

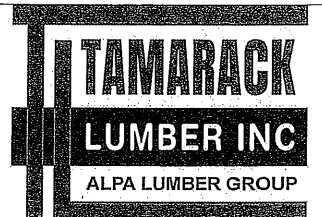
Products				
PlotID	Length	Product	Plies	Net Qty
J1	20-00-00	9 1/2" NI-40x	1	5
J2	18-00-00	9 1/2" NI-40x	1	5
J3	16-00-00	9 1/2" NI-40x	1	16
J3DJ	16-00-00	9 1/2" NI-40x	2	4
J4	14-00-00	9 1/2" NI-40x	1	28
J4DJ	14-00-00	9 1/2" NI-40x	2	4
J5	12-00-00	9 1/2" NI-40x	1	1
J6	10-00-00	9 1/2" NI-40x	1	15
J7	8-00-00	9 1/2" NI-40x	1	4
J8	6-00-00	9 1/2" NI-40x	1	7
J9	4-00-00	9 1/2" NI-40x	1	2
J10	2-00-00	9 1/2" NI-40x	1	2

Products					
PlotID	Length	Product	Plies	Net Qty	
B1	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3	
B3	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	4	4	
B2	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	
B11	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	
B6L	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	
B4L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	
B5L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	
B9L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	
B8	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	
B10L	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	

Connector Summary		
Qty	Manuf	Product
25	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
1	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4	HGUS410
1	H4	HGUS410

DATE: 2020-12-07

1st FLOOR



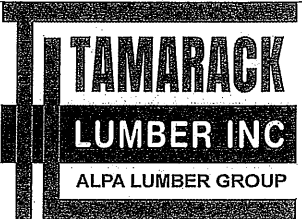
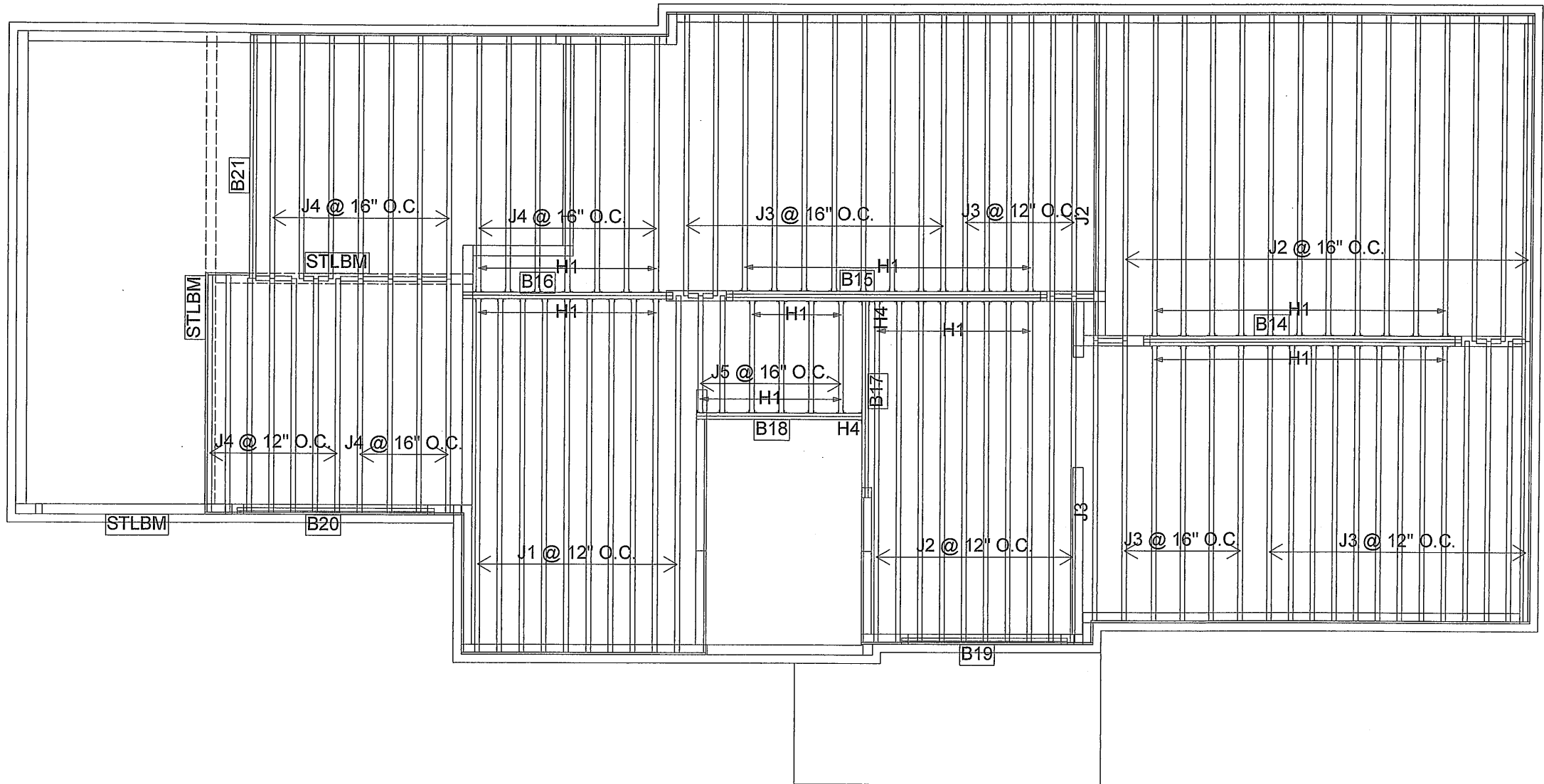
FROM PLAN DATED: MAY 2020  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY ESTATES  
MODEL: S42-17  
ELEVATION: A  
LOT: 402A  
CITY: BRADFORD

SALESMAN: Rick DiCiano  
DESIGNER: PL  
REVISION: lbv

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 REI  
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 TIL**  
APPLICATION AS PER O.B.C 9.30.6.

LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILE LOAD: 20.0 lb/ft<sup>2</sup>

SUBFLOOR: 3/4" GLUED AND NAILED



FROM PLAN DATED: MAY 2020  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY ESTATES  
MODEL: S42-17  
ELEVATION: A  
LOT: 402A  
CITY: BRADFORD  
SALESMAN: Rick DiCiano  
DESIGNER: PL  
REVISION: lbv

NOTES:  
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P. 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** RE 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 TI** APPLICATION AS PER O.B.C 9.30.6.

LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 15.0 lb/ft²  
TILE LOAD: 20.0 lb/ft²

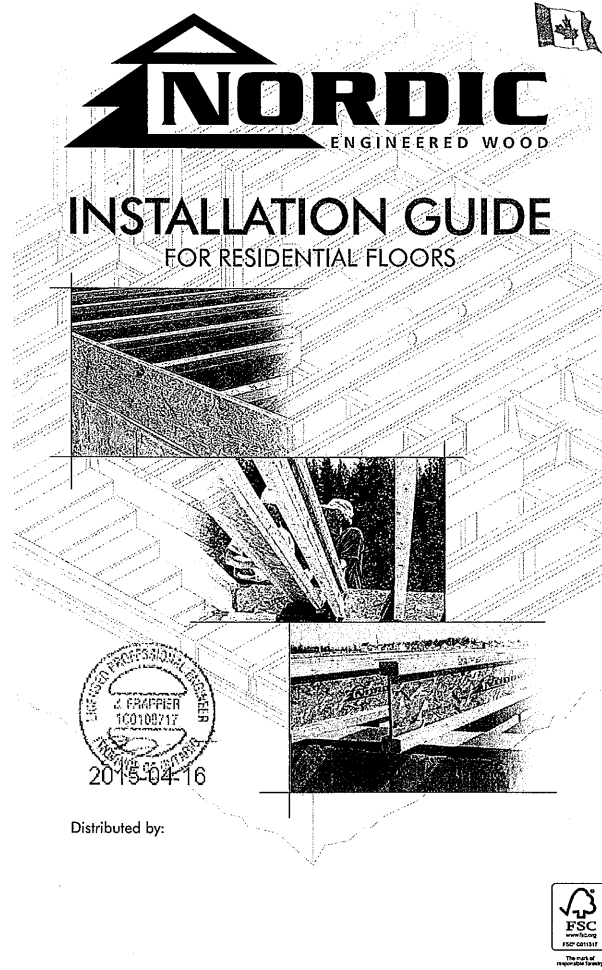
DATE: 2020-12-07

2ND FLOOR

SUBFLOOR: 5/8" GLUED AND NAILED

Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	10
J2	16-00-00	9 1/2" NI-40x	1	26
J3	14-00-00	9 1/2" NI-40x	1	35
J4	12-00-00	9 1/2" NI-40x	1	25
J5	6-00-00	9 1/2" NI-40x	1	6
B21	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B17	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B20	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B18	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B19	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14	16-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Products				
PlotID	Length	Product	Plies	Net Qty
B15	16-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3
Connector Summary				
Qty	Manuf	Product		
22	H1	IUS2.56/9.5		
48	H1	IUS2.56/9.5		
1	H4	HGUS410		
1	H4	HGUS410		



### SAFETY AND CONSTRUCTION PRECAUTIONS

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

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

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied 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, stack, and handle I-joists vertically and level only.
- Always stack and handle I-joists in the upright position only.
- Do not store I-joists in direct contact with the ground and/or flatwise.
- Protect I-joists from weather, and use spacers to separate bundles.
- 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 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.

2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.

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

4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.

5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.

6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and N8C 2010.

7. SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

#### MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

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

CCMC EVALUATION REPORT 13032-R

### 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.

Top Mount  
Skewed  
Face Mount

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

SI units conversion: 1 inch = 25.4 mm

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

Flange width  
2-1/2" or 3-1/2"

Approx. 2" = 1/8"-1/4" Gap

(4) 2-1/2" nails, 3" nails required for I-joists with 3-1/2" flange width

No Gap

See table below for web stiffener size requirements

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

### NORDIC I-JOIST SERIES

33 pieces per unit

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

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

2015-04-16

### INSTALLING NORDIC I-JOISTS

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

Figures 3, 4 or 5

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

NOTE: Never cut or notch flanges.

Nordic Lam or Structural Composite Lumber (SCL)

Use hangers recognized in current code evolution reports

Use 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.

Ni blocking panel

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

Attach I-joist to top plate per detail 1b

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.

Rim board

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

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.

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.

Ni rim joist per detail 1a

Attach I-joist per detail 1b

Minimum 1-3/4" bearing required

Squash block

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)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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

**FIGURE 3**  
**DOUBLE I-JOIST CONSTRUCTION**

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

Notes:

- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinch when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
- The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-joist capacity.

Filler block

Offset nails from opposite face by 6"

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

Maximum support capacity = 1,620 lbs.

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

Maximum support capacity = 1,620 lbs.

Do not bevel-cut joist beyond inside face of wall

Attach I-joist per detail 1b

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

Backer block (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 products conforming to CAN/CSA-C308 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-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.

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

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

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

Two 2-1/2" nails one side only

One 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)

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

CAUTION: Cantilevers formed this way must be carefully detailed to prevent moisture intrusion into the structure and potential decay of untreated I-joist extensions.

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

Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

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

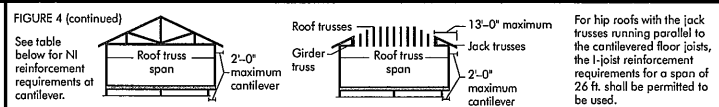
**Method 1 — SHEATHING REINFORCEMENT ONE SIDE**

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

**Method 2 — SHEATHING REINFORCEMENT TWO SIDES**

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

Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3" nails along the centreline of the reinforcing panel from each side. Clinch when possible.



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

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

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

**5a SHEATHING REINFORCEMENT**

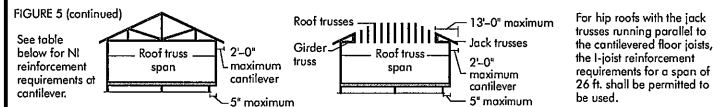
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Full length of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flanges. Install with face grain horizontal. Attach I-joist to plate at all supports per detail 1b. Verify reinforced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

**5b SET-BACK DETAIL**

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

**5c SET-BACK CONNECTION**

Note: Verify girder joist capacity if the back span exceeds the joist spacing. Attach double I-joist per detail 1p, if required.



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

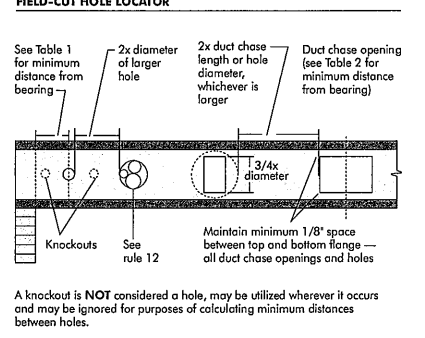
1. N = No reinforcement required.  
2 = NI reinforced with 3/4" wood structural panel on one side only.  
3 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.  
X = Try a deeper joist or closer spacing.  
2. Maximum design load shall be: 15 psf roof dead load, 55 psf floor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

# 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 shall 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



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

## TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

MAXIMUM ALLOWABLE HOLES IN JOIST WEBS																	
Simple or Multiple Span for Dead Loads up to 1 psf and Live Loads up to 40 psf																	
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)														Span adjustment Factor	
		Round hole diameter (in.)															
		2	3	4	5	6	6 1/4	7	8	8 5/8	9	10	10 3/4	11	12	12 3/4	
9-1/2"	N-20	0-7"	1-0"	2-10"	4-3"	5-8"	6-0"	...	...	...	...	...	...	...	...	...	13-6"
	N-40x	0-7"	1-0"	2-10"	4-3"	5-8"	6-0"	...	...	...	...	...	...	...	...	...	14-9"
	N-60	0-7"	1-0"	2-10"	4-3"	5-8"	6-0"	...	...	...	...	...	...	...	...	...	14-11"
	N-70	2-0"	2-3 1/4"	4-9"	6-3"	8-0"	8-4"	...	...	...	...	...	...	...	...	...	15-7"
	N-80	2-0"	2-3 1/4"	4-9"	6-3"	8-0"	8-4"	...	...	...	...	...	...	...	...	...	15-9"
11-7/8"	N-20	0-7"	1-0"	2-10"	4-3"	5-8"	6-0"	6 1/4"	7-0"	7-5"	8-0"	8-4"	...	...	...	...	15-2"
	N-40x	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	16-6"
	N-60	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	16-9"
	N-70	1-3"	1-6"	2-0"	2-4"	3-0"	3-4 1/2"	3-8"	4-2"	4-6 1/2"	5-0"	5-4 1/2"	5-8"	6-2"	6-6 1/2"	7-0"	7-5"
	N-80	0-6"	2-10"	4-2"	4-6 1/2"	5-0"	5-4 1/2"	5-8"	6-2"	6-6 1/2"	7-0"	7-4 1/2"	7-8"	8-2"	8-6 1/2"	9-0"	9-4 1/2"
14"	N-20	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	17-7"
	N-40x	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	17-11"
	N-60	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	18-0"
	N-70	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	17-11"
	N-80	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	18-0"
16"	N-20	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	17-11"
	N-40x	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	18-0"
	N-60	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	18-0"
	N-70	0-8"	1-10"	3-0"	4-5"	6-10"	6-2"	7-8"	8-9"	9-9"	10-4"	12-0"	13-5"	...	...	...	19-5"
	N-80	0-10"	0-10"	3-0"	4-5"	6-2"	6-5"	6-8"	7-2"	7-5"	8-0"	10-0"	10-8"	11-0"	11-11"	12-11"	13-5"
18"	N-20	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	19-5"
	N-40x	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	20-0"
	N-60	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	20-0"
	N-70	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	20-0"
	N-80	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	20-0"
20"	N-20	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	20-10"
	N-80	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	21-2"
22"	N-20	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	21-2"
	N-80	0-7"	0-8 1/2"	1-3"	2-8"	4-0"	4-4 1/2"	5-0"	5-7"	6-10"	6-4"	...	...	...	...	...	21-2"

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

## OPTIONAL:

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

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

Where:  
D<sub>reduced</sub> = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft-in.)  
L<sub>actual</sub> = The actual measured span distance between the inside faces of supports (ft)  
L<sub>max</sub> = Span Adjustment Factor given in this table.  
D = The minimum distance from the inside face of any support to centre of hole from this table.  
If L<sub>actual</sub> is greater than L<sub>max</sub>, use L<sub>max</sub> in the above calculation for D<sub>reduced</sub>.

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

TABLE 2 DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only													
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24			
9-1/2"	N-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"			
	N-40	5-1"	5-5"	6-0"	6-5"	6-10"	6-5"	7-0"	8-0"	8-5"			
	N-60	5-4"	5-9"	6-4"	6-9"	7-4"	7-9"	8-4"	8-9"	9-4"			
	N-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-6"			
	N-80	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-6"			
11-7/8"	N-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"			
	N-40	6-9"	7-2"	7-6"	8-1"	8-5"	8-9"	9-3"	9-9"	10-4"			
	N-60	7-3"	7-8"	8-0"	8-5"	9-0"	9-3"	9-8"	10-3"	11-0"			
	N-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-6"			
	N-80	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-6"			
14"	N-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-6"	10-11"			
	N-40	8-6"	9-1"	9-5"	10-0"	10-4"	10-9"	11-3"	11-8"	12-2"			
	N-60	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"			
	N-70	8-5"	9-0"	9-3"	9-8"	10-3"	10-8"	11-3"	12-0"	12-8"			
	N-80	7-9"	8-1"	9-5"	9-10"	10-4"	10-9"	11-3"	11-7"	12-3"			
16"	N-20	9-0"	9-3"	9-9"	10-1"	10-11"	11-1"	11-11"	12-1"	12-11"			
	N-40	9-6"	9-9"	10-3"	10-7"	11-1"	11-5"	11-9"	12-3"	12-7"			
	N-60	9-0"	9-5"	10-3"	10-7"	11-1"	11-5"	11-9"	12-3"	12-7"			
	N-70	9-2"	9-7"	10-0"	10-5"	10-10"	11-0"	11-5"	11-10"	12-0"			
	N-80	9-4"	9-9"	10-3"	10-7"	11-1"	11-5"	11-9"	12-3"	12-7"			





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 centreling 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 of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1

### LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

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

- 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

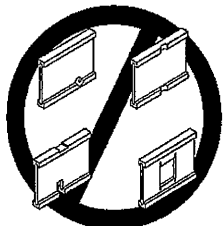
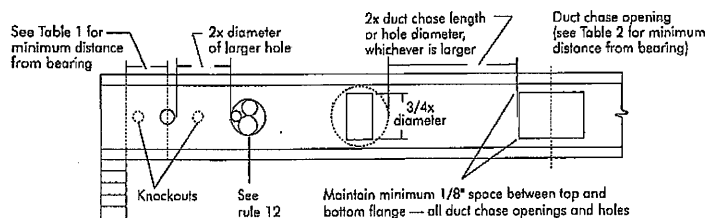
### DUCT CHASE OPENING SIZES AND LOCATIONS

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"	8-0"	8-4"	---	---	---
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-8"	---	---	---
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-8"	---	---	---
14"	NI-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-7"	10-11"	---	---	---
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	11-8"	12-3"	---	---	---
	NI-60	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	---	---	---
	NI-70	8-7"	9-1"	9-5"	10-1"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---
16"	NI-20	9-2"	9-8"	10-0"	10-6"	10-11"	11-5"	11-9"	12-4"	12-11"	---	---	---
	NI-40x	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---
	NI-60	10-3"	10-8"	11-2"	11-7"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---
	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-3"	14-0"	---	---	---
	NI-80	10-4"	10-9"	11-3"	11-8"	12-1"	12-7"	13-1"	13-8"	14-4"	---	---	---

- 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.

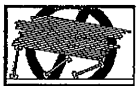
Holes in webs should be cut with a sharp saw.

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



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



Never stack building materials over unshathed I-joints. Once shathed, do not over-stress I-joints with concentrated loads from building materials.

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 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-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.

### PRODUCT WARRANTY

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

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

**1a** NI blocking panel

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

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

Attach I-joint to top plate per detail 1b

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

**1b** Rim board

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

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

One 2-1/2" 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-joint. Nails may be driven at an angle to avoid splitting of bearing plate.

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

**1d** NI or rim board blocking panel per detail 1a

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

Provide lateral bracing per detail 1a or 1b

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

**1g** Joist attachment per detail 1b

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

2-1/2" nails at 6" o.c. to top plate

NI blocking panel per detail 1a

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

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

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

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

**1i** Top- or face-mount hanger

Double I-joint header

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

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

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

**1j** Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

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

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

Top-mount hanger installed per manufacturer's recommendations

**1m** Multiple I-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.

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

Filler block per detail 1p

Maximum support capacity = 1,620 lbs.

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

Attach I-joint per detail 1b

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

**1r** Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side.

NI blocking panel

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.

**1p** FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

NOTES:

- Support back of I-joint web during nailing to prevent damage to web/flange connection.
- Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joint flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joint. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
- The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-joint capacity.

Flange Size	Net Depth	Filler Block Size
9-1/2"	11-7/8"	2-1/8" x 6"
11-7/8"	14"	2-1/8" x 8"
14"	16"	2-1/8" x 10"
16"	18"	2-1/8" x 12"
9-1/2"	11-7/8"	3" x 6"
11-7/8"	14"	3" x 8"
14"	16"	3" x 10"
16"	18"	3" x 12"
11-7/8"	14"	3" x 7"
14"	16"	3" x 9"
16"	18"	3" x 11"

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

Rim board

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

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

I-joint blocking panel

One 2-1/2" nail one side only

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.

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

### WEB STIFFENERS

#### RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joint properties table found in the I-joint Construction Guide (C10). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joint is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

FIGURE 2  
WEB STIFFENER INSTALLATION DETAILS

**CONCENTRATED LOAD** (Load stiffener)

**END BEARING** (Bearing stiffener)

**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

See the adjacent table for web stiffener size requirements

### CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

**4a** Method 1 — SHEATHING REINFORCEMENT ONE SIDE

Rim board or wood structural panel closure (3/4" minimum thickness); attach per detail 1b

NI blocking panel or rim board blocking, attach per detail 1g

Attach I-joint to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

**Method 2 — SHEATHING REINFORCEMENT TWO SIDES**

Use same installation as Method 1 but reinforce both sides of I-joint with sheathing.

Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

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

### RIM BOARD INSTALLATION DETAILS

**8a** ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

(1) 2-1/2"

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

December 7, 2020 16:56:30

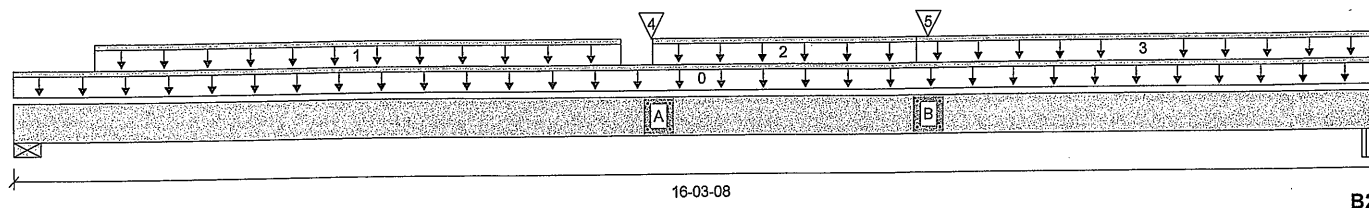
File name: S42-17 LOT 402A STD.mmdl

Description: 1ST FLOOR \Flush Beams\B1(i12158)

**Specifier:**

Designer: PL

Company:



**Total Horizontal Product Length = 16-03-08**

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

Bearing	Live	Dead	Snow	Wind
B1, 11-3/8"	1253 / 0	1243 / 0		
B2, 2-3/4"	1526 / 0	1058 / 0		

## Load Summary

Load Summary							Live	Dead	Snow	Wind	Tributary
Tag	Description	Load Type	Ref.	Start	End	Loc.	1.00	0.65	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-03-08	Top		14			00-00-00
1	-	Unf. Lin. (lb/ft)	L	00-11-08	07-02-00	Top	14	91			n/a
2	FC8 Floor Material	Unf. Lin. (lb/ft)	L	07-06-08	10-08-08	Top	21	10			n/a
3	FC8 Floor Material	Unf. Lin. (lb/ft)	L	10-08-08	16-03-08	Top	27	13			n/a
4	-	Conc. Pt. (lbs)	L	07-06-06	07-06-06	Top	1245	746			n/a
5	B8(i12126)	Conc. Pt. (lbs)	L	10-10-04	10-10-04	Top	1231	648			n/a

## Controls Summary

<b>Controls Summary</b>	<b>Factored Demand</b>	<b>Factored Resistance</b>	<b>Demand/Resistance</b>	<b>Case</b>	<b>Location</b>
Pos. Moment	19370 ft-lbs	33937 ft-lbs	57.1%	1	07-07-06
End Shear	3535 lbs	17356 lbs	20.4%	1	15-03-04
Total Load Deflection	L/251 (0.727")	n\ a	95.4%	4	08-07-00
Live Load Deflection	L/435 (0.42")	n\ a	82.7%	5	08-07-00
Max Defl.	0.727"	n\ a	n\ a	4	08-07-00
Span / Depth	19.2				

## Bearing Supports

Bearing Supports			Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	11-3/8" x 5-1/4"	3434 lbs	9.3%	4.7%	Spruce-Pine-Fir
B2	Beam	2-3/4" x 5-1/4"	3611 lbs	58.5%	20.5%	Unspecified

## Notes

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

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

Calculations assume unbraced length of Top: 06-07-00, Bottom: 06-07-00.

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

BC CALCC® 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

AMENDED 2020



BBB NO. TAN 17264-20

STRUCTURAL  
COMPONENT ONLY



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

**PASSED**

BC CALC® Member Report  
Build 7493

1ST FLOOR \Flush Beams\B1(i12158) (Flush Beam)

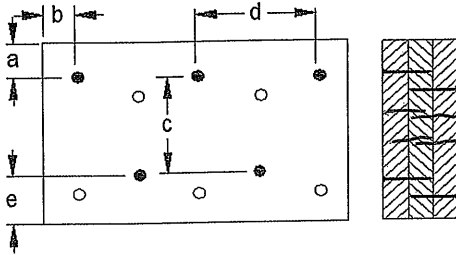
Dry | 1 span | No cant.

December 7, 2020 16:56:30

Job name:  
Address:  
City, Province, Postal Code: BRADFORD  
Customer:  
Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl  
Description: 1ST FLOOR \Flush Beams\B1(i12158)  
Specifier:  
Designer: PL  
Company:

## Connection Diagram: Full Length of Member



*4 rows*

a minimum = 2"  
b minimum = 3"

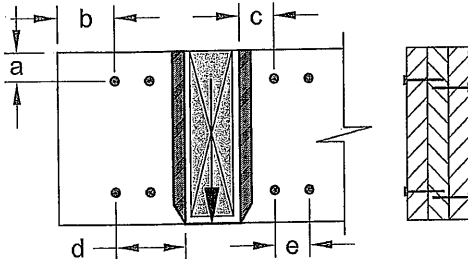
c = 6-1/2"  
d = 12"  
e minimum = 3"

Nailing applies to both sides of the member  
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

## Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 6

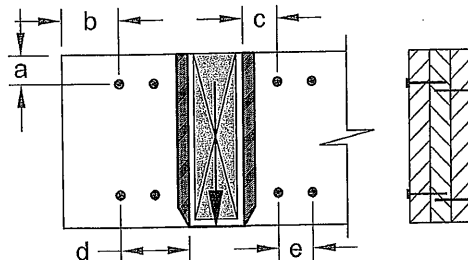


a minimum = 2"  
b minimum = 4"  
c minimum = 4"  
d maximum = 12"  
e minimum = 4"

Nailing applies to both sides of the member  
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

Connection Tag: B Applies to load tag(s): 8



a minimum = 2"  
b minimum = 4"  
c minimum = 4"  
d maximum = 12"  
e minimum = 4"

Nailing applies to both sides of the member  
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM/264-20

STRUCTURAL

COMPONENT ONLY

## Disclosure

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

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

BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 1ST FLOOR \Flush Beams\B10L(i11870)

City, Province, Postal Code: BRADFORD

Specifier:

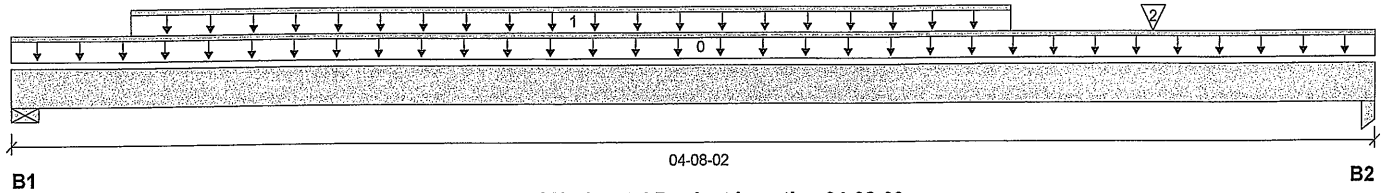
Customer:

Designer: PL

Code reports:

CCMC 12472-R

Company:


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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	311 / 0	168 / 0		
B2, 3-1/2"	307 / 0	166 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-08-02	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-14	03-04-14	Top	159	80			n/a
2	J7(i11878)	Conc. Pt. (lbs)	L	03-10-14	03-10-14	Top	141	71			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	735 ft-lbs	11610 ft-lbs	6.3%	1	01-10-14
End Shear	562 lbs	5785 lbs	9.7%	1	01-01-14
Total Load Deflection	L/999 (0.007")	n/a	n/a	4	02-04-02
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	02-04-02
Max Defl.	0.007"	n/a	n/a	4	02-04-02
Span / Depth	5.2				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	676 lbs	14.4%	7.2%	Spruce-Pine-Fir
B2	Column 3-1/2" x 1-3/4"	668 lbs	16.8%	8.9%	Unspecified

**Notes**

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020


 NWG NO. TAM 17265-20  
**STRUCTURAL**  
 COMPONENT ONLY

**Disclosure**

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

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



BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 1ST FLOOR \Flush Beams\B11(i12108)

City, Province, Postal Code: BRADFORD

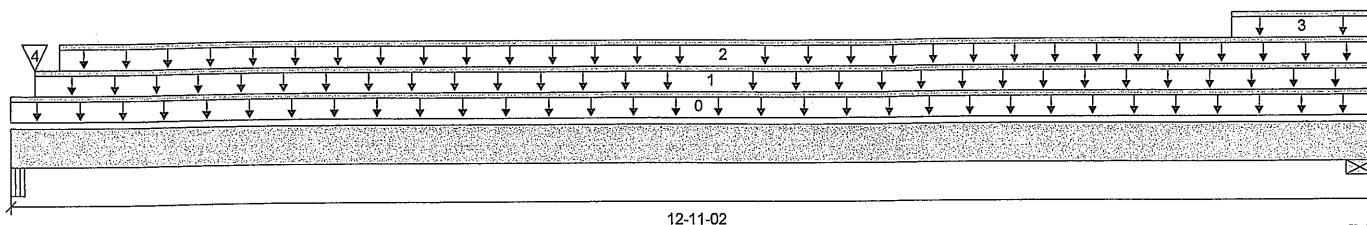
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



B1

12-11-02

B2

Total Horizontal Product Length = 12-11-02

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2827 / 0	1552 / 0		
B2, 6-3/8"	200 / 0	272 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-11-02	Top		10			00-00-00
1	FC8 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	12-11-02	Top	22	11			n/a
2	FC8 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	12-11-02	Top	6	3			n/a
3	E5(i11259)	Unf. Lin. (lb/ft)	L	11-06-12	12-11-02	Top		81			n/a
4	7(i11446)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	2648	1398			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1320 ft-lbs	23220 ft-lbs	5.7%	1	06-04-14
End Shear	386 lbs	11571 lbs	3.3%	1	11-07-04
Total Load Deflection	L/999 (0.05")	n/a	n/a	4	06-04-14
Live Load Deflection	L/999 (0.027")	n/a	n/a	5	06-04-14
Max Defl.	0.05"	n/a	n/a	4	06-04-14
Span / Depth	15.2				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 5-1/2" x 3-1/2"	6181 lbs	75.2%	26.3%	Unspecified
B2	Wall/Plate 6-3/8" x 3-1/2"	640 lbs	4.7%	2.3%	Spruce-Pine-Fir

### 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

AMENDED 2020



17266-20  
STRUCTURAL  
COMPONENT ONLY



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

PASSED

## 1ST FLOOR \Flush Beams\B11(i12108) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report  
Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 1ST FLOOR \Flush Beams\B11(i12108)

City, Province, Postal Code: BRADFORD

Specifier:

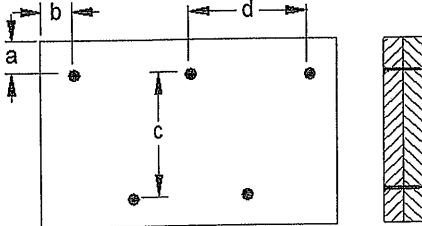
Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:

### Connection Diagram: Full Length of Member



a minimum = 2"  
b minimum = 3"

c = 5-1/2"  
d = 6"

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

3-1/2" ARDOX SPIRAL



OWB NO. 17266-20  
STRUCTURAL  
COMPONENT ONLY

### Disclosure

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BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

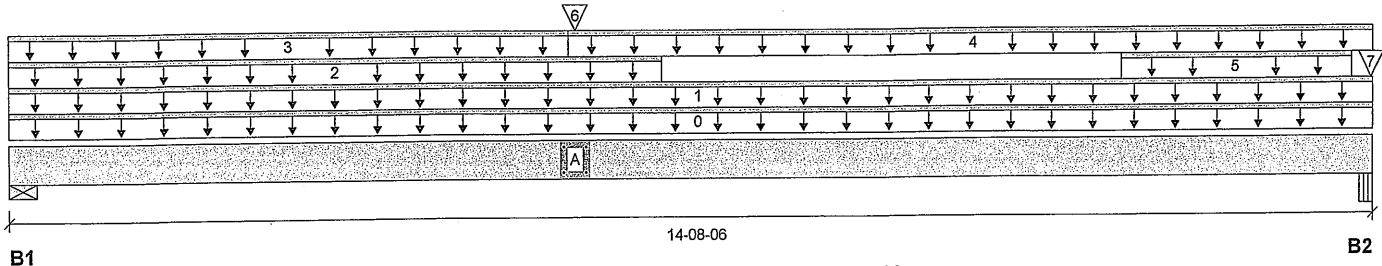
File name: S42-17 LOT 402A STD.mmdl

Description: 1ST FLOOR \Flush Beams\B2(i12115)

Specifier:

Designer: PL

Company:



Total Horizontal Product Length = 14-08-06

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	650 / 0	864 / 0		
B2, 2-3/4"	850 / 0	860 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-08-06	Top		10			00-00-00
1	FC8 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-08-06	Top	16	8			n/a
2	4(i11443)	Unf. Lin. (lb/ft)	L	00-00-00	06-11-06	Top		81			n/a
3	FC8 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-11-06	Top	6	3			n/a
4	FC8 Floor Material	Unf. Lin. (lb/ft)	L	05-11-06	14-08-06	Top	17	9			n/a
5	-	Unf. Lin. (lb/ft)	L	11-11-06	14-05-10	Top		81			n/a
6	B7(i12139)	Conc. Pt. (lbs)	L	06-00-04	06-00-04	Top	767	404			n/a
7	6(i11445)	Conc. Pt. (lbs)	L	14-08-02	14-08-02	Top	312	202			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8871 ft-lbs	23220 ft-lbs	38.2%	1	06-00-04
End Shear	1870 lbs	11571 lbs	16.2%	1	01-01-14
Total Load Deflection	L/419 (0.408")	n/a	57.3%	4	07-01-04
Live Load Deflection	L/833 (0.205")	n/a	43.2%	5	07-01-04
Max Defl.	0.408"	n/a	n/a	4	07-01-04
Span / Depth	18.0				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	2055 lbs	21.8%	11.0%	Spruce-Pine-Fir
B2	Beam 2-3/4" x 3-1/2"	2350 lbs	57.1%	20.0%	Unspecified

### Notes

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

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

Calculations assume member is fully braced.

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

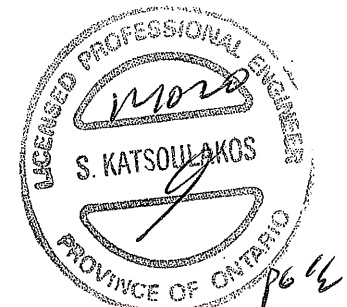
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



BWG NO. TAM 17267-20  
STRUCTURAL  
COMPONENT ONLY



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

PASSED

## 1ST FLOOR \Flush Beams\B2(i12115) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

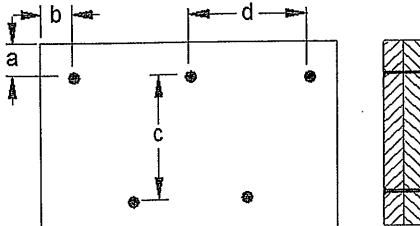
Description: 1ST FLOOR \Flush Beams\B2(i12115)

Specifier:

Designer: PL

Company:

### Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 5-1/2"

d = 8"

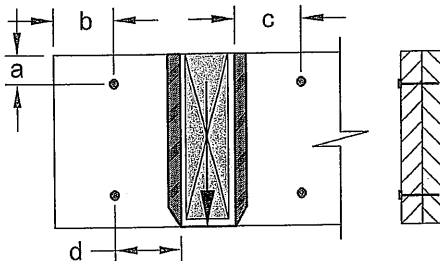
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

### Connection Diagrams: Concentrated Side Loads

Connection Tag: A

Applies to load tag(s): 5



a minimum = 2"

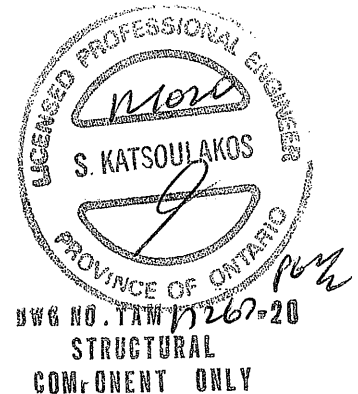
b minimum = 4"

c minimum = 4"

d maximum = 12"

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



### Disclosure

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1ST FLOOR \Flush Beams\B3(i12132) (Flush Beam)

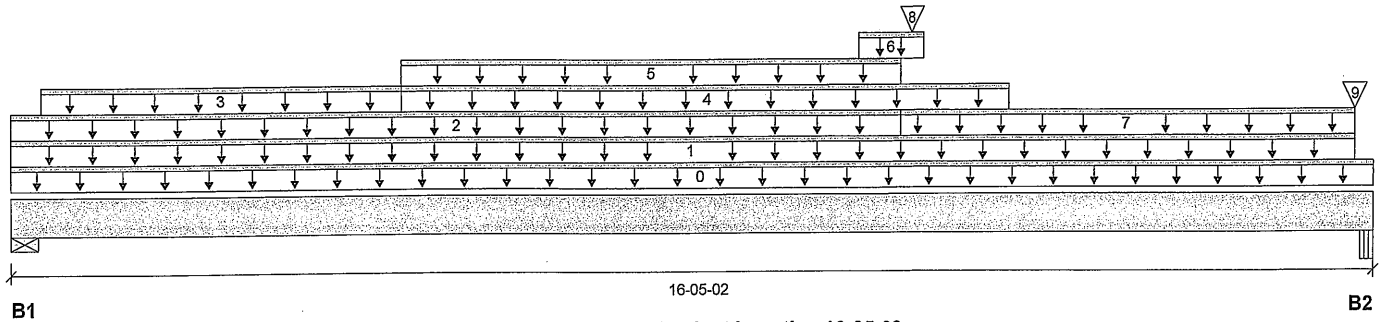
BC CALC® Member Report  
Build 7493

Dry | 1 span | No cant.

December 7, 2020 16:56:30

Job name:  
Address:  
City, Province, Postal Code: BRADFORD  
Customer:  
Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl  
Description: 1ST FLOOR \Flush Beams\B3(i12132)  
Specifier:  
Designer: PL  
Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	1251 / 0	1411 / 0		
B2, 5-1/2"	2108 / 0	1662 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-05-02	Top		19			00-00-00
1	FC8 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-02-06	Top	21	11			n/a
2	FC8 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-07-06	Top	12	6			n/a
3	10(i11452)	Unf. Lin. (lb/ft)	L	00-04-06	04-07-10	Top	26	96			n/a
4	-	Unf. Lin. (lb/ft)	L	04-07-10	11-11-06	Top		81			n/a
5	21(i11664)	Unf. Lin. (lb/ft)	L	04-07-10	10-07-06	Top	26	15			n/a
6	21(i11664)	Unf. Lin. (lb/ft)	L	10-01-02	10-10-14	Top	1375	734			n/a
7	FC8 Floor Material	Unf. Lin. (lb/ft)	L	10-07-06	16-02-06	Top	19	9			n/a
8	B8(i12126)	Conc. Pt. (lbs)	L	10-09-02	10-09-02	Top	1206	635			n/a
9	7(i11446)	Conc. Pt. (lbs)	L	16-02-06	16-02-06	Top	194	144			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	23530 ft-lbs	48297 ft-lbs	48.7%	1	10-04-04
End Shear	4651 lbs	23142 lbs	20.1%	1	15-02-02
Total Load Deflection	L/282 (0.669")	n/a	85.0%	4	08-07-04
Live Load Deflection	L/526 (0.359")	n/a	68.4%	5	08-07-04
Max Defl.	0.669"	n/a	n/a	4	08-07-04
Span / Depth	19.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 7"	3640 lbs	19.3%	9.7%	Spruce-Pine-Fir
B2	Beam 5-1/2" x 7"	5239 lbs	31.9%	11.2%	Unspecified

Cautions

Concentrated side load(s) 10 exceed available connection capacity. Please consult a technical representative or Professional of Record.



OWG NO. TAW 17268-20  
STRUCTURAL  
COMPONENT ONLY





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

PASSED

## 1ST FLOOR \Flush Beams\B3(i12132) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 1ST FLOOR \Flush Beams\B3(i12132)

City, Province, Postal Code: BRADFORD

Specifier:

Customer:

Designer: PL

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.

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.

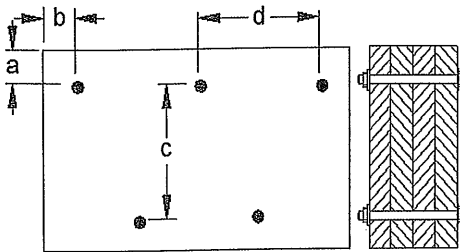
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

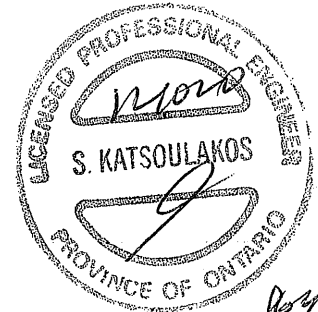
AMENDED 2020

### Connection Diagram: Full Length of Member



a minimum = 2 1/2" c = 4 1/2"  
b minimum = 2-1/2" d = 16"

Bolts are assumed to be Grade A307 or Grade 2 or higher.  
Connectors are: 1/2 in. Staggered Through Bolt



BWG NO. TAM 1260-20  
STRUCTURAL  
COMPONENT ONLY

### Disclosure

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

**PASSED**

## 1ST FLOOR \Flush Beams\B4L(i11848) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

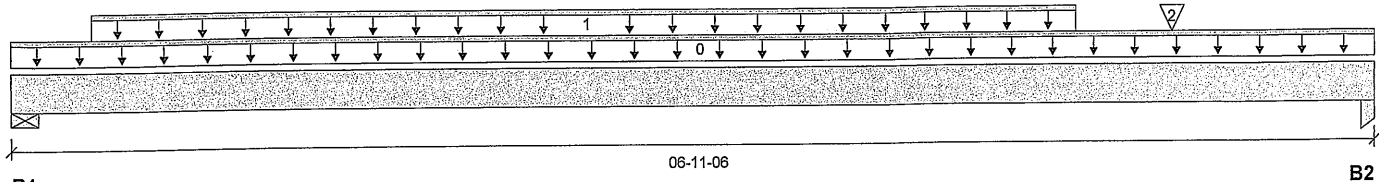
File name: S42-17 LOT 402A STD.mmdl

Description: 1ST FLOOR \Flush Beams\B4L(i11848)

Specifier:

Designer: PL

Company:



Total Horizontal Product Length = 06-11-06

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	610 / 0	322 / 0		
B2, 1-3/4"	561 / 0	296 / 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	06-11-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-14	05-04-14	Top	192	96			n/a
2	J6(i11457)	Conc. Pt. (lbs)	L	05-10-14	05-10-14	Top	211	105			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2255 ft-lbs	11610 ft-lbs	19.4%	1	03-10-14
End Shear	1207 lbs	5785 lbs	20.9%	1	06-00-02
Total Load Deflection	L/999 (0.049")	n/a	n/a	4	03-06-06
Live Load Deflection	L/999 (0.032")	n/a	n/a	5	03-06-06
Max Defl.	0.049"	n/a	n/a	4	03-06-06
Span / Depth	8.3				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	1317 lbs	28.0%	14.1%	Spruce-Pine-Fir
B2	Column 1-3/4" x 1-3/4"	1212 lbs	60.9%	32.4%	Unspecified

### Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

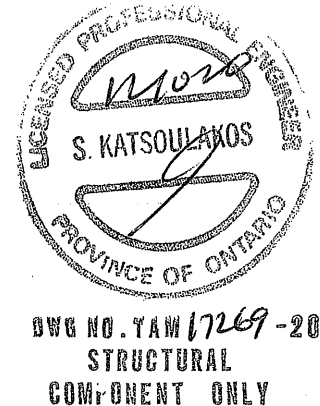
CONFORMS TO OBC 2012

AMENDED 2020

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





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

**PASSED**

## 1ST FLOOR \Flush Beams\B5L(i12111) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 1ST FLOOR \Flush Beams\B5L(i12111)

City, Province, Postal Code: BRADFORD

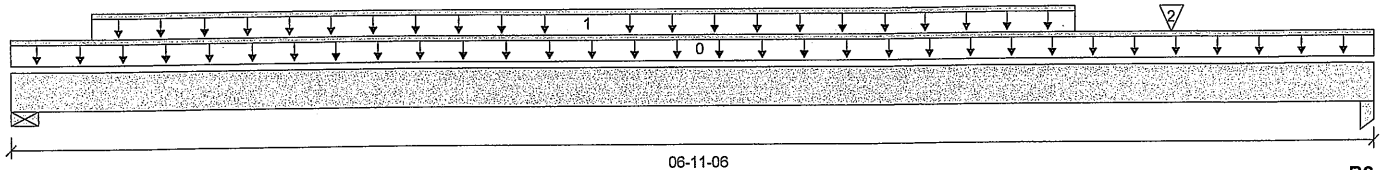
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-11-06

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	610 / 0	322 / 0		
B2, 1-3/4"	561 / 0	296 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-11-06	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-14	05-04-14	Top	192	96			n/a
2	J6(i11457)	Conc. Pt. (lbs)	L	05-10-14	05-10-14	Top	211	105			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2255 ft-lbs	11610 ft-lbs	19.4%	1	03-10-14
End Shear	1207 lbs	5785 lbs	20.9%	1	06-00-02
Total Load Deflection	L/999 (0.049")	n/a	n/a	4	03-06-06
Live Load Deflection	L/999 (0.032")	n/a	n/a	5	03-06-06
Max Defl.	0.049"	n/a	n/a	4	03-06-06
Span / Depth	8.3				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	1317 lbs	28.0%	14.1%	Spruce-Pine-Fir
B2	Column 1-3/4" x 1-3/4"	1212 lbs	60.9%	32.4%	Unspecified



**ENG NO. 12070-20**  
**STRUCTURAL**  
**COMPONENT ONLY**

### 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**

**AMENDED 2020**

### Disclosure

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



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

**PASSED**

## 1ST FLOOR \Flush Beams\B6L(i11439) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

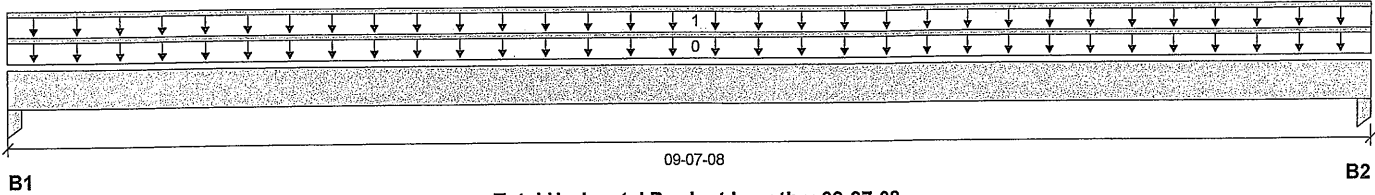
File name: S42-17 LOT 402A STD.mmdl

Description: 1ST FLOOR \Flush Beams\B6L(i11439)

Specifier:

Designer: PL

Company:



Total Horizontal Product Length = 09-07-08

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	114 / 0	80 / 0		
B2, 3-1/2"	114 / 0	80 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-07-08	Top		5			00-00-00
1	FC7 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-07-08	Top	24	12			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	593 ft-lbs	11610 ft-lbs	5.1%	1	04-09-12
End Shear	211 lbs	5785 lbs	3.6%	1	01-01-00
Total Load Deflection	L/999 (0.026")	n/a	n/a	4	04-09-12
Live Load Deflection	L/999 (0.015")	n/a	n/a	5	04-09-12
Max Defl.	0.026"	n/a	n/a	4	04-09-12
Span / Depth	11.6				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	272 lbs	6.8%	3.6%	Unspecified
B2	Column 3-1/2" x 1-3/4"	272 lbs	6.8%	3.6%	Unspecified

### Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAW 1721 -20  
STRUCTURAL  
COMPONENT ONLY

### Disclosure

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



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

**PASSED**

## 1ST FLOOR \Flush Beams\B7(i12139) (Flush Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

December 7, 2020 16:56:30

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 1ST FLOOR \Flush Beams\B7(i12139)

City, Province, Postal Code: BRADFORD

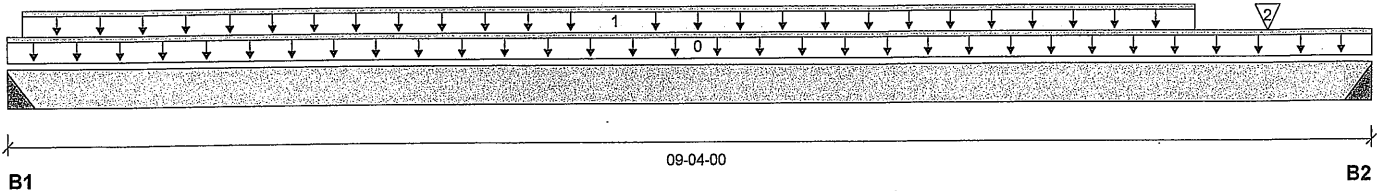
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-04-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3"	794 / 0	417 / 0		
B2, 3"	766 / 0	404 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-04-00	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-01-04	08-01-04	Top	174	87			n/a
2	J6(i12161)	Conc. Pt. (lbs)	L	08-07-04	08-07-04	Top	164	82			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3821 ft-lbs	11610 ft-lbs	32.9%	1	04-07-04
End Shear	1510 lbs	5785 lbs	26.1%	1	08-03-08
Total Load Deflection	L/694 (0.155")	n/a	34.6%	4	04-07-04
Live Load Deflection	L/999 (0.102")	n/a	n/a	5	04-07-04
Max Defl.	0.155"	n/a	n/a	4	04-07-04
Span / Depth	11.3				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 3" x 1-3/4"	1713 lbs	n/a	26.7%	HUS1.81/10
B2	Hanger 3" x 1-3/4"	1654 lbs	n/a	25.8%	HUS1.81/10

### Cautions

Header for the hanger HUS1.81/10 is a Triple 1-3/4" x 9-1/2" LVL Beam.  
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 is a Double 1-3/4" x 9-1/2" LVL Beam.

### Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



HWG NO. TAM 17272-20  
STRUCTURAL  
COMPONENT ONLY

### Disclosure

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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.

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BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

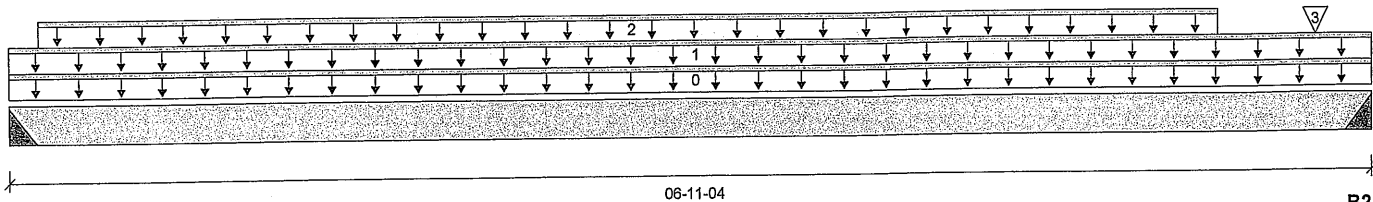
File name: S42-17 LOT 402A STD.mmdl

Description: 1ST FLOOR \Flush Beams\B8(i12126)

Specifier:

Designer: PL

Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 4"	1209 / 0	636 / 0		
B2, 4"	1228 / 0	646 / 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	06-11-04	Top	10				00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	06-11-04	Top	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-01-12	06-01-12	Top	114	56			n/a
3	J8(i12123)	Conc. Pt. (lbs)	L	06-07-12	06-07-12	Top	86	43			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3915 ft-lbs	23220 ft-lbs	16.9%	1	03-07-00
End Shear	1880 lbs	11571 lbs	16.3%	1	05-09-12
Total Load Deflection	L/999 (0.041")	n/a	n/a	4	03-05-08
Live Load Deflection	L/999 (0.027")	n/a	n/a	5	03-05-08
Max Defl.	0.041"	n/a	n/a	4	03-05-08
Span / Depth	8.1				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	2608 lbs	n/a	15.3%	HGUS410
B2	Hanger 4" x 3-1/2"	2650 lbs	n/a	15.5%	HGUS410

**Cautions**

Header for the hanger HGUS410 is a Quadruple 1-3/4" x 9-1/2" LVL Beam.  
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.  
Header for the hanger HGUS410 is a Triple 1-3/4" x 9-1/2" LVL Beam.

**Notes**

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

CONFORMS TO OBC 2012

AMENDED 2020



OWG NO. 7AM17273-20  
STRUCTURAL  
COMPONENT ONLY



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

PASSED

1ST FLOOR \Flush Beams\B8(i12126) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

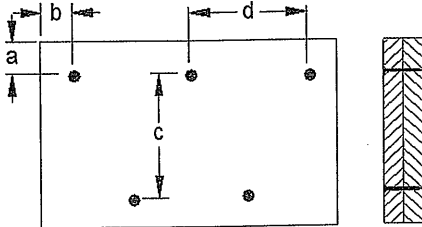
Description: 1ST FLOOR \Flush Beams\B8(i12126)

Specifier:

Designer: PL

Company:

## Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 5-1/2"

d = 8"

Calculated Side Load = 243.8 lb/ft

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL



HWB NO. TAM 1273-20  
STRUCTURAL  
COMPONENT ONLY

## Disclosure

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

**PASSED**

1ST FLOOR \Flush Beams\B9L(i11438) (Flush Beam)

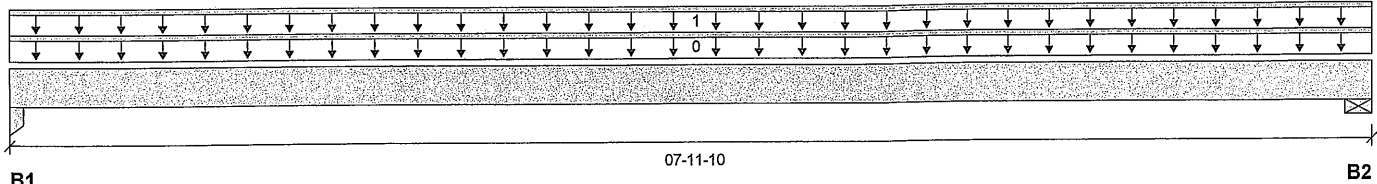
BC CALC® Member Report  
Build 7493

Dry | 1 span | No cant.

December 7, 2020 16:56:30

Job name:  
Address:  
City, Province, Postal Code: BRADFORD  
Customer:  
Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl  
Description: 1ST FLOOR \Flush Beams\B9L(i11438)  
Specifier:  
Designer: PL  
Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	60 / 0	49 / 0		
B2, 4-3/8"	63 / 0	51 / 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	07-11-10	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC6 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-11-10	Top	15	8			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	279 ft-lbs	11610 ft-lbs	2.4%	1	03-10-08
End Shear	114 lbs	5785 lbs	2.0%	1	00-11-04
Total Load Deflection	L/999 (0.008")	n/a	n/a	4	03-10-08
Live Load Deflection	L/999 (0.005")	n/a	n/a	5	03-10-08
Max Defl.	0.008"	n/a	n/a	4	03-10-08
Span / Depth	9.6				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	150 lbs	7.6%	4.0%	Unspecified
B2	Wall/Plate 4-3/8" x 1-3/4"	159 lbs	3.4%	1.7%	Spruce-Pine-Fir

## 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

AMENDED 2020



DWG NO. TAM 17274-20  
STRUCTURAL  
COMPONENT ONLY

## Disclosure

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

BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Dropped Beams\B19(i11859)

City, Province, Postal Code: BRADFORD

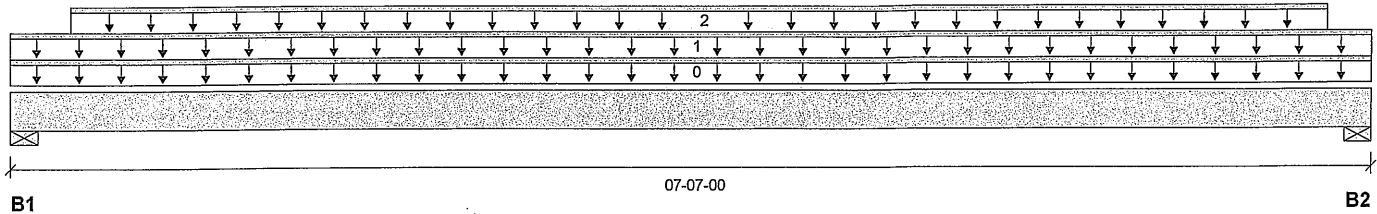
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1093 / 0	1648 / 0	1926 / 0	
B2, 3-1/2"	1120 / 0	1662 / 0	1926 / 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	07-07-00	Top		10			00-00-00
1	R1(i11859)	Unf. Lin. (lb/ft)	L	00-00-00	07-07-00	Top		281	508		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-00	07-04-00	Top	316	158			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10461 ft-lbs	23220 ft-lbs	45.1%	13	03-10-00
End Shear	4662 lbs	11571 lbs	40.3%	13	01-01-00
Total Load Deflection	L/578 (0.148")	n/a	41.5%	35	03-10-00
Live Load Deflection	L/999 (0.096")	n/a	n/a	51	03-10-00
Max Defl.	0.148"	n/a	n/a	35	03-10-00
Span / Depth	9.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	6043 lbs	37.0%	40.4%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	6086 lbs	37.2%	40.7%	Spruce-Pine-Fir

### Notes

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

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

Calculations assume unbraced length of Top: 00-10-05, Bottom: 00-10-05.

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.

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM17275-20  
STRUCTURAL  
COMPONENT ONLY



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

PASSED

## 2ND FLOOR \Dropped Beams\B19(i11859) (Dropped Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

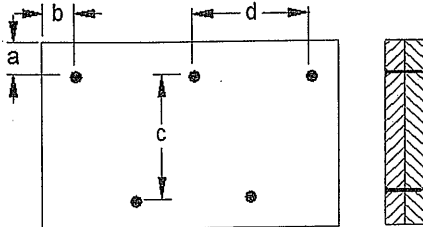
Description: 2ND FLOOR \Dropped Beams\B19(i11859)

Specifier:

Designer: PL

Company:

### Connection Diagram: Full Length of Member



a minimum = 2"

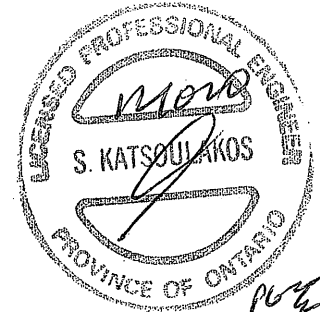
b minimum = 3"

c = 5-1/2"

d = 8"

Connectors are: 1/2" x 3" Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM/7275-20

STRUCTURAL

COMPONENT ONLY

### Disclosure

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BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Dropped Beams\B20(i12334)

City, Province, Postal Code: BRADFORD

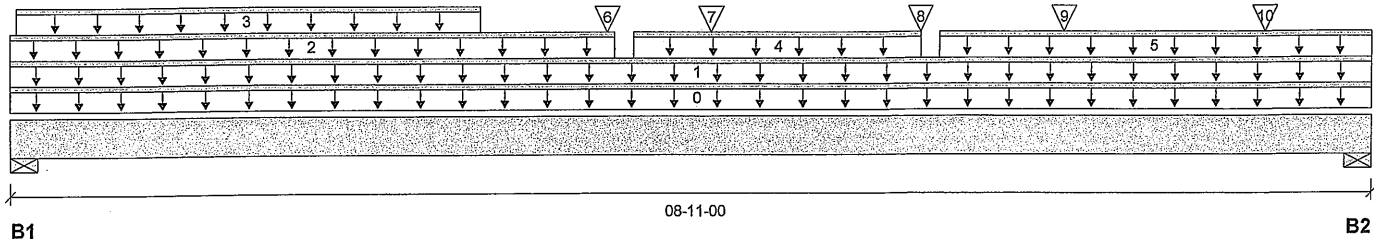
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 08-11-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	952 / 0	1552 / 0	1781 / 0	
B2, 3-1/2"	948 / 0	1974 / 0	2836 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-11-00	Top		10			00-00-00
1	R1(i12335)	Unf. Lin. (lb/ft)	L	00-00-00	08-11-00	Top		81			n/a
2	R1(i12335)	Unf. Lin. (lb/ft)	L	00-00-00	03-11-00	Top		45	133		n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-08	03-00-08	Top	215	108			n/a
4	R1(i12335)	Unf. Lin. (lb/ft)	L	04-00-08	05-11-00	Top		154	394		n/a
5	R1(i12335)	Unf. Lin. (lb/ft)	L	06-00-08	08-11-00	Top		154	394		n/a
6	-	Conc. Pt. (lbs)	L	03-10-07	03-10-07	Top	215	382	709		n/a
7	J4(i11942)	Conc. Pt. (lbs)	L	04-06-08	04-06-08	Top	215	108			n/a
8	-	Conc. Pt. (lbs)	L	05-10-15	05-10-15	Top	251	711	1515		n/a
9	J4(i12008)	Conc. Pt. (lbs)	L	06-10-08	06-10-08	Top	287	143			n/a
10	J4(i12008)	Conc. Pt. (lbs)	L	08-02-08	08-02-08	Top	287	143			n/a

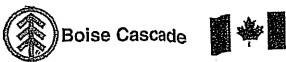
**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	15992 ft-lbs	23220 ft-lbs	68.9%	13	05-00-08
End Shear	6478 lbs	11571 lbs	56.0%	13	07-10-00
Total Load Deflection	L/338 (0.301")	n/a	71.1%	35	04-06-08
Live Load Deflection	L/513 (0.198")	n/a	70.2%	51	04-06-08
Max Defl.	0.301"	n/a	n/a	35	04-06-08
Span / Depth	10.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	5563 lbs	34.0%	37.2%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	7670 lbs	46.9%	51.3%	Spruce-Pine-Fir



DWG NO. TAM/2276-20  
 STRUCTURAL  
 COMPONENT ONLY



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
**2ND FLOOR \Dropped Beams\B20(i12334) (Dropped Beam)**

**PASSED**

December 7, 2020 16:56:30

BC CALC® Member Report  
Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

Description: 2ND FLOOR \Dropped Beams\B20(i12334)

Specifier:

Designer: PL

Company:

**Notes**

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

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

Calculations assume unbraced length of Top: 01-02-05, Bottom: 01-02-05.

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.

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

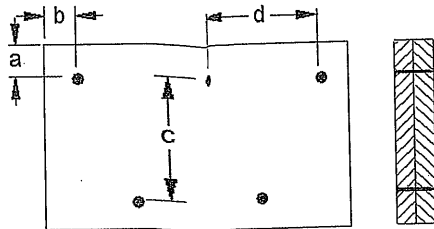
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**

**AMENDED 2020**

**Connection Diagram: Full Length of Member**



a minimum = 2"  
b minimum = 3"

c = 5-1/2"  
d = 2-1/2"

Connectors are:

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



**DWG NO. TAM 17226-20**  
**STRUCTURAL**  
**COMPONENT ONLY**

**Disclosure**

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

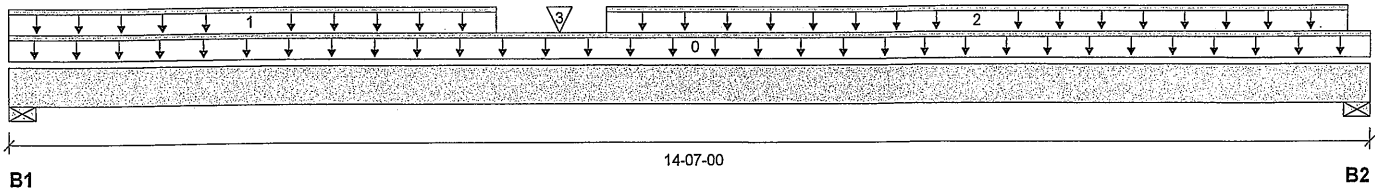
BC CALC® Member Report  
 Build 7493

Dry | 1 span | No cant.

December 7, 2020 16:56:30

Job name:  
 Address:  
 City, Province, Postal Code: BRADFORD  
 Customer:  
 Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl  
 Description: 2ND FLOOR \Flush Beams\B14(i11841)  
 Specifier:  
 Designer: PL  
 Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	4066 / 0	2186 / 0		
B2, 3-1/2"	3883 / 0	2096 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-07-00	Top		21			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	05-02-00	Top	563	281			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	06-04-00	14-04-00	Top	544	272			n/a
3	-	Conc. Pt. (lbs)	L	05-10-00	05-10-00	Top	685	342			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	29644 ft-lbs	75349 ft-lbs	39.3%	1	07-02-00
End Shear	7578 lbs	25578 lbs	29.6%	1	13-01-08
Total Load Deflection	L/541 (0.313")	n/a	44.3%	4	07-02-00
Live Load Deflection	L/833 (0.203")	n/a	43.2%	5	07-02-00
Max Defl.	0.313"	n/a	n/a	4	07-02-00
Span / Depth	12.1				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 5-1/4"	8832 lbs	78.1%	39.4%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 5-1/4"	8445 lbs	74.7%	37.7%	Spruce-Pine-Fir

**Notes**

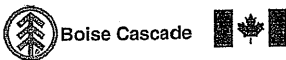
Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian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

**AMENDED 2020**



BWR NO. TAM 17277-20  
 STRUCTURAL  
 COM. ONENT ONLY



Triple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP  
2ND FLOOR \Flush Beams\B14(i11841) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

December 7, 2020 16:56:30

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Flush Beams\B14(i11841)

City, Province, Postal Code: BRADFORD

Specifier:

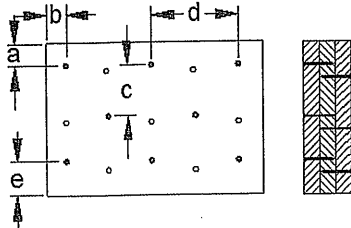
Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"  
b minimum = 3"

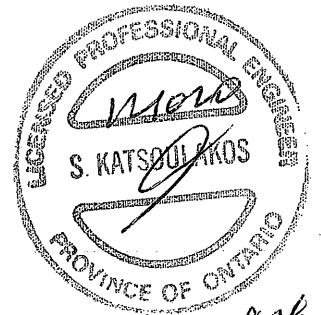
c = 5"  
d = 3"  
e minimum = 3"

Calculated Side Load = 828.8 lb/ft

Nailing applies to both sides of the member

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



ENG NO. TAM 17277-20  
STRUCTURAL  
COMPONENT ONLY

Disclosure

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

BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Flush Beams\B15(i12325)

City, Province, Postal Code: BRADFORD

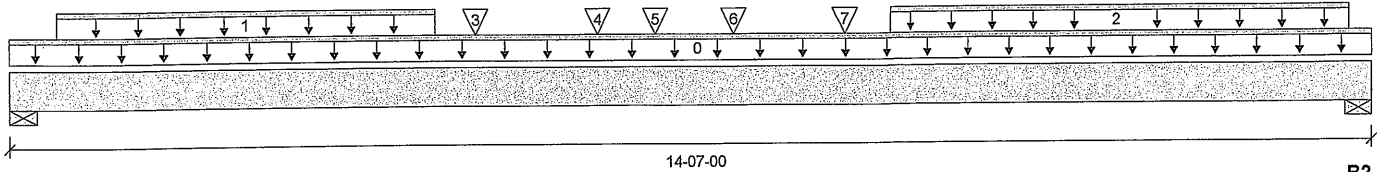
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 14-07-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	3140 / 0	1752 / 0		
B2, 3-1/2"	3826 / 0	2088 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-07-00	Top		21			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-00	04-06-00	Top	363	181			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	09-04-00	14-04-00	Top	569	284			n/a
3	-	Conc. Pt. (lbs)	L	04-11-02	04-11-02	Top	471	235			n/a
4	-	Conc. Pt. (lbs)	L	06-02-11	06-02-11	Top	684	395			n/a
5	J2(i11949)	Conc. Pt. (lbs)	L	06-10-00	06-10-00	Top	253	127			n/a
6	-	Conc. Pt. (lbs)	L	07-07-15	07-07-15	Top	650	324			n/a
7	-	Conc. Pt. (lbs)	L	08-10-00	08-10-00	Top	611	305			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	28419 ft-lbs	75349 ft-lbs	37.7%	1	07-06-00
End Shear	7576 lbs	25578 lbs	29.6%	1	13-01-08
Total Load Deflection	L/571 (0.297")	n/a	42.0%	4	07-06-00
Live Load Deflection	L/887 (0.191")	n/a	40.6%	5	07-06-00
Max Defl.	0.297"	n/a	n/a	4	07-06-00
Span / Depth	12.1				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 5-1/4"	6899 lbs	61.0%	30.8%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 5-1/4"	8349 lbs	73.9%	37.2%	Spruce-Pine-Fir

### 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

AMENDED 2020



DWG NO. TAM 1727B-20  
STRUCTURAL  
COMPONENT ONLY





Triple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP  
2ND FLOOR \Flush Beams\B15(i12325) (Flush Beam)

PASSED

BC CALC® Member Report  
Build 7493

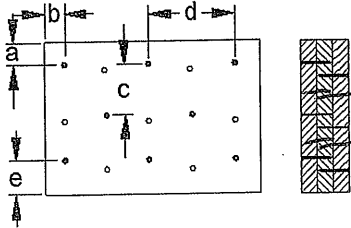
Dry | 1 span | No cant.

December 7, 2020 16:56:30

Job name:  
Address:  
City, Province, Postal Code: BRADFORD  
Customer:  
Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl  
Description: 2ND FLOOR \Flush Beams\B15(i12325)  
Specifier:  
Designer: PL  
Company:

Connection Diagram: Full Length of Member



5 rows

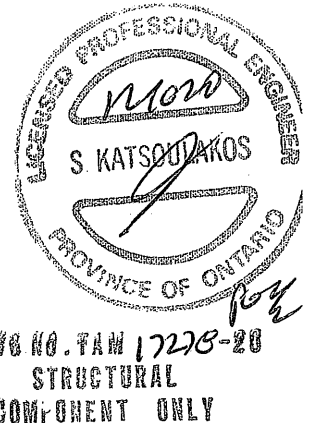
a minimum = 1"  
b minimum = 3"  
c = 5"  
d = 8"  
e minimum = 3"

Calculated Side Load = 1003.5 lb/ft

Nailing applies to both sides of the member

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL



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

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLOOR \Flush Beams\B16(i12330) (Flush Beam)**

December 7, 2020 16:56:30

BC CALC® Member Report

Dry | 1 span | No cant.

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Flush Beams\B16(i12330)

City, Province, Postal Code: BRADFORD

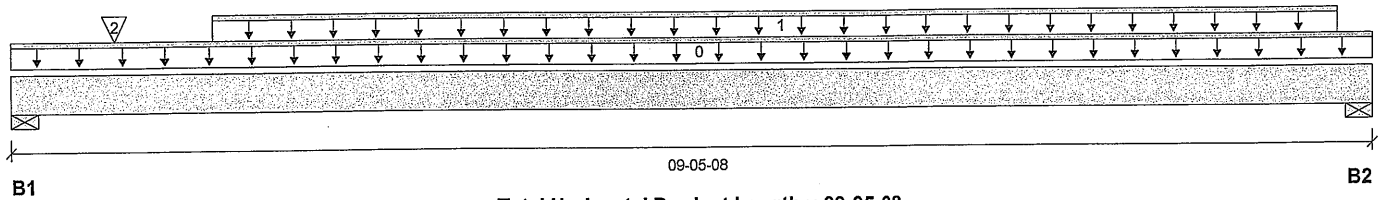
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-05-08

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2621 / 0	1358 / 0		
B2, 3-1/2"	2464 / 0	1279 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-05-08	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	09-02-08	Top	564	282			n/a
2	-	Conc. Pt. (lbs)	L	00-08-08	00-08-08	Top	669	334			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11740 ft-lbs	23220 ft-lbs	50.6%	1	04-08-08
End Shear	4719 lbs	11571 lbs	40.8%	1	08-04-08
Total Load Deflection	L/459 (0.231")	n/a	52.3%	4	04-10-00
Live Load Deflection	L/697 (0.152")	n/a	51.6%	5	04-10-00
Max Defl.	0.231"	n/a	n/a	4	04-10-00
Span / Depth	11.2				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	5628 lbs	47.5%	24.0%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	5295 lbs	70.3%	35.4%	Spruce-Pine-Fir

**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.

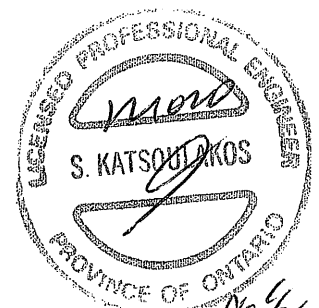
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



0000 NO. TAN 17229-20  
STRUCTURAL  
COM-CHENT ONLY



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

PASSED

## 2ND FLOOR \Flush Beams\B16(i12330) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

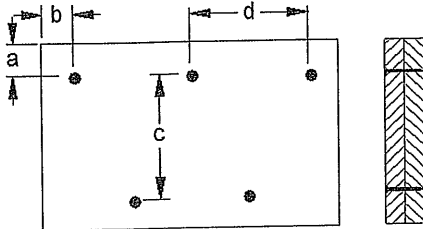
Description: 2ND FLOOR \Flush Beams\B16(i12330)

Specifier:

Designer: PL

Company:

### Connection Diagram: Full Length of Member



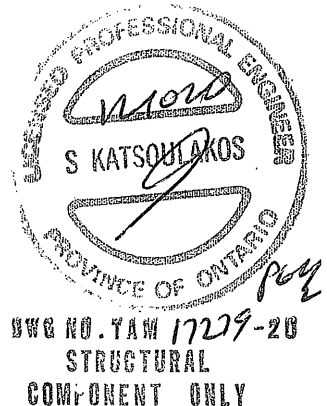
a minimum = 2"  
b minimum = 3"

c = 5-1/2"  
d = 10-0"

Calculated Side Load = 682.8 lb/ft

Connectors are: 16d  $\frac{1}{4}$ " Nails

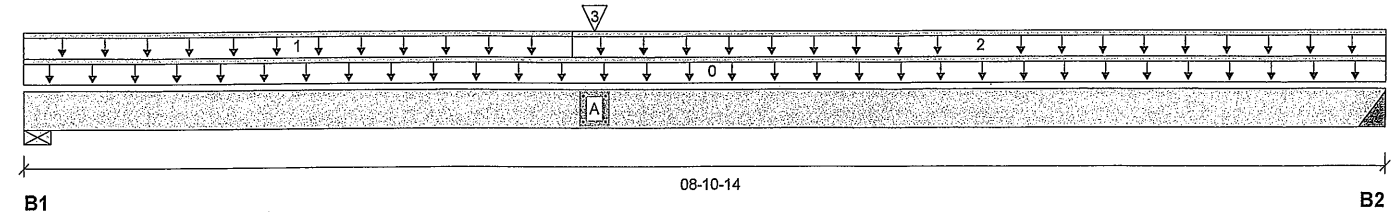
3-1/2" ARDOX SPIRAL



### Disclosure

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



Total Horizontal Product Length = 08-10-14

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	432 / 0	280 / 0		
B2, 4"	360 / 0	235 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-10-14	Top	10				00-00-00
1	FC9 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	Top	14	7			n/a
2	FC9 Floor Material	Unf. Lin. (lb/ft)	L	03-06-08	08-10-14	Top	33	17			n/a
3	B18(i12317)	Conc. Pt. (lbs)	L	03-08-04	03-08-04	Top	563	315			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3001 ft-lbs	23220 ft-lbs	12.9%	1	03-08-04
End Shear	945 lbs	11571 lbs	8.2%	1	01-03-00
Total Load Deflection	L/999 (0.044")	n/a	n/a	4	04-03-15
Live Load Deflection	L/999 (0.027")	n/a	n/a	5	04-03-15
Max Defl.	0.044"	n/a	n/a	4	04-03-15
Span / Depth	10.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	998 lbs	8.4%	4.3%	Spruce-Pine-Fir
B2	Hanger 4" x 3-1/2"	834 lbs	n/a	4.9%	HGUS410

**Cautions**

Header for the hanger HGUS410 is a Triple 1-3/4" x 14" LVL Beam.

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

**Notes**

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

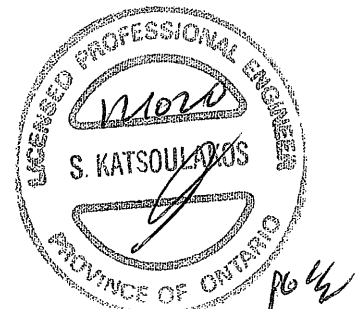
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020


NO. TAM 17280-20  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

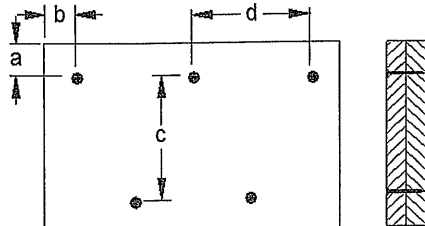
Description: 2ND FLOOR \Flush Beams\B17(i12322)

Specifier:

Designer: PL

Company:

## Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 5-1/2"

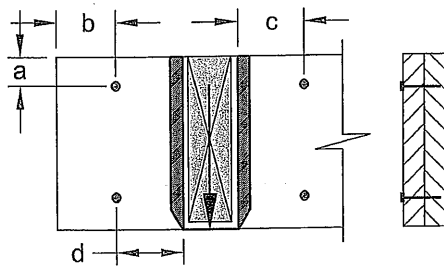
d = 6"

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

## Connection Diagrams: Concentrated Side Loads

Connection Tag: A

Applies to load tag(s): 3



a minimum = 2"

b minimum = 4"

c minimum = 4"

d maximum = 12"

Connectors are: 16d 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®

BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Flush Beams\B18(i12317)

City, Province, Postal Code: BRADFORD

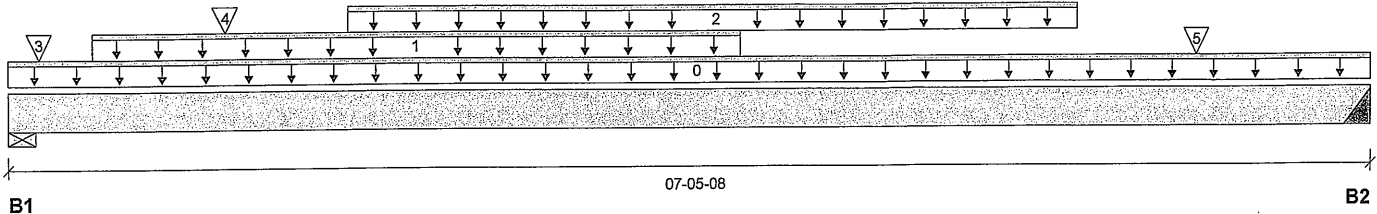
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 07-05-08

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1087 / 0	579 / 0		
B2, 4"	593 / 0	331 / 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	07-05-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-05-08	03-11-08	Top	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-00	05-10-00	Top	113	56			n/a
3	J5(i11929)	Conc. Pt. (lbs)	L	00-02-00	00-02-00	Top	111	56			n/a
4	J5(i11840)	Conc. Pt. (lbs)	L	01-02-00	01-02-00	Top	131	65			n/a
5	J5(i11955)	Conc. Pt. (lbs)	L	06-06-00	06-06-00	Top	138	69			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3142 ft-lbs	23220 ft-lbs	13.5%	1	03-04-00
End Shear	1665 lbs	11571 lbs	14.4%	1	01-03-00
Total Load Deflection	L/999 (0.036")	n/a	n/a	4	03-08-00
Live Load Deflection	L/999 (0.023")	n/a	n/a	5	03-08-00
Max Defl.	0.036"	n/a	n/a	4	03-08-00
Span / Depth	8.6				

			Demand/Resistance Support	Demand/Resistance Member		
Bearing Supports	Dim. (LxW)	Demand			Material	
B1	Wall/Plate	5-1/2" x 3-1/2"	2355 lbs	19.9%	10.0%	Spruce-Pine-Fir
B2	Hanger	4" x 3-1/2"	1303 lbs	n/a	7.6%	HGUS410

### Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

### Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



BWG NO. TAM 17201-20  
STRUCTURAL  
COMPONENT ONLY



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

PASSED

## 2ND FLOOR \Flush Beams\B18(i12317) (Flush Beam)

Dry | 1 span | No cant.

December 7, 2020 16:56:30

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: BRADFORD

Customer:

Code reports: CCMC 12472-R

File name: S42-17 LOT 402A STD.mmdl

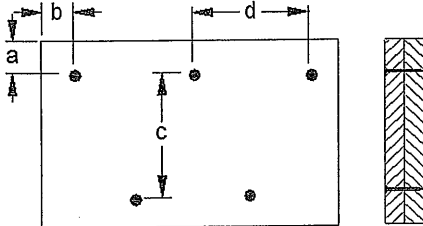
Description: 2ND FLOOR \Flush Beams\B18(i12317)

Specifier:

Designer: PL

Company:

### Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 6"

Calculated Side Load = 320.3 lb/ft

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



ENG NO. TAM/12281-20

STRUCTURAL

COMPONENT ONLY

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BC CALC® Member Report

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Flush Beams\B21(i12043)

City, Province, Postal Code: BRADFORD

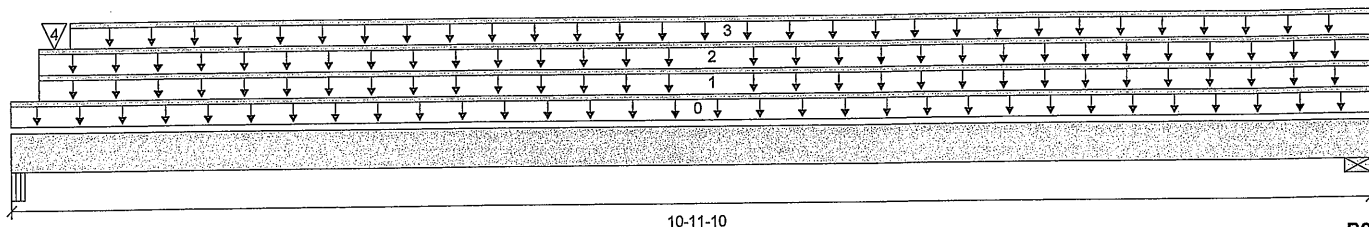
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



B1

B2

Total Horizontal Product Length = 10-11-10

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

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	110 / 0	932 / 0	1182 / 0	
B2, 4-3/8"	116 / 0	813 / 0	747 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-11-10	Top		10			00-00-00
1	E27(i11472)	Unf. Lin. (lb/ft)	L	00-02-12	10-11-10	Top		81			n/a
2	FC9 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	10-11-10	Top	21	10			n/a
3	E27(i11472)	Unf. Lin. (lb/ft)	L	00-05-12	10-11-10	Top		45	133		n/a
4	E27(i11472)	Conc. Pt. (lbs)	L	00-04-04	00-04-04	Top		186	534		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5641 ft-lbs	23220 ft-lbs	24.3%	13	05-05-00
End Shear	2055 lbs	11571 lbs	17.8%	13	01-00-04
Total Load Deflection	L/755 (0.167")	n/a	31.8%	35	05-05-00
Live Load Deflection	L/999 (0.086")	n/a	n/a	51	05-05-00
Max Defl.	0.167"	n/a	n/a	35	05-05-00
Span / Depth	13.3				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 2-3/4" x 3-1/2"	3048 lbs	74.1%	26.0%	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	2253 lbs	23.9%	12.1%	Spruce-Pine-Fir

### 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.

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

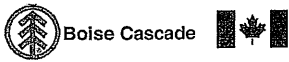
CONFORMS TO OBC 2012

AMENDED 2020



OWG NO. TAM1728220  
STRUCTURAL  
COMPONENT ONLY





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

PASSED

## 2ND FLOOR \Flush Beams\B21(i12043) (Flush Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

December 7, 2020 16:56:30

Build 7493

Job name:

File name: S42-17 LOT 402A STD.mmdl

Address:

Description: 2ND FLOOR \Flush Beams\B21(i12043)

City, Province, Postal Code: BRADFORD

Specifier:

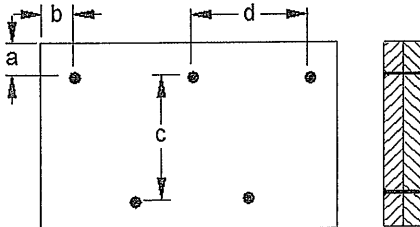
Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:

### Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 8"

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 17262-20  
STRUCTURAL  
COMMENT ONLY

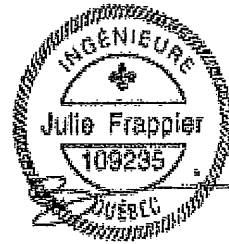
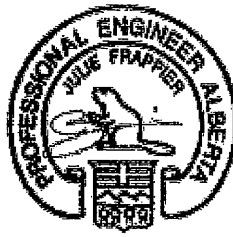
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## Maximum Floor Spans

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

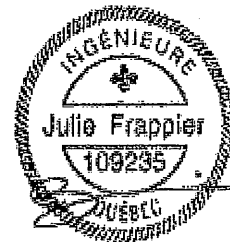
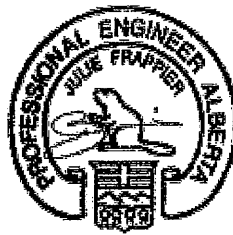


Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

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

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



## Maximum Floor Spans

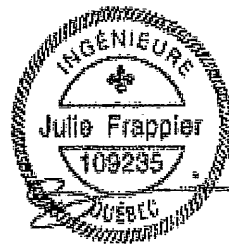
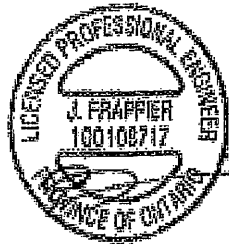
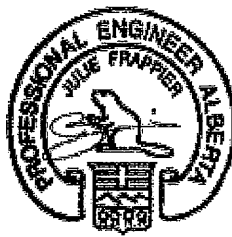
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

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

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



## Maximum Floor Spans

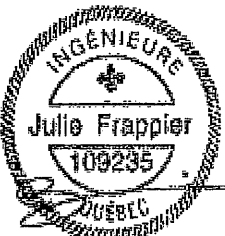
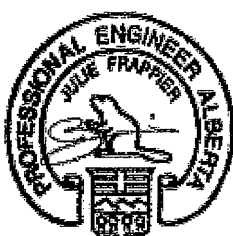
Live Load = 40 psf, Dead Load = 30 psf  
Simple Spans, L/480 Deflection Limit  
5/8" OSB G&N Sheathing

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

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

Maximum Floor Spans

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

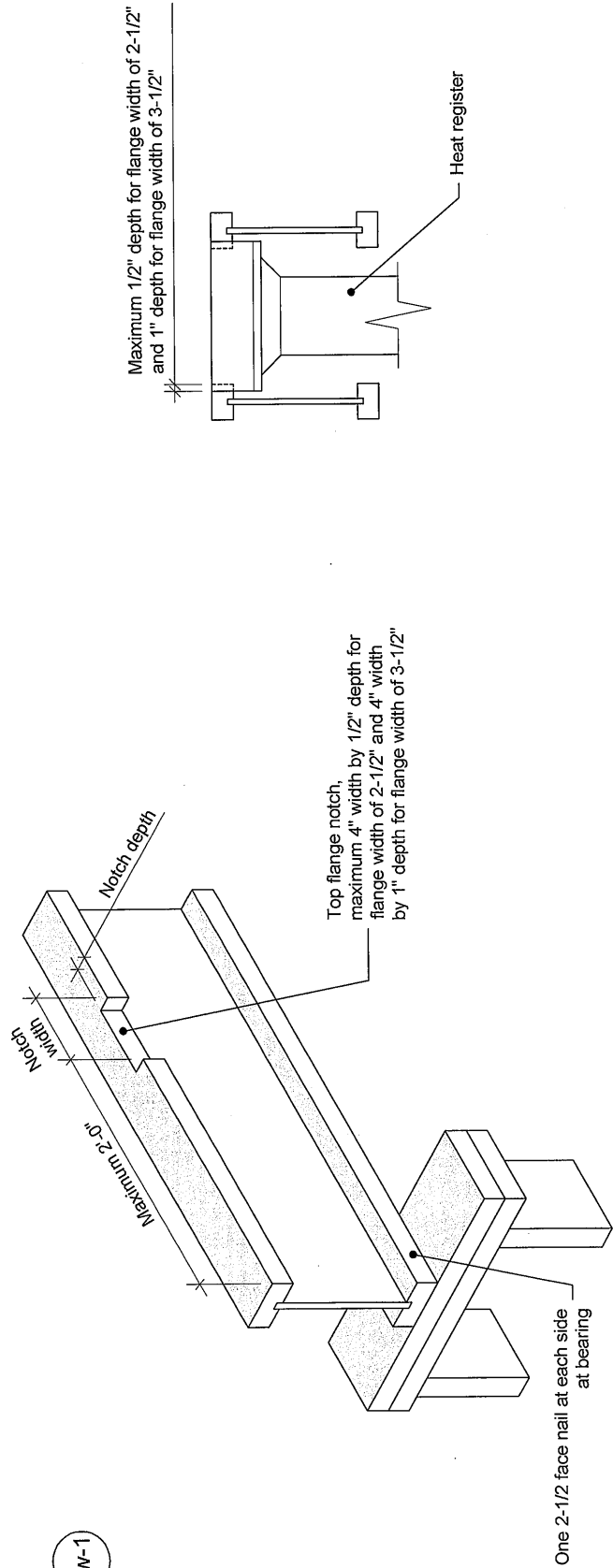


Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"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

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

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

1w-1



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

This document supersedes all previous versions. If the document has been in effect for more than one year, consult [nordic.ca](http://nordic.ca) or contact Nordic Structures.  
All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.144 inch for 3-inch nails. Individual components not shown to scale for clarity.

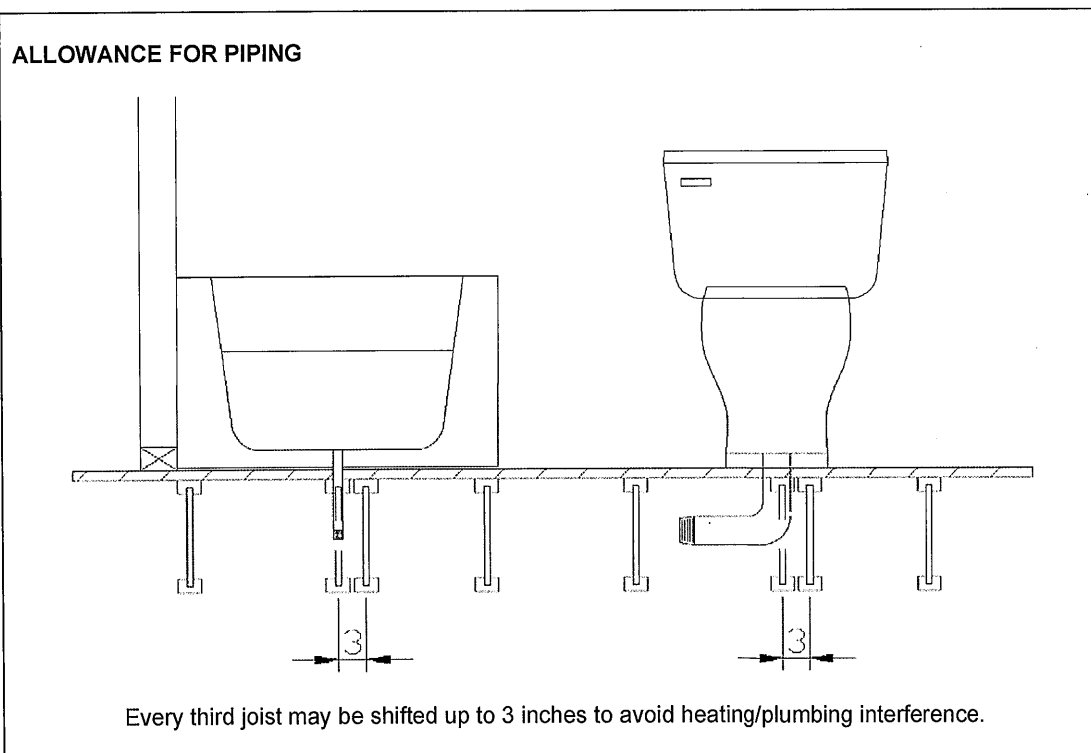
<b>NORDIC</b> STRUCTURES	T 514-871-8526 1 866 817-3418		nordic.ca		DOCUMENT	
	Notch in I-joist for Heat Register		-		DATE	
	CATEGORY		I-joist - Typical Floor Framing and Construction Details		NUMBER	
				2018-04-10		1w-1

## Allowance for Piping (Installation Notes)

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

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

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



Revised April 12, 2012