a	5	01-07-02
Span / Depth	0.004"	n/a	n/a	4	01-07-02

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1,079 lbs	n/a	25.3%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1,015 lbs	n/a	23.8%	HUS1.81/10

### Cautions

Header for the hanger HUS1.81/10 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.  
Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

### 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



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CONFORMS TO QBC 2012

DWG NO. TAM 2473-18#  
STRUCTURAL  
COMPONENT ONLY

T. Gorbic



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

**PASSED**

**2ND FLOOR FRAMING\Flush Beams\B10\B10**

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:06:05

Buidl 6475

Job name:

File name: TH1.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B10\B10

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

Specifier:

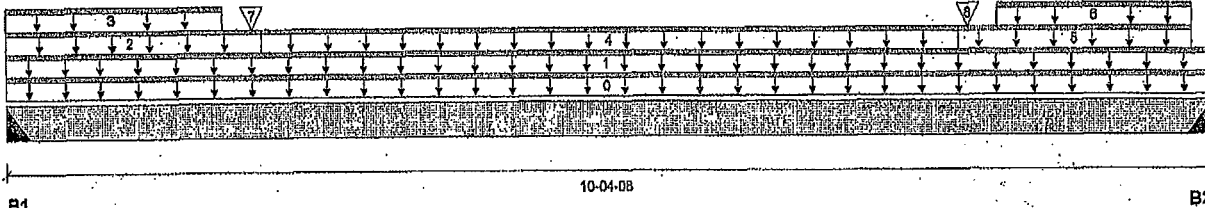
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-04-08

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

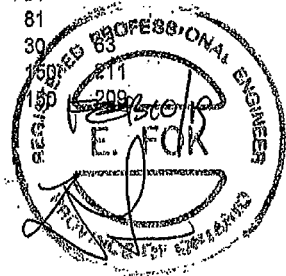
Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	310 / 0	684 / 0	327 / 0	
B2, 2-1/2"	304 / 0	666 / 0	316 / 0	

**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	10-04-08	Top	10				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-04-08	Top	27	13			n/a
2	E30(1459)	Unf. Lin. (lb/ft)	L	00-00-00	02-02-08	Top	81				n/a
3	E30(1459)	Unf. Lin. (lb/ft)	L	00-00-00	01-10-08	Top	33	30	63		n/a
4	E31(1460)	Unf. Lin. (lb/ft)	L	02-02-08	08-02-08	Top	61				n/a
5	E27(1448)	Unf. Lin. (lb/ft)	L	08-02-08	10-02-08	Top	81				n/a
6	E27(1448)	Unf. Lin. (lb/ft)	L	08-06-08	10-02-08	Top	33	30			n/a
7	E30(1459)	Conc. Pt. (lbs)	L	02-01-08	02-01-08	Top	110				n/a
8	E27(1448)	Conc. Pt. (lbs)	L	08-03-08	08-03-08	Top	110				n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,212 ft-lbs	23,220 ft-lbs	13.8%	1	05-02-08
End Shear	1,335 lbs	11,571 lbs	11.5%	13	01-00-00
Total Load Deflection	L/999 (0.099")	n/a	n/a	35	05-02-08
Live Load Deflection	L/999 (0.045")	n/a	n/a	51	05-02-08
Max Defl.	0.099"	n/a	n/a	35	05-02-08
Span / Depth	12.7				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2-1/2" x 3-1/2"	1,656 lbs	n/a	15.5%	HUC410
B2	Hanger 2-1/2" x 3-1/2"	1,610 lbs	n/a	15.1%	HUC410

**Cautions**

Header for the hanger HUC410 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HUC410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.  
Header for the hanger HUC410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

16.12  
DWG NO. TAM2474-18H  
STRUCTURAL  
COMPONENT ONLY

T-1802263



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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B10\B10

BC CALC® Member Report

Dry | 1 span | No cant.

October 27, 2018 09:08:05

Build 6476

Job name:

File name: TH1.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B10\B10

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

Specifier:

Customer:

Designer:

Code reports: CCMC 12472-R

Company:

### Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

**CONFORMS TO UBC 2012**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA Q86.

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

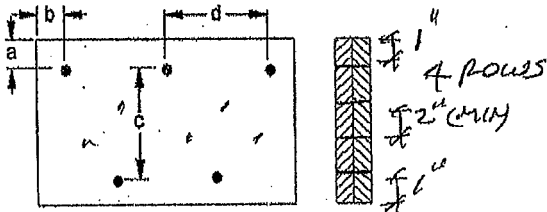
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Member has no side loads.

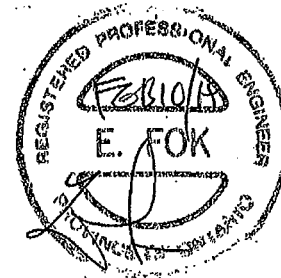
### Connection Diagram: Full Length of Member



a minimum = 4"  
 b minimum = 3"  
 c = 7-1/2"  
 d = 6"

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

Connectors are: 7 Nails  
 3 1/2" ARDOX SPIRAL



### Disclosure

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

T-19022636



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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B11(1937)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Buld 6475

Job name:

File name: TH1.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B11(1937)

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

Specifier:

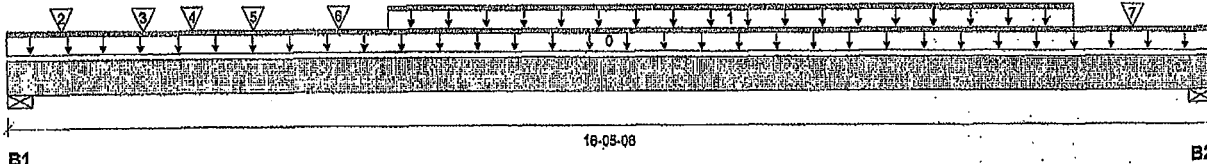
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



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

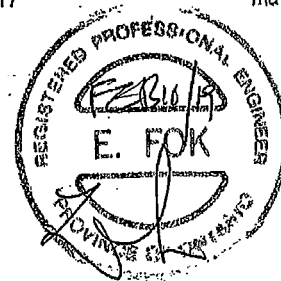
Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	3,142 / 0	1,721 / 0		
B2, 4-3/8"	3,088 / 0	1,693 / 0		

### 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	16-06-06	Top		18			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	05-02-08	14-08-08	Top	426	214			n/a
2	-	Conc. Pt. (lbs)	L	00-08-13	00-08-13	Top	408	204			n/a
3	-	Conc. Pt. (lbs)	L	01-10-08	01-10-08	Top	388	194			n/a
4	J2(1974)	Conc. Pt. (lbs)	L	02-06-08	02-06-08	Top	180	90			n/a
5	-	Conc. Pt. (lbs)	L	03-04-09	03-04-09	Top	422	211			n/a
6	-	Conc. Pt. (lbs)	L	04-06-08	04-06-08	Top	422	211			n/a
7	-	Conc. Pt. (lbs)	L	16-04-05	15-04-05	Top	435	217			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	27,324 ft-lbs	55,212 ft-lbs	49.6%	1	08-06-08
End Shear	6,471 lbs	21,696 lbs	29.8%	1	15-01-02
Total Load Deflection	L/323 (0.686")	n/a	74.4%	4	08-00-08
Live Load Deflection	L/498 (0.379")	n/a	72.2%	5	08-00-08
Max Defl.	0.686"	n/a	n/a	4	08-00-08
Span / Depth	15.9				



### Bearing Supports

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 5-1/4"	6,864 lbs	55.6%	19.5%	Unspecified
B2	Wall/Plate 4-3/8" x 5-1/4"	6,748 lbs	68.8%	24.1%	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.
- Nailing schedule applies to both sides of the member.

P6 2

DWG NO. YAR 2475-18H  
STRUCTURAL  
COMPONENT ONLY

T. Garber



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B11(1937)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 6476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

File name: TH1.mmdl

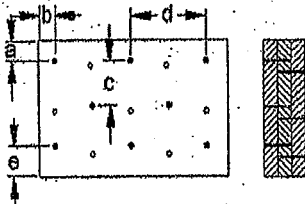
Description: 2ND FLOOR FRAMING\Flush Beams\B11(1937)

Specifier:

Designer:

Company:

Connection Diagram: Full Length of Member

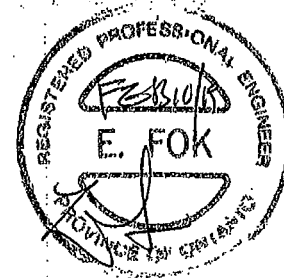


a minimum = 2"  
b minimum = 3"

c = 3-1/2"  
d = 3" @ 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" ARDOX SPIRAL



Disclosure

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

STRUCTURAL COMPONENT ONLY

T-19026661





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

**PASSED**

**2ND FLOOR FRAMING\Flush Beams\B12\I938**

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 0476

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

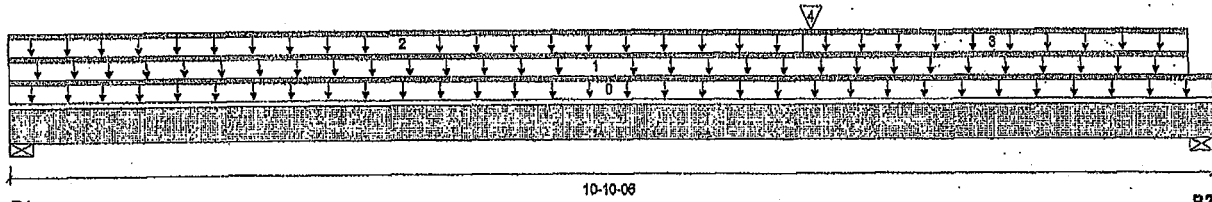
File name: TH1.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B12\I938

Specifier:

Designer:

Company:



Total Horizontal Product Length = 10-10-06

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

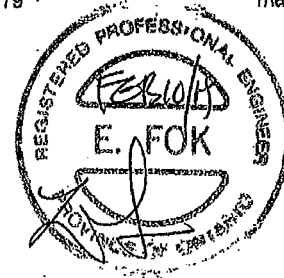
Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	245 / 0	156 / 0		
B2, 5-1/2"	462 / 0	276 / 0		

**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	10-10-06	Top		5			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-07-10	Top	12	6			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-01-14	Top	3	1			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	07-01-14	10-07-10	Top	14	7			n/a
4	B14(I942)	Conc. Pt. (lbs)	L	07-02-12	07-02-12	Top	506	279			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,998 ft-lbs	11,610 ft-lbs	25.8%	1	07-02-12
End Shear	973 lbs	5,785 lbs	16.8%	1	09-07-06
Total Load Deflection	L/917 (0.135")	n/a	26.2%	4	05-07-08
Live Load Deflection	L/999 (0.085")	n/a	n/a	5	05-09-11
Max Defl.	0.135"	n/a	n/a	4	05-07-08
Span / Depth	13.1				



**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/8" x 1-3/4"	564 lbs	31.7%	11.1%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	1,036 lbs	25.2%	8.8%	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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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

DWRNO.TAM 2476-18  
STRUCTURAL COMPONENT ONLY

T. Gortals



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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B13(1944)

Dry | 1 span | No cant.

October 27, 2018 09:08:05

BC CALC® Member Report

Buld 6475

Job name:

File name: TH1.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B13(1944)

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

Specifier:

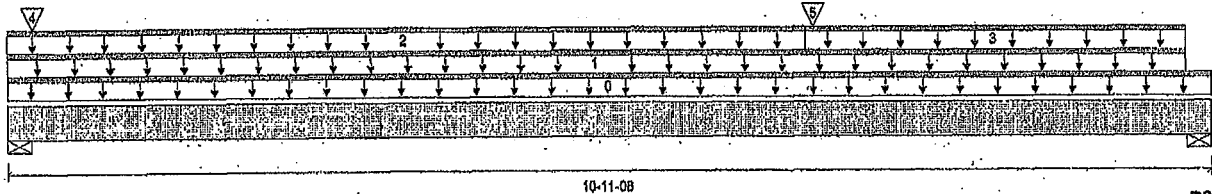
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-11-08

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	469 / 0	730 / 0		
B2, 5-1/2"	903 / 0	496 / 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	10-11-08	Top		5			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-08-12	Top	18	9			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-03-00	Top	6	3			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	07-03-00	10-08-12	Top	24	12			n/a
4	E28(457)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		461			n/a
5	B14(1942)	Conc. Pt. (lbs)	L	07-03-14	07-03-14	Top	1,051	551			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5,841 ft-lbs	11,610 ft-lbs	50.3%	1	07-03-14
End Shear	1,876 lbs	5,785 lbs	32.4%	1	09-08-08
Total Load Deflection	L/480 (0.259")	n/a	50.0%	4	05-09-10
Live Load Deflection	L/743 (0.167")	n/a	48.4%	5	05-09-10
Max Defl.	0.259"	n/a	n/a	4	05-09-10
Span / Depth	13.1				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	1,616 lbs	61.8%	21.6%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	1,975 lbs	48.0%	16.8%	Unspecified

### Disclosure

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### Notes

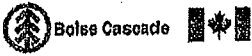
- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Calculations assume member is fully braced.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian 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 ABC 2012

OWNED BY 2477-18H  
STRUCTURAL  
COMPONENT ONLY

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

T-190066



**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B14(1942)**

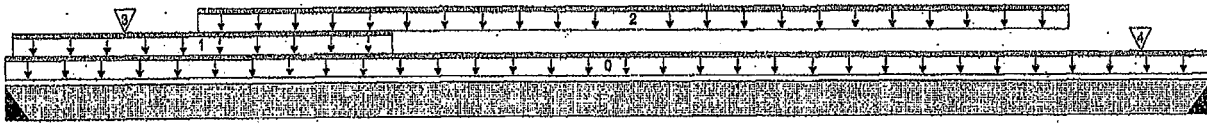
**PASSED**

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

Dry | 1 span | No cant.

October 27, 2018 09:08:05

File name: TH1.mmdl  
 Description: 2ND FLOOR FRAMING\Flush Beams\B14(1942)  
 Specifier:  
 Designer:  
 Company:



11-01-02  
 B1 Total Horizontal Product Length = 11-01-02 B2

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	1,058 / 0	554 / 0		
B2, 2"	499 / 0	275 / 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	11-01-02	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-14	03-06-14	Top	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-09-06	09-09-06	Top	70	34			n/a
3	J5(1976)	Conc. Pt. (lbs)	L	01-01-06	01-01-06	Top	88	44			n/a
4	J5(1947)	Conc. Pt. (lbs)	L	10-05-06	10-05-06	Top	71	36			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,060 ft-lbs	11,610 ft-lbs	35.1%	1	03-09-06
End Shear	1,822 lbs	5,785 lbs	31.5%	1	00-11-08
Total Load Deflection	L/542 (0.241")	n/a	44.3%	4	05-03-06
Live Load Deflection	L/832 (0.167")	n/a	43.2%	5	05-03-06
Max Defl.	0.241"	n/a	n/a	4	05-03-06
Span / Depth	13.7				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	2,279 lbs	n/a	53.4%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1,093 lbs	n/a	26.6%	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 Single 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 QBC 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®,

DWYNDYAN 2478-18H  
**STRUCTURAL COMPONENT ONLY**

T. Garb



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

PASSED

## 2ND FLOOR FRAMING\Flush Beams\B8(1913)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 6475

Job name:

File name: TH1.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B8(1913)

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

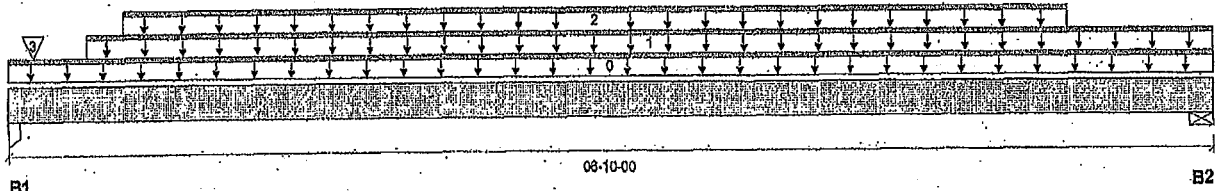
Specifier:

Customer:

Designer:

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-10-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1,136 / 0	1,482 / 0	774 / 0	
B2, 5-1/2"	853 / 0	863 / 0	514 / 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	06-10-00	Top		10			00-00-00
1	E28(457)	Unf. Lin. (lb/ft)	L	00-05-08	06-10-00	Top	77	151	147		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	06-00-00	Top	219	110			n/a
3		Conc. Pt. (lbs)	L	00-01-13	00-01-13	Top	320	724	351		n/a

### Controls Summary

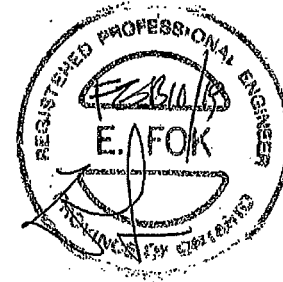
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,424 ft-lbs	23,220 ft-lbs	19.1%	1	03-04-00
End Shear	2,567 lbs	11,571 lbs	22.2%	1	01-01-00
Total Load Deflection	L/999 (0.047")	n/a	n/a	35	03-04-00
Live Load Deflection	L/999 (0.029")	n/a	n/a	51	03-04-00
Max Def.	0.047"	n/a	n/a	35	03-04-00
Span / Depth	7.8				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 3-1/2"	4,331 lbs	54.4%	29.0%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	2,860 lbs	34.8%	12.2%	Unspecified

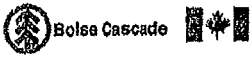
### Notes

- 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. **CONFORMS TO OBG 2012**
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Unbalanced snow loads determined from building geometry were used in selected product's verification.
- Design based on Dry Service Condition.
- Importance Factor : Normal Part code : Part 9
- Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.



DWONG, YAM 2479-18H  
STRUCTURAL  
COMPONENT ONLY

T-192208



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

**PASSED**

2ND FLOOR FRAMING\Flush Beams\B8(1913)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 8475

Job name:

Address:

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

Customer:

Code reports:

CCMC 12472-R

File name: TH1.mmdl

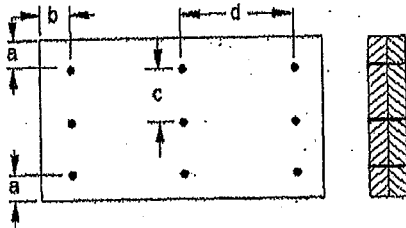
Description: 2ND FLOOR FRAMING\Flush Beams\B8(1913)

Specifier:

Designer:

Company:

## Connection Diagram: Full Length of Member

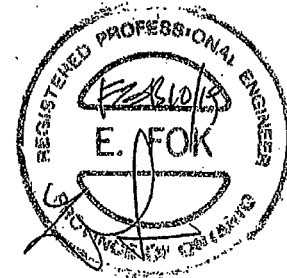


a minimum = 2"  
 b minimum = 3"  
 c = 2-3/4"  
 d = 4"

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

3/4" ARDOX SPIRAL



### Disclosure

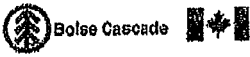
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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

DRAGON TAW 2479 18H  
 STRUCTURAL COMPONENT ONLY

T. L. Gorbalski





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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B9(1977)

Dry | 1 span | No cant.

October 27, 2018 09:06:05

BC CALC® Member Report

Build 6475

Job name:

Address:

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

Customer:

Code reports:

CCMC 12472-R

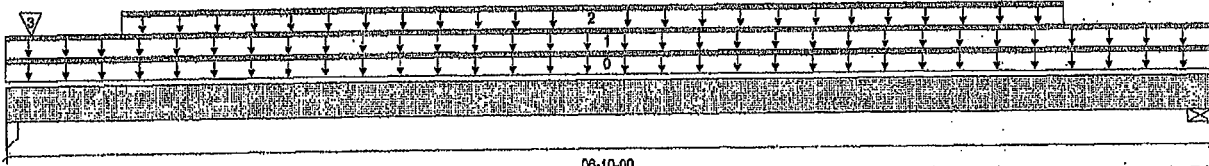
File name: TH1.mrml

Description: 2ND FLOOR FRAMING\Flush Beams\B9(1977)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 06-10-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1,165 / 0	1,508 / 0	829 / 0	
B2, 5-1/2"	854 / 0	854 / 0	514 / 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	06-10-00	Top	10				00-00-00
1	E26(449)	Unf. Lin. (lb/ft)	L	00-00-00	06-10-00	Top	77	151	147		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	06-00-00	Top	219	110			n/a
3	-	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	309	667	339		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,430 ft-lbs	23,220 ft-lbs	19.1%	1	03-04-00
End Shear	2,283 lbs	11,571 lbs	19.7%	1	01-01-00
Total Load Deflection	L/999 (0.048")	n/a	n/a	35	03-04-00
Live Load Deflection	L/999 (0.03")	n/a	n/a	51	03-04-00
Max Defl.	0.048"	n/a	n/a	35	03-04-00
Span / Depth	7.8				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 3-1/2"	4,461 lbs	56.1%	29.8%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	2,862 lbs	34.8%	12.2%	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 2016 and CSA O86.
- Unbalanced snow loads determined from building geometry were used in selected product's verification.
- Design based on Dry Service Condition.
- Importance Factor : Normal Part code : Part 9
- Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

CONFORMS TO OBC 2012

DWG NO. TAM 2480-18H  
STRUCTURAL  
COMPONENT ONLY

T. 190269



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR FRAMING\Flush Beams\B9(1977)**

**PASSED**

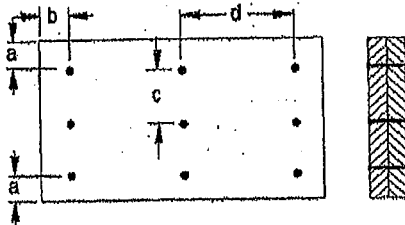
BC CALC® Member Report  
 Build 6475  
 Job name:  
 Address:  
 City, Province, Postal Code: ST ...NES  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

October 27, 2018 09:06:05

File name: TH1.mmdl  
 Description: 2ND FLOOR FRAMING\Flush Beams\B9(1977)  
 Specifier:  
 Designer:  
 Company:

**Connection Diagram: Full Length of Member**



a minimum = 2"  
 b minimum = 3"  
 c = 2-3/4"  
 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**



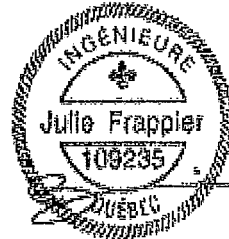
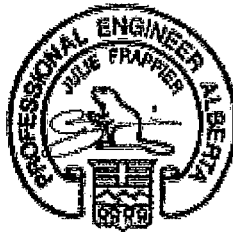
**Disclosure**

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. TAM2480-18H  
 STRUCTURAL  
 COMPONENT ONLY

T-190269(4)



### Maximum Floor Spans

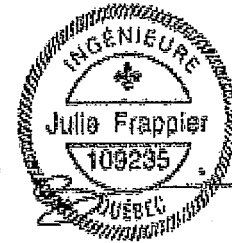
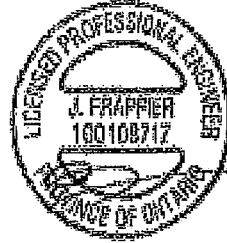
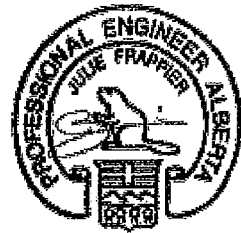
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
5/8" OSB G&N Sheathing

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

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

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

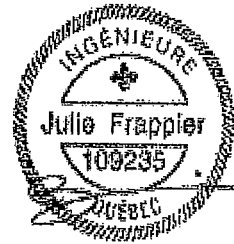
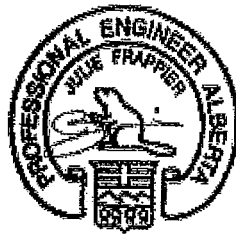


**Maximum Floor Spans**  
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

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

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



### Maximum Floor Spans

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

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

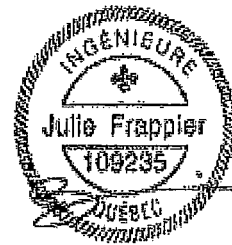
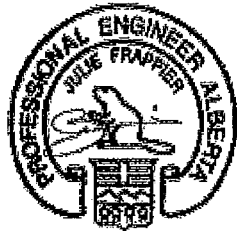
Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60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

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



### Maximum Floor Spans

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



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

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

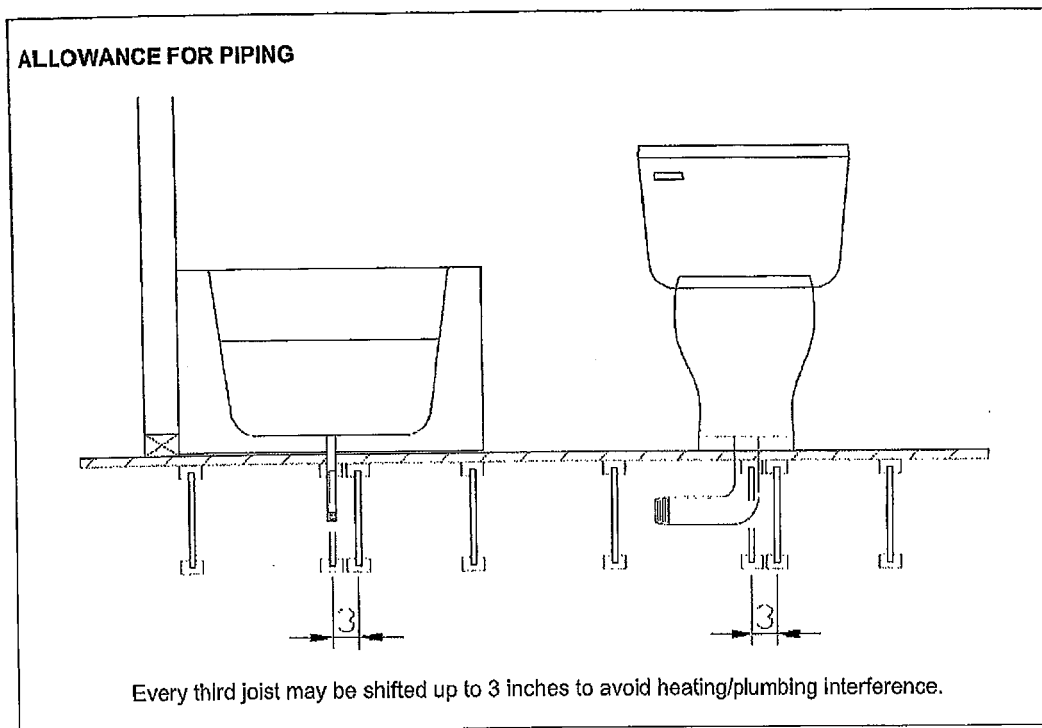
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load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

## Allowance for Piping (Installation Notes)

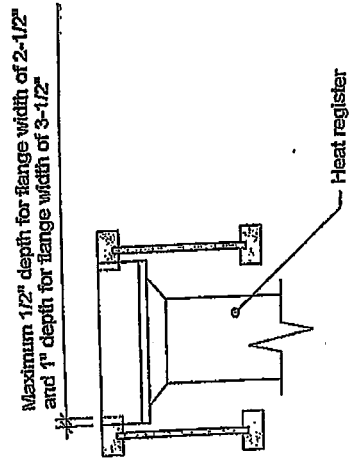
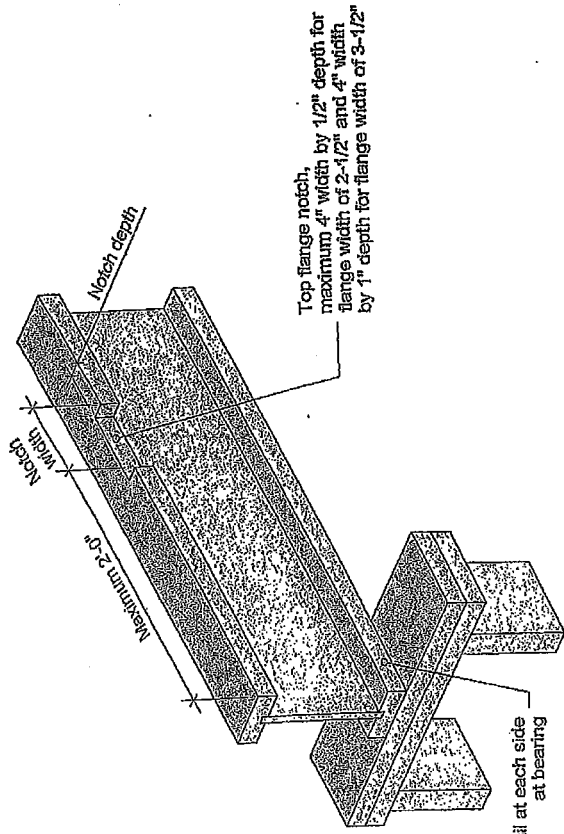
The floor layouts have usually not been checked for heating and/or plumbing interference. On-site adjustment of joists of up to 3 inches is permitted to avoid interferences. When moving a joist, the subfloor thickness shall be checked with code requirements when the joist spacing exceeds 19.2 inches.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

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

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



Revised April 12, 2012



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

This document supersedes all previous versions. If the document has been in effect for more than one year, consult [nordic.ca](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.

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TITLE  
Notch in Joist for Heat Register  
CATEGORY  
Joist - Typical Floor Framing and Construction Details

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