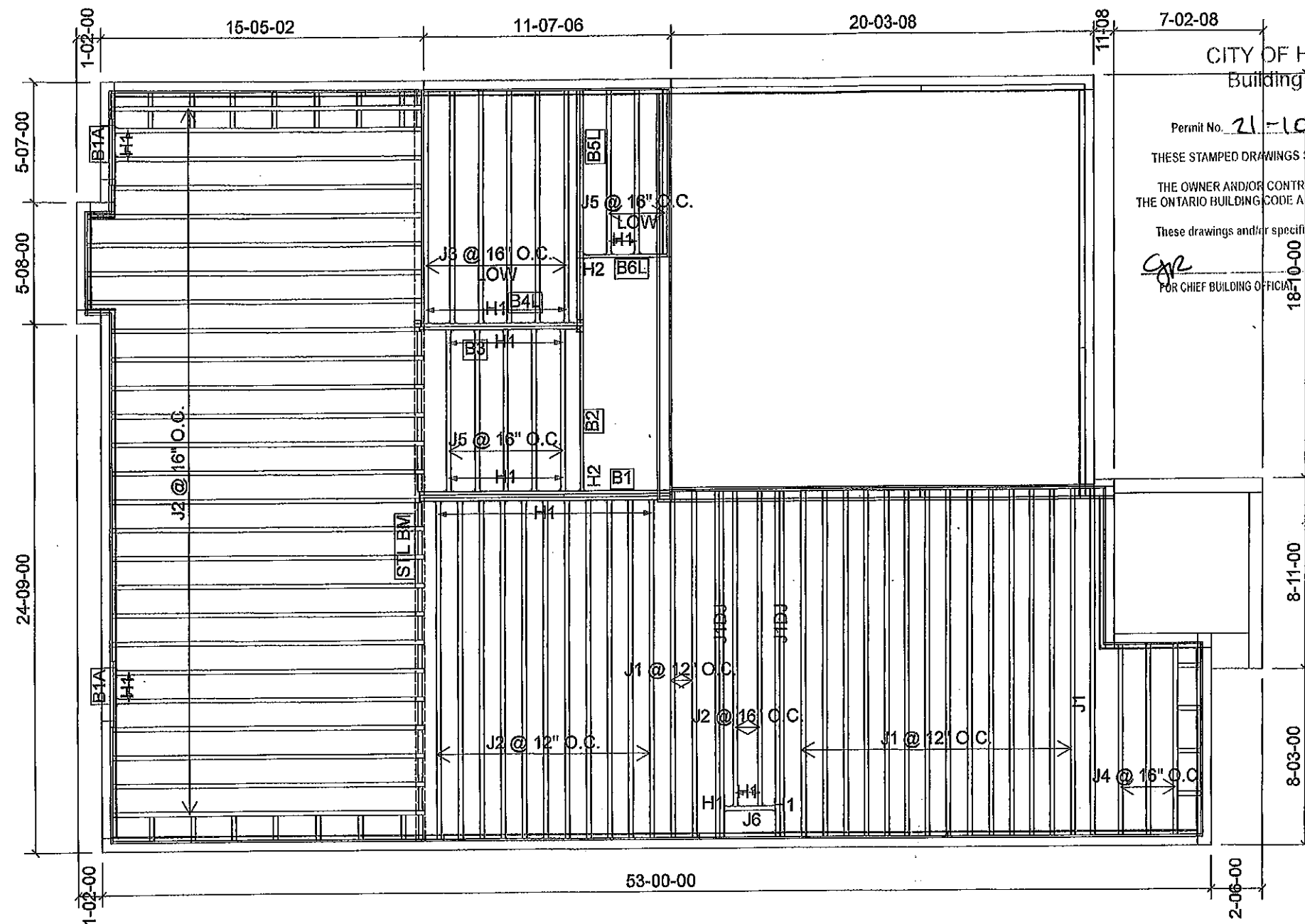




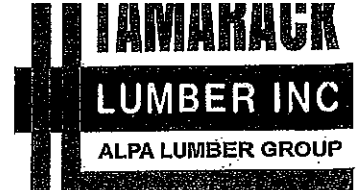
CITY OF HAMILTON
Building Division

Permit No. 21-105911

THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE

THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAWS

These drawings and/or specifications have been reviewed by
CJR FOR CHIEF BUILDING OFFICIAL DATE FEB 19/21



FROM PLAN DATED:

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS PH 3

MODEL: MOUNTAINASH 3

ELEVATION: 3

LOT: 155

CITY: WATERDOWN

SALESMAN: MARIO DICIANO

DESIGNER: AJ

REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING CANT' OVER BRICK 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 TILE** APPLICATION AS PER O.B.C 9.30.6.

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

SUBFLOOR: 3/4" GLUED AND NAILED

Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	17	MFD
J1DJ	18-00-00	9 1/2" NI-40x	2	4	MFD
J2	16-00-00	9 1/2" NI-40x	1	39	MFD
J3	12-00-00	9 1/2" NI-40x	1	6	MFD
J4	10-00-00	9 1/2" NI-40x	1	3	MFD
J5	8-00-00	9 1/2" NI-40x	1	8	MFD
J6	4-00-00	9 1/2" NI-40x	1	1	MFD
B5L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3	MFD
B2	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B4L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B6L	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B1A	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	4	MFD

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

CITY OF HAMILTON
BUILDING DIVISION
Planning & Development Department

FEB 4 2021

REC'D BY _____ DATE _____

REF'D TO _____ DATE _____

1st FLOOR

DECK CONDITION

FROM PLAN DATED:

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS PH 3

MODEL: MOUNTAINASH 3

ELEVATION: 3

LOT: 155

CITY: WATERDOWN

SALESMAN: MARIO DICIANO

DESIGNER: AJ

REVISION:

NOTES:

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

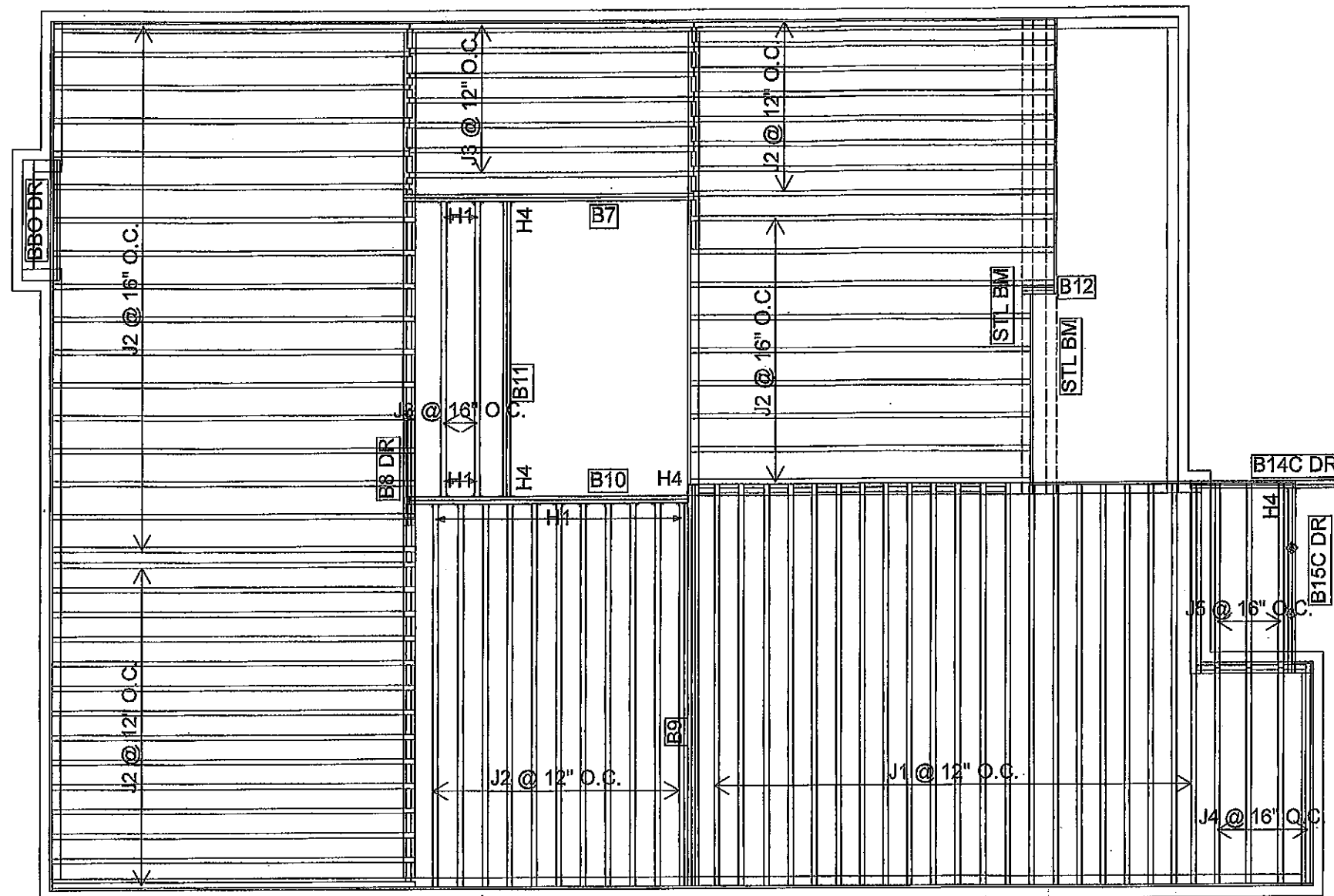
DEAD LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2020-02-14

2nd FLOOR

OPT 5 BEDROOM



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	21	MFD
J2	16-00-00	9 1/2" NI-40x	1	59	MFD
J3	12-00-00	9 1/2" NI-40x	1	9	MFD
J4	10-00-00	9 1/2" NI-40x	1	4	MFD
J5	8-00-00	9 1/2" NI-40x	1	3	MFD
B9	18-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	3	3	MFD
B10	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	MFD
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	MFD
B7	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	MFD
B14C DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	MFD
B15C DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	MFD
B8 DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	3	3	MFD
B12	2-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	MFD

Connector Summary		
Qty	Manuf	Product
15	H1	IUS2.56/9.5
3	H4	HGUS410
1	H4	HGUS410

NORDIC

ENGINEERED WOOD

INSTALLATION GUIDE

FOR RESIDENTIAL FLOORS

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

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

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.

Disributed by:

2015-04-16

SAFETY AND HANDLING 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 bracing at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. 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 diaphragm panels, rim board, or cross-bracing.
- 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 State Design per CAN/CSA C30-09 Standard, and NRC 2010.

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

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans On centre spacing				Multiple spans On centre spacing			
		12'	12'	19.2'	24'	12'	16'	19.2'	24'
9-1/2"	N-20	13.1'	14.2'	15.9'	17.5'	15.4'	14.0'	14.7'	
	N-40	16.1'	19.2'	14.8'	14.9'	17.5'	16.5'	15.0'	15.5'
	N-60	16.5'	15.4'	14.0'	14.1'	17.1'	16.7'	16.0'	16.1'
	N-80	17.1'	16.1'	15.4'	15.7'	18.1'	17.4'	16.9'	16.1'
11-7/8"	N-20	16.1'	16.0'	15.5'	15.6'	18.4'	17.3'	16.8'	16.7'
	N-40	18.1'	17.0'	16.5'	16.6'	20.0'	18.8'	17.9'	17.9'
	N-60	18.4'	17.3'	16.7'	16.9'	20.3'	18.9'	18.0'	18.1'
	N-80	19.5'	18.0'	17.4'	17.5'	21.4'	19.1'	19.0'	19.1'
14"	N-20	19.9'	18.3'	17.6'	17.7'	21.9'	20.2'	19.3'	19.4'
	N-40	20.2'	18.7'	17.0'	17.1'	22.3'	20.7'	19.8'	19.9'
	N-60	20.4'	18.9'	17.1'	17.1'	22.5'	20.9'	19.9'	20.0'
	N-80	20.4'	18.9'	17.1'	17.1'	22.5'	20.9'	19.9'	20.0'
16"	N-20	22.1'	21.1'	20.9'	20.9'	24.0'	22.1'	21.1'	21.1'
	N-40	22.1'	21.1'	21.1'	21.1'	24.0'	22.1'	21.1'	21.1'
	N-60	22.1'	21.1'	21.1'	21.1'	24.0'	22.1'	21.1'	21.1'
	N-80	22.1'	21.1'	21.1'	21.1'	24.0'	22.1'	21.1'	21.1'

CGIC EVALUATION REPORT 13023-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 minimum spans.
- Web stiffeners are required when the sides of the hangers do not laterally brace the top flange of the I-joist.

Top Mount
Face Mount
Skewed

WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

CONCENTRATED LOAD (Load stiffener)
END BEARING (Bearing stiffener)

See table below for web 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

Chondos Chibougamou Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from the raw log to the 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, 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 applications 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 squish blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
- Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products - such as rim board - must be cut to fit between the I-joists, and on I-joist-compatible depth selected.
- Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
- If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
- Nail spacing: 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.

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

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

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

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

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

1d Backer block (use if hanger load exceeds 240 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block fits. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

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

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

1g Multiple I-joist header with full depth filler block shown. Nordic Lom or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

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

1i Attach I-joist to top plate per detail 1b.

1j Attach I-joist to top plate per detail 1b.

1k Attach I-joist to top plate per detail 1b.

1l Attach I-joist to top plate per detail 1b.

1m Attach I-joist to top plate per detail 1b.

1n Attach I-joist to top plate per detail 1b.

1o Attach I-joist to top plate per detail 1b.

1p Attach I-joist to top plate per detail 1b.

1q Attach I-joist to top plate per detail 1b.

1r Attach I-joist to top plate per detail 1b.

1s Attach I-joist to top plate per detail 1b.

1t Attach I-joist to top plate per detail 1b.

1u Attach I-joist to top plate per detail 1b.

1v Attach I-joist to top plate per detail 1b.

1w Attach I-joist to top plate per detail 1b.

1x Attach I-joist to top plate per detail 1b.

1y Attach I-joist to top plate per detail 1b.

1z Attach I-joist to top plate per detail 1b.

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O305 or CAN/CSA-A437 Standard.

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

1a One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1b One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1c One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1d One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1e One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1f One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1g One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1h One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1i One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1j One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1k One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1l One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1m One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1n One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1o One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1p One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1q One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1r One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1s One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1t One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1u One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1v One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

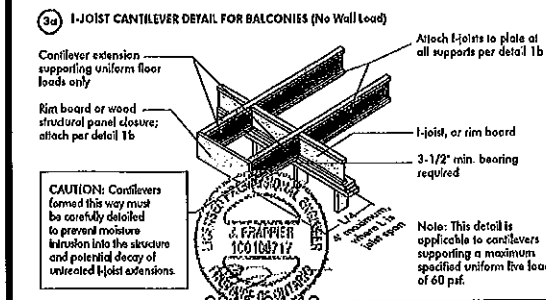
1w One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1x One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

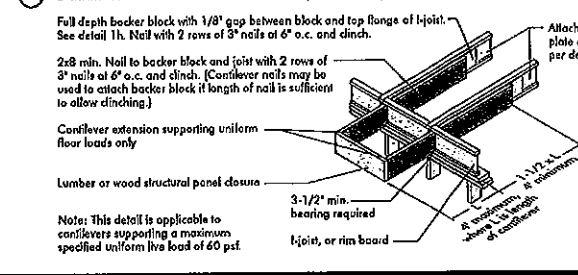
1y One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

1z One 2-1/2" nail at top and bottom flange. Two 2-1/2" nails from each web to lumber plate. Two 2-1/2" nails from each web to lumber plate. One 2-1/2" nail on side only. 2-1/2" nails at 6" o.c.

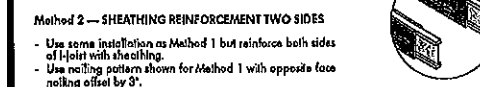
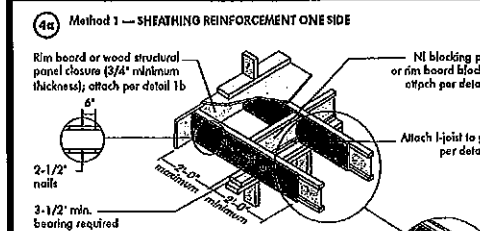
CANTILEVER DETAILS FOR BALCONIES (No Wall Load)



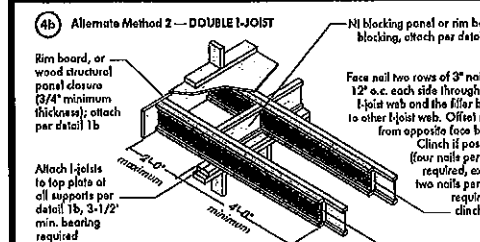
LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



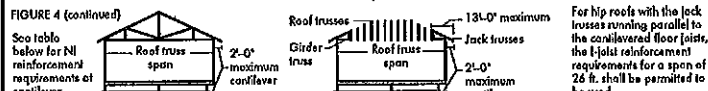
CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4\"/>



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange wider than 3 inches place an additional row of 3\"/>



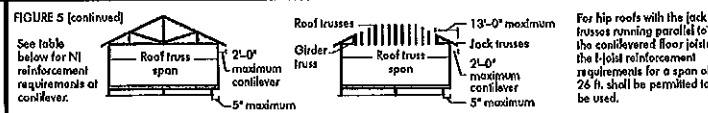
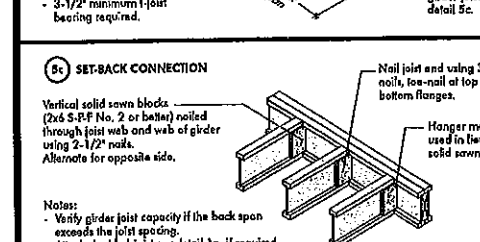
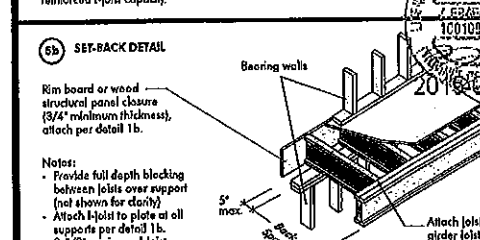
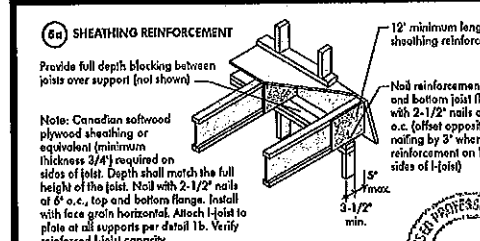
For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	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	1	2	X	N	2	X	X
	30	N	N	1	X	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	2	X	X	1	X	X	X
	34	N	N	1	2	N	2	X	X	1	X	X	X
11-7/8"	26	N	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	N	N	1	2	N	N	1	2
14"	26	N	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	N	N	1	2	N	N	1	2
16"	26	N	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	N	N	1	2	N	N	1	2

1. N = No reinforcement required.
- 1 = NI reinforced with 3/4\"/>

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



For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	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	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X	1	X	X	X
	34	2	X	X	X	2	X	X	X	1	X	X	X
11-7/8"	26	N	2	X	X	N	2	X	X	N	2	X	X
	30	N	2	X	X	N	2	X	X	N	2	X	X
	32	N	2	X	X	N	2	X	X	N	2	X	X
	34	N	2	X	X	N	2	X	X	N	2	X	X
14"	26	N	2	X	X	N	2	X	X	N	2	X	X
	30	N	2	X	X	N	2	X	X	N	2	X	X
	32	N	2	X	X	N	2	X	X	N	2	X	X
	34	N	2	X	X	N	2	X	X	N	2	X	X
16"	26	N	2	X	X	N	2	X	X	N	2	X	X
	30	N	2	X	X	N	2	X	X	N	2	X	X
	32	N	2	X	X	N	2	X	X	N	2	X	X
	34	N	2	X	X	N	2	X	X	N	2	X	X

1. N = No reinforcement required.
- 1 = NI reinforced with 3/4\"/>

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centerline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centered on the middle of the web.
4. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. 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.

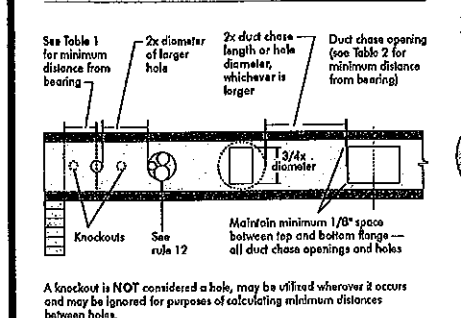
TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Joist Depth (in.)	Joist Series	Minimum distance from inside face of any support to center of hole (in.)											
		3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/8	11
9-1/2"	N-20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-22	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-26	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
11-7/8"	N-28	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-30	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-32	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-34	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
14"	N-36	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-38	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-42	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
16"	N-44	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-46	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-48	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

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

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

FIGURE 7 FIELD-CUT HOLE LOCATOR



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

Never drill, cut, or notch the flange, or over-cut the web.
Holes in webs should be cut with a sharp saw.
For rectangular holes, avoid over-cutting the corners, as this causes 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 cut between the holes is another good method to minimize damage to the I-joist.

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

Joist Depth (in.)	Joist Series	Minimum distances from inside face of any support to center of opening (in.)											
		3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/8	11
9-1/2"	N-20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-22	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-24	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-26	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
11-7/8"	N-28	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-30	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-32	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-34	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
14"	N-36	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-38	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-42	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
16"	N-44	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-46	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-48	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	N-50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

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

INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
2. Snap a chalk line across the I-joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
7. After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joist flanges.
8. Tap the second row of panels into place, using a block to protect groove edges.
9. Stagger end joints in each succeeding row of panels. A 1/8-inch gap is recommended. Use a spacer tool or an 2-1/2\"/>

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges	Interior Supports
16	3/8	2"	1-3/4"	2"	6'	12'
20	5/8	2"	1-3/4"	2"	6'	12'
24	3/4	2"	1-3/4"	2"	6'	12'



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

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

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

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

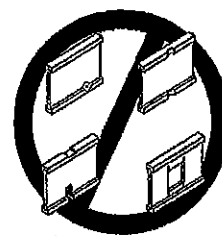
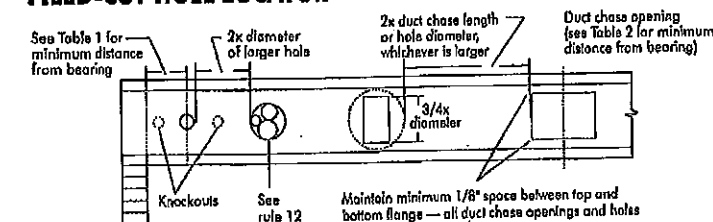
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the joists being used at their maximum spans. The minimum distances 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.)											
9-1/2"	NI-20	4-7"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---
	NI-40x	5-4"	5-3"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	---	---	---
	NI-80	5-3"	6-8"	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"	10-6"	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-4"	10-9"	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-6"	---	---	---
	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"	11-1"	---	---	---
	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"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---
16"	NI-20	9-2"	9-8"	10-0"	10-6"	10-1"	11-5"	11-9"	12-4"	12-11"	---	---	---
	NI-40x	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---
	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-7"	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-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/180.
- The above table is based on the I-joists being used at their maximum spans. The minimum distances as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



Never stack building materials over unshored I-joists. Once shored, do not over-stress I-joists with concentrated loads from building materials.

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, end/or cross-bridging at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on 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 at the end of the bay.
 - 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.

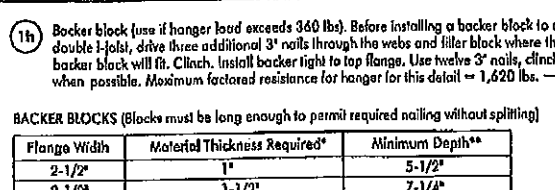
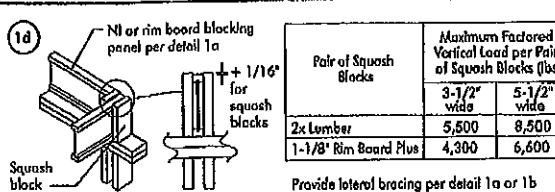
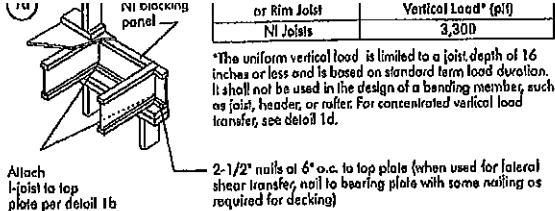
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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



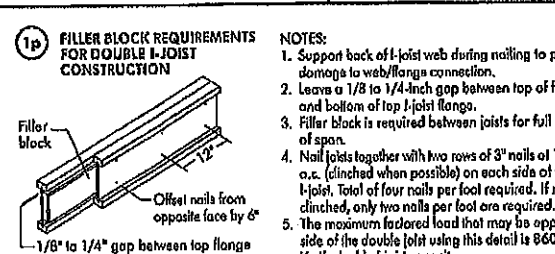
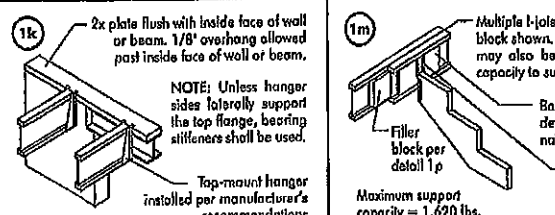
PRODUCT WARRANTY

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 installed in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.



- Minimum girths for backing block material shall be S-P-F No. 2, or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C325 or CAN/CSA-C437 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".

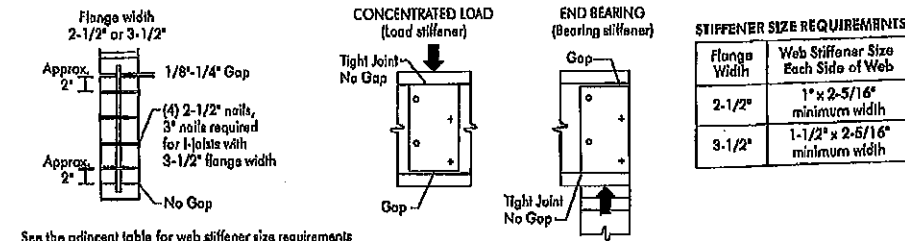


WEB STIFFENERS

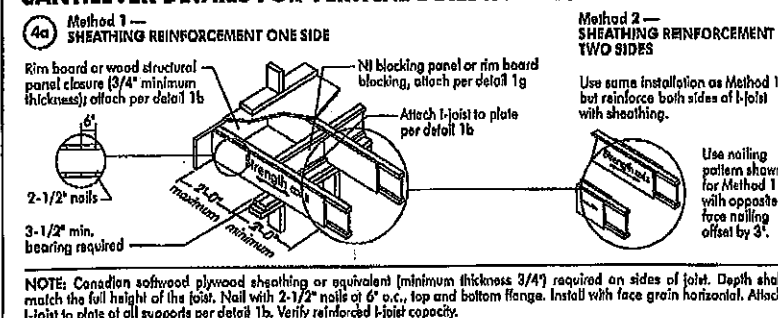
RECOMMENDATIONS:

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

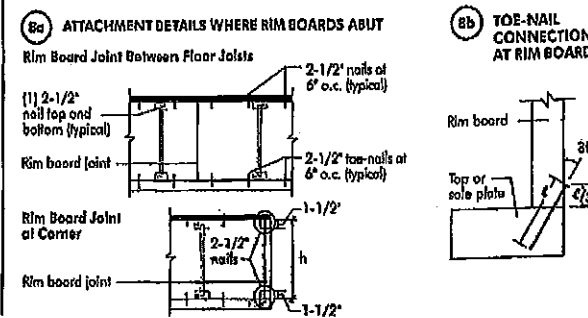
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET



RIM BOARD INSTALLATION DETAILS



NORDIC STRUCTURES

COMPANY
Apr. 9, 2020 09:37

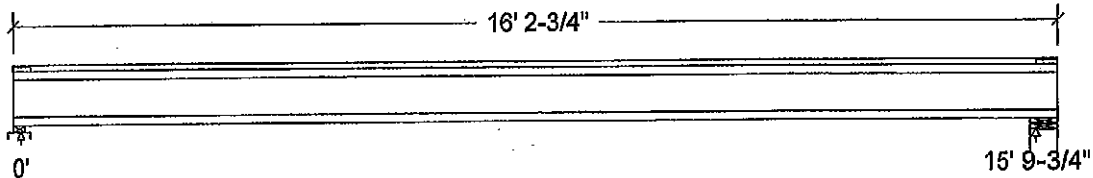
PROJECT
J1 1ST FLOOR.wwb

Design Check Calculation Sheet Nordic Sizer - Canada 7.2

Loads:

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

Maximum Reactions (lbs) and Support Bearing (in):



Unfactored:			
Dead	158		158
Live	316		316
Factored:			
Total	672		672
Bearing:			
Capacity			
Joist	1865		1893
Support	3971		7744
Des ratio			
Joist	0.36		0.36
Support	0.17		0.09
Load case	#2		#2
Length	2-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		769
Kzcp sup	1.09		-

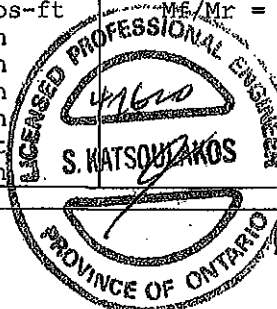
Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

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

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Lumber Wall, No.1/No.2;
Total length: 16' 2-3/4"; Clear span: 15' 8"; 3/4" nailed and glued OSB sheathing
This section **PASSES** the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 672	Vr = 1895	lbs	Vf/Vr = 0.35
Moment(+)	Mf = 2657	Mr = 4824	lbs-ft	Mf/Mr = 0.55
Perm. Defl'n	0.12 = < L/999	0.53 = L/360	in	0.22
Live Defl'n	0.24 = L/802	0.40 = L/480	in	0.60
Total Defl'n	0.35 = L/535	0.79 = L/240	in	0.45
Bare Defl'n	0.28 = L/672	0.53 = L/360	in	0.54
Vibration	Lmax = 15'-9.8	Lv = 17'-1.8	ft	0.92
Defl'n	= 0.032	= 0.041	in	0.77



NO. 74W5933 -20
STRUCTURAL
PERMANENT RAIL

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span

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

CALCULATIONS:E_Ieff = 265.29 lb-in² K= 4.94e06 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



DWG NO. YAW5933 -20
 STRUCTURAL
 COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
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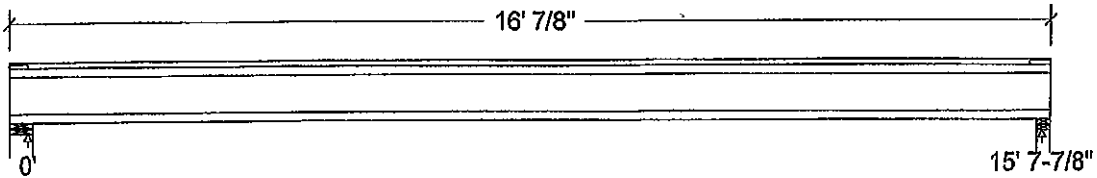
PROJECT
J1 2ND FLOOR.wwb

Design Check Calculation Sheet Nordic Sizer - Canada 7.2

Loads:

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

Maximum Reactions (lbs) and Support Bearing (in):



Unfactored:			
Dead	157		157
Live	313		313
Factored:			
Total	665		665
Bearing:			
Capacity			
Joist	1893		1865
Support	7744		3981
Des ratio			
Joist	0.35		0.36
Support	0.09		0.17
Load case	#2		#2
Length	4-3/8		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		769
Kzcp sup	-		-

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

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

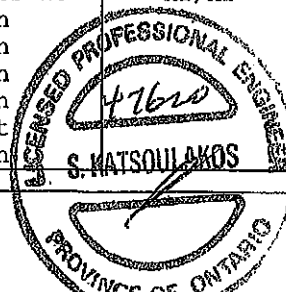
Supports: All - Lumber Wall, No.1/No.2

Total length: 16' 7/8"; Clear span: 15' 6-1/8"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 665	Vr = 1895	lbs	Vf/Vr = 0.35
Moment (+)	Mf = 2604	Mr = 4824	lbs-ft	Mf/Mr = 0.54
Perm. Defl'n	0.12 = < L/999	0.52 = L/360	in	0.22
Live Defl'n	0.23 = L/805	0.39 = L/480	in	0.60
Total Defl'n	0.35 = L/537	0.78 = L/240	in	0.45
Bare Defl'n	0.27 = L/691	0.52 = L/360	in	0.52
Vibration	Lmax = 15'-7.9	Lv = 16'-8.5	ft	0.94
Defl'n	= 0.034	= 0.041	in	0.82



NO. 5934-20
STRUCTURAL
COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span

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

CALCULATIONS:E_{IEff} = 258.29 lb-in² K = 4.94e06 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



DWG NO. FAM 5934-20
STRUCTURAL
COMPONENT ONLY

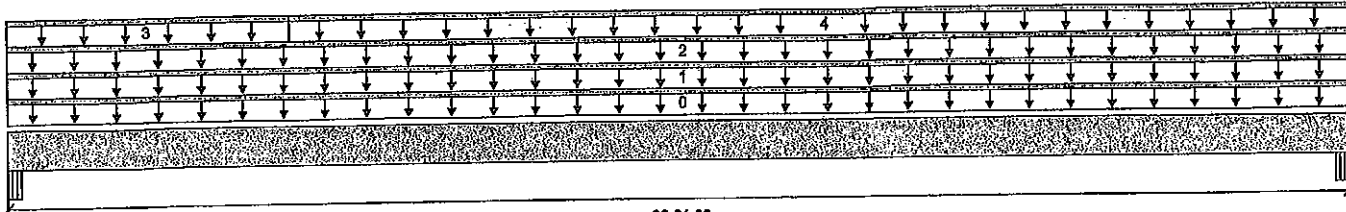
BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

December 3, 2020 11:21:49

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

File name: MOUNTAINASH 3 EL 2.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B12B(i2082)
 Specifier:
 Designer: AJ
 Company:



02-01-02

B2

B1

Total Horizontal Product Length = 02-01-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	66 / 0	68 / 0	69 / 0	
B2, 4-1/8"	61 / 0	54 / 0	63 / 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	02-01-02	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	02-01-02	Top	33	30	63		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-01-02	Top	22	11			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-04	Top	5	3			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	02-01-02	Top	6	3			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	57 ft-lbs	23220 ft-lbs	0.2%	13	01-01-02
End Shear	30 lbs	11571 lbs	0.3%	1	01-02-12
Span / Depth	1.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	243 lbs	2.5%	1.1%	Unspecified
B2 Beam	4-1/8" x 3-1/2"	222 lbs	2.9%	1.3%	Unspecified

Notes

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 ORC 2012

AMENDED 2020



DWG NO. YAM/1692-20
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B12B(I2082) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

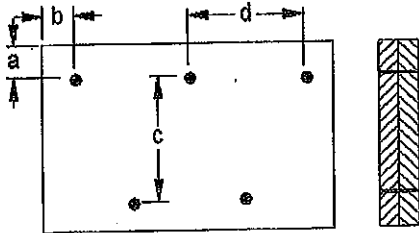
Dry | 1 span | No cant.

December 3, 2020 11:21:49

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

File name: MOUNTAINASH 3 EL 2.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B12B(I2082)
Specifier:
Designer: AJ
Company:

Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 6"

Connectors are: 8 1/2" ARDOX SPIRAL Nails



ENG. NO. 1692-20
STRUCTURAL

DISCLOSURE COMPONENT ONLY

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:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

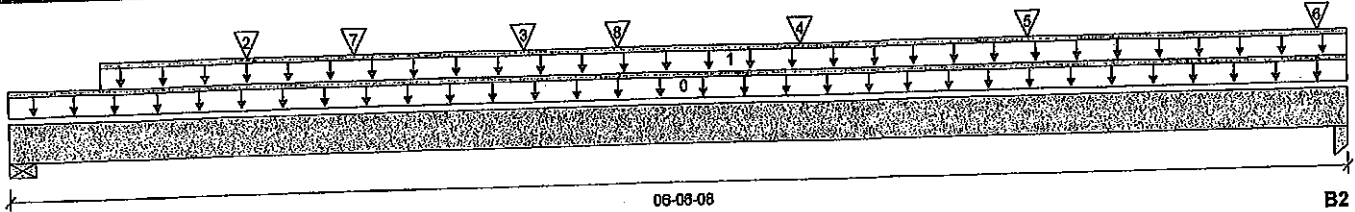
File name: MOUNTAINASH 3 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B14(I2116)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 06-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	647 / 0	739 / 0	439 / 0	
B2, 3-7/16"	592 / 0	1075 / 0	191 / 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	06-06-08	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-05-08	06-06-08	Top		100			n/a
2	J5(I2259)	Conc. Pt. (lbs)	L	01-02-00	01-02-00	Top	181	90			n/a
3	J5(I2257)	Conc. Pt. (lbs)	L	02-06-00	02-06-00	Top	205	103			n/a
4	J5(I2258)	Conc. Pt. (lbs)	L	03-10-00	03-10-00	Top	190	95			n/a
5	J5(I2261)	Conc. Pt. (lbs)	L	04-11-10	04-11-10	Top	209	104			n/a
6	B15(I2117)	Conc. Pt. (lbs)	L	06-04-12	06-04-12	Top	124	451			n/a
7	GIRDER	Conc. Pt. (lbs)	L	01-08-04	01-08-04	Top	198	180	378		n/a
8	GIRDER	Conc. Pt. (lbs)	L	02-11-08	02-11-08	Top	132	120	252		n/a

Controls Summary

Factor	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3502 ft-lbs	23220 ft-lbs	15.1%	1	02-11-07
End Shear	2178 lbs	11571 lbs	18.8%	1	01-03-00
Total Load Deflection	L/999 (0.033")	n/a	n/a	35	03-02-12
Live Load Deflection	L/999 (0.019")	n/a	n/a	51	03-02-12
Max Defl.	0.033"	n/a	n/a	35	03-02-12
Span / Depth	7.5				

			Demand/ Resistance Support	Demand/ Resistance Member	Material	
Bearing Supports	Dim. (LxW)	Demand				
B1	Wall/Plate	5-1/2" x 3-1/2"	2332 lbs	19.7%	9.9%	Spruce-Pine-Fir
B2	Column	3-7/16" x 3-1/2"	2424 lbs	24.7%	16.4%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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



AWG NO. TAW 16920-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B14(I2116) (Flush Beam)

PASSED

December 3, 2020 11:24:39

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 3 EL 1.mmdl

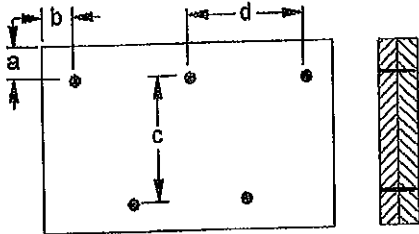
Description: 2ND FLR FRAMING\Flush Beams\B14(I2116)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 5-1/2"
d = 8"

Calculated Side Load = 315.7 lb/ft

Connectors are: Nails

3 1/2" ARDOX SPIRAL



DWG NO. YAM 16925-20

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.

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Boise Cascade



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

2ND FLR FRAMING\Flush Beams\B15(I2117) (Flush Beam)

PASSED

December 3, 2020 11:24:39

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

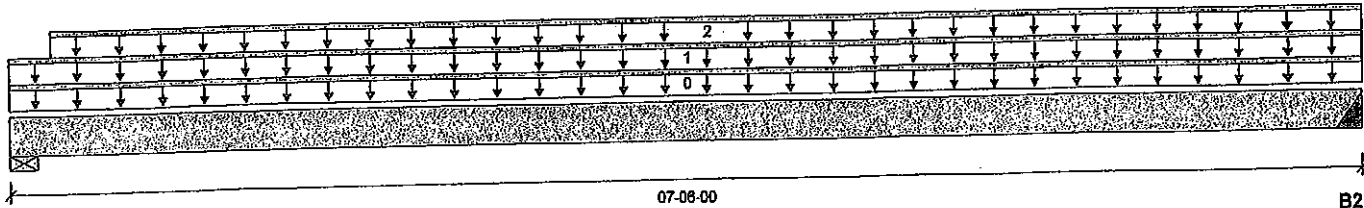
File name: MOUNTAINASH 3 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15(I2117)

Specifier:

Designer: AJ

Company:



B1

Total Horizontal Product Length = 07-06-00

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	115 / 0	485 / 0		
B2, 2"	113 / 0	452 / 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	07-06-00	Top	10				00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-06-00	Top		100			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	07-06-00	Top	31	16			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1075 ft-lbs	15093 ft-lbs	7.1%	0	03-10-12
End Shear	464 lbs	7521 lbs	6.2%	0	01-03-00
Total Load Deflection	L/999 (0.017")	n/a	n/a	4	03-10-12
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	03-10-12
Max Defl.	0.017"	n/a	n/a	4	03-10-12
Span / Depth	8.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	679 lbs	8.8%	4.4%	Spruce-Pine-Fir
B2	Hanger 2" x 3-1/2"	633 lbs	n/a	11.4%	HUC410

Cautions

Header for the hanger HUC410 is a Double 1-3/4" x 9-1/2" LVL Beam.

Hanger model HUC410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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



DATE NO. 16921-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B15(I2117) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

December 3, 2020 11:24:39

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 3 EL 1.mmdl

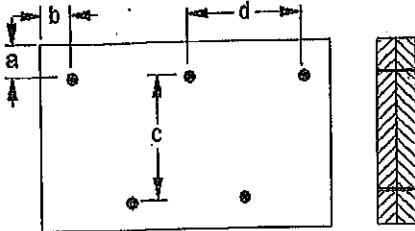
Description: 2ND FLR FRAMING\Flush Beams\B15(I2117)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 5-1/2"

d = 6"

Connectors are: 3/4" ARDOX SPIRAL

3/4" ARDOX SPIRAL



OWB NO. 12340-20

STRUCTURAL

Disclosure

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BC CALCO® Member Report

Dry | 1 span | No cant.

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

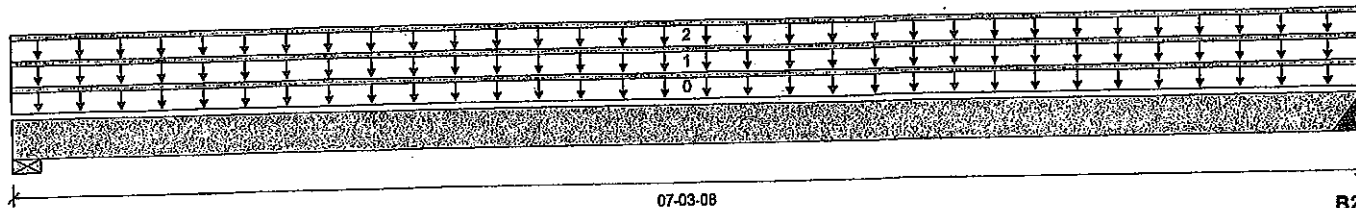
File name: MOUNTAINASH 3 EL 2.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15B(i2073)

Specifler:

Designer: AJ

Company:



Total Horizontal Product Length = 07-03-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	383 / 0	587 / 0		
B2, 4"	392 / 0	600 / 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	07-03-08	Top	106	53	100	1.16	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-03-08	Top					n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-03-08	Top					n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2118 ft-lbs	23220 ft-lbs	9.1%	1	03-07-04
End Shear	930 lbs	11571 lbs	8.0%	1	01-00-08
Total Load Deflection	L/999 (0.026")	n/a	n/a	4	03-07-04
Live Load Deflection	L/999 (0.01")	n/a	n/a	5	03-07-04
Max Defl.	0.026"	n/a	n/a	4	03-07-04
Span / Depth	8.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	1307 lbs	20.2%	10.2%	Spruce-Pine-Fir
B2	Hanger 4" x 3-1/2"	1338 lbs	n/a	7.8%	HGUS410

Cautions

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.

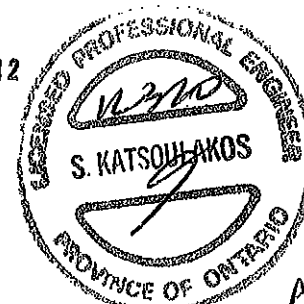
BC CALCO analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWS NO. TAN 16923-20
STRUCTURAL
COMPONENT ONLY



Bolse Cascade



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

2ND FLR FRAMING\Flush Beams\B15B(i2073) (Flush Beam)

PASSED

December 3, 2020 11:23:34

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 3 EL 2.mmdl

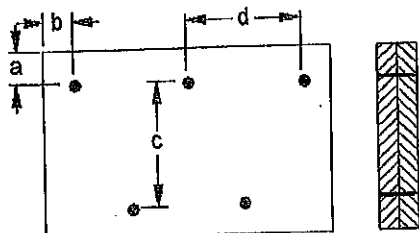
Description: 2ND FLR FRAMING\Flush Beams\B15B(i2073)

Specifier:

Designer: AJ

Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

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

Connectors are: 3/4" ARDOX SPIRAL

3/4" ARDOX SPIRAL



PROV. NO. 12310-20

STRUCTURAL

COMPONENT ONLY

Disclosure

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BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

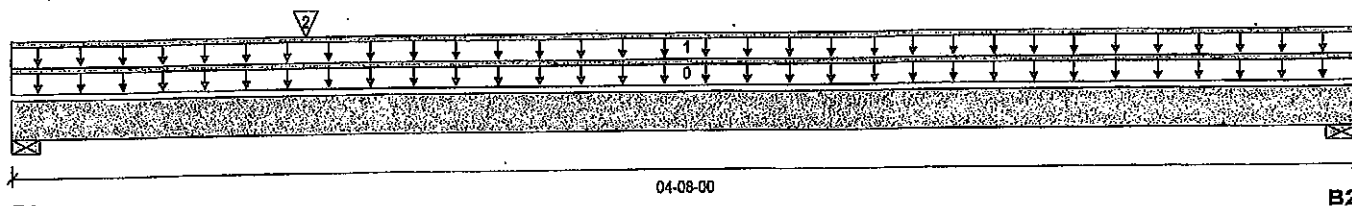
File name: MOUNTAINASH 3 EL 1.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B8 DR(1852)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 04-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	2950 / 0	1585 / 0		
B2, 4"	1282 / 0	682 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-08-00	Top	1.00	0.65	1.00	1.16	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-08-00	Top	330	165			n/a
2	B10(1818)	Conc. Pt. (lbs)	L	01-00-04	01-00-04	Top	2669	1428			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4176 ft-lbs	36222 ft-lbs	11.5%	1	01-00-04
End Shear	4794 lbs	17356 lbs	27.6%	1	01-01-08
Total Load Deflection	L/999 (0.011")	n/a	n/a	4	02-02-00
Live Load Deflection	L/999 (0.007")	n/a	n/a	5	02-02-00
Max Defl.	0.011"	n/a	n/a	4	02-02-00
Span / Depth	5.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 5-1/4"	6406 lbs	22.9%	25.0%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 5-1/4"	2745 lbs	9.8%	10.7%	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: 00-03-09, Bottom: 00-03-09.

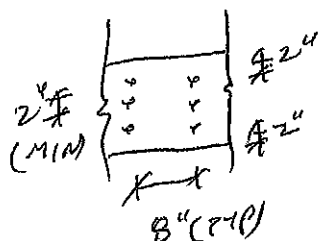
Resistance Factor phi has been applied to all presented results per CSA O86. AMENDED 2020

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



PROVIDE 3 ROWS OF 3/4" ARDOX
 SPIRAL NAILS @ 8" O/C FOR
 MULTI-PLY NAILING. MAINTAIN
 A MIN. 2" LUMBER EDGE/END
 DISTANCE. DO NOT USE AIR NAILS
 STAGGER NAILS 4" BETWEEN PLYS.



UFG NO. YAM 5935-20

STRUCTURAL

COMPONENT ONLY

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

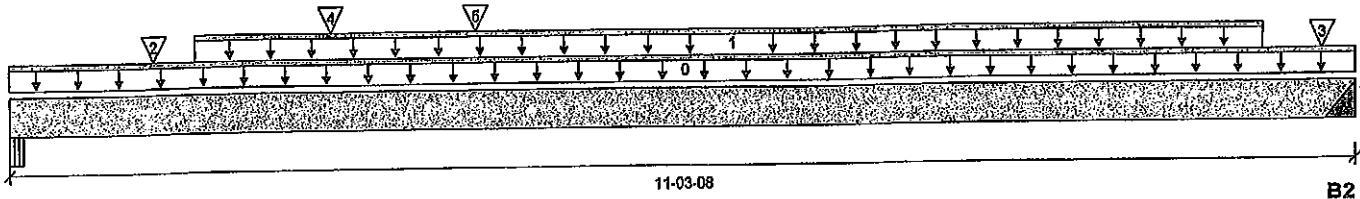
BC CALC® Member Report
Build 7239
Job name:
Address:
City, Province, Postal Code:
Customer:
Code reports:

Dry | 1 span | No cant.

February 10, 2020 08:08:13

File name: MOUNTAINASH 3 EL 1.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B10(11818)
Specifier:
Designer:
Company:

CCMC 12472-R



Total Horizontal Product Length = 11-03-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	2633 / 0	1409 / 0		
B2, 4"	2057 / 0	1105 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-08	Top	10				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-06-08	10-06-08	Top	315	158			n/a
2	-	Conc. Pt. (lbs)	L	01-02-08	01-02-08	Top	967	483			n/a
3	J1(11626)	Conc. Pt. (lbs)	L	11-00-08	11-00-08	Top	232	116			n/a
4	J2(11788)	Conc. Pt. (lbs)	L	02-08-06	02-08-06	Top	323	162			n/a
5	B11(11835)	Conc. Pt. (lbs)	L	03-10-12	03-10-12	Top	308	212			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	13379 ft-lbs	23220 ft-lbs	57.6%	1	05-00-08
End Shear	5679 lbs	11571 lbs	49.1%	1	01-00-00
Total Load Deflection	L/324 (0.403")	n/a	74.1%	4	05-08-08
Live Load Deflection	L/499 (0.261")	n/a	72.1%	5	05-08-08
Max Defl.	0.403"	n/a	n/a	4	05-08-08
Span / Depth	13.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 2-1/2" x 3-1/2"	5712 lbs	53.5%	53.5%	VL 2.0 3100 SP
B2	Hanger 4" x 3-1/2"	4467 lbs	n/a	26.2%	HGUS410

Cautions

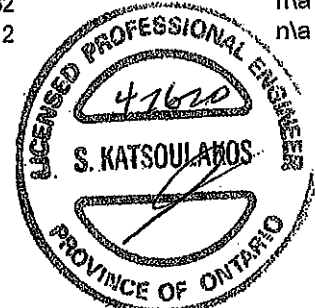
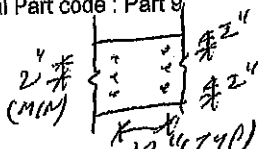
Header for the hanger HGUS410 at B2 is a Triple 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

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

PROVIDE 3 ROWS OF 3/4" ARDOX SPIRAL NAILS @ 12" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



OWB NO. YAW 5936-20

STRUCTURAL COMPONENT ONLY

Disclosure

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

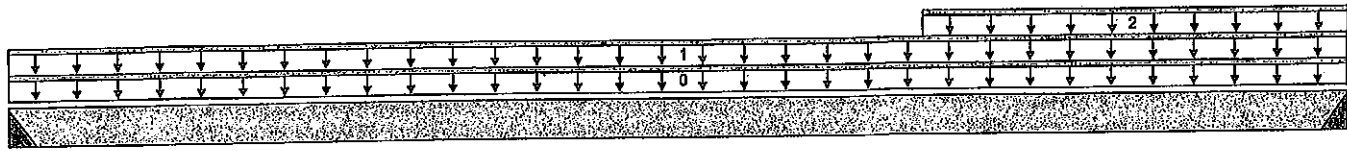
BC CALC® Member Report
 Build 7239
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

CCMC 12472-R

Dry | 1 span | No cant.

February 10, 2020 08:08:13

File name: MOUNTAINASH 3 EL 1.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B11(1835)
 Specifier:
 Designer:
 Company:



11-11-04

B1

B2

Total Horizontal Product Length = 11-11-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	294 / 0	204 / 0		
B2, 4"	947 / 0	531 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-11-04	Top	10				00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-11-04	Top	27	13			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	08-01-04	11-11-04	Top	240	120			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3203 ft-lbs	23220 ft-lbs	13.8%	1	08-03-05
End Shear	1432 lbs	11571 lbs	12.4%	1	10-08-12
Total Load Deflection	L/999 (0.098")	n/a	n/a	4	06-04-05
Live Load Deflection	L/999 (0.061")	n/a	n/a	5	06-05-10
Max Defl.	0.098"	n/a	n/a	4	06-04-05
Span / Depth	14.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	696 lbs	n/a	4.1%	HGUS410
B2	Hanger 4" x 3-1/2"	2083 lbs	n/a	12.2%	HGUS410

Cautions

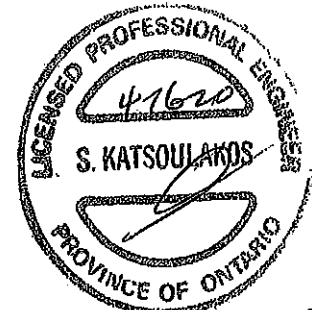
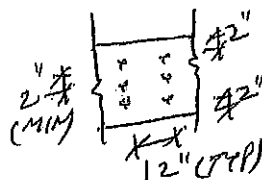
Header for the hanger HGUS410 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
 Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.
 Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Notes

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

CONFORMS TO OBC 2012

PROVIDE 3 ROWS OF 3 1/2" ARDOX SPIRAL NAILS @ 12" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



DWG NO. FPM 5937 -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®,

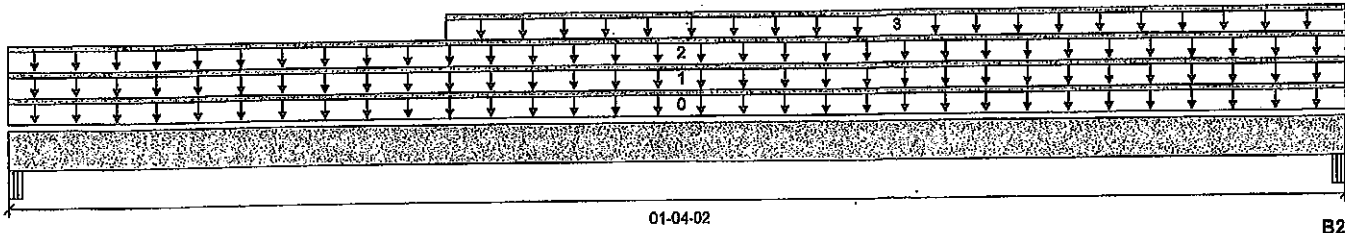
BC CALC® Member Report
 Build 7239
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

February 10, 2020 08:08:13

File name: MOUNTAINASH 3 EL 1.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B12(I1923)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



01-04-02

B2

Total Horizontal Product Length = 01-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	30 / 0	32 / 0	45 / 0	
B2, 4-1/8"	28 / 0	29 / 0	39 / 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	01-04-02	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	01-04-02	Top	33	30	63		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-04-02	Top	6	3			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	01-04-02	Top	6	3			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	12 ft-lbs	23220 ft-lbs	n/a	13	00-08-10
End Shear	55 lbs	11571 lbs	0.5%	13	00-05-04
Span / Depth	0.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	137 lbs	1.4%	0.6%	Unspecified
B2 Beam	4-1/8" x 3-1/2"	123 lbs	1.6%	0.7%	Unspecified

Notes

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.

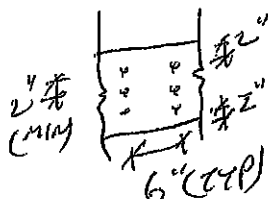
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

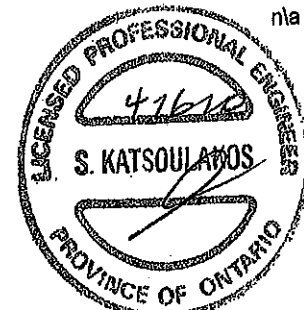
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/4" ARDOX
 SPIRAL NAILS @ 6" O/C FOR
 MULTI-PLY NAILING. MAINTAIN
 A MIN. 2" LUMBER EDGE/END
 DISTANCE. DO NOT USE AIR NAILS



DWG NO. TAM 5936-20
 STRUCTURAL

COMPONENT ONLY Disclosure

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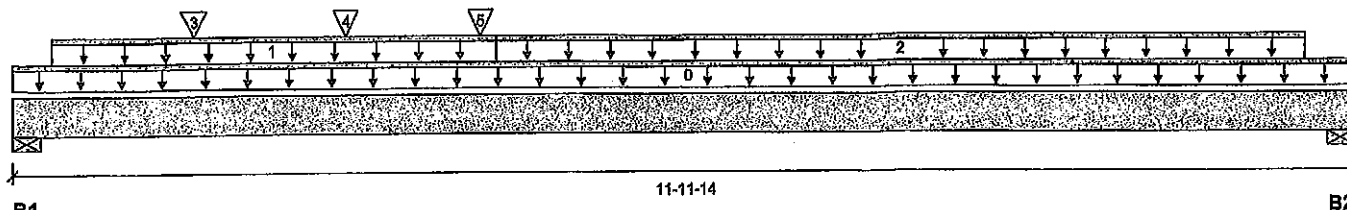
BC CALC®, BC FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

BC CALC® Member Report
Build 7239
Job name:
Address:
City, Province, Postal Code:
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 10, 2020 08:08:12

File name: MOUNTAINASH 3 EL 1.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B7(1816)
Specifier:
Designer:
Company:



Total Horizontal Product Length = 11-11-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1431 / 0	811 / 0		
B2, 5-1/2"	563 / 0	359 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-11-14	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-04-00	04-03-08	Top	19	9			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	04-03-08	11-06-06	Top	21	11			n/a
3	J2(11743)	Conc. Pt. (lbs)	L	01-07-06	01-07-06	Top	497	248			n/a
4	J2(11788)	Conc. Pt. (lbs)	L	02-11-06	02-11-06	Top	323	162			n/a
5	B11(11835)	Conc. Pt. (lbs)	L	04-01-12	04-01-12	Top	933	524			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7954 ft-lbs	23220 ft-lbs	34.3%	1	04-01-12
End Shear	3108 lbs	11571 lbs	26.9%	1	01-03-00
Total Load Deflection	L/631 (0.213")	n/a	38.0%	4	05-06-00
Live Load Deflection	L/1003 (0.134")	n/a	35.9%	5	05-06-00
Max Defl.	0.213"	n/a	n/a	4	05-06-00
Span / Depth	14.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	3161 lbs	26.7%	13.5%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	1293 lbs	10.9%	5.5%	Spruce-Pine-Fir

Notes

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

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

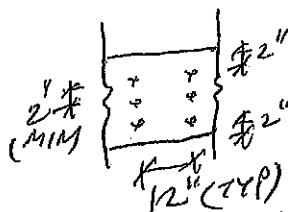
Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86. AMENDED 2020

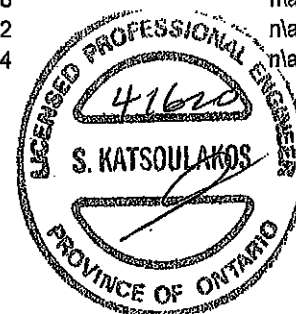
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



PROVIDE 3 ROWS OF 3/4" ARDOX SPIRAL NAILS @ 12" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



DWG NO. TAM 5939-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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

CONFORMS TO OBC 2012

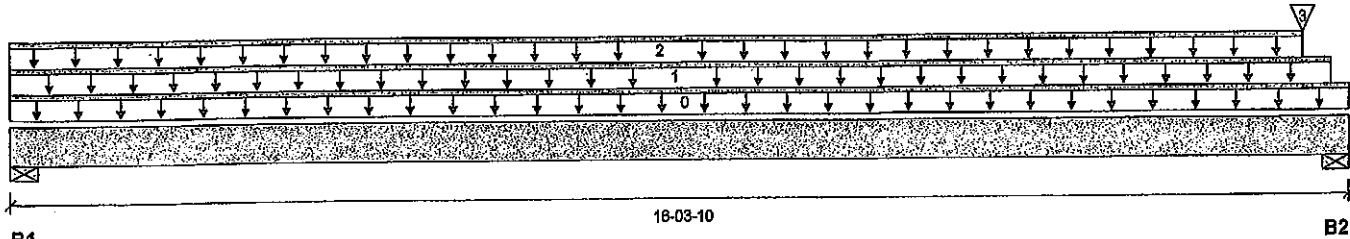
AMENDED 2020

BC CALC® Member Report
 Build 7239
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 10, 2020 08:08:13

File name: MOUNTAINASH 3 EL 1.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B9(1804)
 Specifier:
 Designer:
 Company:



Total Horizontal Product Length = 16-03-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	250 / 0	242 / 0		
B2, 5-1/4"	2264 / 0	1327 / 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	16-03-10	Top		14			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-00-14	Top	21	11			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	15-08-10	Top	9	5			n/a
3	B10(11818)	Conc. Pt. (lbs)	L	15-08-10	15-08-10	Top	2021	1087			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2550 ft-lbs	36222 ft-lbs	7.0%	1	08-01-06
End Shear	594 lbs	17356 lbs	3.4%	1	15-00-14
Total Load Deflection	L/999 (0.108")	n/a	n/a	4	08-01-06
Live Load Deflection	L/999 (0.055")	n/a	n/a	5	08-01-06
Max Defl.	0.108"	n/a	n/a	4	08-01-06
Span / Depth	19.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 5-1/4"	678 lbs	4.8%	2.4%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/4" x 5-1/4"	5055 lbs	29.8%	15.0%	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



PROVIDE 3 ROWS OF 3/4" ARDOX
 SPIRAL NAILS @ 12" O/C FOR
 MULTI-PLY NAILING. MAINTAIN
 A MIN. 2" LUMBER EDGE/END
 DISTANCE. DO NOT USE AIR NAILS.
 STAGGER NAILS 6" BETWEEN PLYS



DWG NO. TAM 5940-20
STRUCTURAL
COMPONENT ONLY

Disclosure

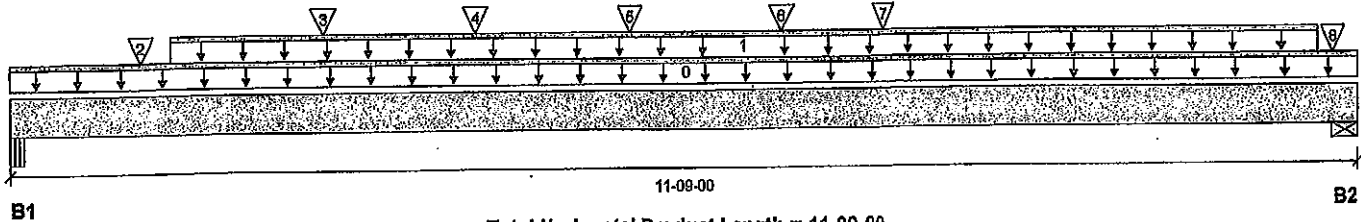
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BC CALC® Member Report
Build 7239
Job name:
Address:
City, Province, Postal Code:
Customer:
Code reports:

CCMC 12472-R

File name: MOUNTAINASH 3 EL 1.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1(1903)
Specifier:
Designer:
Company:



Total Horizontal Product Length = 11-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-5/8"	2744 / 0	1460 / 0		
B2, 5-1/2"	4654 / 0	2658 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-09-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-10	11-04-10	Top	328	164			n/a
2	-	Conc. Pt. (lbs)	L	01-01-08	01-01-08	Top	597	298			n/a
3	J5(1381)	Conc. Pt. (lbs)	L	02-08-08	02-08-08	Top	214	107			n/a
4	J5(1568)	Conc. Pt. (lbs)	L	04-00-08	04-00-08	Top	567	284			n/a
5	J5(1381)	Conc. Pt. (lbs)	L	05-04-08	05-04-08	Top	214	107			n/a
6	J5(1434)	Conc. Pt. (lbs)	L	06-08-08	06-08-08	Top	180	90			n/a
7	B2(1474)	Conc. Pt. (lbs)	L	07-07-02	07-07-02	Top		54			n/a
8	1(1599)	Conc. Pt. (lbs)	L	11-06-04	11-06-04	Top	2266	136			n/a

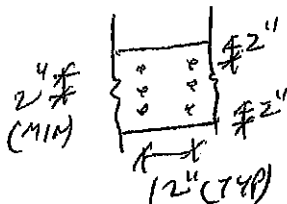
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	17040 ft-lbs	36222 ft-lbs	47.0%	1	05-04-08
End Shear	5820 lbs	17356 lbs	33.5%	1	01-00-02
Total Load Deflection	L/375 (0.358")	n/a	64.0%	4	05-07-09
Live Load Deflection	L/575 (0.234")	n/a	62.6%	5	05-07-09
Max Defl.	0.358"	n/a	n/a	4	05-07-09
Span / Depth	14.1				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	2-5/8" x 5-1/4"	5941 lbs	80.7%	35.3%	Unspecified
B2 Wall/Plate	5-1/2" x 5-1/4"	10303 lbs	58.0%	29.2%	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 unbraced length of Top: 00-00-00, Bottom: 00-00-00.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9

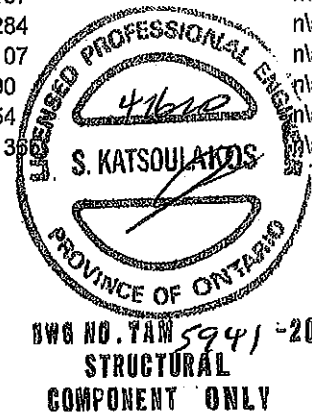


PROVIDE 3 ROWS OF 3/4\"/>

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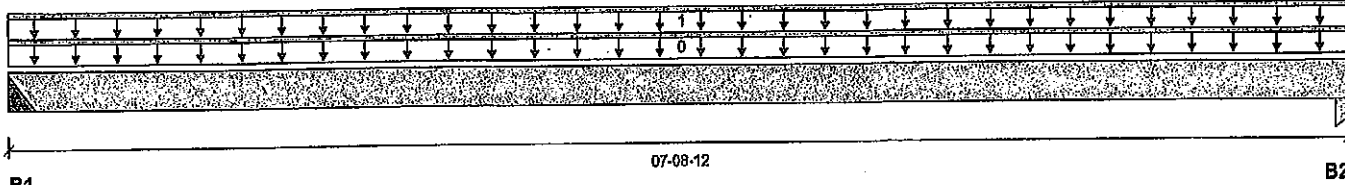
BC CALC® Member Report
Build 7239
Job name:
Address:
City, Province, Postal Code:
Customer:
Code reports:

Dry | 1 span | No cant.

February 10, 2020 08:08:13

File name: MOUNTAINASH 3 EL 1.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B2(11474)
Specifier:
Designer:
Company:

CCMC 12472-R



Total Horizontal Product Length = 07-08-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	73 / 0	55 / 0		
B2, 3-1/2"	75 / 0	57 / 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	07-08-12	Top		5			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-08-12	Top	19	10			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	320 ft-lbs	11610 ft-lbs	2.8%	1	03-09-10
End Shear	133 lbs	5785 lbs	2.3%	1	00-11-08
Total Load Deflection	L/999 (0.009")	n/a	n/a	4	03-09-10
Live Load Deflection	L/999 (0.005")	n/a	n/a	5	03-09-10
Max Defl.	0.009"	n/a	n/a	4	03-09-10
Span / Depth	9.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 1-3/4"	178 lbs	n/a	4.2%	HUS1.81/10
B2 Column	3-1/2" x 1-3/4"	184 lbs	3.7%	2.5%	Unspecified

Cautions

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

Notes

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

CONFORMS TO CBC 2012

AMENDED 2020



DWG NO. TAM 5942-20
STRUCTURAL
COMPONENT ONLY

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



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B3(i1810) (Flush Beam)****PASSED**

Dry | 1 span | No cant.

February 10, 2020 08:08:13

BC CALC® Member Report

Build 7239

Job name:

File name: MOUNTAINASH 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3(i1810)

City, Province, Postal Code:

Specifier:

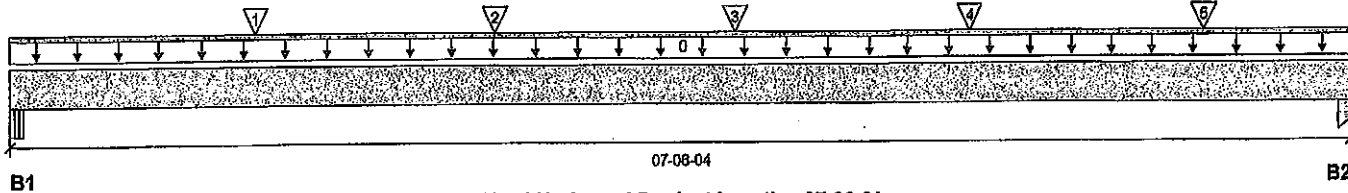
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 07-06-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-5/8"	610 / 0	324 / 0		
B2, 1-3/4"	614 / 0	325 / 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	07-06-04	Top		5			00-00-00
1	J5(i1374)	Conc. Pt. (lbs)	L	01-04-08	01-04-08	Top	287	144			n/a
2	J5(i1381)	Conc. Pt. (lbs)	L	02-08-08	02-08-08	Top	210	105			n/a
3	J5(i1568)	Conc. Pt. (lbs)	L	04-00-08	04-00-08	Top	337	168			n/a
4	J5(i1381)	Conc. Pt. (lbs)	L	05-04-08	05-04-08	Top	210	105			n/a
5	J5(i1434)	Conc. Pt. (lbs)	L	06-08-08	06-08-08	Top	180	90			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2854 ft-lbs	11610 ft-lbs	24.6%	1	04-00-08
End Shear	1313 lbs	5785 lbs	22.7%	1	01-00-02
Total Load Deflection	L/999 (0.074")	n/a	n/a	4	03-09-08
Live Load Deflection	L/999 (0.048")	n/a	n/a	5	03-09-08
Max Defl.	0.074"	n/a	n/a	4	03-09-08
Span / Depth	9.2				

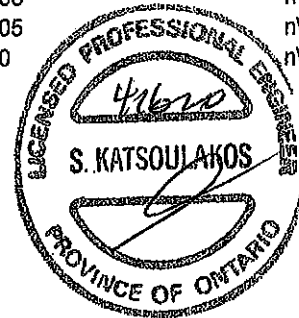
Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	2-5/8" x 1-3/4"	1320 lbs	53.8%	23.5%	Unspecified
B2 Column	1-3/4" x 1-3/4"	1327 lbs	53.3%	35.5%	Unspecified

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: 00-00-00, Bottom: 00-00-00.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 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 5943-20
**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®,



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B4L(I41) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 10, 2020 08:08:13

Build 7239

Job name:

File name: MOUNTAINASH 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B4L(I41)

City, Province, Postal Code:

Specifier:

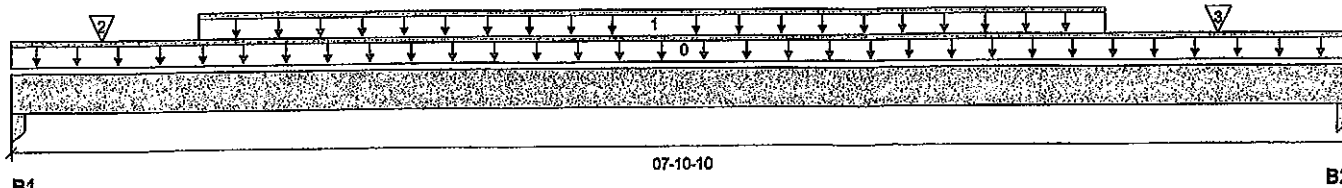
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 07-10-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	773 / 0	406 / 0		
B2, 3-1/2"	775 / 0	406 / 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	07-10-10	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-04	06-05-04	Top	220	110			n/a
2	J3(I72)	Conc. Pt. (lbs)	L	00-06-08	00-06-08	Top	147	73			n/a
3	J3(I62)	Conc. Pt. (lbs)	L	07-01-04	07-01-04	Top	225	112			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3234 ft-lbs	11610 ft-lbs	27.9%	1	04-05-04
End Shear	1482 lbs	5785 lbs	25.6%	1	06-09-10
Total Load Deflection	L/999 (0.09")	n/a	n/a	4	03-11-04
Live Load Deflection	L/999 (0.059")	n/a	n/a	5	03-11-04
Max Defl.	0.09"	n/a	n/a	4	03-11-04
Span / Depth	9.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	1665 lbs	33.5%	22.3%	Unspecified
B2	Column 3-1/2" x 1-3/4"	1671 lbs	33.6%	22.4%	Unspecified

Notes

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

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

Calculations assume unbraced length of Top: 00-05-04, Bottom: 00-05-04.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO QBC 2012**AMENDED 2020****DWG NO. TAM 5944-20****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®,

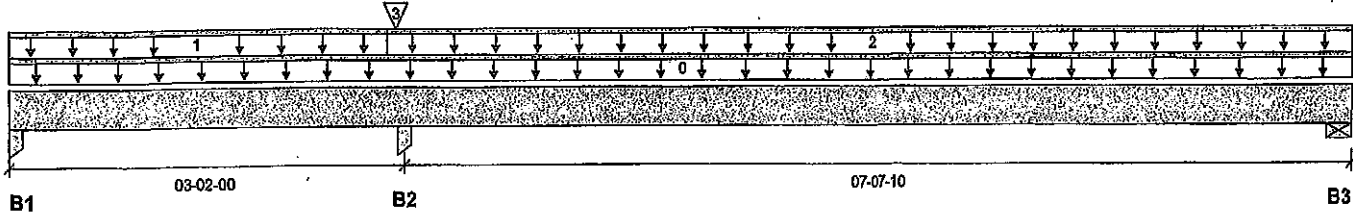
BC CALC® Member Report
Build 7239

Dry | 2 spans | No cant.

February 10, 2020 08:08:13

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

File name: MOUNTAINASH 3 EL 1.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B5L(I450)
Specifier:
Designer:
Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	24 / 65	0 / 22		
B2, 3-1/2"	701 / 0	434 / 0		
B3, 1-7/8"	128 / 1	94 / 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	10-09-10	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-00-04	Top	16	8			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-00-04	10-09-10	Top	40	20			n/a
3	B6L(I449)	Conc. Pt. (lbs)	L	03-01-02	03-01-02	Top	428	223			n/a

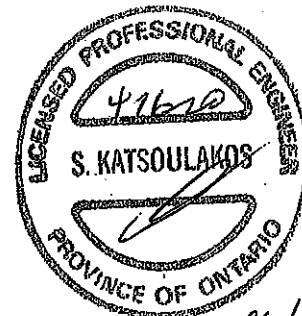
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	464 ft-lbs	23220 ft-lbs	2.0%	3	07-07-05
Neg. Moment	-505 ft-lbs	-23220 ft-lbs	2.2%	1	03-02-00
End Shear	216 lbs	11571 lbs	1.9%	1	09-10-04
Cont. Shear	342 lbs	11571 lbs	3.0%	1	04-01-04
Total Load Deflection	L/999 (0.006")	n/a	n/a	10	07-03-00
Live Load Deflection	L/999 (0.003")	n/a	n/a	13	07-03-00
Total Neg. Defl.	L/999 (-0.001")	n/a	n/a	10	01-10-14
Max Defl.	0.006"	n/a	n/a	10	07-03-00
Span / Depth	9.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Column	1-3/4" x 3-1/2"	16 lbs	0.3%	0.2%	Unspecified
B1 Uplift		126 lbs			
B2 Column	3-1/2" x 3-1/2"	1595 lbs	16.0%	10.7%	Unspecified
B3 Wall/Plate	1-7/8" x 3-1/2"	309 lbs	7.7%	3.9%	Spruce-Pine-Fir

Cautions

Uplift of 126 lbs found at bearing B1. (Simpson 2x12-54 @ 87-91)



DWG NO. YAW 5945-20
STRUCTURAL
COMPONENT ONLY

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File name: MOUNTAINASH 3 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B5L(I450)

Specifier:

Designer:

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.

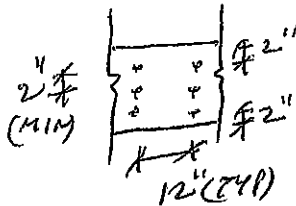
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/4" ARDOX
SPIRAL NAILS @ 12" O/C FOR
MULTI-PLY NAILING, MAINTAIN
A MIN. 2" LUMBER EDGE/END
DISTANCE. DO NOT USE AIR NAILS

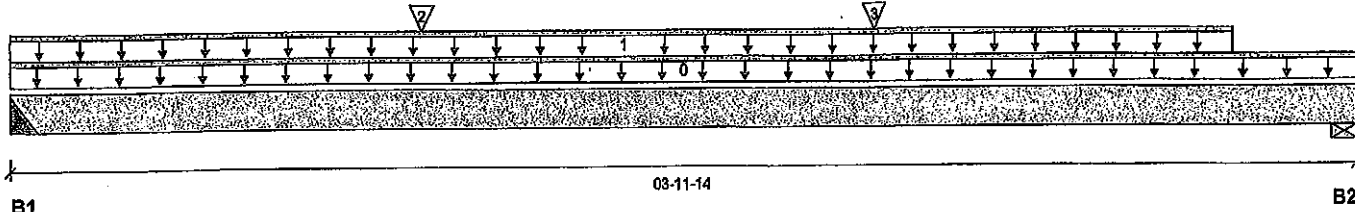


DWG NO. TAM 5945-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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BC CALC® Member Report
Build 7239
Dry | 1 span | No cant.
February 10, 2020 08:08:13
Job name:
Address:
City, Province, Postal Code:
Customer:
Code reports:
CCMC 12472-R
File name: MOUNTAINASH 3 EL 1.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B6L(I449)
Specifier:
Designer:
Company:

Total Horizontal Product Length = 03-11-14
Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	440 / 0	229 / 0		
B2, 4-3/8"	416 / 0	219 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-11-14	Top	120	60			n/a
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-07-08	Top	212	106			n/a
2	J5(I69)	Conc. Pt. (lbs)	L	01-02-10	01-02-10	Top	209	105			n/a
3	J5(I69)	Conc. Pt. (lbs)	L	02-06-10	02-06-10	Top					n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	923 ft-lbs	11610 ft-lbs	7.9%	1	01-10-10
End Shear	696 lbs	5785 lbs	12.0%	1	00-11-08
Total Load Deflection	L/999 (0.008")	n/a	n/a	4	01-10-10
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	01-10-10
Max Defl.	0.008"	n/a	n/a	4	01-10-10
Span / Depth	4.5				

Bearing Supports

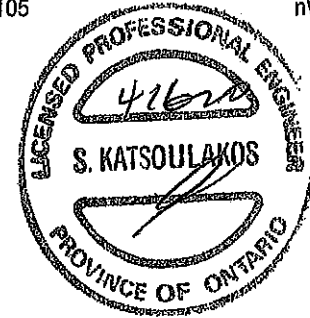
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	946 lbs	n/a	22.2%	HUS1.81/10
B2	Wall/Plate 4-3/8" x 1-3/4"	898 lbs	19.1%	9.6%	Spruce-Pine-Fir

Cautions

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

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

006 NO. TAM 5946-20
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®,

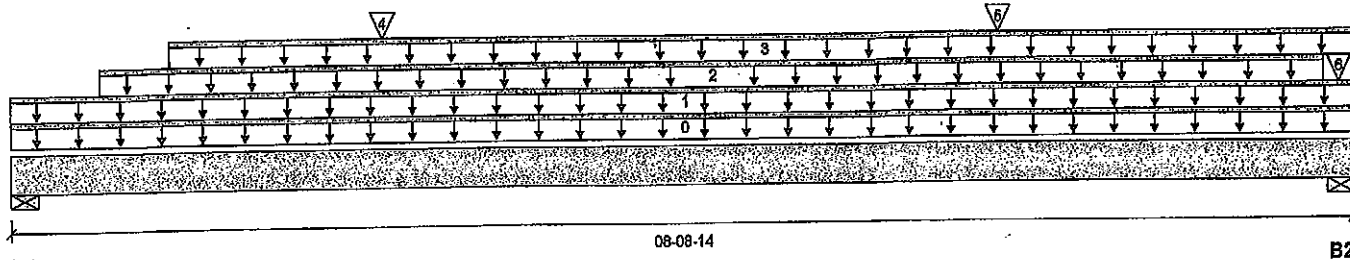
BC CALC® Member Report

Dry | 1 span | No cant.

February 10, 2020 08:45:04

Build 7239
Job name:
Address:
City, Province, Postal Code: WATERDOWN
Customer:
Code reports: CCMC 12472-R

File name: MOUNTAINASH 3 EL 2.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B16(I2399)
Specifier:
Designer: AJ
Company:



Total Horizontal Product Length = 08-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 12-3/8"	270 / 0	576 / 0	92 / 0	
B2, 2-1/2"	254 / 0	577 / 0	76 / 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	08-08-14	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-08-14	Top	5	3			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-06-14	08-06-06	Top	46	23			n/a
3	WALL	Unf. Lin. (lb/ft)	L	01-00-06	08-08-14	Top		100			n/a
4	WINDOW	Conc. Pt. (lbs)	L	02-04-14	02-04-14	Top	44	40			n/a
5	WINDOW	Conc. Pt. (lbs)	L	06-04-14	06-04-14	Top	44	40			n/a
6	FC3 Floor Material	Conc. Pt. (lbs)	L	08-07-10	08-07-10	Top	21				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1478 ft-lbs	15093 ft-lbs	9.8%	0	04-09-06
End Shear	622 lbs	7621 lbs	8.3%	0	01-09-14
Total Load Deflection	L/999 (0.035")	n/a	n/a	35	04-09-06
Live Load Deflection	L/999 (0.013")	n/a	n/a	51	04-09-06
Max Defl.	0.035"	n/a	n/a	35	04-09-06
Span / Depth	9.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/Support	Demand/Member	Material
B1	Wall/Plate 12-3/8" x 3-1/2"	807 lbs	4.7%	2.3%	Spruce-Pine-Fir
B2	Wall/Plate 2-1/2" x 3-1/2"	808 lbs	23.1%	11.6%	Spruce-Pine-Fir

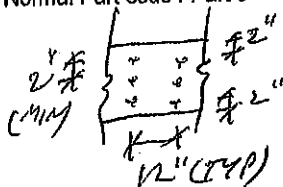
Notes

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

PROVIDE 3 ROWS OF 3 1/2" ARDOX SPIRAL NAILS @ 12" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



Disclosure

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

OWG NO. FAM5947-20

STRUCTURAL



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B15C DR(I2381) (Dropped Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 10, 2020 09:01:54

Build 7239

Job name:

File name: MOUNTAINASH 3 EL 3.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B15C DR(I2381)

City, Province, Postal Code: WATERDOWN

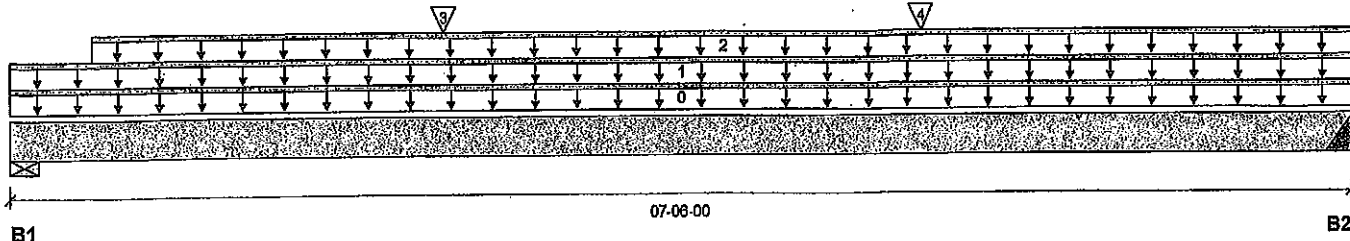
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 07-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	84 / 0	478 / 0	86 / 0	
B2, 4"	86 / 0	465 / 0	82 / 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	07-06-00	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-06-00	Top		100			n/a
2	R1(I2378)	Unf. Lin. (lb/ft)	L	00-05-08	07-06-00	Top	12	6			n/a
3	WINDOW	Conc. Pt. (lbs)	L	02-05-00	02-05-00	Top	44	40	84		n/a
4	WINDOW	Conc. Pt. (lbs)	L	05-01-00	05-01-00	Top	44	40	84		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1060 ft-lbs	15093 ft-lbs	7.0%	0	03-10-00
End Shear	471 lbs	7521 lbs	6.3%	0	01-03-00
Total Load Deflection	L/999 (0.019")	n/a	n/a	35	03-10-00
Live Load Deflection	L/999 (0.006")	n/a	n/a	51	03-10-00
Max Defl.	0.019"	n/a	n/a	35	03-10-00
Span / Depth	8.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	669 lbs	4.0%	4.4%	Spruce-Pine-Fir
B2	Hanger 4" x 3-1/2"	651 lbs	n/a	5.9%	HGUS410

Cautions

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



DWG NO. TAM5948-20
STRUCTURAL
COMPONENT ONLY



Bolse Cascade



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

PASSED

2ND FLR FRAMING\Dropped Beams\B15C DR(I2381) (Dropped Beam)

Dry | 1 span | No cant.

February 10, 2020 09:01:54

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 3 EL 3.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B15C DR(I2381)

Specifier:

Designer: AJ

Company:

Notes

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

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

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

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.

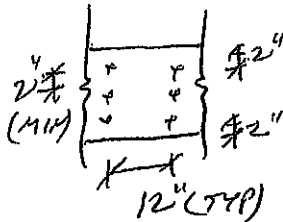
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/4" ARDOX
SPIRAL NAILS @ 12" O/C FOR
MULTI-PLY NAILING, MAINTAIN
A MIN. 2" LUMBER EDGE/END
DISTANCE. DO NOT USE AIR NAILS

DWG NO. YAM 5948-20
STRUCTURALCOMPONENT 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

Dry | 1 span | No cant.

February 10, 2020 09:01:54

Build 7239

Job name:

File name: MOUNTAINASH 3 EL 3.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B14C DR(i2413)

City, Province, Postal Code: WATERDOWN

Specifier:

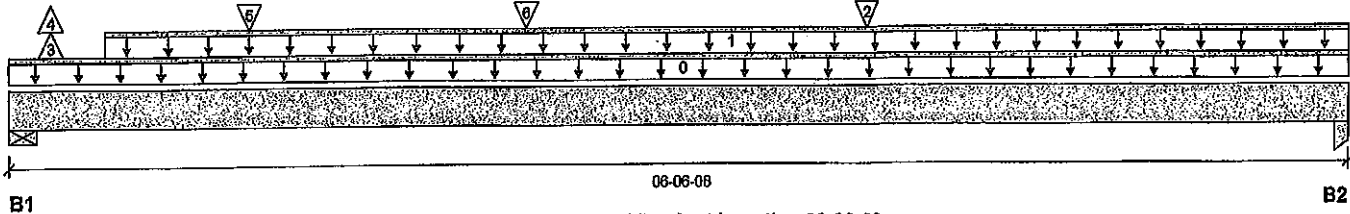
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 06-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	423 / 80	578 / 0	28 / 0	
B2, 3-7/16"	236 / 0	734 / 0	52 / 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	06-06-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-05-08	06-06-08	Top		100			n/a
2	-	Conc. Pt. (lbs)	L	04-01-14	04-01-14	Top	229	521	80		n/a
3	J5(i2419)	Conc. Pt. (lbs)	L	00-02-06	00-02-06	Top	48	-72			n/a
4	J5(i2419)	Conc. Pt. (lbs)	L	00-02-06	00-02-06	Top	-80				n/a
5	J4(i2436)	Conc. Pt. (lbs)	L	01-02-00	01-02-00	Top	176	88			n/a
6	J4(i2371)	Conc. Pt. (lbs)	L	02-06-00	02-06-00	Top	203	102			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1717 ft-lbs	15093 ft-lbs	11.4%	0	03-11-05
End Shear	861 lbs	7521 lbs	11.5%	0	05-05-09
Total Load Deflection	L/999 (0.023")	n/a	n/a	58	03-05-00
Live Load Deflection	L/999 (0.008")	n/a	n/a	85	03-04-00
Max Defl.	0.023"	n/a	n/a	58	03-05-00
Span / Depth	7.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	1385 lbs	5.4%	5.9%	Spruce-Pine-Fir
B2	Column 3-7/16" x 3-1/2"	1027 lbs	16.1%	10.7%	Unspecified

Notes

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

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

Calculations assume unbraced length of Top: 02-01-08, Bottom: 02-01-08.

Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

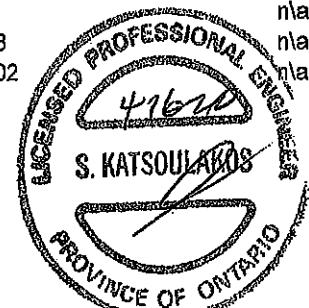
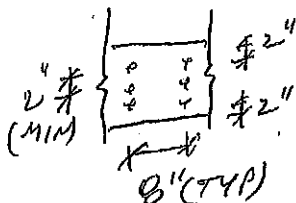
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

PROVIDE 3 ROWS OF 3/4" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



OWG NO. TAM 5949-20
STRUCTURAL

Disclosure

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



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B1A(i2350) (Flush Beam)**

Dry | 1 span | No cant.

PASSED

April 15, 2020 16:25:10

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

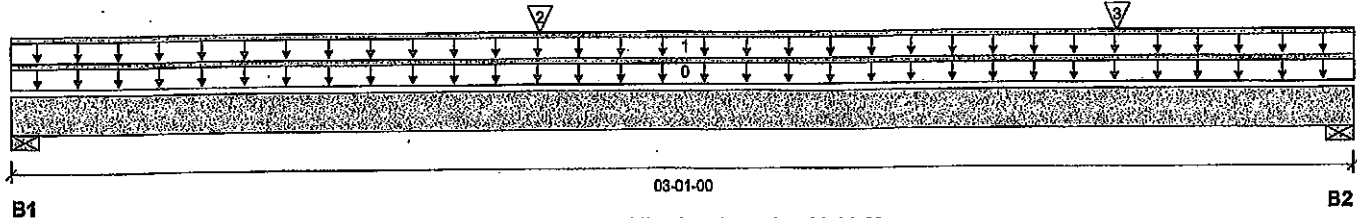
File name: MOUNTAINASH 3 EL 1 DECK CONDITION.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B1A(i2350)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 03-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	770 / 0	525 / 0		
B2, 3"	968 / 0	624 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	E13(i595)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	303	233			n/a
2	J2(i2020)	Conc. Pt. (lbs)	L	01-02-08	01-02-08	Top	402	201			n/a
3	J2(i2020)	Conc. Pt. (lbs)	L	02-06-08	02-06-08	Top	402	201			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1310 ft-lbs	23220 ft-lbs	5.6%	1	01-03-02
End Shear	1022 lbs	11571 lbs	8.8%	1	01-00-08
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	01-06-04
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-06-04
Max Defl.	0.002"	n/a	n/a	4	01-06-04
Span / Depth	3.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	1812 lbs	28.0%	14.1%	Spruce-Pine-Fir
B2	Wall/Plate 3" x 3-1/2"	2233 lbs	34.6%	17.4%	Spruce-Pine-Fir

Notes

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

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

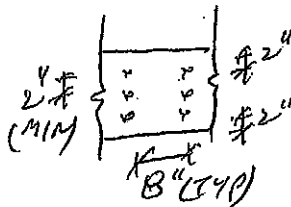
Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA 086. **AMENDED 2020**

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA 086.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

PROVIDE 3 ROWS OF 3/4" ARDOR
SPIRAL NAILS @ 8" O/C FOR
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A MIN. 2" LUMBER EDGE/END
DISTANCE. DO NOT USE AIR NAILS

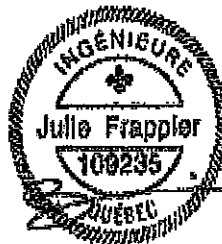
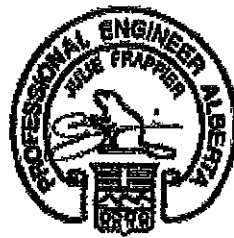


DWG NO. TAM 5950-20

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®



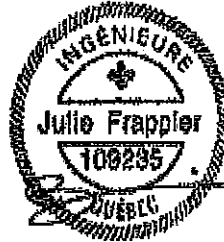
Maximum Floor Spans

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'-4"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	NI-40x	21'-5"	19'-10"	18'-11"	17'-5"	22'-1"	20'-6"	19'-6"	17'-5"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
16"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

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

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



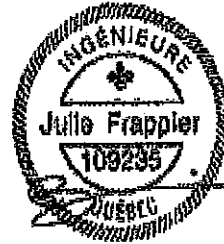
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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-1274C.

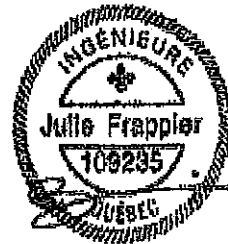
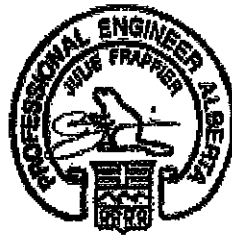


Maximum Floor Spans

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

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

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



Maximum Floor Spans

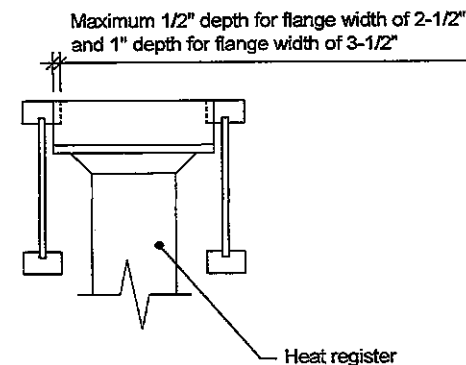
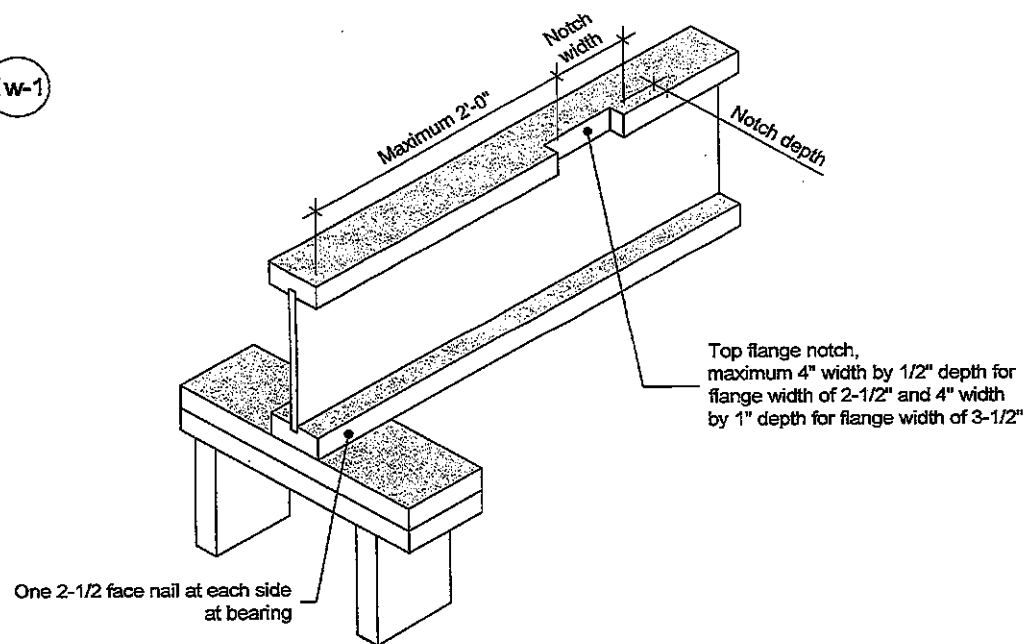
Live Load = 40 psf; Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

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-1274C.

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 or contact Nordic Structures.

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

**NORDIC
STRUCTURES**

T 514-871-8526
1 866 817-3418
nordic.ca

TITLE
Notch in I-joist for Heat Register

CATEGORY
I-joist - Typical Floor Framing and Construction Details

DOCUMENT

DATE
2018-04-10

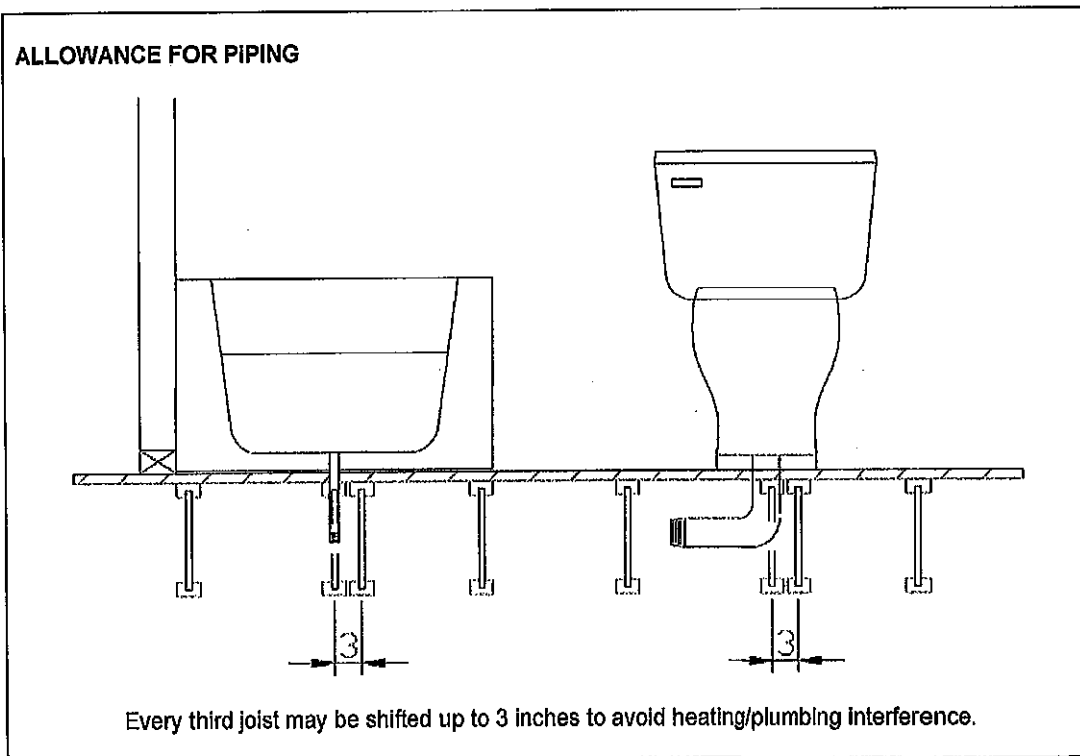
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Allowance for Piping (Installation Notes)

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