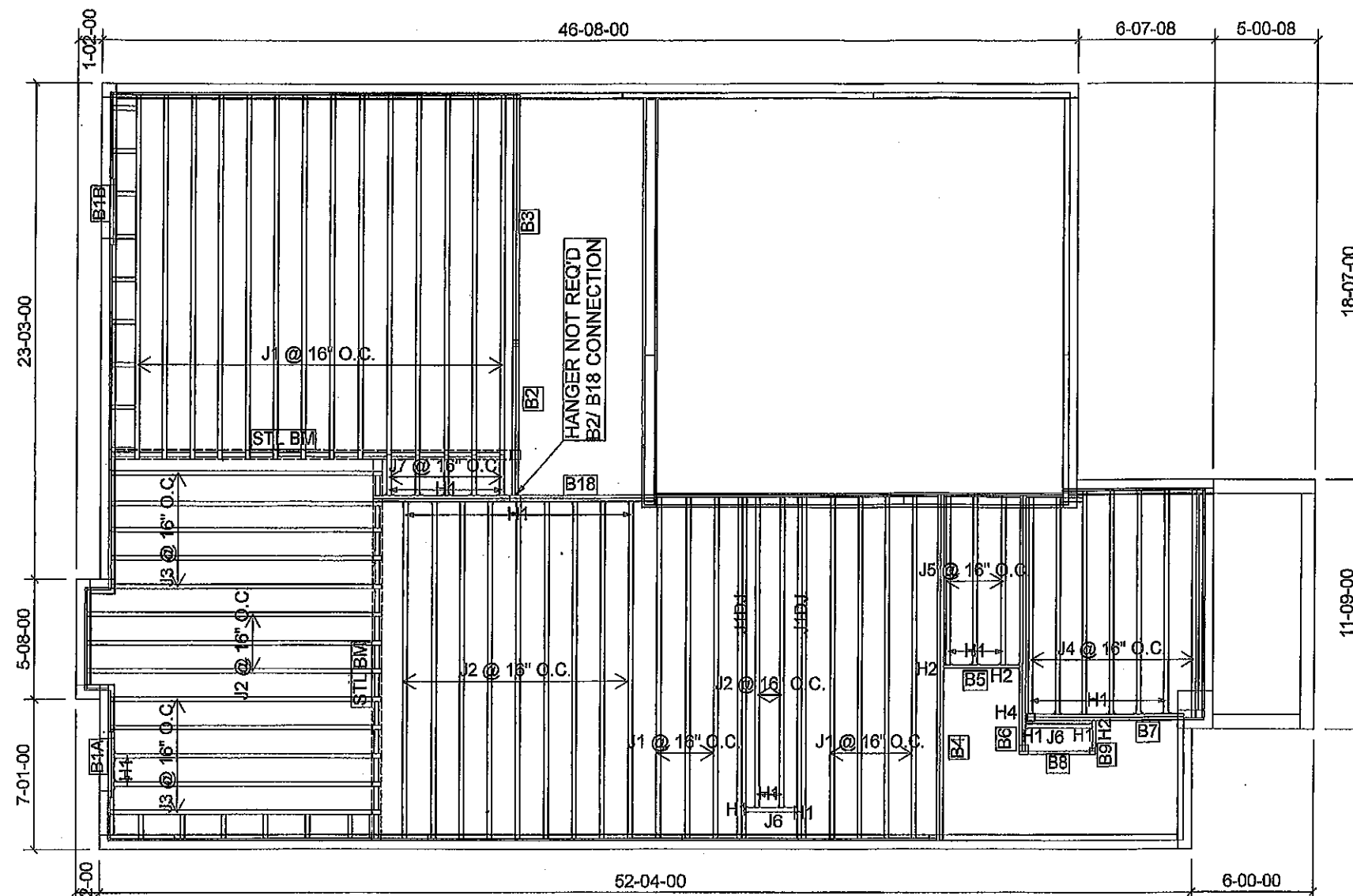
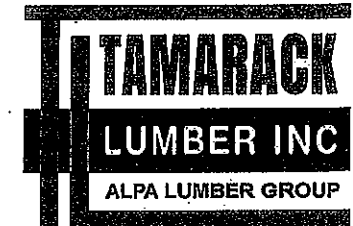




Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	11 7/8" NI-40x	1	21	MFD
J1DJ	18-00-00	11 7/8" NI-40x	2	4	MFD
J2	16-00-00	11 7/8" NI-40x	1	14	MFD
J3	14-00-00	11 7/8" NI-40x	1	10	MFD
J4	12-00-00	11 7/8" NI-40x	1	7	MFD
J5	8-00-00	11 7/8" NI-40x	1	3	MFD
J6	4-00-00	11 7/8" NI-40x	1	2	MFD
J7	2-00-00	11 7/8" NI-40x	1	5	MFD
B4	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B18	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B6	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B3	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B7	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B5	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B8	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B1A	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B1B	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B9	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	MFD

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
23	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
3	H2	HUS1.81/10
1	H4	HGUS410

CITY OF HAMILTON
Building Division
Permit No. **21-105958**
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
[Signature] **Apr 5/21**
FOR CHIEF BUILDING OFFICIAL DATE



FROM PLAN DATED:

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS PH 3

MODEL: MOUNTAINASH 4

ELEVATION: **3**

LOT: **235**

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 RE I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TIL** APPLICATION AS PER O.B.C 9.30.6.

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

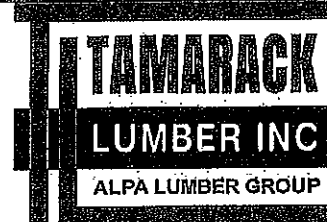
DEAD LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2020-04-16

1st FLOOR

DECK CONDITION



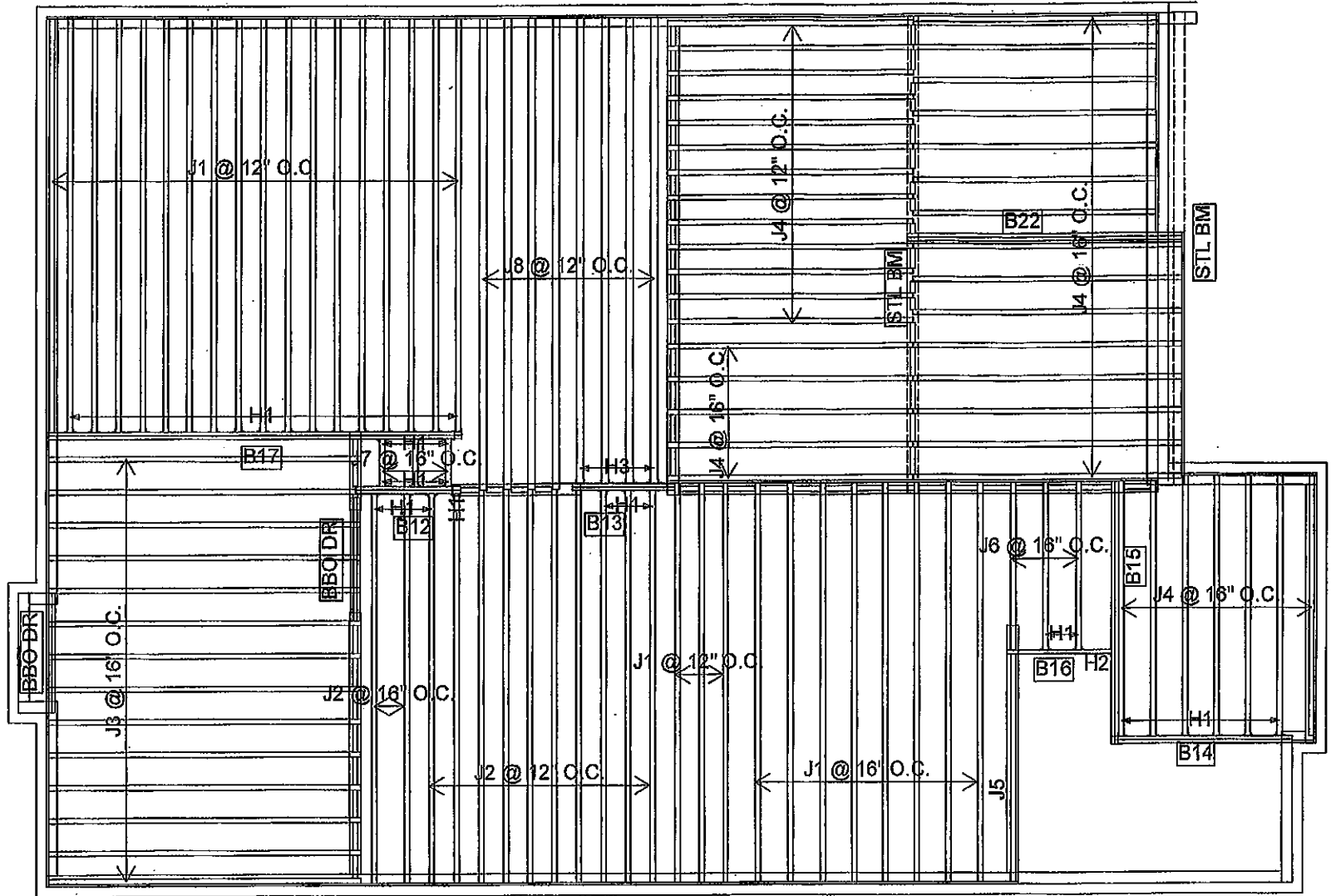
FROM PLAN DATED:
BUILDER: GREENPARK HOMES
SITE: RUSSELL GARDENS PH 3
MODEL: MOUNTAINASH 4
ELEVATION: 3
LOT: 235
CITY: WATERDOWN
SALESMAN: MARIO DICIANO
DESIGNER: AJ
REVISION:

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

LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 20.0 lb/ft²
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2020-02-18

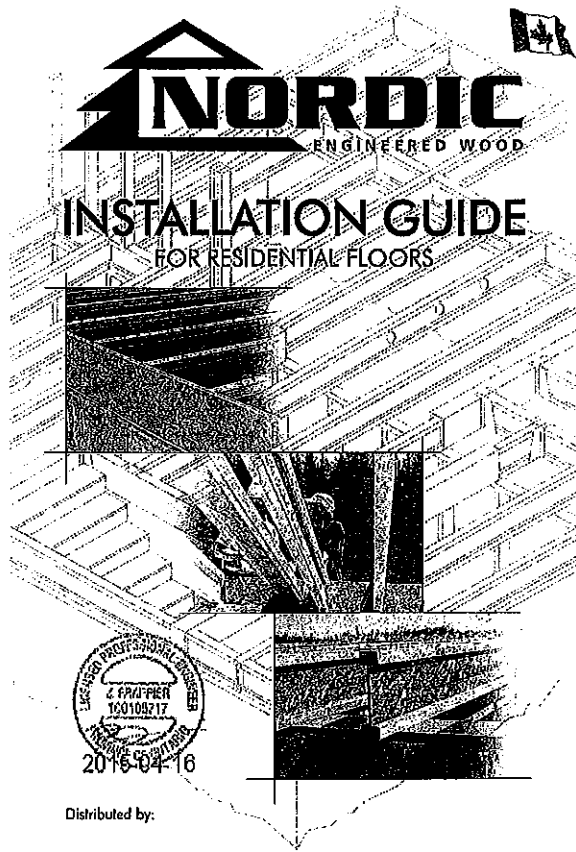
2nd FLOOR



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	11 7/8" NI-40x	1	29	MFD
J2	16-00-00	11 7/8" NI-40x	1	12	MFD
J3	14-00-00	11 7/8" NI-40x	1	14	MFD
J4	12-00-00	11 7/8" NI-40x	1	40	MFD
J5	10-00-00	11 7/8" NI-40x	1	1	MFD
J6	8-00-00	11 7/8" NI-40x	1	3	MFD
J7	2-00-00	11 7/8" NI-40x	1	3	MFD
J8	20-00-00	11 7/8" NI-80	1	8	MFD
B17	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B15	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B22	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B14	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B16	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	MFD
B12	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B13	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD

Connector Summary		
Qty	Manuf	Product
2	H1	IUS2.56/11.88
36	H1	IUS2.56/11.88
1	H2	HUS1.81/10
4	H3	IUS3.56/11.88

CITY OF HAMILTON
Building Division
Permit No. 21-105958
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
FOR CHIEF BUILDING OFFICIAL
DATE



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

WARNING

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

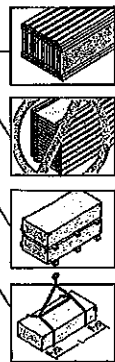
Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

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

STORAGE AND HANDLING GUIDELINES

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 slabs.
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 spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adjustive shall meet the requirements given in CGS-7.1.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA C86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm, 1 foot = 0.305 m

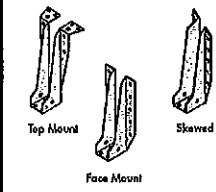
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On center spacing				On center spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	N1-20	15'1"	14'2"	12'6"	13'5"	16'3"	15'4"	14'10"	14'7"
	N1-22	16'1"	15'2"	14'5"	14'9"	17'3"	16'5"	15'10"	15'5"
	N1-24	16'3"	15'4"	14'10"	14'11"	17'7"	16'7"	16'0"	16'1"
	N1-26	17'1"	16'1"	15'6"	15'7"	18'7"	17'4"	16'9"	16'10"
11-7/8"	N1-20	17'3"	16'3"	14'9"	15'8"	18'10"	17'3"	16'11"	17'0"
	N1-22	18'1"	17'0"	15'5"	15'6"	19'3"	18'3"	17'9"	17'7"
	N1-24	18'4"	17'3"	15'7"	15'9"	20'3"	18'9"	18'0"	18'1"
	N1-26	19'4"	18'0"	17'4"	17'5"	21'6"	19'11"	19'0"	19'1"
14"	N1-20	19'9"	18'3"	17'6"	17'7"	21'9"	20'2"	19'3"	19'4"
	N1-22	20'2"	18'7"	17'10"	17'11"	22'3"	20'7"	19'8"	19'9"
	N1-24	20'4"	18'9"	17'11"	17'11"	22'5"	20'9"	19'10"	19'11"
	N1-26	20'5"	18'11"	18'1"	18'2"	22'7"	20'11"	20'0"	20'1"
16"	N1-20	21'7"	20'0"	19'1"	19'2"	23'10"	22'1"	21'1"	21'2"
	N1-22	21'9"	20'2"	19'4"	19'5"	24'3"	22'5"	21'5"	21'6"
	N1-24	22'5"	20'8"	19'9"	19'10"	24'9"	22'10"	21'10"	21'11"
	N1-26	22'7"	20'11"	19'11"	19'11"	24'11"	22'11"	22'0"	22'1"
18"	N1-20	22'9"	21'1"	20'2"	20'3"	24'11"	23'1"	22'1"	22'2"
	N1-22	23'1"	21'3"	20'4"	20'5"	25'1"	23'3"	22'3"	22'4"
	N1-24	23'3"	21'5"	20'6"	20'7"	25'3"	23'5"	22'5"	22'6"
	N1-26	23'5"	21'7"	20'8"	20'9"	25'5"	23'7"	22'7"	22'8"

CCMC EVALUATION REPORT 13923-R

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.



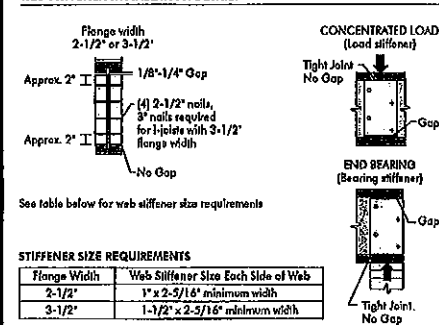
WEB STIFFENERS

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2 WEB STIFFENER INSTALLATION DETAILS



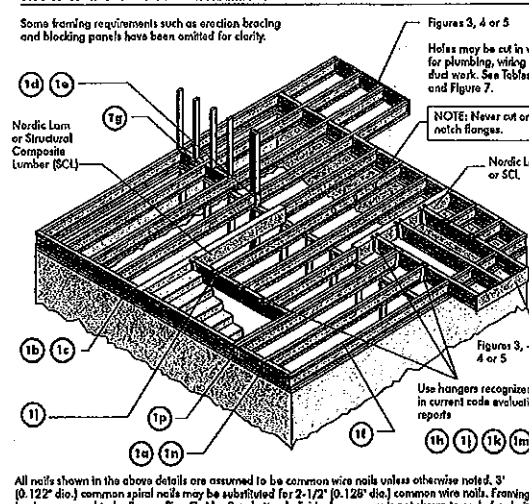
See table below for web stiffener size requirements

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

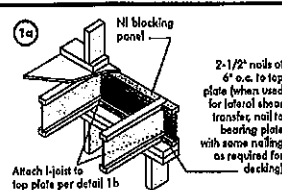
INSTALLING NORDIC I-JOISTS

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 end and 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 rollover. 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 squash blocks (cripple 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-composite depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists of interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support and to the cantilevered section. 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

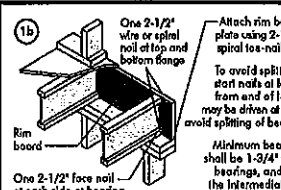


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122") common spiral nails may be substituted for 2-1/2" (0.128") common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



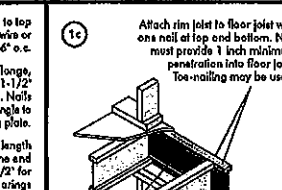
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
N1 Joist	3,300

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



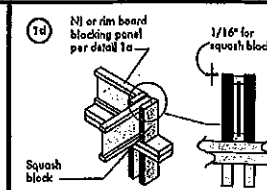
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	9,090

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



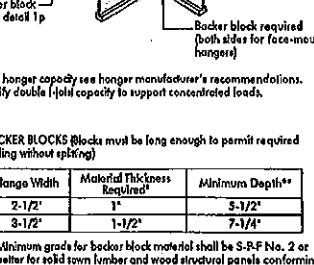
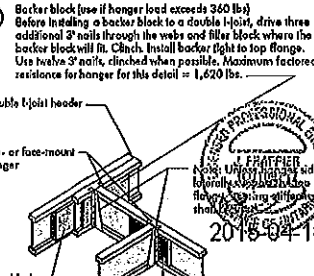
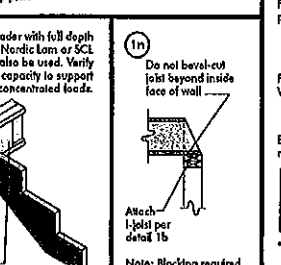
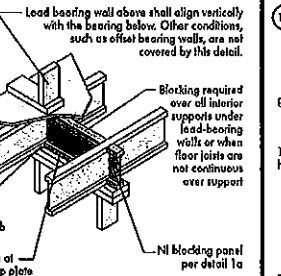
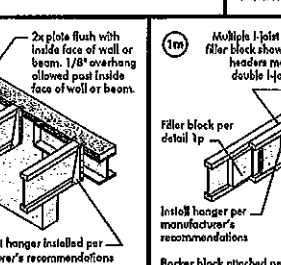
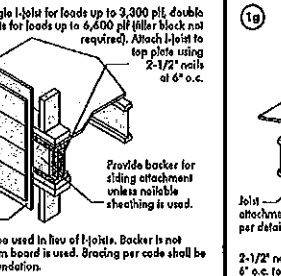
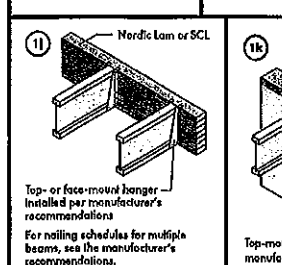
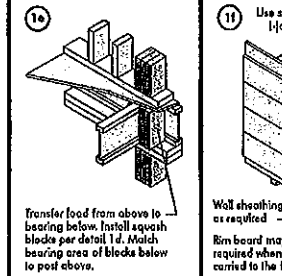
Rule of Squash Blocks	Maximum Factored Vertical Load per Foot of Squash Block (plf)
2x Lumber	5,580
1-1/8" Rim Board Plus	4,380
	5,580

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



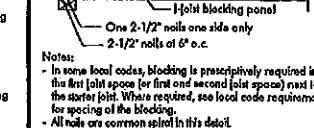
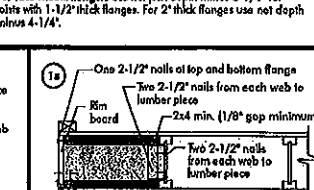
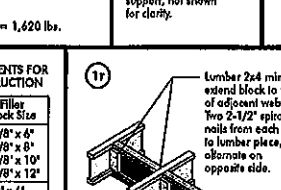
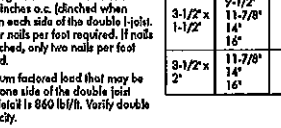
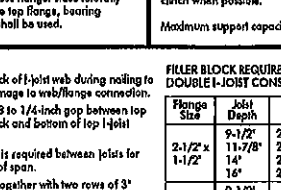
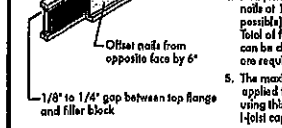
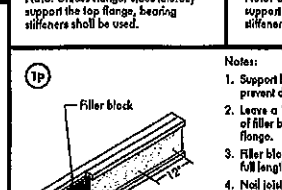
Rule of Squash Blocks	Maximum Factored Vertical Load per Foot of Squash Block (plf)
2x Lumber	5,580
1-1/8" Rim Board Plus	4,380
	5,580

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



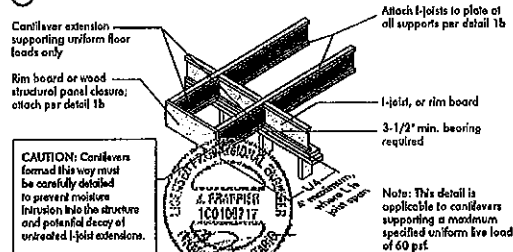
Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	3-1/2"
3-1/2"	1-1/2"	7-1/4"

* Aluminum grade for backer block material shall be S-F No. 2 or better for solid town lumber and wood structural panels conforming to CAN/CSA-C325 or CAN/CSA-C437 Standard.
** For face-mount hangers use nail joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use nail depth minus 4-1/4".

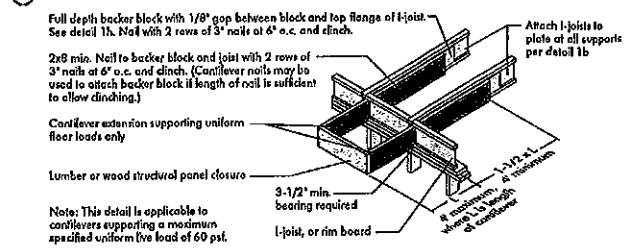


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

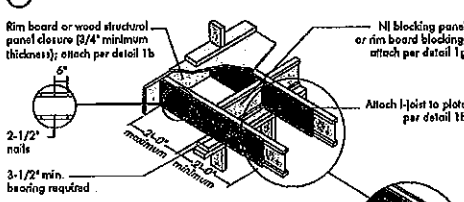


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

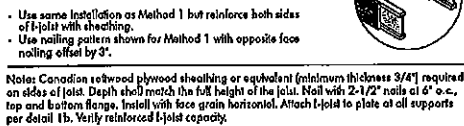


FIGURE 4 (continued)



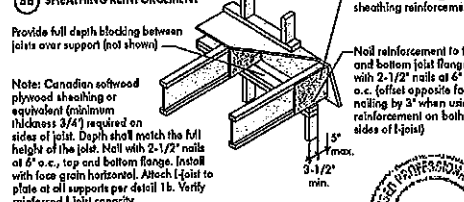
CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		12	14	16	18	12	14	16	18	12	14	16	18
9-1/2"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2
11-7/8"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2
14"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2
16"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2

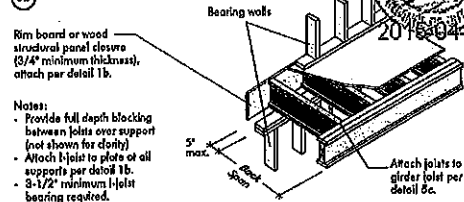
- N = No reinforcement required.
- N1 reinforced with 3/4" wood structural panel on one side only.
- N2 reinforced with 3/4" wood structural panel on both sides.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door opening.
- For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- 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 or a truss is used.
- Cantilevered joists supporting glider trusses or roof beams may require additional reinforcing.

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

5a) SHEATHING REINFORCEMENT



5b) SET-BACK DETAIL



5c) SET-BACK CONNECTION

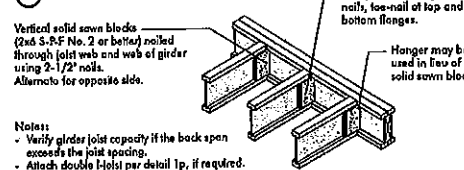


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		12	14	16	18	12	14	16	18	12	14	16	18
9-1/2"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2
11-7/8"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2
14"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2
16"	12	N	N	1	2	N	N	1	2	N	N	1	2
	14	N	N	1	2	N	N	1	2	N	N	1	2
	16	N	N	1	2	N	N	1	2	N	N	1	2
	18	N	N	1	2	N	N	1	2	N	N	1	2

- N = No reinforcement required.
- N1 reinforced with 3/4" wood structural panel on one side only.
- N2 reinforced with 3/4" wood structural panel on both sides.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door opening.
- For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- 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 or a truss is used.
- Cantilevered joists supporting glider trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the cantilever of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field cut holes should be centered on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole or twice the length of the longest side of the longest rectangular hole or duct chase opening, and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (in.)												Span Adjustment Factor			
		Round hole diameter (in.)															
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-1/2	13
9-1/2"	12	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	14	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	16	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	18	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	20	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	22	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
11-7/8"	12	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	14	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	16	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	18	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	20	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	22	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
14"	12	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	14	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	16	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	18	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	20	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	22	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
16"	12	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	14	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	16	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	18	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	20	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0
	22	0.7	1.2	1.5	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.1	5.4	5.7	6.0

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

OPTIONAL:

The above table is based on the I-joist 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 cantilever of the hole to the face of any support (D) as given above may be reduced as follows:

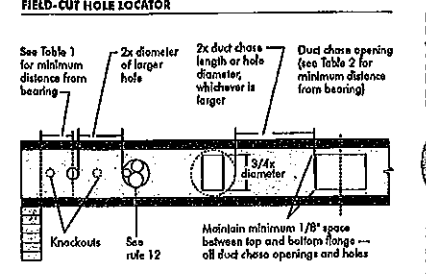
Reduced = $\frac{L_{actual}}{L_{max}} \times D$

Where:

- Reduced = Distance from the inside face of any support to center of hole, reduced for less than maximum span application.
- L_{actual} = The actual measured span distance between the inside faces of supports (ft).
- L_{max} = Span Adjustment Factor given in this table.
- D = The minimum distance from the inside face of any support to center of hole from this table.

If L_{actual} is greater than 1, use 1 above table calculation for L_{actual} .

FIGURE 7 FIELD-CUT HOLE LOCATOR



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

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

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

Holes in webs should be cut with a sharp saw.

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

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

JOIST CHASE OPENING SIZES AND MINIMUM DISTANCE FROM INSIDE FACE OF ANY SUPPORT TO CENTER OF OPENING (in.)		JOIST CHASE LENGTH (in.)											
JOIST DEPTH	JOIST SERIES	8	10	12	14	16	18	20	22	24	26	28	30
9 1/2"	12	12	12	12	12	12	12	12	12	12	12	12	12
	14	12	12	12	12	12	12	12	12	12	12	12	12
	16	12	12	12	12	12	12	12	12	12	12	12	12
	18	12	12	12	12	12	12	12	12	12	12	12	12
11 7/8"	12	12	12	12	12	12	12	12	12	12	12	12	12
	14	12	12	12	12	12	12	12	12	12	12	12	12
	16	12	12	12	12	12	12	12	12	12	12	12	12
	18	12	12	12	12	12	12	12	12	12	12	12	12
14"	12	12	12	12	12	12	12	12	12	12	12	12	12
	14	12	12	12	12	12	12	12	12	12	12	12	12
	16	12	12	12	12	12	12	12	12	12	12	12	12
	18	12	12	12	12	12	12	12	12	12	12	12	12
16"	12	12	12	12	12	12	12	12	12	12	12	12	12
	14	12	12	12	12	12	12	12	12	12	12	12	12
	16	12	12	12	12	12	12	12	12	12	12	12	12
	18	12	12	12	12	12	12	12	12	12	12	12	12

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

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

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

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

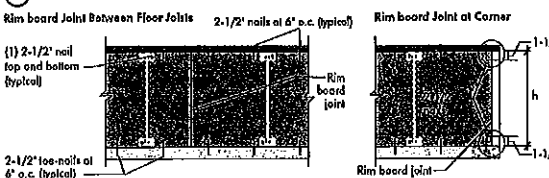
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

Floor sheathing must be field glued to the I-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

5a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



5b) TOP-NAIL CONNECTION AT RIM BOARD

NORDIC STRUCTURES

COMPANY
Apr. 9, 2020 09:44

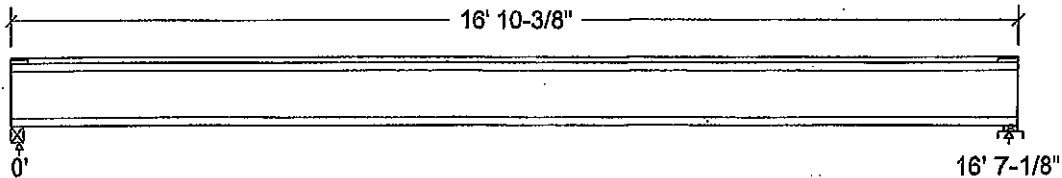
PROJECT
J1 1ST FLOOR.wwb

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):



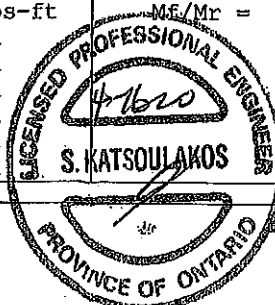
Unfactored:			
Dead	221		221
Live	442		442
Factored:			
Total	940		940
Bearing:			
Capacity			
Joist	2137		2102
Support	4036		3981
Des ratio			
Joist	0.44		0.45
Support	0.23		0.24
Load case	#2		#2
Length	2-5/8		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.00		1.09

Nordic 11-7/8" NI-40x Floor joist @ 16" o.c.

Supports: 1 - Lumber Beam, No.1/No.2; 2 - Lumber Sill plate, No.1/No.2;
Total length: 16' 10-3/8"; Clear span: 16' 5-3/8"; 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 = 940	Vr = 2336	lbs	Vf/Vr = 0.40
Moment(+)	Mf = 3901	Mr = 6255	lbs-ft	Mf/Mr = 0.62
Perm. Defl'n	0.11 = < L/999	0.55 = L/360	in	0.20
Live Defl'n	0.23 = L/879	0.41 = L/480	in	0.55
Total Defl'n	0.34 = L/586	0.83 = L/240	in	0.41
Bare Defl'n	0.27 = L/727	0.55 = L/360	in	0.49
Vibration	Lmax = 16'-7.1	Lv = 18'-1.3	ft	0.92
Defl'n	= 0.029	= 0.038	in	0.76



16' 4 1/2"
NW 6035-20
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 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} = 459.76 lb-in² K = 6.18e06 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. YAM 6035 -20
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
Apr. 9, 2020 09:44

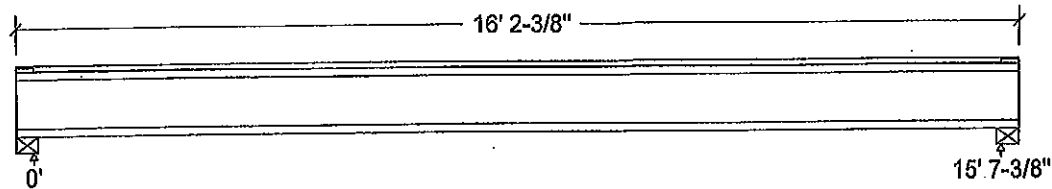
PROJECT
J1 2ND FLOOR.wwb

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	208		208
Live	416		416
Factored:			
Total	885		885
Bearing:			
Capacity			
Joist	2336		2336
Support	6734		6734
Des ratio			
Joist	0.38		0.38
Support	0.13		0.13
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	1.00		1.00
fcp sup	769		769
Kzcp sup	1.00		1.00

Nordic 11-7/8" NI-40x Floor joist @ 16" o.c.

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

Total length: 16' 2-3/8"; Clear span: 15' 5-5/8"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 885	Vr = 2336	lbs	Vf/Vr = 0.38
Moment(+)	Mf = 3454	Mr = 6255	lbs-ft	Mf/Mr = 0.55
Perm. Defl'n	0.09 = < L/999	0.52 = L/360	in	0.18
Live Defl'n	0.18 = < L/999	0.39 = L/480	in	0.47
Total Defl'n	0.28 = L/676	0.78 = L/240	in	0.35
Bare Defl'n	0.22 = L/861	0.52 = L/360	in	0.42
Vibration	Lmax = 15'-7.4	Lv = 17'-8.1	ft	0.88
Defl'n	= 0.028	= 0.041	in	0.68



NO. YAW 6036-20
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 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 = 447.63 lb-in² K= 6.18e06 lbs

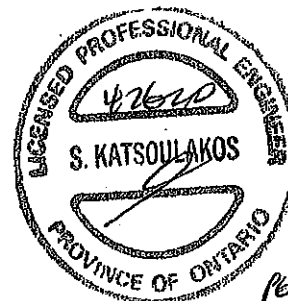
"Live" deflection is due to all non-dead loads (live, wind, snow...)

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.



OWG NO. YAM 6036 -20
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
Apr. 9, 2020 09:47

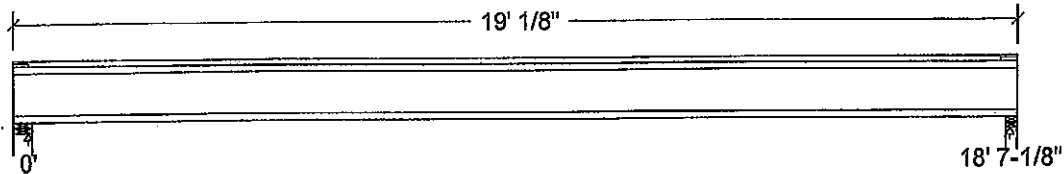
PROJECT
J8 2ND FLOOR.wwb

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	186		186
Live	372		372
Factored:			
Total	790		790
Bearing:			
Capacity			
Joist	2336		2188
Support	10841		5573
Des ratio			
Joist	0.34		0.36
Support	0.07		0.14
Load case	#2		#2
Length	4-3/8		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		769
Kzcp sup	-		-

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

Nordic 11-7/8" NI-80 Floor Joist @ 12" o.c.

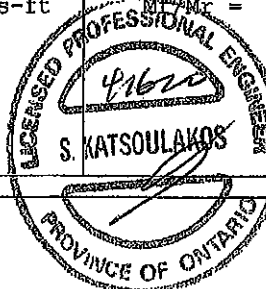
Supports: All - Lumber Wall, No.1/No.2

Total length: 19' 1/8"; Clear span: 18' 5-3/8"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section **PASSES** the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 790	Vr = 2336	lbs	Vf/Vr = 0.34
Moment(+)	Mf = 3673	Mr = 11609	lbs-ft	Mf/Mr = 0.32
Perm. Defl'n	0.10 = < L/999	0.62 = L/360	in	0.16
Live Defl'n	0.20 = < L/999	0.46 = L/480	in	0.44
Total Defl'n	0.30 = L/735	0.93 = L/240	in	0.33
Bare Defl'n	0.22 = L/998	0.62 = L/360	in	0.36
Vibration	Lmax = 18'-7.1	Lv = 20'-5.8	ft	0.91
Defl'n	= 0.027	= 0.034	in	0.79



OWN NO. YAM6037-20
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#2
EI	547.1 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:

EI_{eff} = 613.27 lb-in² K= 6.18e06 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. YAW 6037-20
 STRUCTURAL
 COMPONENT ONLY

2ND FLR FRAMING\Dropped Beams\B19A DR(i2421) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

February 18, 2020 08:54:51

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B19A DR(i2421)

City, Province, Postal Code: WATERDOWN

Specifier:

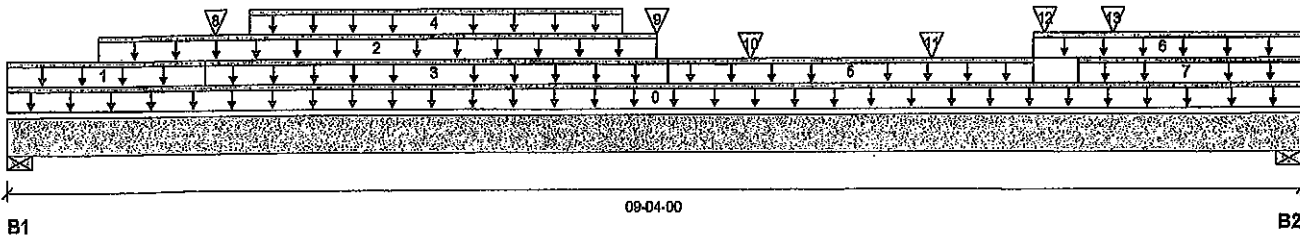
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 09-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	999 / 0	945 / 0	405 / 0	
B2, 5-1/2"	1034 / 0	996 / 0	444 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-04-00	Top		10			00-00-00
1	R1(i1840)	Unf. Lin. (lb/ft)	L	00-00-00	01-05-00	Top		41			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	04-08-00	Top	205	103			n/a
3	R1(i1840)	Unf. Lin. (lb/ft)	L	01-05-00	04-09-00	Top		81			n/a
4	R1(i1840)	Unf. Lin. (lb/ft)	L	01-09-00	04-05-00	Top	44	40	92		n/a
5	R1(i1840)	Unf. Lin. (lb/ft)	L	04-09-00	07-05-00	Top		41			n/a
6	R1(i1840)	Unf. Lin. (lb/ft)	L	07-05-00	09-04-00	Top		81			n/a
7	R1(i1840)	Unf. Lin. (lb/ft)	L	07-09-00	09-04-00	Top	44	40	92		n/a
8	R1(i1840)	Conc. Pt. (lbs)	L	01-06-00	01-06-00	Top	72	90	151		n/a
9	R1(i1840)	Conc. Pt. (lbs)	L	04-08-00	04-08-00	Top	75	93	156		n/a
10	J4(i1832)	Conc. Pt. (lbs)	L	05-04-00	05-04-00	Top	273	137			n/a
11	J4(i1774)	Conc. Pt. (lbs)	L	06-08-00	06-08-00	Top	273	137			n/a
12	R1(i1840)	Conc. Pt. (lbs)	L	07-06-00	07-06-00	Top	72	90	151		n/a
13	J4(i1726)	Conc. Pt. (lbs)	L	08-00-00	08-00-00	Top	253	126			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7076 ft-lbs	23220 ft-lbs	30.5%	1	04-05-00
End Shear	3013 lbs	11571 lbs	26.0%	1	01-01-08
Total Load Deflection	L/721 (0.144")	n/a	33.3%	35	04-06-08
Live Load Deflection	L/999 (0.087")	n/a	n/a	51	04-06-08
Max Defl.	0.144"	n/a	n/a	35	04-06-08
Span / Depth	10.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	3084 lbs	16.5%	18.1%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	3240 lbs	12.6%	13.8%	Spruce-Pine-Fir



OWG NO. 1AM 6038-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B19A DR(I2421) (Dropped Beam)**

Dry | 1 span | No cant.

February 18, 2020 08:54:51

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMG 12472-R

File name: MOUNTAINASH 4 EL 1.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B19A DR(I2421)

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.

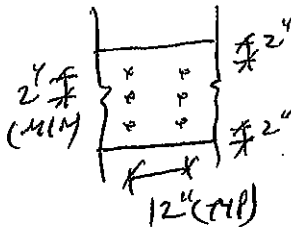
Resistance Factor phi has been applied to all presented results per CSA O86.

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



DWG NO. TAW 6038-20
**STRUCTURAL
COMPONENT ONLY**

Disclosure

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

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



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B20A DR(i2266) (Dropped Beam)**

Dry | 1 span | No cant.

February 18, 2020 08:54:51

BC CALC® Member Report

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B20A DR(i2266)

City, Province, Postal Code: WATERDOWN

Specflier:

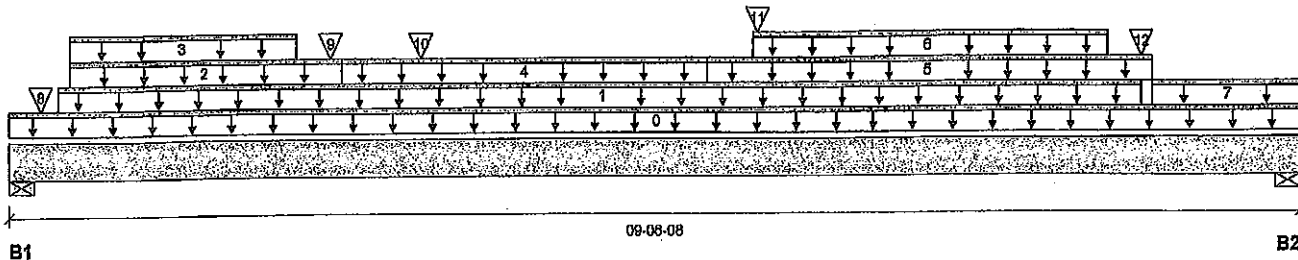
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	1272 / 0	1070 / 0	399 / 0	
B2, 4"	1109 / 0	1043 / 0	462 / 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	09-06-08	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-08	08-04-08	Top	102	52			n/a
2	R1(i1840)	Unf. Lin. (lb/ft)	L	00-05-08	02-05-08	Top		81			n/a
3	R1(i1840)	Unf. Lin. (lb/ft)	L	00-05-08	02-01-08	Top	44	40	92		n/a
4	R1(i1840)	Unf. Lin. (lb/ft)	L	02-05-08	05-01-08	Top		41			n/a
5	R1(i1840)	Unf. Lin. (lb/ft)	L	05-01-08	08-05-08	Top		81			n/a
6	R1(i1840)	Unf. Lin. (lb/ft)	L	05-05-08	08-01-08	Top	44	40	92		n/a
7	R1(i1840)	Unf. Lin. (lb/ft)	L	08-05-08	09-06-08	Top		41			n/a
8	-	Conc. Pt. (lbs)	L	00-02-14	00-02-14	Top	328	164			n/a
9	R1(i1840)	Conc. Pt. (lbs)	L	02-04-08	02-04-08	Top	75	93	156		n/a
10	J4(i1794)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	Top	273	137			n/a
11	-	Conc. Pt. (lbs)	L	05-05-14	05-05-14	Top	345	227	151		n/a
12	-	Conc. Pt. (lbs)	L	08-04-08	08-04-08	Top	348	230	156		n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7786 ft-lbs	23220 ft-lbs	33.5%	1	05-02-08
End Shear	3399 lbs	11571 lbs	29.4%	1	08-05-00
Total Load Deflection	L/614 (0.179")	n/a	39.1%	35	04-09-00
Live Load Deflection	L/999 (0.108")	n/a	n/a	51	04-09-00
Max Defl.	0.179"	n/a	n/a	35	04-09-00
Span / Depth	11.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2" x 3-1/2"	3645 lbs	39.0%	42.7%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	3430 lbs	18.4%	20.1%	Spruce-Pine-Fir



SWD NO. TAN 6039-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B20A DR(I2266) (Dropped Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 18, 2020 08:54:51

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B20A DR(I2266)

City, Province, Postal Code: WATERDOWN

Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

Notes

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

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

CONFORMS TO OBC 2012

Calculations assume unbraced length of Top: 00-01-11, Bottom: 00-01-11.

AMENDED 2020

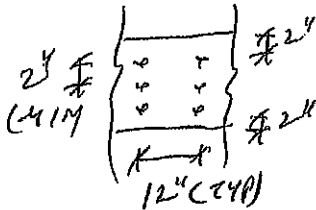
Resistance Factor phi has been applied to all presented results per CSA O86.

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



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



3100 SP, 41620-20
**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®

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports:

CCMC 12472-R

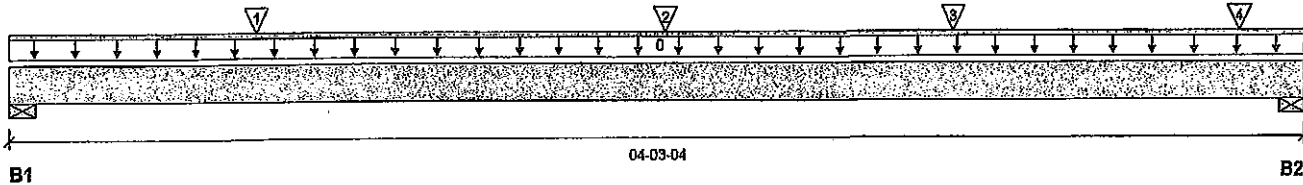
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B12(i2257)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 04-03-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	602 / 0	326 / 0		
B2, 4"	903 / 0	477 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-04	Top	12				00-00-00
1	-	Conc. Pt. (lbs)	L	00-09-12	00-09-12	Top	382	191			n/a
2	-	Conc. Pt. (lbs)	L	02-01-13	02-01-13	Top	428	215			n/a
3	J2(i2353)	Conc. Pt. (lbs)	L	03-01-04	03-01-04	Top	317	158			n/a
4	-	Conc. Pt. (lbs)	L	04-00-10	04-00-10	Top	378	188			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1459 ft-lbs	35392 ft-lbs	4.1%	1	02-01-04
End Shear	1045 lbs	14464 lbs	7.2%	1	02-11-06
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	02-01-04
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	02-01-04
Max Defl.	0.003"	n/a	n/a	4	02-01-04
Span / Depth	3.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/4" x 3-1/2"	1310 lbs	22.1%	11.2%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	1951 lbs	22.7%	11.4%	Spruce-Pine-Fir

Notes

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

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

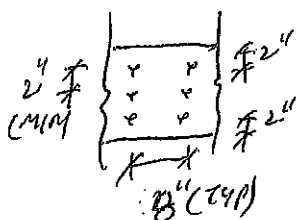
Calculations assume member is fully braced.

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

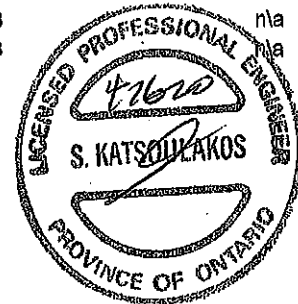
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



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



OWN NO. NAM 6040-20
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®.

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

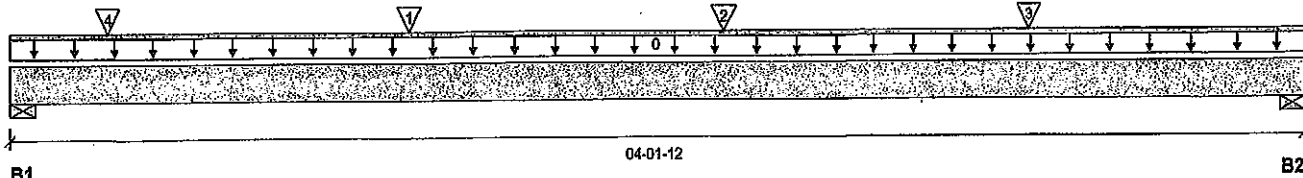
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B13(12387)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 04-01-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1278 / 0	664 / 0		
B2, 3-3/4"	1032 / 0	541 / 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	04-01-12	Top	12				00-00-00
1	-	Conc. Pt. (lbs)	L	01-03-07	01-03-07	Top	694	347			n/a
2	-	Conc. Pt. (lbs)	L	02-03-07	02-03-07	Top	694	347			n/a
3	-	Conc. Pt. (lbs)	L	03-03-05	03-03-05	Top	545	273			n/a
4	J8(12418)	Conc. Pt. (lbs)	L	00-03-12	00-03-12	Top	376	188			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2393 ft-lbs	35392 ft-lbs	6.8%	1	02-03-00
End Shear	1870 lbs	14464 lbs	12.9%	1	01-03-14
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	02-00-15
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-00-15
Max Defl.	0.004"	n/a	n/a	4	02-00-15
Span / Depth	3.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	2747 lbs	31.9%	16.1%	Spruce-Pine-Fir
B2	Wall/Plate 3-3/4" x 3-1/2"	2224 lbs	27.5%	13.9%	Spruce-Pine-Fir

Notes

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

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

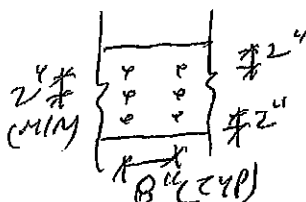
Calculations assume member is fully braced.

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

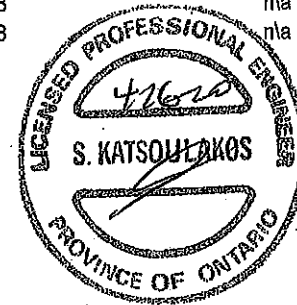
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



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



UWG NO. 1AW 6041-20
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®,

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B14(i1719)

City, Province, Postal Code: WATERDOWN

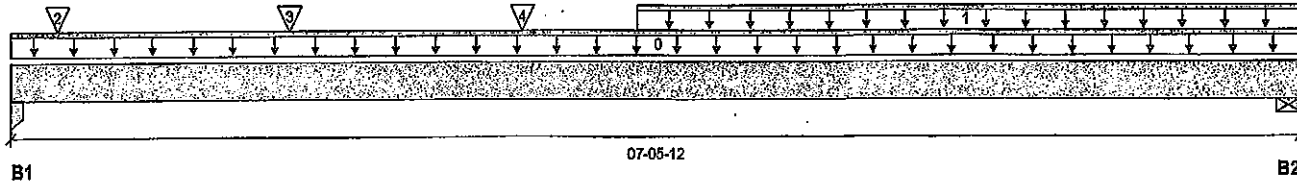
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 07-05-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	748 / 0	417 / 0		
B2, 5-1/2"	893 / 0	492 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-05-12	Top	12	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	03-07-06	07-05-12	Top	222	111			n/a
2	J4(i1797)	Conc. Pt. (lbs)	L	00-03-06	00-03-06	Top	206	103			n/a
3	J4(i1843)	Conc. Pt. (lbs)	L	01-07-06	01-07-06	Top	163	82			n/a
4	J4(i2389)	Conc. Pt. (lbs)	L	02-11-06	02-11-06	Top	413	206			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3010 ft-lbs	35392 ft-lbs	8.5%	1	02-11-06
End Shear	1337 lbs	14464 lbs	9.2%	1	06-00-06
Total Load Deflection	L/999 (0.019")	n/a	n/a	4	03-07-06
Live Load Deflection	L/999 (0.012")	n/a	n/a	5	03-07-06
Max Defl.	0.019"	n/a	n/a	4	03-07-06
Span / Depth	7.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 3-1/2"	1643 lbs	33.0%	22.0%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	1955 lbs	16.5%	8.3%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

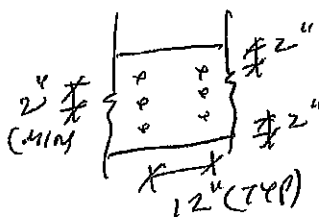
Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

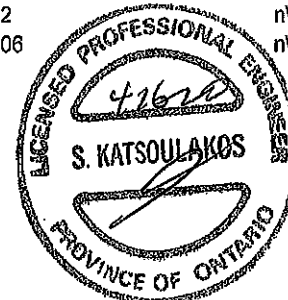
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



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



**DWG NO. 7AM 6042-20
STRUCTURAL
COMPONENT ONLY**

Disclosure

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BC CALC® Member Report

Dry | 1 span | No cant.

February 18, 2020 08:54:51

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B15(11830)

City, Province, Postal Code: WATERDOWN

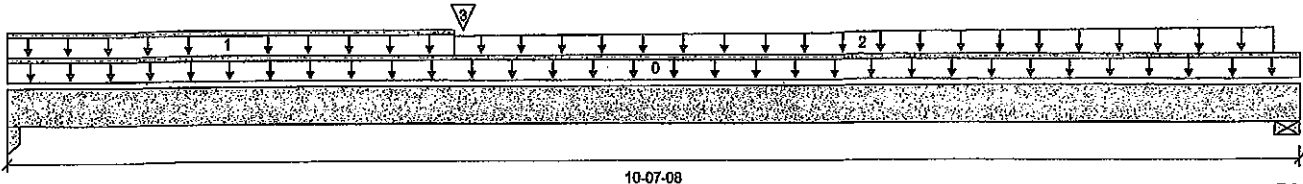
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 10-07-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	501 / 0	290 / 0		
B2, 5-1/2"	394 / 0	234 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-07-08	Top	6				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-00	Top	3				n/a
2	FC2 Floor Material	Trapezoidal (lb/ft)	L	03-08-00	10-04-12	Top	30	15			n/a
3	B16(11764)	Conc. Pt. (lbs)	L	03-08-14	03-08-14	Top	647	336			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3813 ft-lbs	17696 ft-lbs	21.5%	1	03-08-14
End Shear	1096 lbs	7232 lbs	15.2%	1	01-03-06
Total Load Deflection	L/999 (0.085")	n/a	n/a	4	04-11-02
Live Load Deflection	L/999 (0.054")	n/a	n/a	5	04-11-02
Max Defl.	0.085"	n/a	n/a	4	04-11-02
Span / Depth	10.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	1113 lbs	22.4%	14.9%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	883 lbs	14.9%	7.5%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

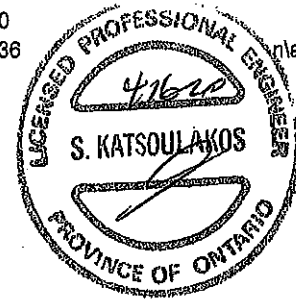
Resistance Factor phi has been applied to all presented results per CSA O86. AMENDED 2020

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



OWN NO. 7AM 6043 -20

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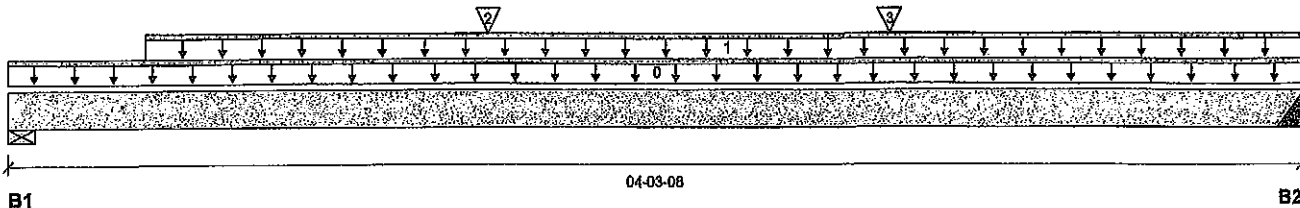
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

Build 7239
Job name:
File name: MOUNTAINASH 4 EL 1.mmdl

Address:
Description: 2ND FLR FRAMING\Flush Beams\B16(11764)

City, Province, Postal Code: WATERDOWN

Specifier:
Customer:
Designer: AJ

Code reports:
CCMC 12472-R
Company:

Total Horizontal Product Length = 04-03-08
Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	632 / 0	330 / 0		
B2, 2"	664 / 0	345 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-05-08	04-03-08	Top	240	120			n/a
2	J6(11825)	Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	181	91			n/a
3	J6(11743)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top	191	96			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1419 ft-lbs	17696 ft-lbs	8.0%	1	02-04-00
End Shear	837 lbs	7232 lbs	11.6%	1	01-05-06
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	02-03-08
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	02-03-08
Max Defl.	0.005"	n/a	n/a	4	02-03-08
Span / Depth	3.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	1361 lbs	23.0%	11.6%	Spruce-Pine-Fir
B2	Hanger 2" x 1-3/4"	1427 lbs	n/a	33.4%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

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

Calculations assume member is fully braced.

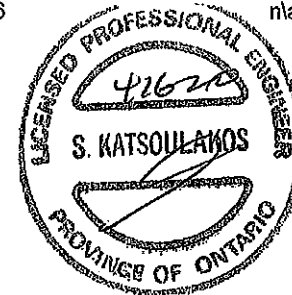
Hanger Manufacturer: Unassigned

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



OWN NO. 1AM 6044 -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®,

CONFORMS TO O86 2012

BC CALC® Member Report

Dry | 2 spans | No cant.

February 18, 2020 08:54:51

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(12170)

City, Province, Postal Code: WATERDOWN

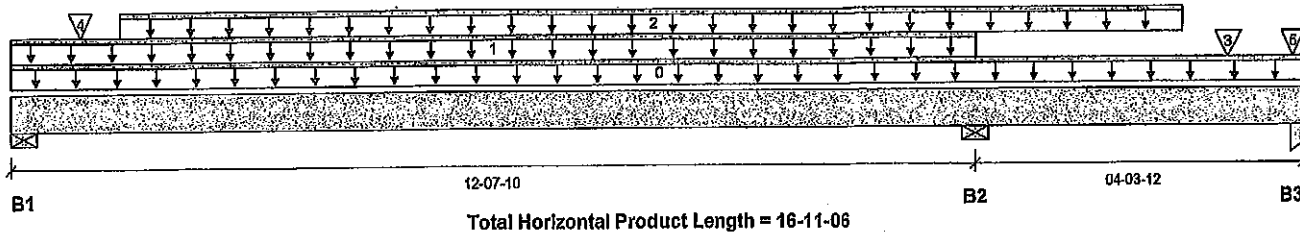
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	1695 / 16	906 / 0		
B2, 5-1/2"	4638 / 0	2482 / 0		
B3, 3-1/2"	939 / 1231	0 / 164		

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	16-11-06	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-07-10	Top	19	9			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-14	15-04-14	Top	333	167			n/a
3	-	Conc. Pt. (lbs)	L	15-11-09	15-11-09	Top	377	158			n/a
4	J1(12296)	Conc. Pt. (lbs)	L	00-10-14	00-10-14	Top	293	147			n/a
5	J1(12172)	Conc. Pt. (lbs)	L	16-09-10	16-09-10	Top	316	158			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9514 ft-lbs	35392 ft-lbs	26.9%	2	04-10-14
Neg. Moment	-11329 ft-lbs	-35392 ft-lbs	32.0%	1	12-07-10
End Shear	3318 lbs	14464 lbs	22.9%	2	01-04-04
Cont. Shear	5044 lbs	14464 lbs	34.9%	1	11-05-00
Total Load Deflection	L/934 (0.158")	n/a	25.7%	9	05-10-14
Live Load Deflection	L/999 (0.104")	n/a	n/a	12	05-10-14
Total Neg. Defl.	L/999 (-0.014")	n/a	n/a	9	14-04-02
Max Defl.	0.158"	n/a	n/a	9	05-10-14
Span / Depth	12.5				

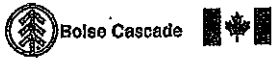
Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	3675 lbs	39.0%	19.7%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	10059 lbs	84.9%	42.8%	Spruce-Pine-Fir
B3	Column 3-1/2" x 3-1/2"	1262 lbs	12.7%	8.4%	Unspecified
B3	Uplift	2051 lbs			

Cautions

Uplift of 2051 lbs found at bearing B3. (Simpson 1-T522 @ 33).



DWG NO. TAM6045-20
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B17(I2170) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 2 spans | No cant.

February 18, 2020 08:54:51

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B17(I2170)

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.

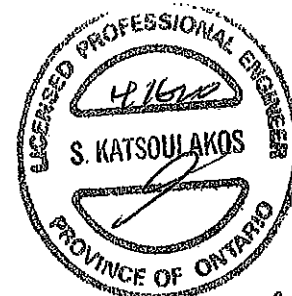
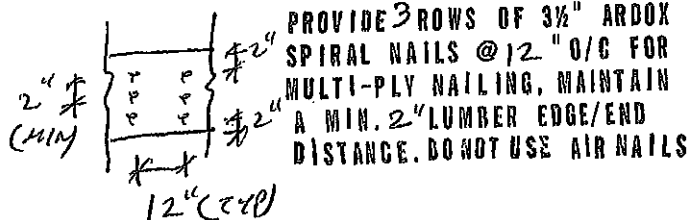
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. YAM 6045-20
**STRUCTURAL
COMPONENT ONLY**

Disclosure

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

BC CALC® Member Report

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B18(13879)

City, Province, Postal Code: WATERDOWN

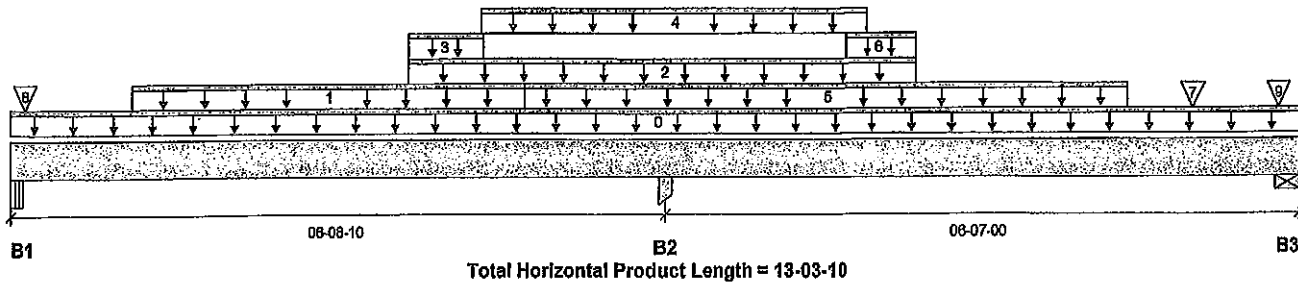
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	1388 / 344	605 / 0		
B2, 6"	7432 / 0	4243 / 0		
B3, 5-1/2"	2738 / 310	2808 / 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	13-03-10	Top	12				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-04	05-03-04	Top	363	182			n/a
2	5(1592)	Unf. Lin. (lb/ft)	L	04-01-02	09-04-02	Top	81				n/a
3	5(1592)	Unf. Lin. (lb/ft)	L	04-01-02	04-10-02	Top	1209	638			n/a
4	5(1592)	Unf. Lin. (lb/ft)	L	04-09-14	08-09-14	Top	698	349			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	05-03-04	11-08-08	Top	348	174			n/a
6	5(1592)	Unf. Lin. (lb/ft)	L	08-07-02	09-04-02	Top	2107	1087			n/a
7	J2(13755)	Conc. Pt. (lbs)	L	12-02-08	12-02-08	Top	522	267			n/a
8	4(1589)	Conc. Pt. (lbs)	L	00-01-14	00-01-14	Top	178	118			n/a
9	1(1533)	Conc. Pt. (lbs)	L	13-00-14	13-00-14	Top	1208	2139			n/a

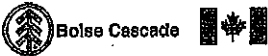
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	6231 ft-lbs	35392 ft-lbs	17.6%	3	09-04-02
Neg. Moment	-9047 ft-lbs	-35392 ft-lbs	25.6%	1	08-08-10
End Shear	2710 lbs	14464 lbs	18.7%	3	11-10-04
Cont. Shear	7571 lbs	14464 lbs	52.3%	1	07-11-08
Total Load Deflection	L/999 (0.027")	n/a	n/a	10	09-09-08
Live Load Deflection	L/999 (0.02")	n/a	n/a	13	09-09-08
Total Neg. Defl.	L/999 (-0.008")	n/a	n/a	10	04-10-02
Max Defl.	0.027"	n/a	n/a	10	09-09-08
Span / Depth	6.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	2838 lbs	28.9%	12.7%	Unspecified
B2 Column	6" x 3-1/2"	16451 lbs	96.5%	64.2%	Unspecified
B3 Wall/Plate	5-1/2" x 3-1/2"	7617 lbs	64.3%	32.4%	Spruce-Pine-Fir



DWG NO. TAM6046-20
STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B18(13879) (Flush Beam)

Dry | 2 spans | No cant.

February 18, 2020 08:54:51

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B18(13879)

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.

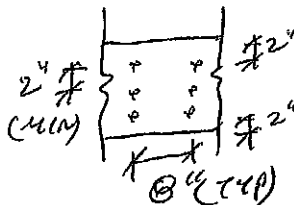
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO QBC 2012

AMENDED 2020



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

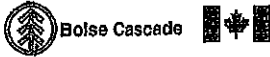


DWG NO. YAW 6046-20
STRUCTURAL
COMPONENT ONLY

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 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B2(13880) (Flush Beam)**

Dry | 2 spans | L cant.

February 18, 2020 08:54:51

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

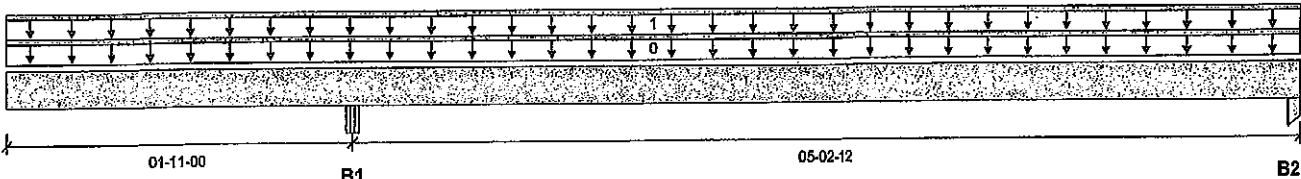
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B2(13880)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 07-01-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	90 / 0	103 / 0		
B2, 1-3/4"	49 / 7	49 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-01-12	Top	12				00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-01-12	Top	19	9			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	157 ft-lbs	35392 ft-lbs	0.4%	3	04-07-14
Neg. Moment	-100 ft-lbs	-35392 ft-lbs	0.3%	1	01-11-00
End Shear	73 lbs	14464 lbs	0.5%	3	06-00-02
Cont. Shear	94 lbs	14464 lbs	0.6%	1	03-01-08
Total Load Deflection	L/999 (0.001")	n/a	n/a	10	04-06-13
Live Load Deflection	2xL/1998 (-0")	n/a	n/a	13	00-00-00
Total Neg. Defl.	2xL/1998 (-0")	n/a	n/a	10	00-00-00
Max Defl.	0.001"	n/a	n/a	10	04-06-13
Span / Depth	5.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	284 lbs	2.7%	1.2%	Unspecified
B2 Column	1-3/4" x 3-1/2"	135 lbs	2.7%	1.8%	Unspecified

Notes

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

Design meets User specified (2xL/360) Live load deflection criteria.

Calculations assume member is fully braced.

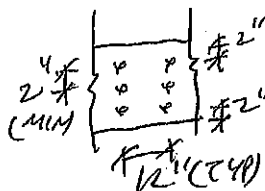
Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

CONFORMS TO OBC 2012

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



DWG NO. TAM 6047 -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®,

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

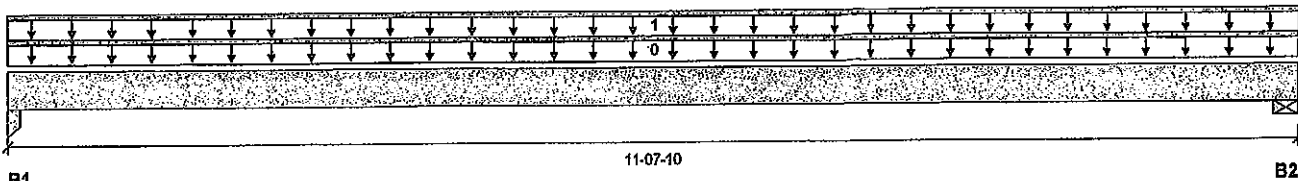
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B3(I3832)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 11-07-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	108 / 0	124 / 0		
B2, 1-7/8"	108 / 0	124 / 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	11-07-10	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-07-10	Top	19	9			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	894 ft-lbs	35392 ft-lbs	2.5%	1	05-09-12
End Shear	255 lbs	14464 lbs	1.8%	1	01-01-10
Total Load Deflection	L/999 (0.016")	n/a	n/a	4	05-09-12
Live Load Deflection	L/999 (0.007")	n/a	n/a	5	05-09-12
Max Defl.	0.016"	n/a	n/a	4	05-09-12
Span / Depth	11.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column 1-3/4" x 3-1/2"	316 lbs	6.4%	4.2%	Unspecified
B2	Wall/Plate 1-7/8" x 3-1/2"	317 lbs	7.9%	4.0%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

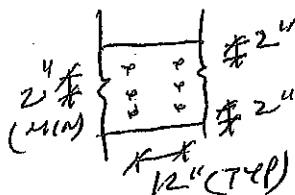
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



UWG NO. TAM 6048 +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

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B4(I3765) (Flush Beam)****PASSED**

BC CALCO® Member Report

Dry | 1 span | No cant.

February 18, 2020 08:54:51

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B4(I3765)

City, Province, Postal Code: WATERDOWN

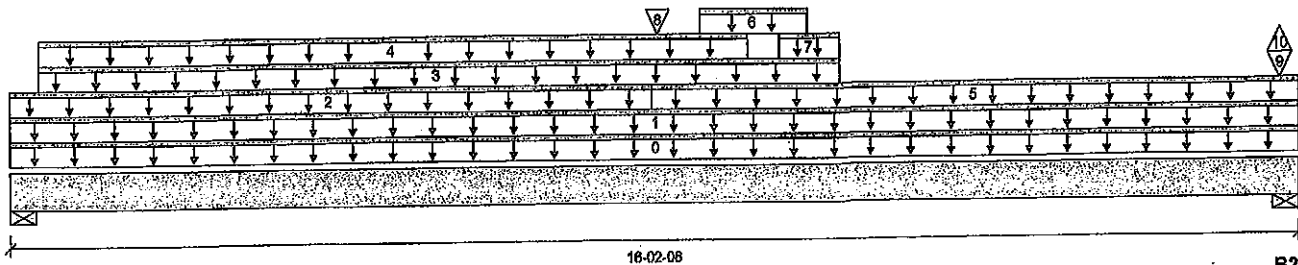
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



B1

B2

Total Horizontal Product Length = 16-02-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-7/8"	1167 / 0	1263 / 0		
B2, 5-1/2"	1277 / 5	1062 / 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	16-02-06	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-02-06	Top	26	13			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-00-08	Top	6	3			n/a
3	6(I614)	Unf. Lin. (lb/ft)	L	00-04-06	10-04-10	Top		81			n/a
4	6(I614)	Unf. Lin. (lb/ft)	L	00-04-06	09-02-14	Top	36	23			n/a
5	FC1 Floor Material	Unf. Lin. (lb/ft)	L	08-00-08	16-02-06	Top	7	4			n/a
6	6(I614)	Unf. Lin. (lb/ft)	L	08-07-12	09-11-12	Top	487	254			n/a
7	6(I614)	Unf. Lin. (lb/ft)	L	09-07-10	10-04-10	Top	279	139			n/a
8	B5(I3861)	Conc. Pt. (lbs)	L	08-01-06	08-01-06	Top	709	365			n/a
9	2(I532)	Conc. Pt. (lbs)	L	15-11-10	15-11-10	Top	36	41			n/a
10	2(I532)	Conc. Pt. (lbs)	L	15-11-10	15-11-10	Top	-5				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	18495 ft-lbs	35392 ft-lbs	52.3%	1	08-01-06
End Shear	3234 lbs	14464 lbs	22.4%	1	01-01-12
Total Load Deflection	L/343 (0.549")	n/a	69.9%	6	08-00-08
Live Load Deflection	L/842 (0.294")	n/a	56.1%	8	08-01-06
Max Defl.	0.549"	n/a	n/a	6	08-00-08
Span / Depth	15.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 1-7/8" x 3-1/2"	3330 lbs	82.5%	41.6%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	3244 lbs	27.4%	13.8%	Spruce-Pine-Fir



DWG NO. TAM6049 -20

STRUCTURAL

COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B4(13765) (Flush Beam)

Dry | 1 span | No cant.

February 18, 2020 08:54:51

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B4(13765)

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.

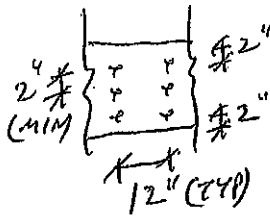
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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



DWG NO. TAM 6049-20

STRUCTURAL
COMPONENT ONLY

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

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

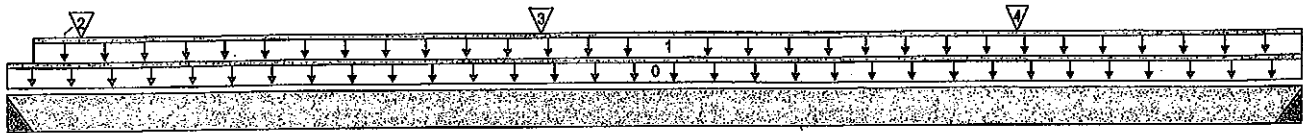
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B5(I3861)

Specifier:

Designer: AJ

Company:



B1

03-07-04

B2

Total Horizontal Product Length = 03-07-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	699 / 0	360 / 0		
B2, 2"	663 / 0	343 / 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	03-07-04	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-14	03-07-04	Top	240	120			n/a
2	J5(I3844)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	129	64			n/a
3	J5(I3855)	Conc. Pt. (lbs)	L	01-05-12	01-05-12	Top	206	103			n/a
4	J5(I3872)	Conc. Pt. (lbs)	L	02-09-12	02-09-12	Top	180	90			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1204 ft-lbs	17696 ft-lbs	6.8%	1	01-07-03
End Shear	684 lbs	7232 lbs	9.5%	1	02-05-06
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	01-09-12
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-09-12
Max Defl.	0.004"	n/a	n/a	4	01-09-12
Span / Depth	3.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1499 lbs	n/a	35.1%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1423 lbs	n/a	33.3%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B1 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWB NO. TAM 6050 -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®.

BC CALCO® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

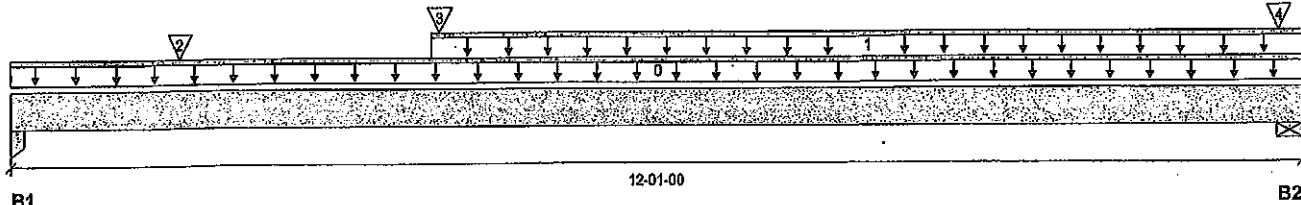
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B6(13876)

Specflier:

Designer: AJ

Company:



Total Horizontal Product Length = 12-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2577 / 0	1554 / 0		
B2, 5-1/2"	772 / 0	520 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-01-00	Top	12				00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-11-02	12-01-00	Top	27	13			n/a
2	-	Conc. Pt. (lbs)	L	01-07-02	01-07-02	Top	2325	1374			n/a
3	B5(13861)	Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	654	338			n/a
4	2(1532)	Conc. Pt. (lbs)	L	11-10-04	11-10-04	Top	127	95			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9181 ft-lbs	35392 ft-lbs	25.9%	1	04-00-00
End Shear	5775 lbs	14464 lbs	39.9%	1	01-03-06
Total Load Deflection	L/995 (0.138")	n/a	24.1%	4	05-04-03
Live Load Deflection	L/999 (0.086")	n/a	n/a	5	05-04-03
Max Defl.	0.138"	n/a	n/a	4	05-04-03
Span / Depth	11.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 3-1/2"	5808 lbs	58.4%	38.9%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	1807 lbs	15.3%	7.7%	Spruce-Pine-Fir

Notes

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

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

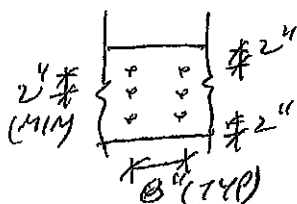
Calculations assume member is fully braced.

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

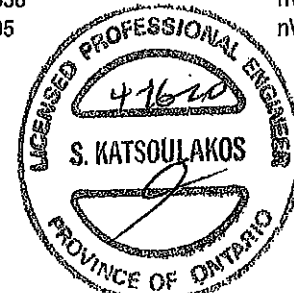
BC CALCO® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



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



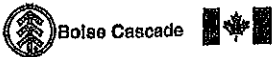
WWW.HO.TAM6051-20
STRUCTURAL COMPONENT ONLY

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

CONFORMS TO OBC 2012

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B7(i3864) (Flush Beam)**

Dry | 1 span | No cant.

February 18, 2020 08:54:51

BC CALCO Member Report

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B7(i3864)

City, Province, Postal Code: WATERDOWN

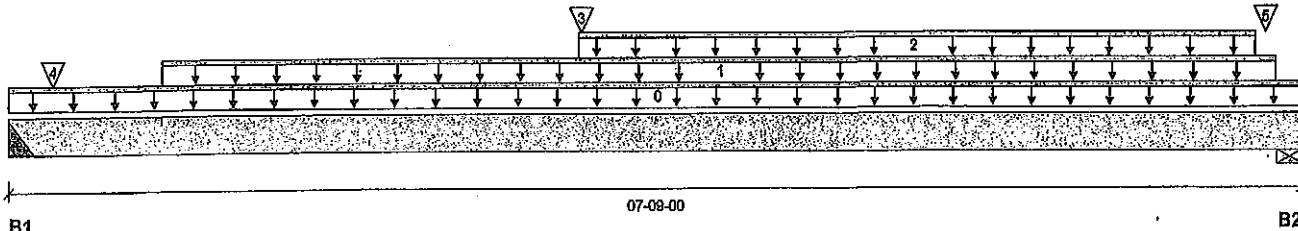
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 4"	2280 / 0	1354 / 0		
B2, 3-1/2"	1726 / 0	976 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	Top	1.00	0.85	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-00	07-07-00	Top	216	108			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	03-04-11	07-05-08	Top	120	60			n/a
3	B9(i3871)	Conc. Pt. (lbs)	L	03-04-14	03-04-14	Top	63	36			n/a
4	-	Conc. Pt. (lbs)	L	00-03-04	00-03-04	Top	1439	884			n/a
5	E10(i425)	Conc. Pt. (lbs)	L	07-06-04	07-06-04	Top	545	338			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4497 ft-lbs	35392 ft-lbs	12.7%	1	04-03-00
End Shear	2014 lbs	14464 lbs	13.9%	1	06-05-10
Total Load Deflection	L/999 (0.03")	n/a	n/a	4	03-11-08
Live Load Deflection	L/999 (0.019")	n/a	n/a	5	03-11-08
Max Defl.	0.03"	n/a	n/a	4	03-11-08
Span / Depth	7.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	4" x 3-1/2"	5113 lbs	n/a	29.9%	HGUS410
B2 Wall/Plate	3-1/2" x 3-1/2"	3809 lbs	50.5%	25.5%	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS410 at B1 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWG NO. TAM 6052-20
STRUCTURAL COMPONENT ONLY



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

PASSED

BC CALC® Member Report
Bulld 7239

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

Dry | 1 span | No cant.

February 18, 2020 08:54:51

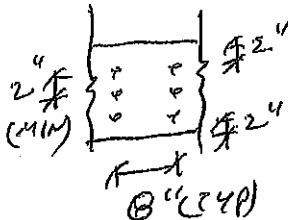
File name: MOUNTAINASH 4 EL 1.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B7(i3864)
Specifier:
Designer: AJ
Company:

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.
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 3/8" 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. YAM6052-20
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®,

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B8(i3867) (Flush Beam)**

Dry | 1 span | No cant.

February 18, 2020 08:54:51

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

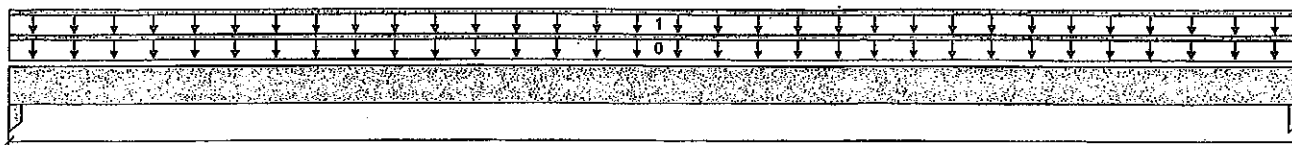
File name: MOUNTAINASH 4 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B8(i3867)

Specflier:

Designer: AJ

Company:



B1

03-09-04

B2

Total Horizontal Product Length = 03-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	52 / 0	38 / 0		
B2, 3-1/2"	48 / 0	35 / 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	03-09-04	Top		6			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-09-04	Top	27	13			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	80 ft-lbs	17696 ft-lbs	0.5%	1	01-11-08
End Shear	34 lbs	7232 lbs	0.5%	1	01-05-02
Total Load Deflection	L/999 (0")	n/a	n/a	4	01-11-08
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-11-08
Max Defl.	0"	n/a	n/a	4	01-11-08
Span / Depth	3.2				

			Demand/ Resistance Support	Demand/ Resistance Member	
Bearing Supports	Dim. (LxW)	Demand			Material
B1	Column	5-1/4" x 1-3/4"	126 lbs	1.7%	1.1%
B2	Column	3-1/2" x 1-3/4"	116 lbs	2.3%	1.6%
					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**ENG NO. YAM6053 -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®,

BC CALC® Member Report

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B9\((3871)

City, Province, Postal Code: WATERDOWN

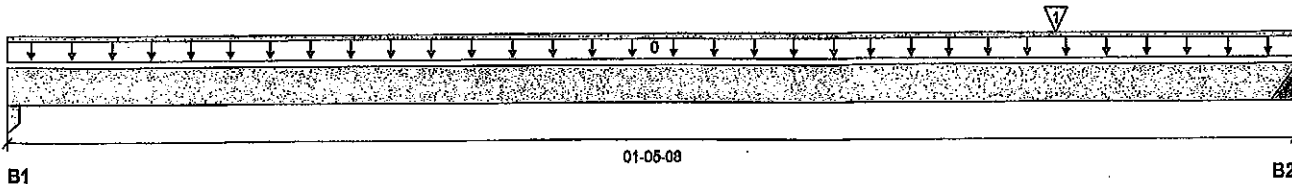
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 01-05-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	8 / 0	8 / 0		
B2, 2"	55 / 0	32 / 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	01-05-08	Top	6				00-00-00
1	J6((3869)	Conc. Pt. (lbs)	L	01-02-04	01-02-04	Top	63	32			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	20 ft-lbs	17696 ft-lbs	0.1%	1	01-02-04
End Shear	14 lbs	7232 lbs	0.2%	1	01-01-10
Span / Depth	1.3				

Bearing Supports

B1	Column	1-3/4" x 1-3/4"	23 lbs	0.9%	0.6%	Unspecified
B2	Hanger	2" x 1-3/4"	123 lbs	n/a	2.9%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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



OWG NO. TAM 6054 -20
STRUCTURAL
 COMPONENT ONLY

Disclosure

Use of the Bolsa 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 Bolsa 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®

CONFORMS TO OBC 2012

AMENDED 2020

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 2.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B19 DR(i4489)

City, Province, Postal Code: WATERDOWN

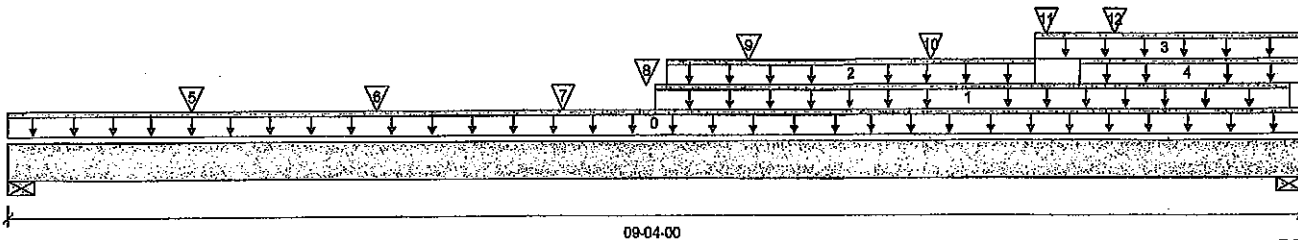
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1206 / 0	1090 / 0	524 / 0	
B2, 6-1/2"	1274 / 0	1230 / 0	780 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-04-00	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	04-08-00	09-02-14	Top	33	30	63		n/a
2	R1(i4465)	Unf. Lin. (lb/ft)	L	04-09-00	07-05-00	Top		41			n/a
3	R1(i4465)	Unf. Lin. (lb/ft)	L	07-05-00	09-04-00	Top		81			n/a
4	R1(i4465)	Unf. Lin. (lb/ft)	L	07-09-00	09-04-00	Top	44	40	92		n/a
5	J4(i4437)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	Top	414	342	170		n/a
6	J4(i4460)	Conc. Pt. (lbs)	L	02-08-00	02-08-00	Top	394	331	127		n/a
7	J4(i4484)	Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	286	237	87		n/a
8	B21(i4467)	Conc. Pt. (lbs)	L	04-07-04	04-07-04	Top	282	331	197		n/a
9	J4(i4447)	Conc. Pt. (lbs)	L	05-04-00	05-04-00	Top	244	136	69		n/a
10	J4(i4129)	Conc. Pt. (lbs)	L	06-08-00	06-08-00	Top	273	137			n/a
11	R1(i4465)	Conc. Pt. (lbs)	L	07-06-00	07-06-00	Top	72	90	151		n/a
12	J4(i3973)	Conc. Pt. (lbs)	L	08-00-00	08-00-00	Top	286	156	69		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9223 ft-lbs	23220 ft-lbs	39.7%	1	04-07-04
End Shear	3683 lbs	11571 lbs	31.8%	1	01-01-08
Total Load Deflection	L/561 (0.185")	n/a	42.8%	35	04-07-04
Live Load Deflection	L/999 (0.114")	n/a		51	04-07-04
Max Defl.	0.185"	n/a		35	04-07-04
Span / Depth	10.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	3696 lbs	32.5%	21.6%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	4227 lbs	16.5%	18.0%	Spruce-Pine-Fir



OWN NO. YAM 6055 -20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B19 DR(I4489) (Dropped Beam)**

Dry | 1 span | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 2.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B19 DR(I4489)

Specifier:

Designer: AJ

Company:

Notes

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

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

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

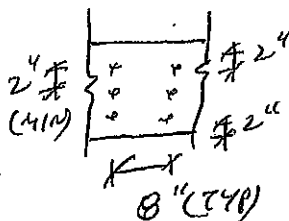
Resistance Factor phi has been applied to all presented results per CSA O86.

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



SWG NO. TAM 6055-20
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®



Bolsa Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B20 DR(i4444) (Dropped Beam)**

Dry | 1 span | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 2.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B20 DR(i4444)

City, Province, Postal Code: WATERDOWN

Specifier:

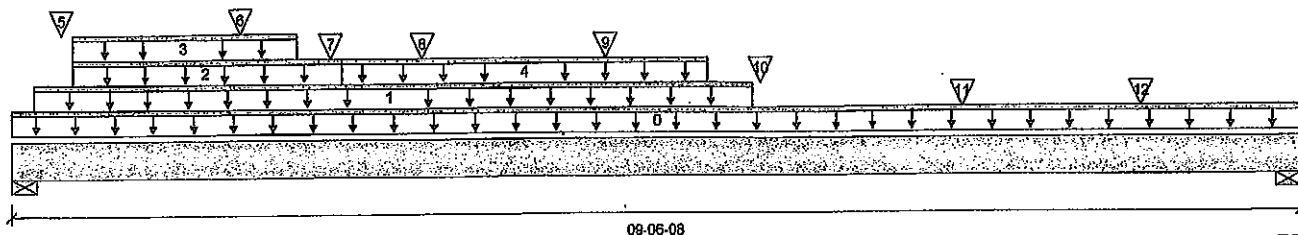
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



B1

09-06-08

B2

Total Horizontal Product Length = 09-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	1316 / 0	1199 / 0	738 / 0	
B2, 4"	1285 / 0	1195 / 0	623 / 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	09-06-08	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-02-00	05-05-08	Top	33	30	63		n/a
2	R1(i4438)	Unf. Lin. (lb/ft)	L	00-05-08	02-05-08	Top		81			n/a
3	R1(i4438)	Unf. Lin. (lb/ft)	L	00-05-08	02-01-08	Top	44	40	92		n/a
4	R1(i4438)	Unf. Lin. (lb/ft)	L	02-05-08	05-01-08	Top		41			n/a
5	J4(i4000)	Conc. Pt. (lbs)	L	00-04-08	00-04-08	Top	174	87			n/a
6	J4(i3957)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	Top	303	165	69		n/a
7	R1(i4438)	Conc. Pt. (lbs)	L	02-04-08	02-04-08	Top	75	93	156		n/a
8	J4(i4129)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	Top	273	137			n/a
9	J4(i4461)	Conc. Pt. (lbs)	L	04-04-08	04-04-08	Top	295	161	69		n/a
10	-	Conc. Pt. (lbs)	L	05-06-03	05-06-03	Top	430	478	260		n/a
11	J4(i4479)	Conc. Pt. (lbs)	L	07-00-08	07-00-08	Top	371	320	125		n/a
12	J4(i4471)	Conc. Pt. (lbs)	L	08-04-08	08-04-08	Top	427	362	195		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9800 ft-lbs	23220 ft-lbs	42.2%	1	04-09-00
End Shear	4031 lbs	11571 lbs	34.8%	1	08-05-00
Total Load Deflection	L/482 (0.228")	n/a	49.8%	35	04-09-00
Live Load Deflection	L/777 (0.142")	n/a	46.3%	51	04-09-00
Max Defl.	0.228"	n/a	n/a	35	04-09-00
Span / Depth	11.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2" x 3-1/2"	4211 lbs	45.1%	49.3%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	4044 lbs	35.6%	23.7%	Spruce-Pine-Fir



DWG NO. TAN 6056 -20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B20 DR(14444) (Dropped Beam)**

Dry | 1 span | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 2.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B20 DR(14444)

Specifier:

Designer: AJ

Company:

Notes

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

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

Calculations assume unbraced length of Top: 01-02-04, Bottom: 01-02-04.

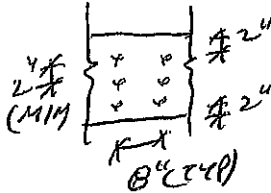
Resistance Factor phi has been applied to all presented results per CSA O86.

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

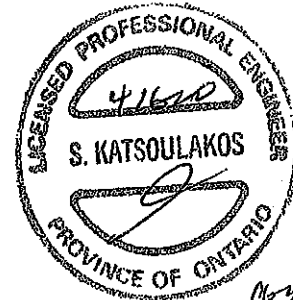
Unbalanced snow loads determined from building geometry were used in selected product's verification.

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



DWG NO. YAM6056-20
**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®,

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B21(i4467) (Flush Beam)**

Dry | 2 spans | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Bulld 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

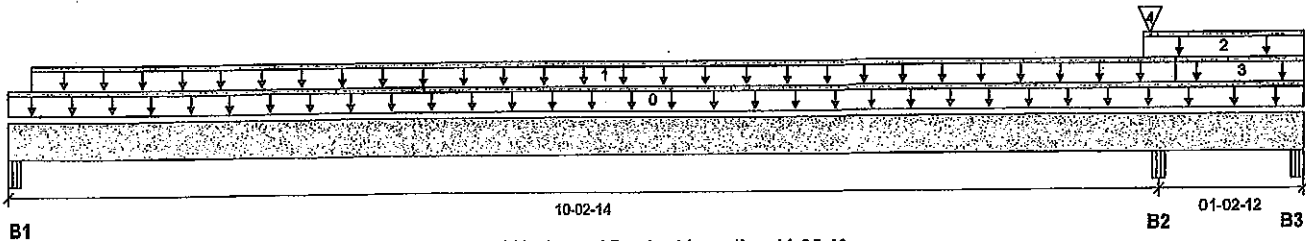
File name: MOUNTAINASH 4 EL 2.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B21(i4467)

Specifier:

Designer: AJ

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	105 / 0	103 / 0	0 / 0	
B2, 3-1/2"	620 / 0	650 / 0	206 / 0	
B3, 5-1/4"	38 / 350	0 / 293	50 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-05-10	Top	12				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	10-04-10	Top	27	13			n/a
2	ROOF	Unf. Lin. (lb/ft)	L	10-01-02	11-05-10	Top	33	30	63		n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	10-04-10	11-05-10	Top	15	7			n/a
4	E21(i1667)	Conc. Pt. (lbs)	L	10-01-14	10-01-14	Top	81	136	169		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	517 ft-lbs	35392 ft-lbs	1.5%	44	04-02-04
Neg. Moment	-806 ft-lbs	-35392 ft-lbs	2.3%	1	10-02-14
End Shear	919 lbs	14464 lbs	6.4%	44	11-00-06
Cont. Shear	998 lbs	14464 lbs	6.9%	19	10-04-10
Total Load Deflection	L/999 (0.005")	n/a	n/a	107	04-08-00
Live Load Deflection	L/999 (0.003")	n/a	n/a	159	04-08-00
Total Neg. Defl.	L/999 (-0")	n/a	n/a	107	10-07-03
Max Defl.	0.005"	n/a	n/a	107	04-08-00
Span / Depth	10.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	287 lbs	2.9%	1.3%	Unspecified
B2 Beam	3-1/2" x 3-1/2"	1948 lbs	13.0%	13.0%	VL 2.0 3100 SP
B3 Beam	5-1/4" x 3-1/2"	0 lbs	n/a	n/a	Unspecified
B3 Uplift		892 lbs			

Cautions

Uplift of 892 lbs found at bearing B3. (SIMPSON 2-H2-5A @ 87.33)

DWG NO. TAM6057-20
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Flush Beams\B21(i4467) (Flush Beam)

Dry | 2 spans | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Bulld 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 2.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B21(i4467)

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.

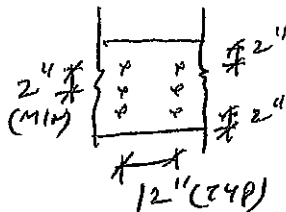
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



OWN NO. TAM 6057-20
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™, BC®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B22(i4454) (Flush Beam)**

Dry | 2 spans | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

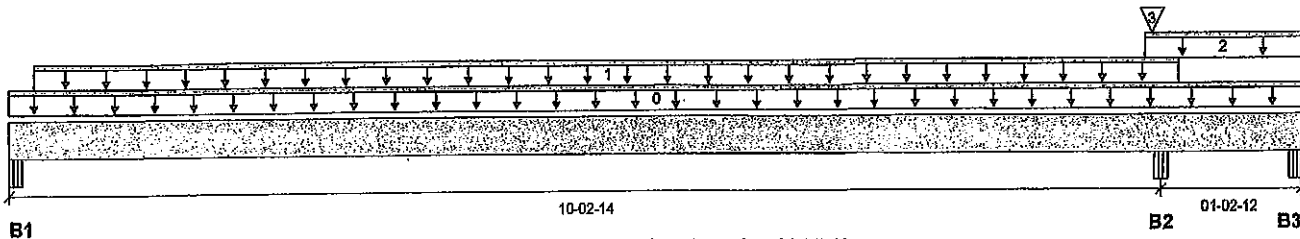
File name: MOUNTAINASH 4 EL 2.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B22(i4454)

Specifier:

Designer: AJ

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	211 / 0	156 / 0	0 / 0	
B2, 3-1/2"	1088 / 0	876 / 0	118 / 0	
B3, 5-1/4"	27 / 699	0 / 474	50 / 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	11-05-10	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	10-04-10	Top	53	27			n/a
2	ROOF	Unf. Lin. (lb/ft)	L	10-01-02	11-05-10	Top	33	30	63		n/a
3	E19(i1665)	Conc. Pt. (lbs)	L	10-01-14	10-01-14	Top	39	107	81		n/a

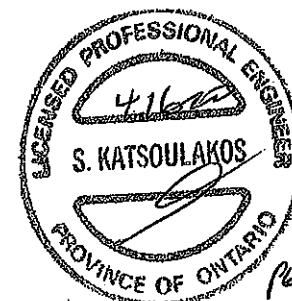
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	926 ft-lbs	35392 ft-lbs	2.6%	44	04-02-04
Neg. Moment	-1440 ft-lbs	-35392 ft-lbs	4.1%	1	10-02-14
End Shear	1664 lbs	14464 lbs	11.5%	44	11-00-06
Cont. Shear	1731 lbs	14464 lbs	12.0%	1	10-04-10
Total Load Deflection	L/999 (0.009")	n/a	n/a	107	04-08-00
Live Load Deflection	L/999 (0.005")	n/a	n/a	159	04-08-00
Total Neg. Defl.	L/999 (-0")	n/a	n/a	107	10-07-03
Max Defl.	0.009"	n/a	n/a	107	04-08-00
Span / Depth	10.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	511 lbs	5.2%	2.3%	Unspecified
B2 Beam	3-1/2" x 3-1/2"	2845 lbs	19.0%	19.0%	VL 2.0 3100 SP
B3 Beam	5-1/4" x 3-1/2"	0 lbs	n/a	n/a	Unspecified
B3 Uplift		1641 lbs			

Cautions

Uplift of 1641 lbs found at bearing B3. (SIMPSON 2-HZ-57 + 4-3 1/2" ANCHOR BOLTS TO BE NAILS @ ST. B3).



DWG NO. YAM605B-20

**STRUCTURAL
COMPONENT ONLY**



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

PASSED

2ND FLR FRAMING\Flush Beams\B22(14454) (Flush Beam)

Dry | 2 spans | No cant.

February 18, 2020 09:06:05

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: MOUNTAINASH 4 EL 2.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B22(14454)

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.

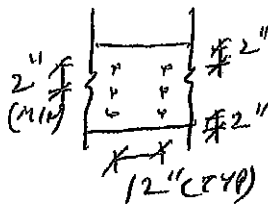
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

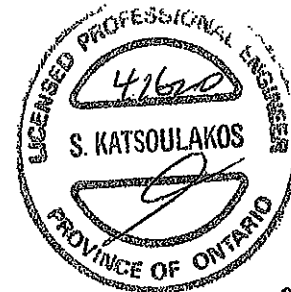
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



DWG NO. TAW 6058-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

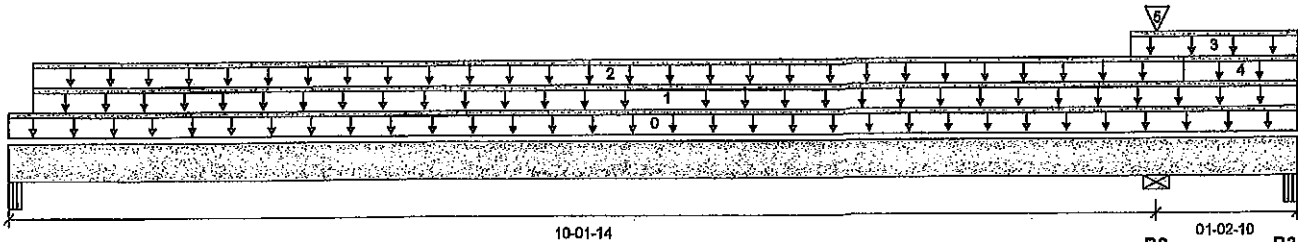
File name: MOUNTAINASH 4 EL 3 OPT.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B22(I4484)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 11-04-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	105 / 0	102 / 0	0 / 0	
B2, 5-1/2"	504 / 0	494 / 0	46 / 0	
B3, 4-1/8"	34 / 311	0 / 260	46 / 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	11-04-08	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	11-04-08	Top	7	4			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	10-04-10	Top	20	10			n/a
3	ROOF	Unf. Lin. (lb/ft)	L	09-11-02	11-04-08	Top	33	30	63		n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	10-04-10	11-04-08	Top	6	3			n/a
5	E20(I1686)	Conc. Pt. (lbs)	L	10-01-14	10-01-14	Top		14			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	511 ft-lbs	35392 ft-lbs	1.4%	44	04-01-08
Neg. Moment	-788 ft-lbs	-35392 ft-lbs	2.2%	1	10-01-14
End Shear	813 lbs	14464 lbs	5.6%	44	11-00-08
Cont. Shear	886 lbs	14464 lbs	6.1%	1	10-04-10
Total Load Deflection	L/999 (0.005")	n/a	n/a	107	04-07-02
Live Load Deflection	L/999 (0.003")	n/a	n/a	159	04-07-02
Total Neg. Defl.	L/999 (-0")	n/a	n/a	107	10-06-09
Max Defl.	0.005"	n/a	n/a	107	04-07-02
Span / Depth	9.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	285 lbs	2.9%	1.3%	Unspecified
B2 Wall/Plate	5-1/2" x 3-1/2"	1420 lbs	12.0%	6.0%	Spruce-Pine-Fir
B3 Beam	4-1/8" x 3-1/2"	0 lbs	n/a	n/a	Unspecified
B3 Uplift		792 lbs			

Cautions

Uplift of 792 lbs found at bearing B3. (SIMPSON 2-H2-57 Q-33)



ONE NO. TAM6059 -20
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B22(14484) (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 18, 2020 09:19:26

File name: MOUNTAINASH 4 EL 3 OPT.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B22(14484)

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.

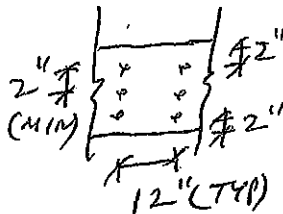
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



OWN NO. FAN 6059-20
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®,

Build 7239

Job name:

File name: MOUNTAINASH 4 EL 1 DECK CONDITION.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1A(I4890)

City, Province, Postal Code: WATERDOWN

Specifier:

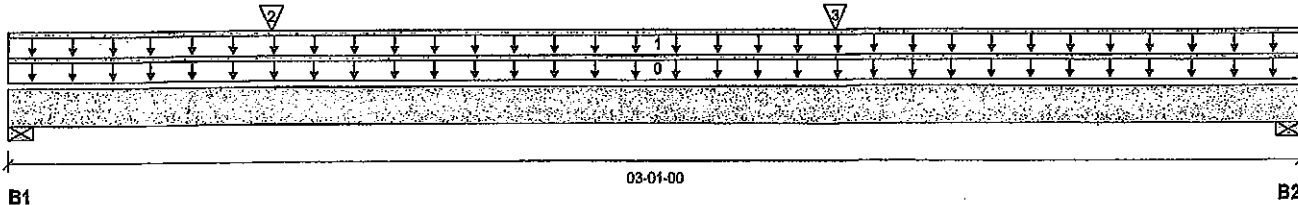
Customer:

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"	818 / 0	552 / 0		
B2, 3"	889 / 0	487 / 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	12	0.65	1.00	1.15	00-00-00
1	E1(I429)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	262	212			n/a
2	J3(I4853)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	Top	349	174			n/a
3	J3(I4853)	Conc. Pt. (lbs)	L	01-11-08	01-11-08	Top	349	174			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1140 ft-lbs	35392 ft-lbs	3.2%	1	01-08-12.
End Shear	722 lbs	14464 lbs	5.0%	1	01-10-02
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-06-08
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-06-08
Max Defl.	0.001"	n/a	n/a	4	01-06-08
Span / Depth	2.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	1917 lbs	29.7%	15.0%	Spruce-Pine-Fir
B2	Wall/Plate 3" x 3-1/2"	1643 lbs	25.4%	12.8%	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. 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 3/2" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



PROV. NO. 41620-20
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®,

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

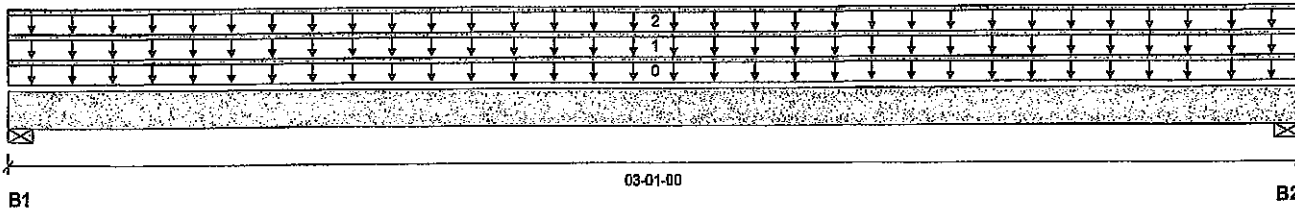
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Description: 1ST FLR FRAMING\Flush Beams\B1B(14889)

Specifier:

Designer: AJ

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	79 / 0	192 / 0		
B2, 3"	79 / 0	192 / 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	12	0.65	1.00	1.15	00-00-00
1	E5(i427)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	25	99			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	27	13			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	160 ft-lbs	23005 ft-lbs	0.7%	0	01-06-08
End Shear	53 lbs	9401 lbs	0.6%	0	01-02-14
Total Load Deflection	L/999 (0")	n/a	n/a	4	01-06-08
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-06-08
Max Defl.	0"	n/a	n/a	4	01-06-08
Span / Depth	2.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	268 lbs	6.4%	3.2%	Spruce-Pine-Fir
B2	Wall/Plate 3" x 3-1/2"	268 lbs	6.4%	3.2%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

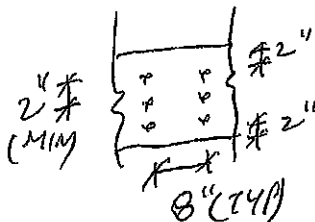
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



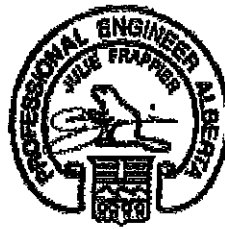
DESIGN NO. FAM 6061-20
STRUCTURAL
COMPONENT ONLY

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®



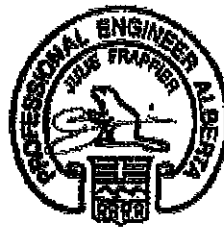
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf

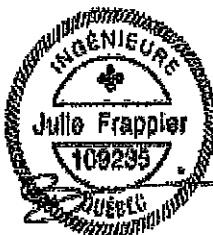
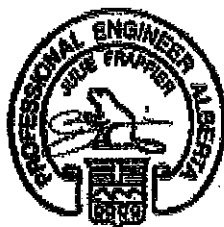
Simple Spans, L/480 Deflection Limit

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

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



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'-5"	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'-0"	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'-8"	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"

1. 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.

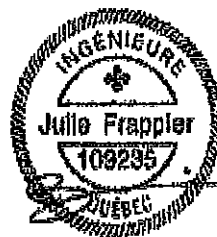
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

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

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

5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.

6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

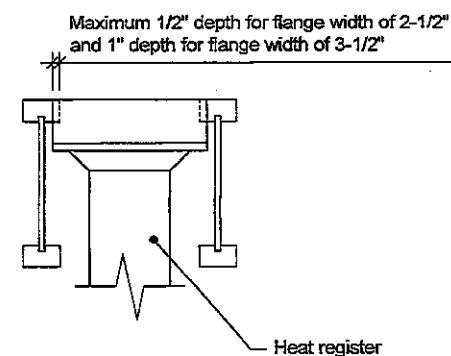
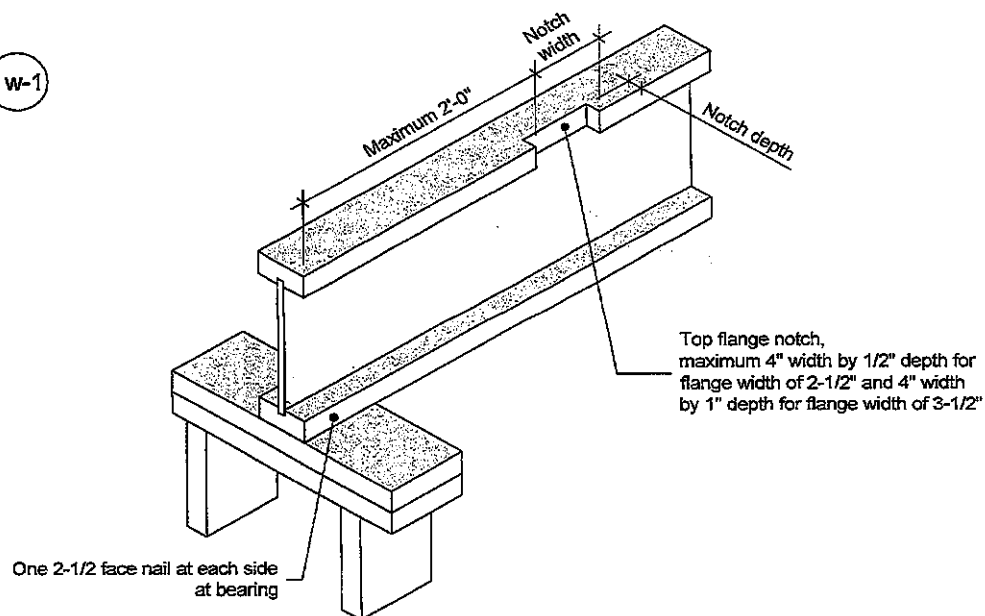
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

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

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

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

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 0.126 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

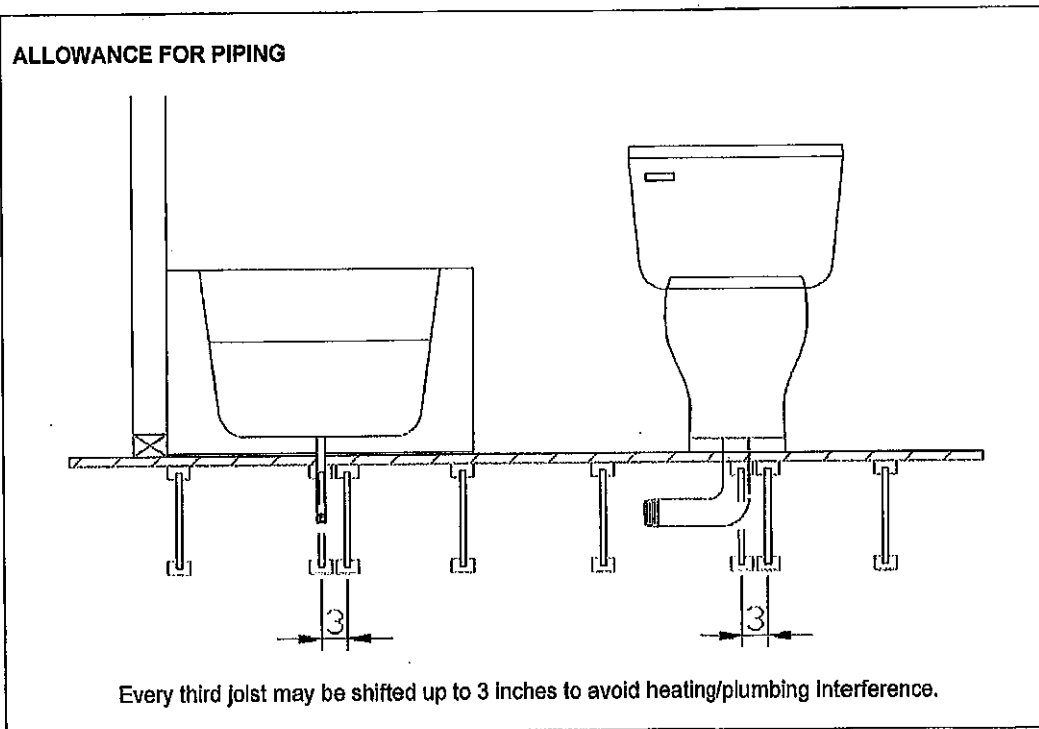
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Allowance for Piping (Installation Notes)

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

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

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



Revised April 12, 2012