

CITY OF HAMILTON
Building Division

Permit No. 20-199450

THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE

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

These drawings and/or specifications have been reviewed by
JAN 15 2021

FOR THE BUILDING OFFICIAL DATE

TAMARACK

LUMBER INC

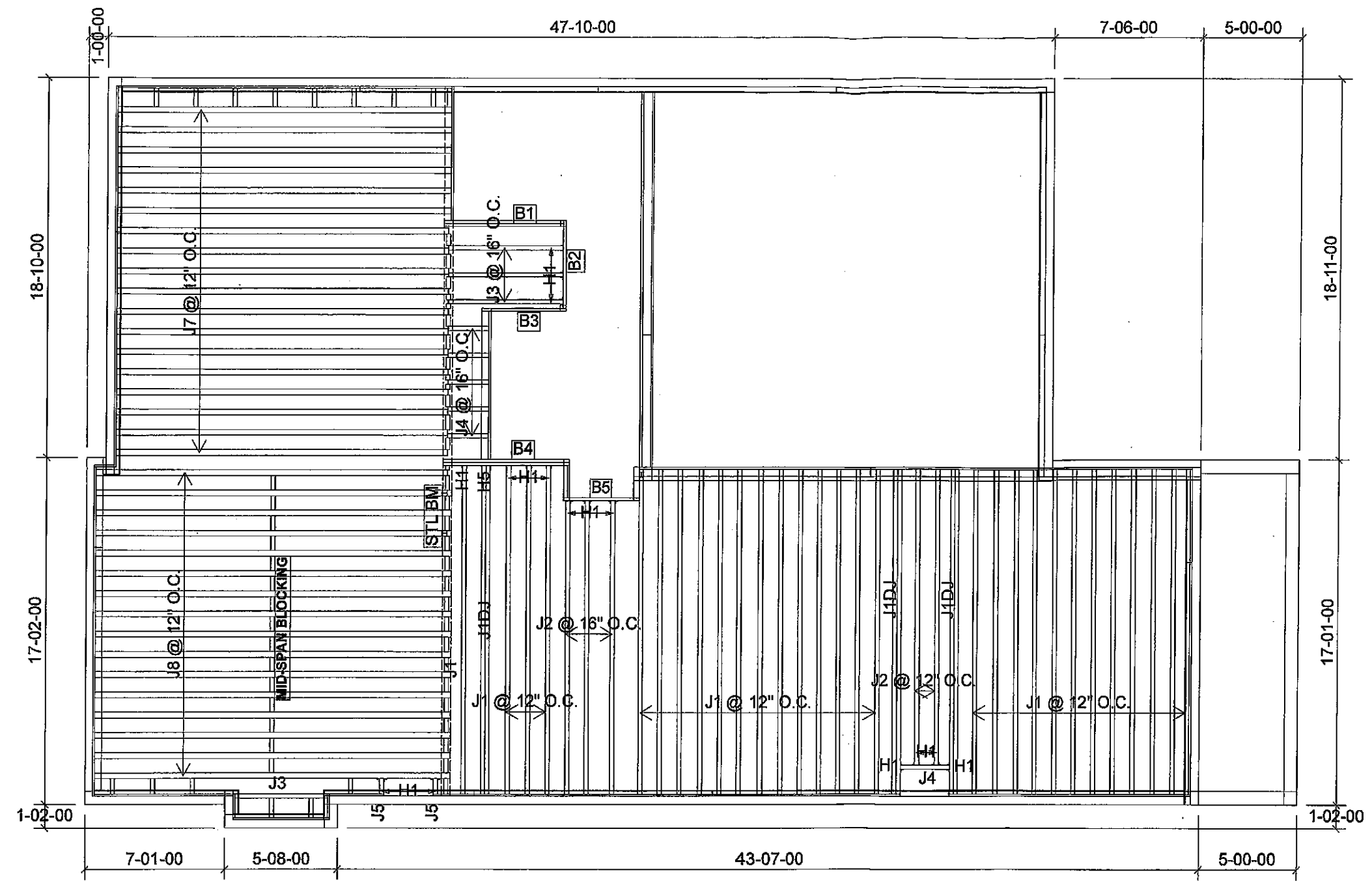
ALPA LUMBER GROUP

FROM PLAN DATED: JAN 2019
BUILDER: GREENPARK HOMES
SITE: RUSSELL GARDEN S PH 3
MODEL: MOUNTAINASH 5
ELEVATION: 2
LOT: 13
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
FIGURES 4 & 5 FOR REINFORCEMENT
REQUIREMENTS. FOR **HOLES** INCLUDING
DUCT CHASE AND **FIELD CUT OPENINGS**
SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE**
APPLICATION AS PER O.B.C 9.30.6.

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

SUBFLOOR: 3/4" GLUED AND NAILED

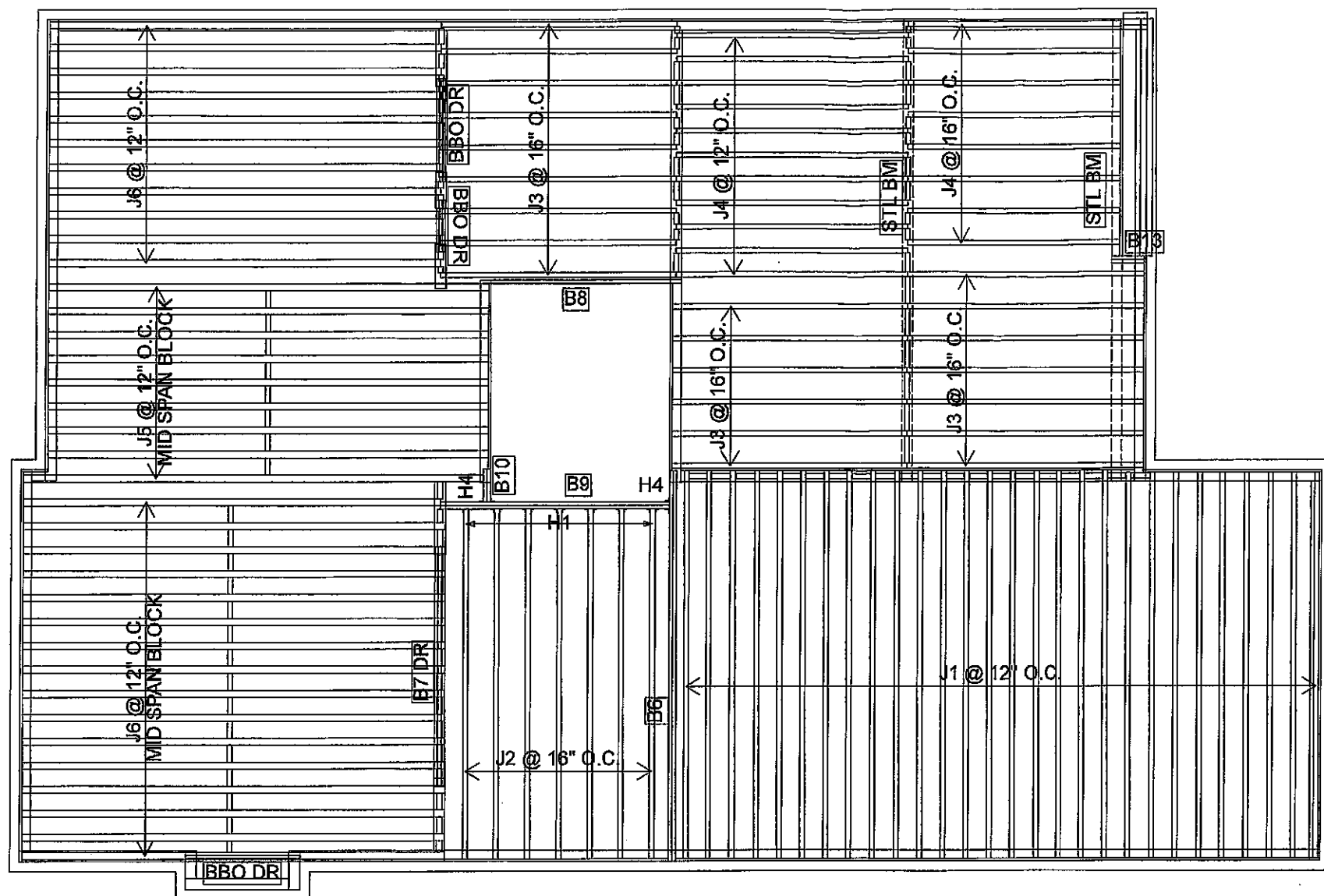


Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	29	MFD
J1DJ	18-00-00	9 1/2" NI-40x	2	6	MFD
J2	16-00-00	9 1/2" NI-40x	1	5	MFD
J3	6-00-00	9 1/2" NI-40x	1	4	MFD
J4	4-00-00	9 1/2" NI-40x	1	6	MFD
J5	2-00-00	9 1/2" NI-40x	1	2	MFD
J7	18-00-00	9 1/2" NI-80	1	18	MFD
J8	18-00-00	9 1/2" NI-80	1	16	MFD
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B2	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B1	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B5	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
1	H5	HU312-2

DATE: 8/26/20

1st FLOOR



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	28	MFD
J2	16-00-00	9 1/2" NI-40x	1	7	MFD
J3	12-00-00	9 1/2" NI-40x	1	22	MFD
J4	10-00-00	9 1/2" NI-40x	1	19	MFD
J5	20-00-00	9 1/2" NI-80	1	9	MFD
J6	18-00-00	9 1/2" NI-80	1	27	MFD
B6	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B7 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3	MFD
B10	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B13	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/9.5
2	H4	HGUS410

DATE: 2020-08-20

2ND FLOOR



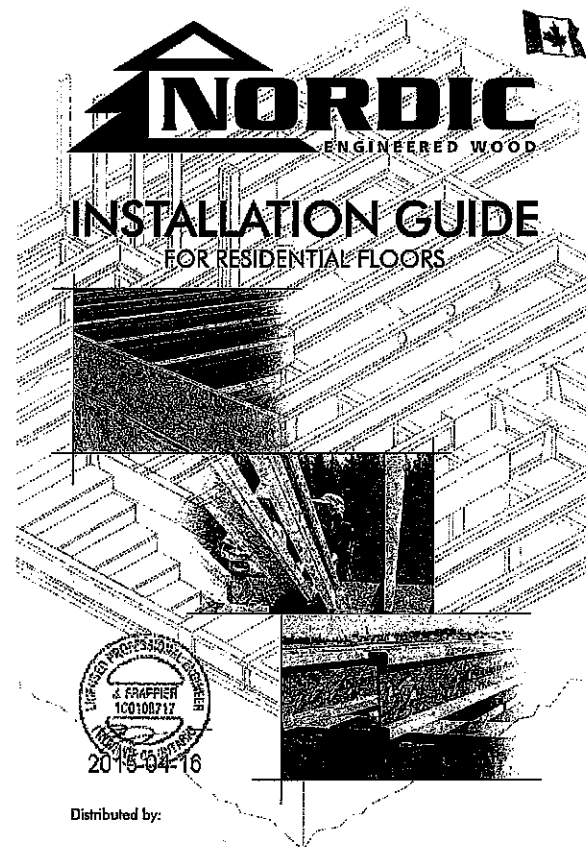
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 LOT: L3
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 DESIGN LOADS: L/480.000
 LIVE LOAD: 40.0 lb/ft²
 DEAD LOAD: 15.0 lb/ft²
 TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED



SAFETY AND CONSTRUCTION PRECAUTIONS



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

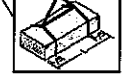


Never stack building materials on unbraced I-joists. Once sheathed, do not over-stress I-joist with concentrated loads from building materials.

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.

STORAGE AND HANDLING GUIDELINES

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



MAXIMUM FLOOR SPANS

1. Maximum clear span applicable to single-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 CGG-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 longspan.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA C308-07 Standard, and NBC 2100.
7. SI units conversion: 1 inch = 25.4 mm, 1 foot = 0.305 m.

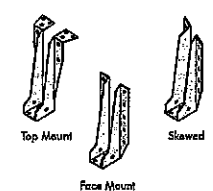
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SINGLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On center spacing				On center spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
2-1/2"	N1-20	15'1"	14'2"	13'9"	12'5"	16'3"	15'4"	14'10"	12'7"
	N1-20S	16'1"	15'2"	14'9"	14'9"	17'3"	16'5"	15'10"	13'8"
	N1-20L	16'3"	15'4"	14'10"	14'11"	17'5"	16'7"	15'11"	13'9"
	N1-20T	17'1"	16'1"	15'6"	15'7"	18'2"	17'4"	16'9"	14'10"
3-1/2"	N3-20	17'2"	16'3"	15'9"	15'9"	18'10"	17'11"	16'11"	14'11"
	N3-20S	18'1"	17'0"	16'5"	16'6"	19'0"	18'1"	17'9"	15'0"
	N3-20L	18'4"	17'3"	16'7"	16'9"	19'3"	18'4"	17'9"	15'1"
	N3-20T	19'4"	18'0"	17'4"	17'5"	20'4"	19'1"	18'4"	15'1"
4"	N4-20	19'9"	18'3"	17'6"	17'7"	21'9"	20'2"	19'3"	15'4"
	N4-20S	20'2"	18'7"	17'10"	17'11"	22'3"	20'7"	19'8"	15'9"
	N4-20L	20'4"	18'9"	17'11"	18'0"	22'5"	20'9"	19'10"	15'11"
	N4-20T	21'1"	19'4"	18'7"	18'7"	23'1"	21'4"	20'4"	16'0"
6"	N6-20	21'7"	20'0"	19'1"	19'2"	23'10"	22'1"	21'1"	16'2"
	N6-20S	21'11"	20'3"	19'4"	19'5"	23'5"	22'5"	21'5"	16'6"
	N6-20L	22'5"	20'9"	19'9"	19'10"	24'0"	22'10"	21'10"	16'10"
	N6-20T	22'7"	21'11"	20'9"	20'9"	24'1"	22'9"	21'9"	16'11"
8"	N8-20	22'3"	20'9"	19'9"	19'10"	24'7"	22'9"	21'9"	16'11"
	N8-20S	22'7"	21'11"	20'9"	20'9"	24'11"	23'3"	22'3"	17'0"
	N8-20L	23'1"	21'7"	20'7"	20'7"	25'0"	23'8"	22'8"	17'1"
	N8-20T	23'6"	21'9"	20'9"	20'9"	25'5"	24'0"	23'1"	17'6"
10"	N10-20	24'5"	22'6"	21'5"	21'6"	26'11"	24'10"	23'9"	17'9"
	N10-20S	24'8"	22'9"	21'8"	21'9"	27'3"	25'2"	24'0"	18'1"

CEMC EVALUATION REPORT 17032-B

I-JOIST HANGERS

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

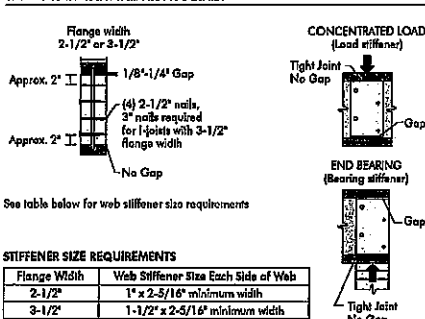


WEB STIFFENERS

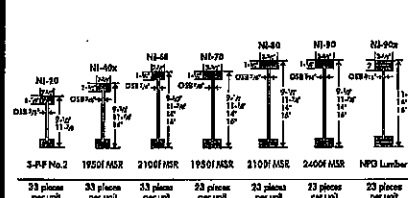
RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (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 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



NORDIC I-JOIST SERIES



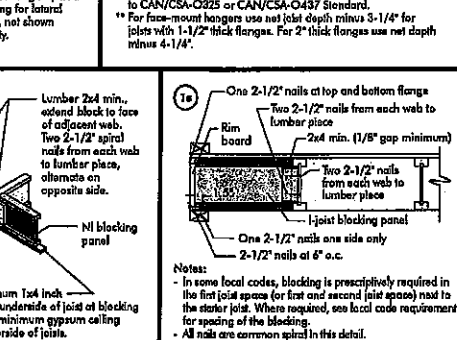
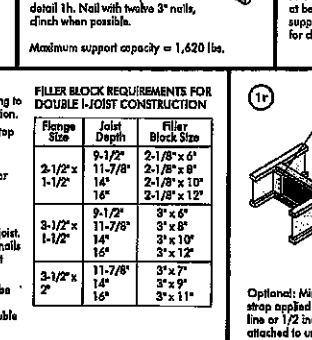
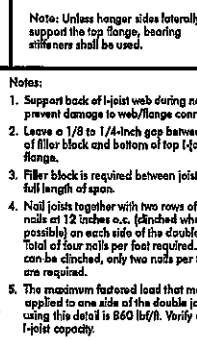
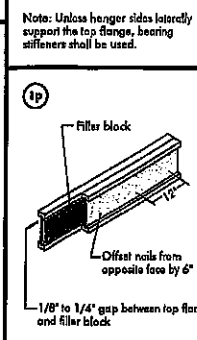
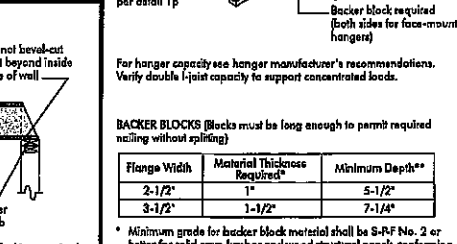
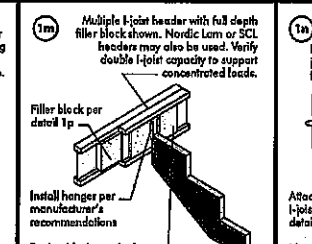
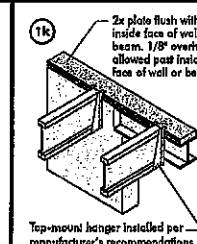
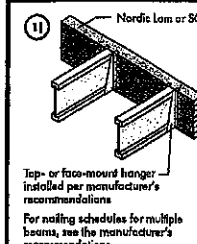
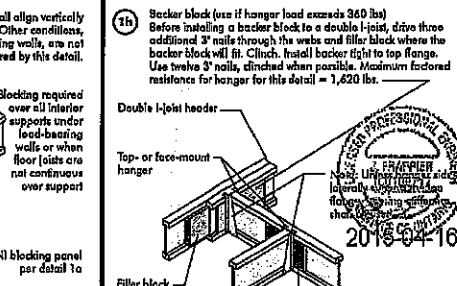
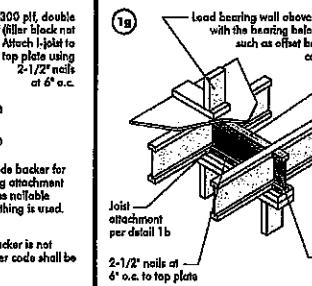
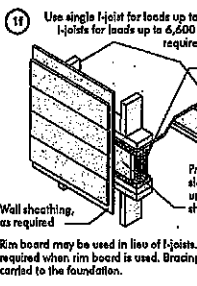
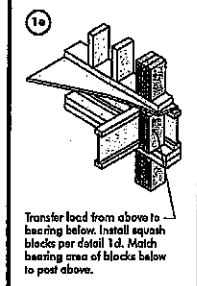
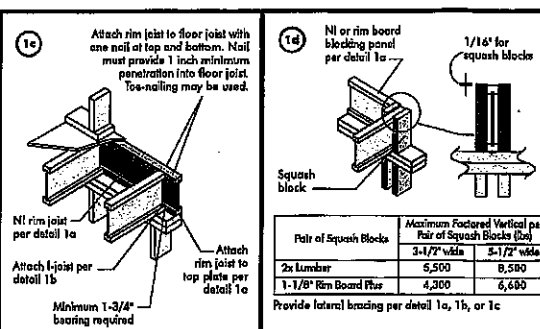
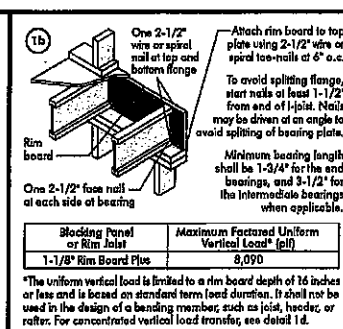
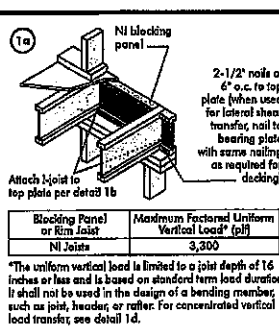
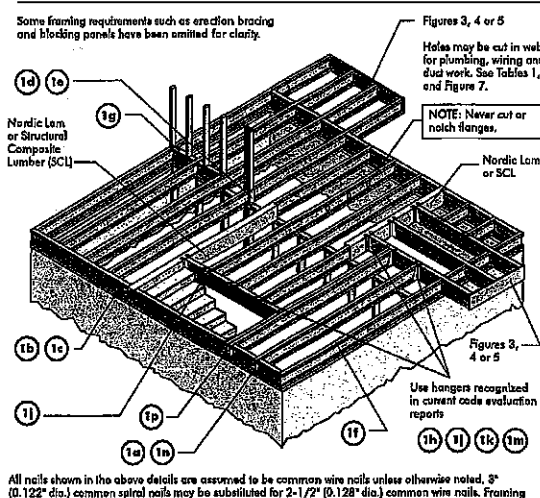
Chambers Châteauguay Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from the raw material to the finished product, reflects our commitment to quality.

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

INSTALLING NORDIC I-JOISTS

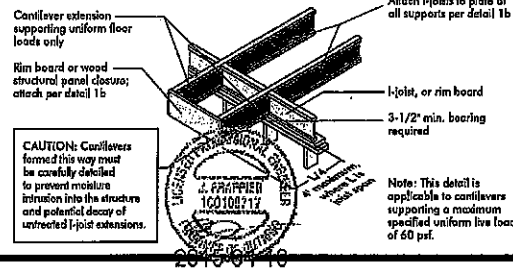
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, consult supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical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

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

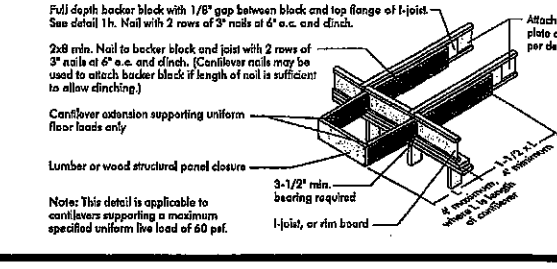


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

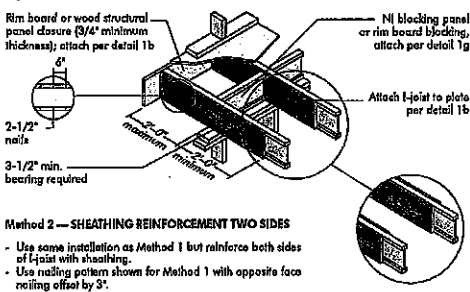


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

4b Alternate Method 2 — DOUBLE I-JOIST

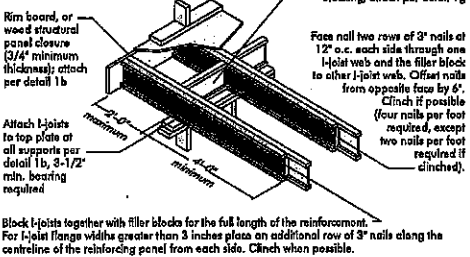


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	1 = 30 psf, DL = 15 psf				2 = 40 psf, DL = 15 psf				3 = 50 psf, DL = 15 psf			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
11-7/8"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
14"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
16"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2

1. N = No reinforcement required.
2. N = Reinforced with 3/4 inch wood structural panel on one side only.
3. N = Reinforced with 3/4 inch wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3/4 inch wide openings spaced less than 60 inches on center, additional reinforcement is required.
5. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.

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

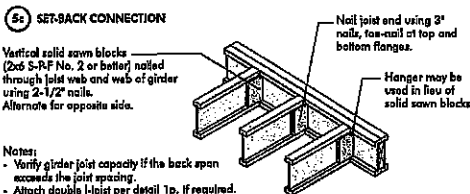
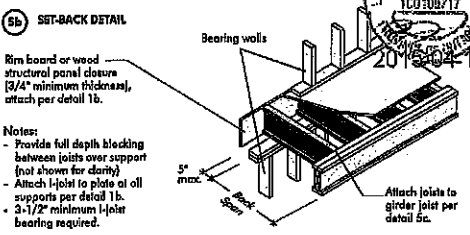
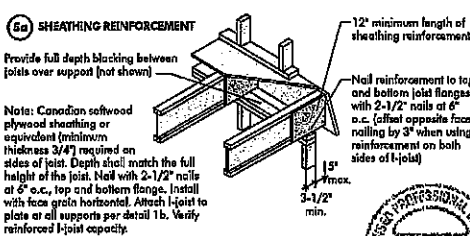


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	1 = 30 psf, DL = 15 psf				2 = 40 psf, DL = 15 psf				3 = 50 psf, DL = 15 psf			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
11-7/8"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
14"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
16"	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2

1. N = No reinforcement required.
2. N = Reinforced with 3/4 inch wood structural panel on one side only.
3. N = Reinforced with 3/4 inch wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3/4 inch wide openings spaced less than 60 inches on center, additional reinforcement is required.
5. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.

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. Wherever possible, field-cut holes should be centered on the middle of the web.
4. The maximum size hole or the minimum 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.

FIGURE 7 FIELD-CUT HOLE LOCATOR

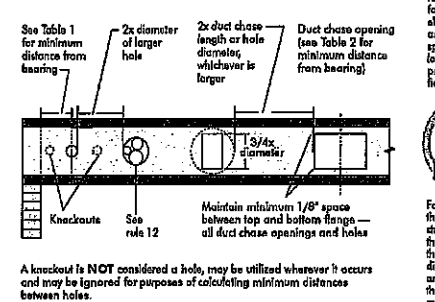


TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Joist Depth (in.)	Joist Series	Minimum distance from inside face of any support to center of hole (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	N-10	12	12	12	12	12	12	12	12	12	12	12	12
	N-12	12	12	12	12	12	12	12	12	12	12	12	12
	N-14	12	12	12	12	12	12	12	12	12	12	12	12
	N-16	12	12	12	12	12	12	12	12	12	12	12	12
11-7/8"	N-10	12	12	12	12	12	12	12	12	12	12	12	12
	N-12	12	12	12	12	12	12	12	12	12	12	12	12
	N-14	12	12	12	12	12	12	12	12	12	12	12	12
	N-16	12	12	12	12	12	12	12	12	12	12	12	12
14"	N-10	12	12	12	12	12	12	12	12	12	12	12	12
	N-12	12	12	12	12	12	12	12	12	12	12	12	12
	N-14	12	12	12	12	12	12	12	12	12	12	12	12
	N-16	12	12	12	12	12	12	12	12	12	12	12	12
16"	N-10	12	12	12	12	12	12	12	12	12	12	12	12
	N-12	12	12	12	12	12	12	12	12	12	12	12	12
	N-14	12	12	12	12	12	12	12	12	12	12	12	12
	N-16	12	12	12	12	12	12	12	12	12	12	12	12

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 support to center of hole.
3. Distances in this table are based on uniformly loaded joists.

OPTIONAL:
The above table is based on the I-joists used or 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 (2) as given above may be reduced as follows:
Reduced = $\frac{\text{Actual Span}}{\text{Full Span}} \times \text{Table Value}$
Where:
Reduced = Distance from the inside face of any support to center of hole, reduced for less-than-maximum span application.
Actual = The actual measured span distance between the inside faces of supports (2).
Full Span = The full span distance between the inside faces of supports (2).
If the reduced distance is less than 12 inches, use 12 inches.

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 ensure 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 and joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or on 2-1/2 inch common nail to ensure accurate and consistent spacing.)
10. Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. Warm weather accelerates glue setting. Use 2" ring- or screw-shank nails for panels 3/4 inch thick or less, and 2-1/2 inch ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Maximum Spacing of Fasteners
16	5/8	2"	1-3/4"	2"	6"
20	3/8	2"	1-3/4"	2"	6"
24	3/4	2"	1-3/4"	2"	6"

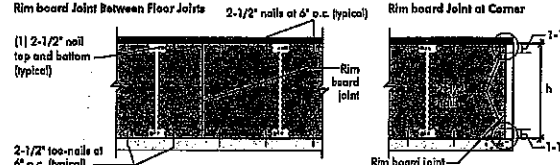
1. Fasteners of sheathing and subflooring shall conform to the above table.
2. Staples shall not be less than 1/16 inch in diameter or thickness, with not less than a 3/8 inch crown driven with the crown parallel to framing.
3. Flooring screws shall not be less than 1/8 inch in diameter.
4. Special conditions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

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

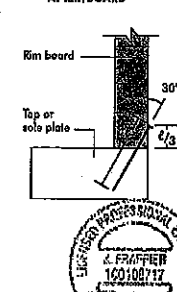
IMPORTANT NOTE: Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

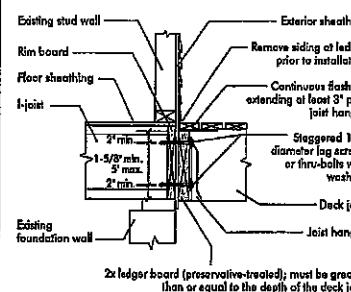
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

Champion Challenging guarantees that, in accordance with our specifications, these products are free from manufacturing defects in material and workmanship.

Furthermore, Champion Challenging warrants that our products, when installed in accordance with our building and installation instructions, will resist or prevent water penetration for the duration of the warranty.

NORDIC STRUCTURES

COMPANY
Apr. 9, 2020 09:52

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	164		164
Live	329		329
Factored:			
Total	698		698
Bearing:			
Capacity			
Joist	1865		1893
Support	3971		-
Des ratio			
Joist	0.37		0.37
Support	0.18		-
Load case	#2		#2
Length	2-3/8		5-1/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.09		-

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

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;
Total length: 16' 11"; Clear span: 16' 3-3/8"; 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 = 698	Vr = 1895	lbs	Vf/Vr = 0.37
Moment (+)	Mf = 2867	Mr = 4824	lbs-ft	Mf/Mr = 0.59
Perm. Defl'n	0.14 = < L/999	0.55 = L/360	in	0.25
Live Defl'n	0.27 = L/721	0.41 = L/480	in	0.67
Total Defl'n	0.41 = L/480	0.82 = L/240	in	0.50
Bare Defl'n	0.33 = L/603	0.55 = L/360	in	0.60
Vibration	Lmax = 16'-5.1	Lv = 17'-1.8	ft	0.96
Defl'n	= 0.034	= 0.039	in	0.87



DWG NO. TAW 6062-20
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} = 265.29 lb-in² K= 4.94e06 lbs

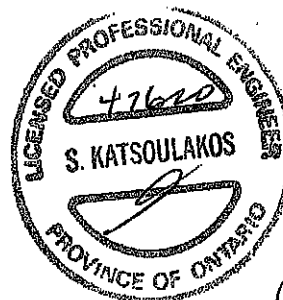
"Live" deflection is due to all non-dead loads (live, wind, snow...)

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. TAN 6062-20
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

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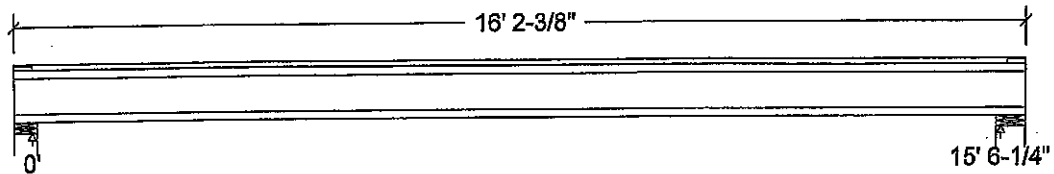
PROJECT
J1 2ND FLOOR.wwb

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	155		155
Live	310		310
Factored:			
Total	660		660
Bearing:			
Capacity			
Joist	1893		1893
Support	7744		9724
Des ratio			
Joist	0.35		0.35
Support	0.09		0.07
Load case	#2		#2
Length	4-3/8		5-1/2
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.

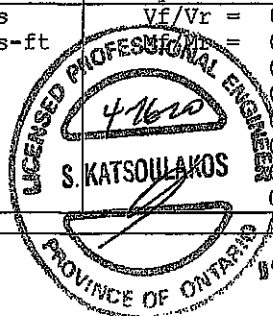
Supports: All - Lumber Wall, No.1/No.2

Total length: 16' 2-3/8"; Clear span: 15' 4-1/2"; 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 = 660	Vr = 1895	lbs	Vf/Vr = 0.35
Moment(+)	Mf = 2559	Mr = 4824	lbs-ft	Mf/Mr = 0.53
Perm. Defl'n	0.11 = < L/999	0.52 = L/360	in	0.22
Live Defl'n	0.23 = L/825	0.39 = L/480	in	0.58
Total Defl'n	0.34 = L/550	0.78 = L/240	in	.44
Bare Defl'n	0.26 = L/708	0.52 = L/360	in	.51
Vibration	Lmax = 15'-6.3	Lv = 16'-8.5	ft	20.93
Defl'n	= 0.033	= 0.042	in	0.79



Drawn by: TAW 6063-20
STRUCTURAL

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

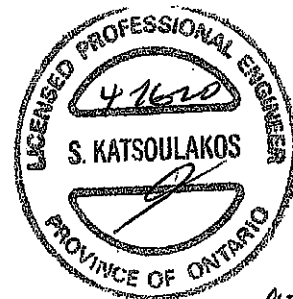
"Live" deflection is due to all non-dead loads (live, wind, snow...)

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.



OWS HQ.YAM 6063 -20
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
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PROJECT
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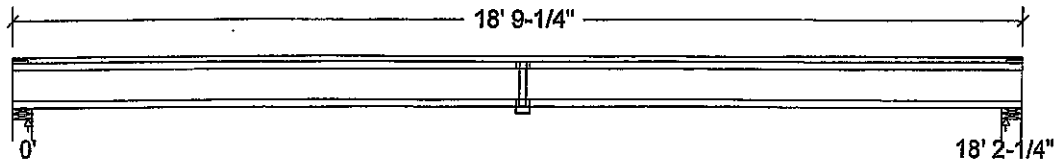
Design Check Calculation Sheet

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	182		182
Live	364		364
Factored:			
Total	773		773
Bearing:			
Capacity			
Joist	1893		1893
Support	10841		10841
Des ratio			
Joist	0.41		0.41
Support	0.07		0.07
Load case	#2		#2
Length	4-3/8		4-3/8
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-80 Floor joist @ 12" o.c.

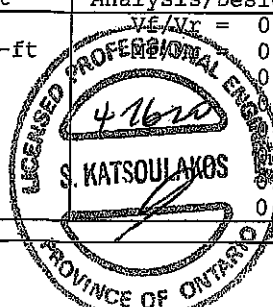
Supports: All - Lumber Wall, No.1/No.2

Total length: 18' 9-1/4"; Clear span: 18' 1/2"; 5/8" nailed and glued OSB sheathing with 1 row of blocking; strapping at blocking locations and 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 = 773	Vr = 1895	lbs	Vf/Vr = 0.41
Moment (+)	Mf = 3514	Mr = 8958	lbs-ft	0.39
Perm. Defl'n	0.15 = L/999	0.61 = L/360	in	0.25
Live Defl'n	0.30 = L/726	0.45 = L/480	in	0.66
Total Defl'n	0.45 = L/484	0.91 = L/240	in	0.50
Bare Defl'n	0.34 = L/649	0.61 = L/360	in	0.55
Vibration	Lmax = 18'-2.3	Lv = 20'-0.5	ft	0.81
Defl'n	= 0.028	= 0.034	in	0.81



DWG NO. TAM 6064-20
STRUCTURAL

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	8958	1.00	1.00	-	1.000	-	-	-	#2
EI	324.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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} = 367.27 lb-in² K= 4.94e06 lbs

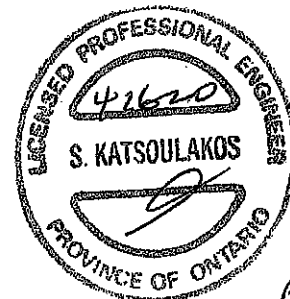
"Live" deflection is due to all non-dead loads (live, wind, snow...)

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.



UWG NO. TAM 6064-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B1(1498) (Flush Beam)**

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

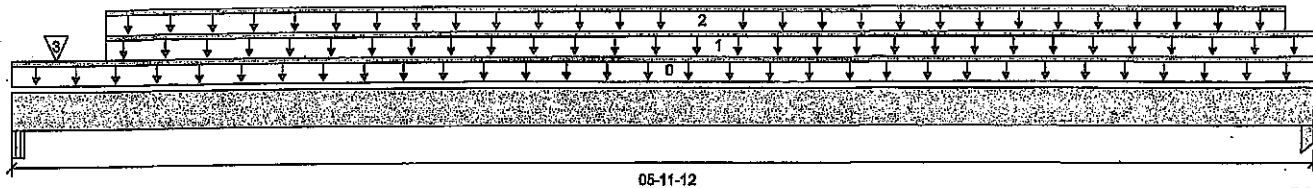
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B1(1498)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 05-11-12

Reaction Summary (Down / Uplift) (lbs)

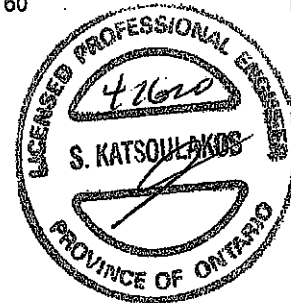
Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	147 / 0	289 / 0		
B2, 1-3/4"	77 / 0	228 / 0		

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	05-11-12	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	05-11-12	Top	27	14			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-04	05-10-00	Top		60			n/a
3	12(1619)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	72	60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	443 ft-lbs	15093 ft-lbs	2.9%	0	03-01-10
End Shear	222 lbs	7521 lbs	3.0%	0	01-02-12
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	03-01-10
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	03-01-10
Max Defl.	0.005"	n/a	n/a	4	03-01-10
Span / Depth	7.0				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	405 lbs	7.9%	2.8%	Unspecified
B2	Column 1-3/4" x 3-1/2"	319 lbs	12.3%	6.6%	Unspecified

Notes

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

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

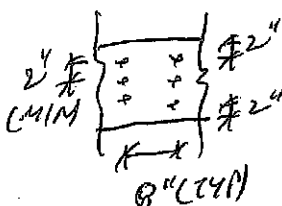
Calculations assume member is fully braced.

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

SW6 NO. TAM 6065-20
STRUCTURAL COMPONENT ONLY
Disclosure

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

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B2(11522) (Flush Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 7, 2020 09:30:29

Build 7239

Job name:

File name: MOUNTAINASH 5 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B2(11522)

City, Province, Postal Code:

Specifier:

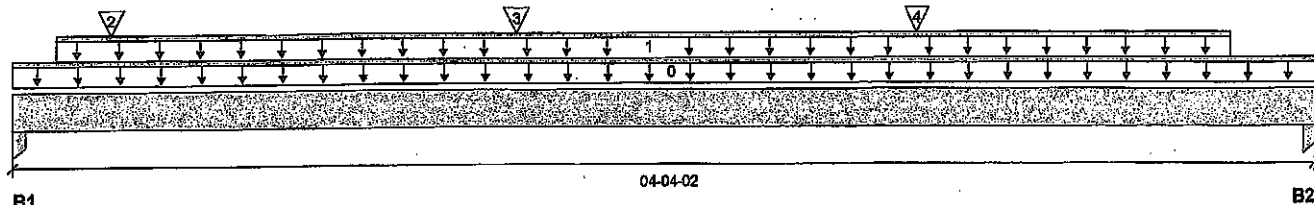
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 04-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	239 / 0	246 / 0		
B2, 3-1/2"	182 / 0	219 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-04-02	Top		5			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-01-12	04-00-10	Top		60			n/a
2	J4(I1461)	Conc. Pt. (lbs)	L	00-03-14	00-03-14	Top	105	52			n/a
3	J4(I1445)	Conc. Pt. (lbs)	L	01-07-14	01-07-14	Top	158	79			n/a
4	J4(I1521)	Conc. Pt. (lbs)	L	02-11-14	02-11-14	Top	158	79			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	658 ft-lbs	11610 ft-lbs	5.7%	1	01-07-14
End Shear	480 lbs	5785 lbs	8.3%	1	03-03-02
Total Load Deflection	L/999 (0.006")	n/a	n/a	4	02-01-06
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-01-06
Max Defl.	0.006"	n/a	n/a	4	02-01-06
Span / Depth	5.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	667 lbs	33.5%	17.9%	Unspecified
B2	Column 3-1/2" x 1-3/4"	546 lbs	13.7%	7.3%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

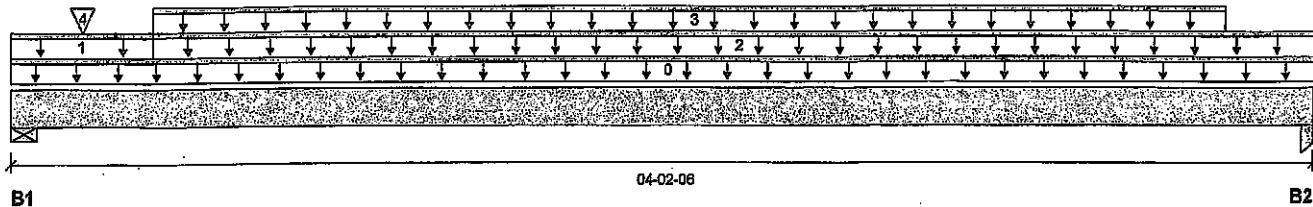
CONFORMS TO OBC 2012**AMENDED 2020****DWG NO. TAN 6066-20****STRUCTURAL
COMPONENT ONLY****Disclosure**

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

Build 7239
Job name:
File name: MOUNTAINASH 5 EL 1.mmdl

Address:
Description: 1ST FLR FRAMING\Flush Beams\B3(1455)

City, Province, Postal Code:
Specifier:
Customer:
Designer:
Code reports:
CCMC 12472-R
Company:

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	32 / 0	188 / 0		
B2, 3-1/2"	19 / 0	123 / 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	04-02-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-08	Top	8				n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	04-02-06	Top	9	5			n/a
3	WALL	Unf. Lin. (lb/ft)	L	00-05-08	03-10-14	Top		60			n/a
4	10(I544)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	12	64			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	185 ft-lbs	7546 ft-lbs	2.1%	0	02-02-03
End Shear	91 lbs	3761 lbs	2.4%	0	01-03-00
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	02-02-03
Live Load Deflection	L/999 (0")	n/a	n/a	5	02-02-03
Max Defl.	0.001"	n/a	n/a	4	02-02-03
Span / Depth	4.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	263 lbs	6.8%	3.4%	Spruce-Pine-Fir
B2	Column 3-1/2" x 1-3/4"	172 lbs	6.6%	3.5%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012
AMENDED 2020

UWG NO. TAM 6067-20
STRUCTURAL
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Disclosure

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BC CALC®, BC FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, 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****PASSED****1ST FLR FRAMING\Flush Beams\B4(i1440) (Flush Beam)**

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BG CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

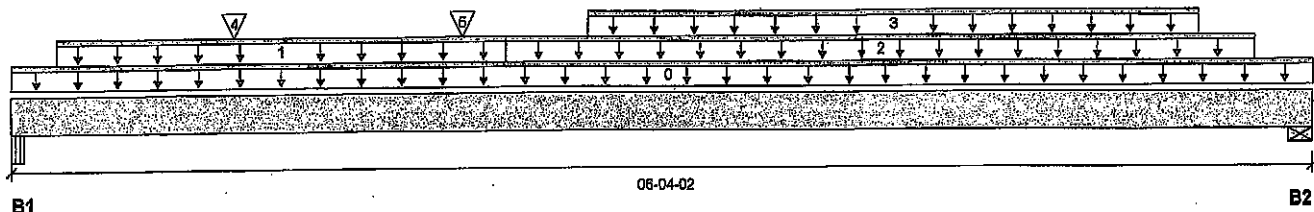
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B4(i1440)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 06-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	1442 / 0	799 / 0		
B2, 3-1/2"	1552 / 0	826 / 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	06-04-02	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	02-04-10	Top	26	13			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	02-04-10	06-00-10	Top	240	120			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	02-09-06	05-09-06	Top	341	170			n/a
4	J1(i1486)	Conc. Pt. (lbs)	L	01-00-14	01-00-14	Top	316	158			n/a
5	-	Conc. Pt. (lbs)	L	02-02-01	02-02-01	Top	695	418			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5363 ft-lbs	23220 ft-lbs	23.1%	1	03-03-06
End Shear	2948 lbs	11571 lbs	25.5%	1	01-02-12
Total Load Deflection	L/999 (0.044")	n/a	n/a	4	03-03-08
Live Load Deflection	L/999 (0.029")	n/a	n/a	5	03-03-06
Max Defl.	0.044"	n/a	n/a	4	03-03-06
Span / Depth	7.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	3161 lbs	40.3%	14.1%	Unspecified
B2	Wall/Plate 3-1/2" x 3-1/2"	3360 lbs	44.6%	22.5%	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.

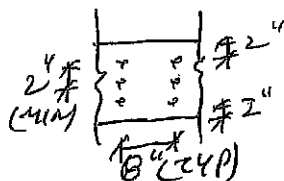
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO CBC 2012

AMENDED 2020



PROVIDE 2 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



DWG NO. TAN 6068-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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



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

PASSED

1ST FLR FRAMING\Flush Beams\B5(i1548) (Flush Beam)

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

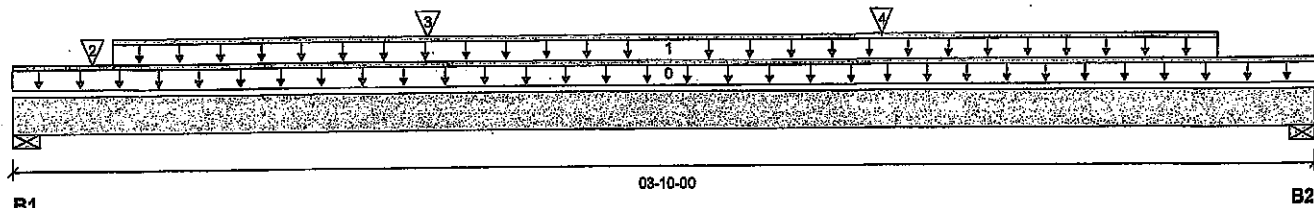
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B5(i1548)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 03-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1050 / 0	535 / 0		
B2, 3-1/2"	766 / 0	392 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-10-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-03-08	03-06-08	Top	240	120			n/a
2	J2(i1488)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	289	145			n/a
3	J2(i1439)	Conc. Pt. (lbs)	L	01-02-08	01-02-08	Top	341	171			n/a
4	J2(i1540)	Conc. Pt. (lbs)	L	02-06-08	02-06-08	Top	403	201			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1549 ft-lbs	11610 ft-lbs	13.3%	1	02-00-08
End Shear	1228 lbs	5785 lbs	21.2%	1	02-09-00
Total Load Deflection	L/999 (0.009")	n/a	n/a	4	01-11-00
Live Load Deflection	L/999 (0.006")	n/a	n/a	5	01-11-00
Max Defl.	0.009"	n/a	n/a	4	01-11-00
Span / Depth	4.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	2244 lbs	59.6%	30.0%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 1-3/4"	1639 lbs	43.5%	21.9%	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



OWN NO. TAM 6069-20
STRUCTURAL
COMPONENT ONLY

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

**Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B7 DR(1989) (Dropped Beam)**

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

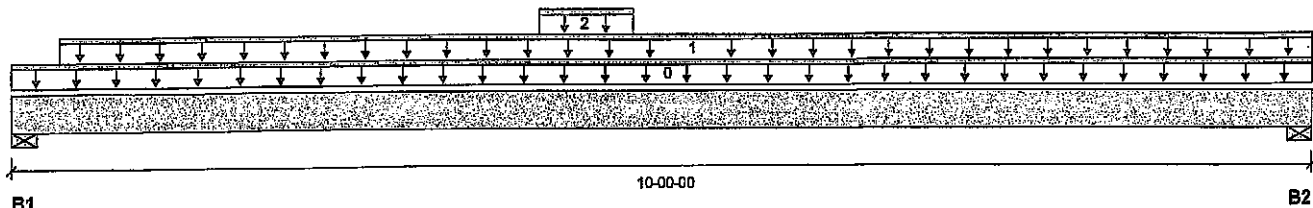
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B7 DR(1989)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 10-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1592 / 0	868 / 0		
B2, 4"	1824 / 0	984 / 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	10-00-00	Top		14			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-08	10-00-00	Top	341	170			n/a
2	Bk2(11151)	Unf. Lin. (lb/ft)	L	04-00-04	04-08-12	Top	136	68			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	8666 ft-lbs	36222 ft-lbs	23.9%	1	04-10-08
End Shear	3250 lbs	17356 lbs	18.7%	1	08-10-08
Total Load Deflection	L/875 (0.13")	n/a	27.4%	4	05-00-00
Live Load Deflection	L/999 (0.084")	n/a	n/a	5	05-00-00
Max Defl.	0.13"	n/a	n/a	4	05-00-00
Span / Depth	11.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4" x 5-1/4"	3474 lbs	12.4%	13.6%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 5-1/4"	3967 lbs	14.2%	15.5%	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 unbraced length of Top: 00-02-04, Bottom: 00-02-04.

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

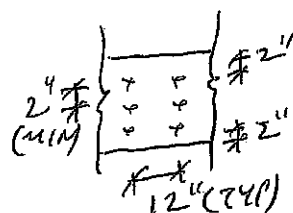
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

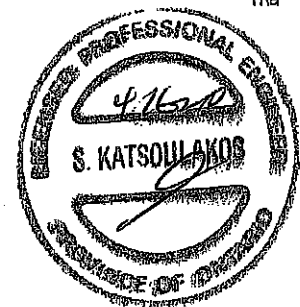
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/8" ARDOX
SPIRAL NAILS @ 12" O/C FOR
MULTI-PLY NAILING, MAINTAIN
A MIN. 2" LUMBER EDGE/END
DISTANCE. DO NOT USE AIR NAILS
SPACER NAILS 6" BETWEEN PLYS



OWG NO. TAM 6070-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B10(11567) (Flush Beam)

PASSED

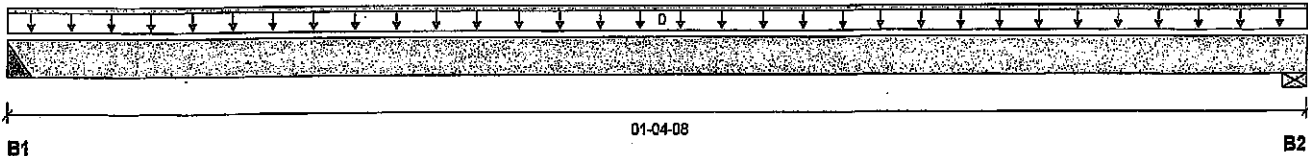
BC CALC® Member Report
Build 7239
Job name:
Address:
City, Province, Postal Code:
Customer:
Code reports:

Dry | 1 span | No cant.

February 7, 2020 09:30:29

File name: MOUNTAINASH 5 EL 1.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B10(11567)
Specifier:
Designer:
Company:

CCMC 12472-R



Total Horizontal Product Length = 01-04-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"		6 / 0		
B2, 6-1/2"		8 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-04-08	Top	1.00	0.65	1.00	1.15	00-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1 ft-lbs	15093 ft-lbs	n/a	0	00-07-00
End Shear	3 lbs	7521 lbs	n/a	0	00-04-00
Span / Depth	0.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	8 lbs	n/a	n/a	HGUS410
B2	Wall/Plate 6-1/2" x 3-1/2"	11 lbs	0.1%	n/a	Spruce-Pine-Fir

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.

Notes

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

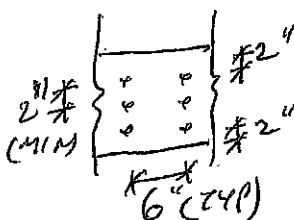
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO CBC 2012

AMENDED 2020



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



HWG NO. TAM 6071 -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®.

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B13(i625) (Flush Beam)**

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

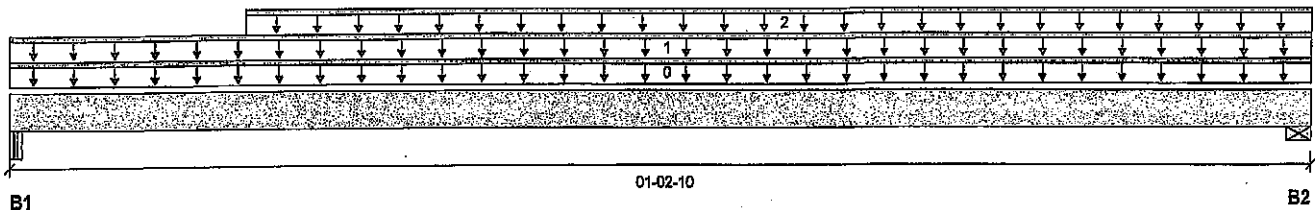
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B13(i625)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 01-02-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-5/8"	42 / 0	41 / 0	72 / 0	
B2, 5-1/2"	66 / 0	63 / 0	107 / 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	01-02-10	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	01-02-10	Top	77	70	147		n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	01-02-10	Top	14	7			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	23 ft-lbs	23220 ft-lbs	0.1%	13	00-05-14
End Shear	114 lbs	11571 lbs	1.0%	13	00-02-10
Span / Depth	0.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 2-5/8" x 3-1/2"	201 lbs	5.1%	1.8%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	306 lbs	2.6%	1.3%	Spruce-Pine-Fir

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.

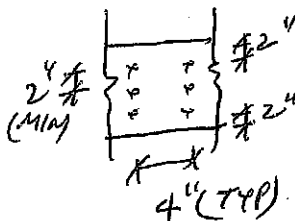
Unbalanced snow loads determined from building geometry were used in selected product's verification.

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 @ 4" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



DWG NO. TAM 6072-20

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®

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B6(I1574) (Flush Beam)**

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

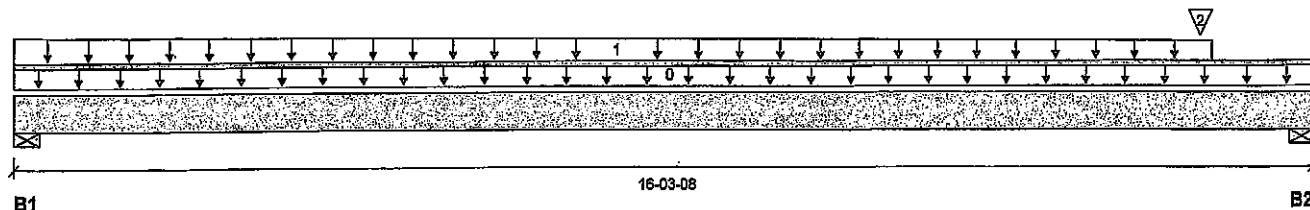
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B6(I1574)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 16-03-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	332 / 0	247 / 0		
B2, 5-1/2"	1753 / 0	999 / 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	16-03-08	Top		10			00-00-00
1	FC2 Floor Material	Trapezoidal (lb/ft)	L	00-00-00	15-00-00	Top	29	15			n/a
2	B9(I1577)	Conc. Pt. (lbs)	L	14-10-04	14-10-04	Top	1686	890			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4312 ft-lbs	23220 ft-lbs	18.6%	1	11-08-00
End Shear	3844 lbs	11571 lbs	33.2%	1	15-00-08
Total Load Deflection	L/703 (0.265")	n/a	34.1%	4	08-08-04
Live Load Deflection	L/1176 (0.158")	n/a	30.6%	5	08-08-04
Max Defl.	0.265"	n/a	n/a	4	08-08-04
Span / Depth	19.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	807 lbs	6.8%	3.4%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	3877 lbs	32.7%	16.5%	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.

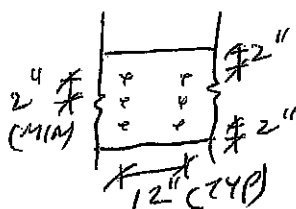
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

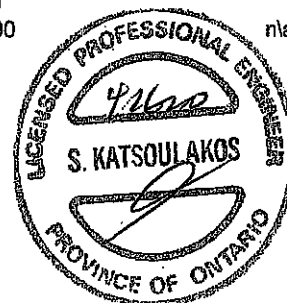
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



ONE NO. TAM 6073-20
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®,



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B8(1569) (Flush Beam)****PASSED**

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 7, 2020 09:30:29

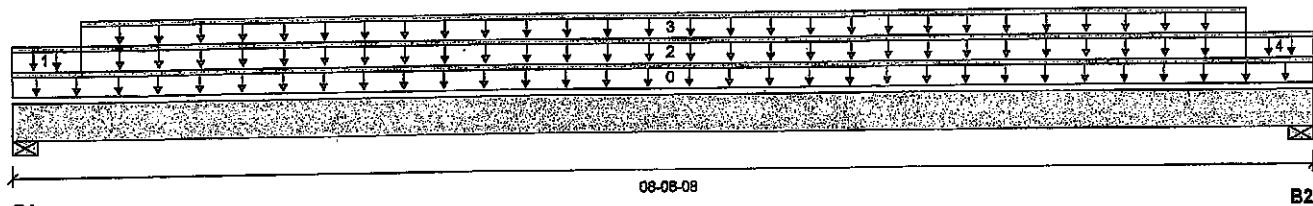
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B8(1569)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 08-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	32 / 0	265 / 0		
B2, 5-1/2"	30 / 0	264 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-06-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-08	Top	10				n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-08	08-01-00	Top		60			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	08-01-00	Top	7	4			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	08-01-00	08-06-08	Top	6				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	718 ft-lbs	7546 ft-lbs	9.5%	0	04-03-04
End Shear	289 lbs	3761 lbs	7.7%	0	01-03-00
Total Load Deflection	L/999 (0.024")	n/a	n/a	4	04-03-04
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	04-03-04
Max Defl.	0.024"	n/a	n/a	4	04-03-04
Span / Depth	9.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	371 lbs	9.6%	4.9%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	370 lbs	9.6%	4.8%	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

DWD NO. TAM 6074-20

STRUCTURAL

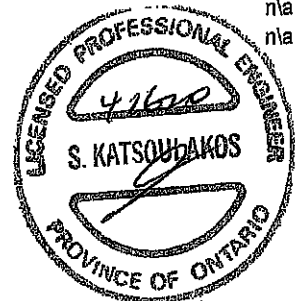
COMPONENT ONLY

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



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B9(11577) (Flush Beam)**

Dry | 1 span | No cant.

February 7, 2020 09:30:29

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

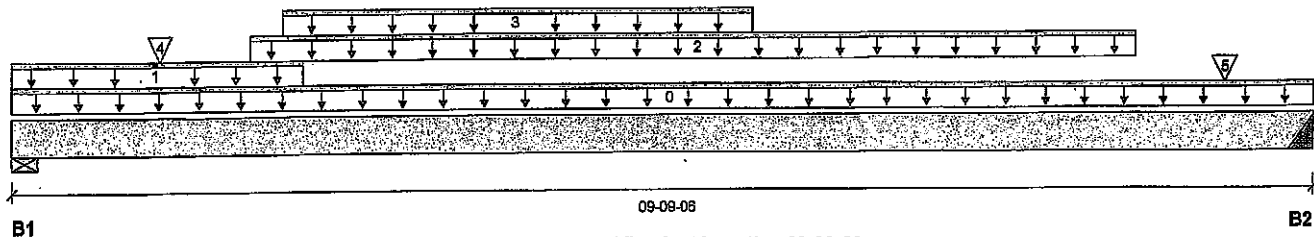
File name: MOUNTAINASH 5 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B9(11577)

Specifier:

Designer:

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	1918 / 0	1008 / 0		
B2, 4"	1730 / 0	914 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-09-06	Top		10			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-01-14	Top	23	11			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-09-04	08-05-04	Top	298	149			n/a
3	STAIR	Unf. Lin. (lb/ft)	L	02-00-01	05-06-01	Top	240	120			n/a
4	J2(i675)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	451	225			n/a
5	J2(i673)	Conc. Pt. (lbs)	L	09-01-04	09-01-04	Top	321	161			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	10250 ft-lbs	23220 ft-lbs	44.1%	1	04-07-04
End Shear	4076 lbs	11571 lbs	35.2%	1	01-00-04
Total Load Deflection	L/501 (0.224")	n/a	47.9%	4	04-09-04
Live Load Deflection	L/763 (0.147")	n/a	47.2%	5	04-09-04
Max Defl.	0.224"	n/a	n/a	4	04-09-04
Span / Depth	11.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 2-3/4" x 3-1/2"	4138 lbs	69.9%	35.2%	Spruce-Pine-Fir
B2	Hanger 4" x 3-1/2"	3738 lbs	n/a	21.9%	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.



FWG NO. TAN 6075-20
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B9(1577) (Flush Beam)

PASSED

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

Dry | 1 span | No cant.

February 7, 2020 09:30:29

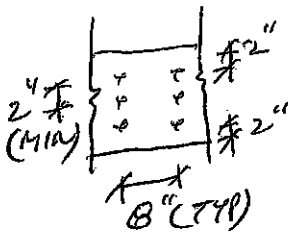
File name: MOUNTAINASH 5 EL 1.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B9(1577)
Specifier:
Designer:
Company:

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.
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



PROVIDE 3 ROWS OF 3 1/2" ARDOX
SPIRAL NAILS @ 8" O/C FOR
MULTI-PLY NAILING. MAINTAIN
A MIN. 2" LUMBER EDGE/END
DISTANCE. DO NOT USE AIR NAILS



DWG NO. YAW 6075-20
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®.



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B15(1694) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 2 spans | No cant.

February 7, 2020 10:01:17

Buld 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

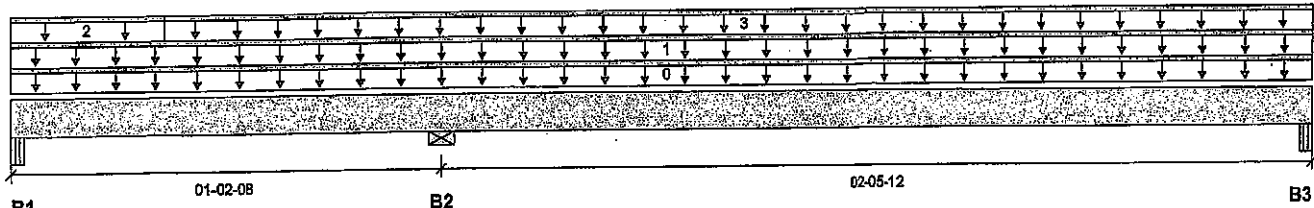
File name: MOUNTAINASH 5 EL 3.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15(1694)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 03-08-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	77 / 47	27 / 0	77 / 14	
B2, 5-1/2"	215 / 0	197 / 0	320 / 0	
B3, 5-1/4"	122 / 1	111 / 0	181 / 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	03-08-04	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	03-08-04	Top	77	70	147		n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-04	Top	27	13			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	03-08-04	Top	22	11			n/a

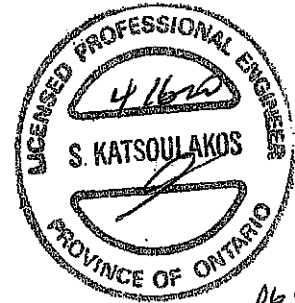
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	159 ft-lbs	23220 ft-lbs	0.7%	66	02-05-08
Neg. Moment	-182 ft-lbs	-23220 ft-lbs	0.8%	49	01-02-08
End Shear	134 lbs	11571 lbs	1.2%	18	00-05-04
Cont. Shear	299 lbs	11571 lbs	2.6%	67	00-11-12
Total Load Deflection	L/999 (0")	n/a	n/a	126	02-04-05
Live Load Deflection	L/999 (0")	n/a	n/a	178	02-04-05
Max Defl.	0"	n/a	n/a	126	02-04-05
Span / Depth	2.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	227 lbs	2.3%	1.0%	Unspecified
B2 Wall/Plate	5-1/2" x 3-1/2"	940 lbs	7.9%	4.0%	Spruce-Pine-Fir
B3 Beam	5-1/4" x 3-1/2"	533 lbs	5.4%	2.4%	Unspecified

Cautions

Uplift of 60 lbs found at bearing B1. (SIMPSON 2-H25A @ B1)



DWG NO. TAM 6076-20
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B15(I1694) (Flush Beam)

PASSED

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

Dry | 2 spans | No cant.

February 7, 2020 10:01:17

File name: MOUNTAINASH 5 EL 3.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15(I1694)

Specifier:

Designer: AJ

Company:

Notes

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

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

Calculations assume member is fully braced.

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.

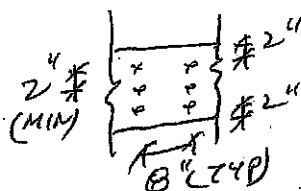
Unbalanced snow loads determined from building geometry were used in selected product's verification.

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 @ 8" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



OWN NO. TAN 6076-20
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®

Build 7239

Job name:

File name: MOUNTAINASH 5 EL 1 DECK CONDITION.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1A(i1996)

City, Province, Postal Code: WATERDOWN

Specifier:

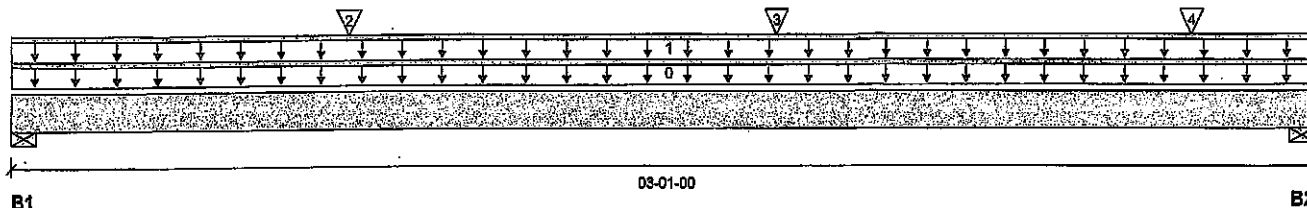
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 03-01-00

Reaction Summary (Down / Uplift) (lbs)

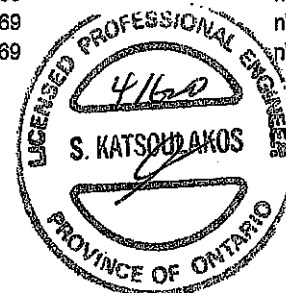
Bearing	Live	Dead	Snow	Wind
B1, 3"	923 / 0	601 / 0		
B2, 3"	1134 / 0	706 / 0		

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	E1(i402)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	337	250			n/a
2	J1(i1927)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	Top	339	169			n/a
3	J1(i1877)	Conc. Pt. (lbs)	L	01-09-08	01-09-08	Top	339	169			n/a
4	J1(i1942)	Conc. Pt. (lbs)	L	02-09-08	02-09-08	Top	339	169			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1386 ft-lbs	23220 ft-lbs	6.0%	1	01-08-06
End Shear	1690 lbs	11571 lbs	14.6%	1	01-00-08
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-06-11
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-06-11
Max Defl.	0.003"	n/a	n/a	4	01-06-11
Span / Depth	3.4				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	2135 lbs	33.1%	16.7%	Spruce-Pine-Fir
B2	Wall/Plate 3" x 3-1/2"	2583 lbs	40.0%	20.2%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

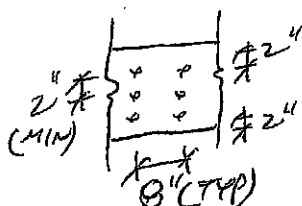
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 3

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3x4 ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS

SWG NO. TAM 6077-20

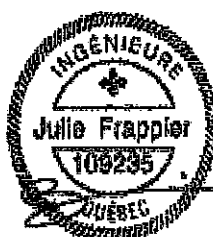
STRUCTURAL

COMPONENT ONLY

Disclosure

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

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

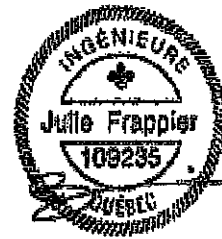


Maximum Floor Spans

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

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



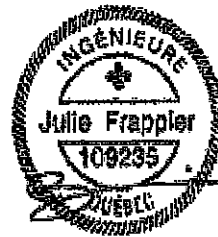
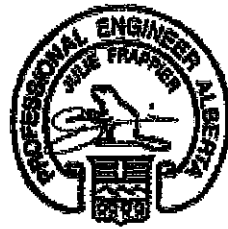
Maximum Floor Spans

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

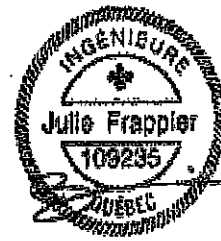
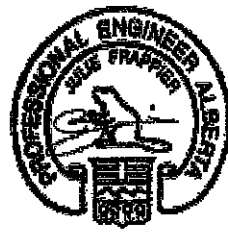
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

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

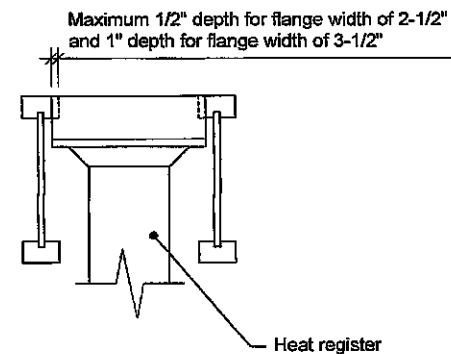
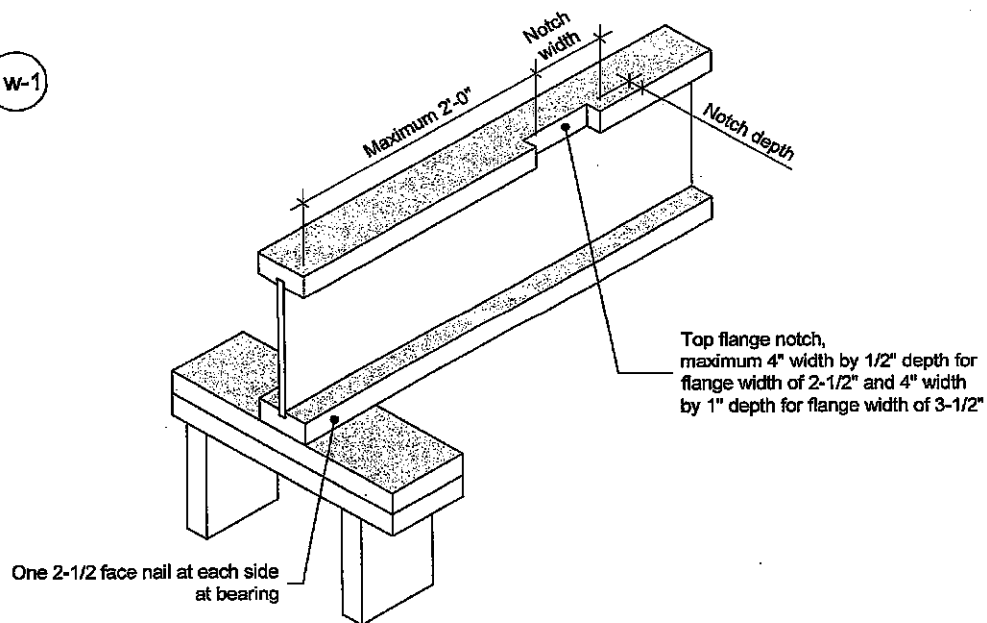


Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	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'-5"	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 13G32-R and APA Product Report PR-L274C.

1w-1



Notes:

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

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

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DATE

2018-04-10

NUMBER

1w-1



Construction Detail

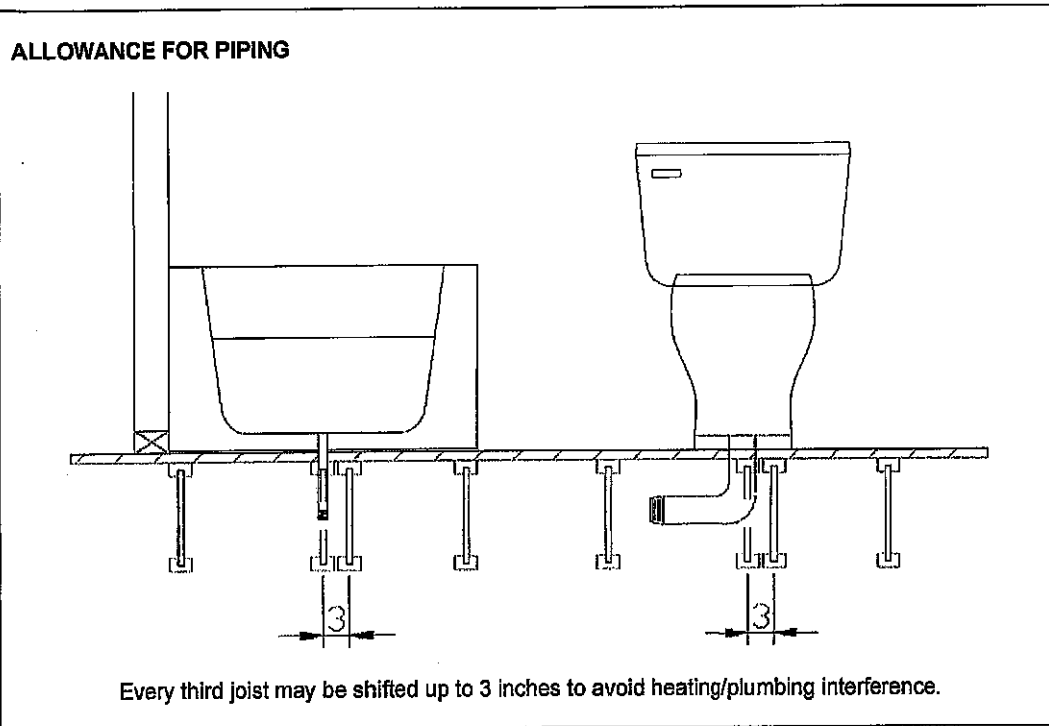
Limit States Design

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