

FROM PLAN DATED: JAN 2020

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS PH 3

MODEL: VALLEYCREEK 2

ELEVATION: 1

LOT:

CITY: WATERDOWN

SALESMAN: MARIO DICIANO

DESIGNER: AJ

REVISION:

NOTES:

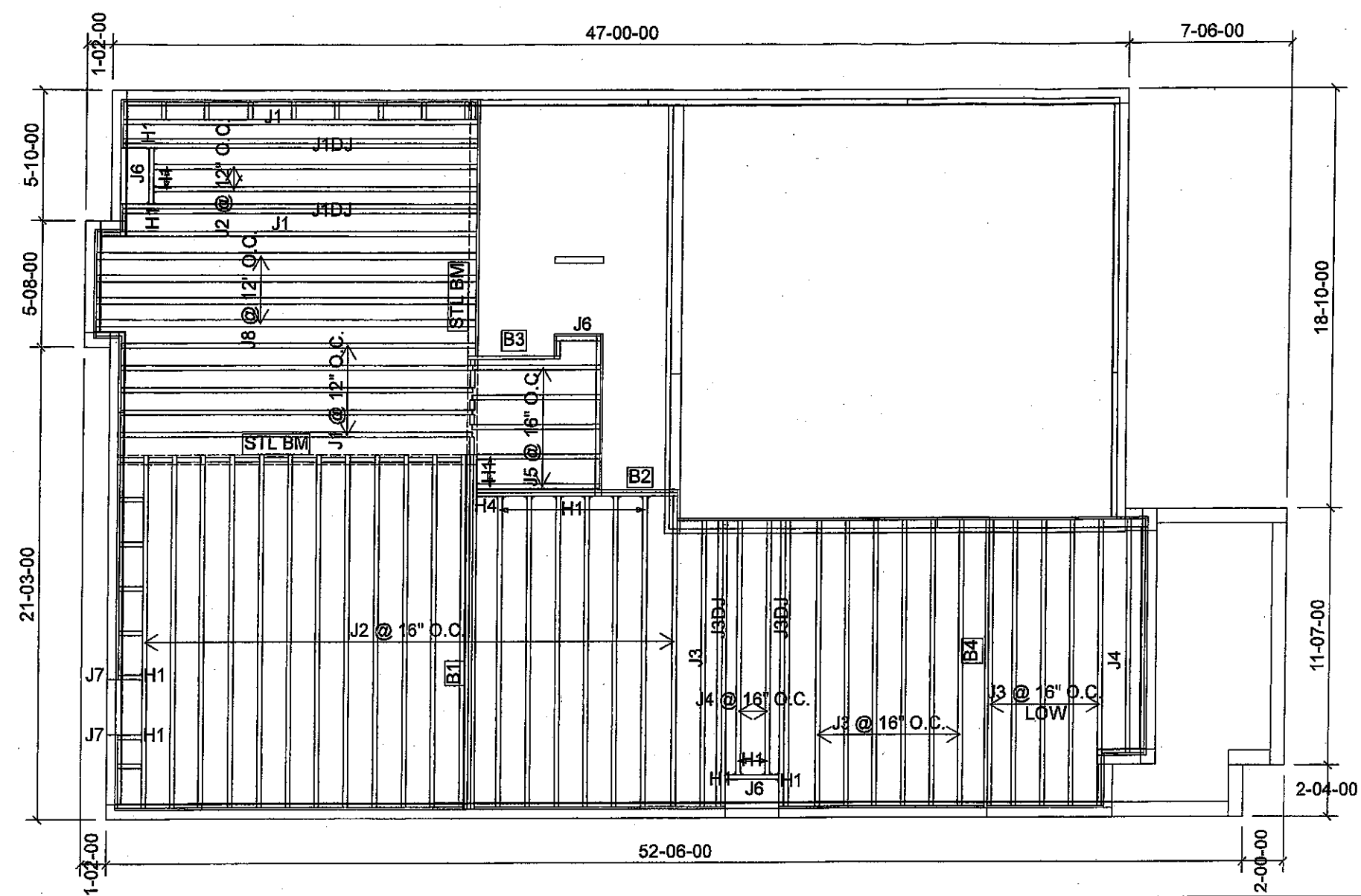
REFER TO THE **NORDIC INSTALLATION**
GUIDE FOR PROPER STORAGE AND
INSTALLATION.

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

LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 20.0 lb/ft²
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2020-02-20

1st FLOOR



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	7	MFD
J1DJ	18-00-00	9 1/2" NI-40x	2	4	MFD
J2	16-00-00	9 1/2" NI-40x	1	21	MFD
J3	14-00-00	9 1/2" NI-40x	1	12	MFD
J3DJ	14-00-00	9 1/2" NI-40x	2	4	MFD
J4	12-00-00	9 1/2" NI-40x	1	3	MFD
J5	6-00-00	9 1/2" NI-40x	1	5	MFD
J6	4-00-00	9 1/2" NI-40x	1	3	MFD
J7	2-00-00	9 1/2" NI-40x	1	2	MFD
J8	18-00-00	9 1/2" NI-80	1	4	MFD
B1	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3	MFD
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Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
1	H4	HGUS410

CITY OF HAMILTON
Building Division

Permit No. 187704

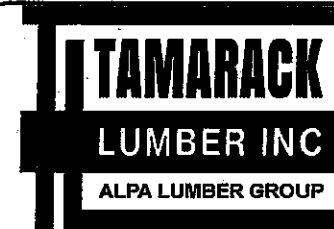
THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE

THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
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FOR CHIEF BUILDING OFFICIAL

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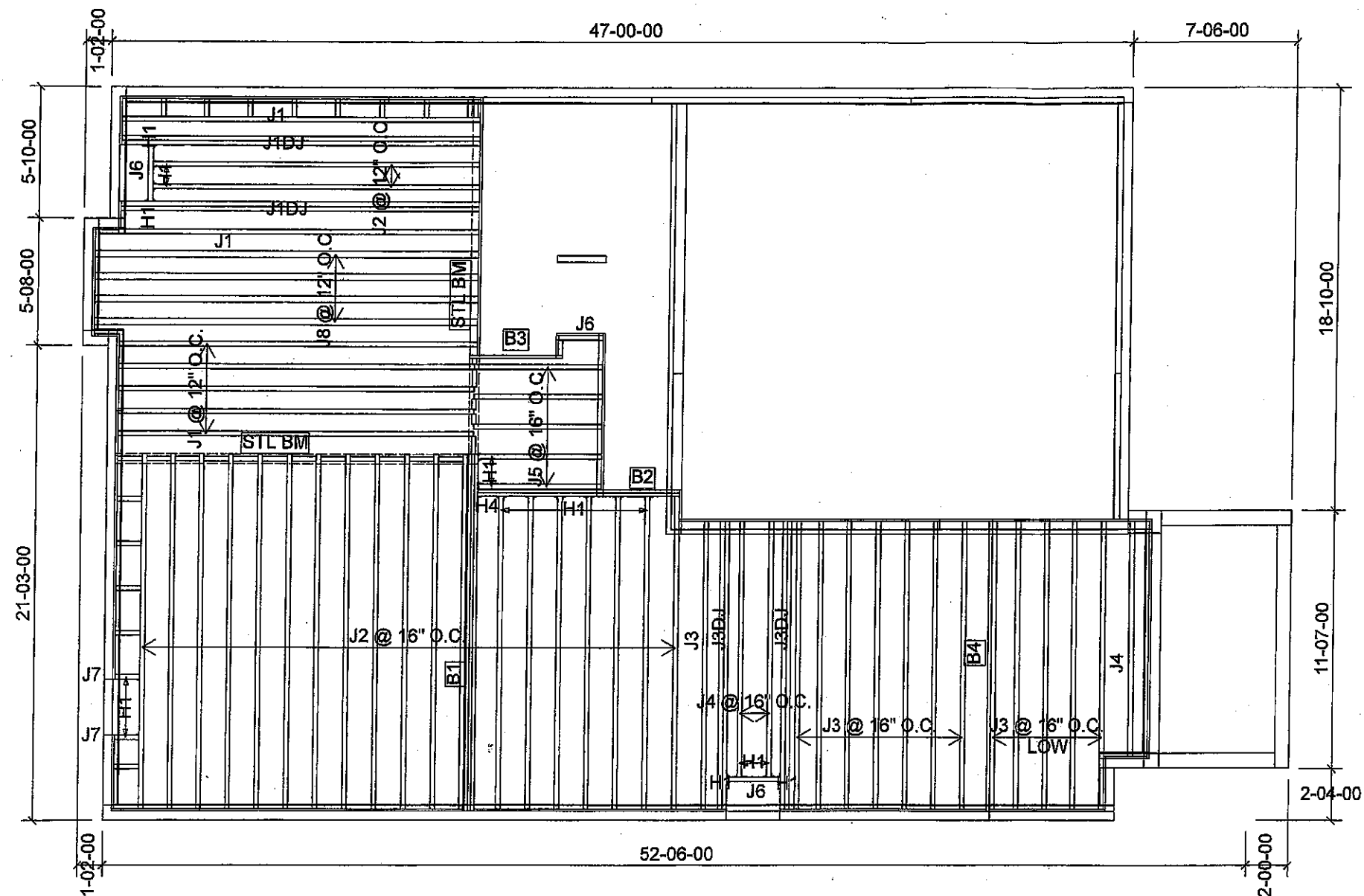
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LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

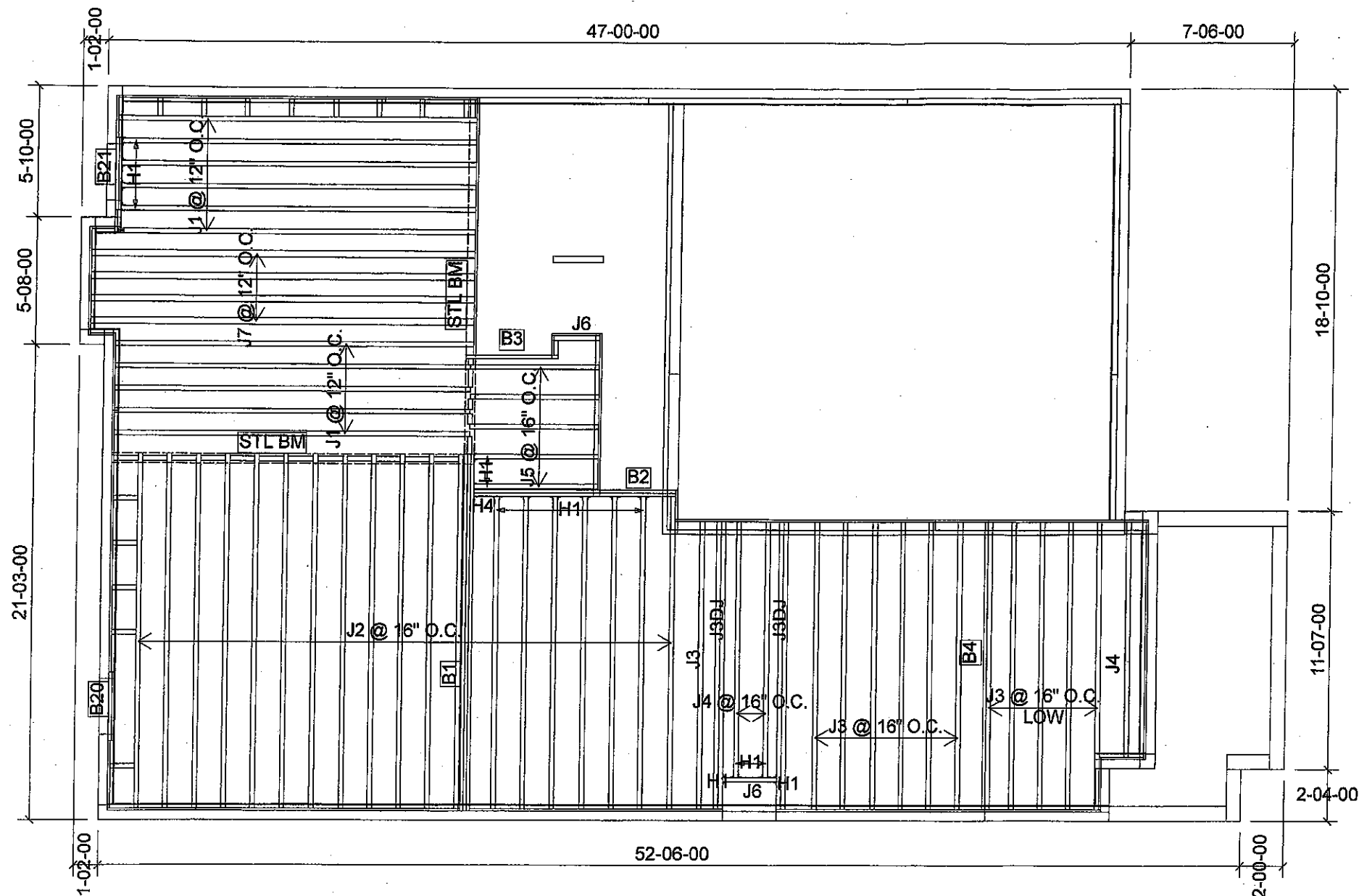
DEAD LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2020-03-24

1st FLOOR

DECK CONDITION



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	11	MFD
J2	16-00-00	9 1/2" NI-40x	1	19	MFD
J3	14-00-00	9 1/2" NI-40x	1	12	MFD
J3DJ	14-00-00	9 1/2" NI-40x	2	4	MFD
J4	12-00-00	9 1/2" NI-40x	1	3	MFD
J5	6-00-00	9 1/2" NI-40x	1	5	MFD
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B20	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B21	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD

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ELEVATION: 2,3

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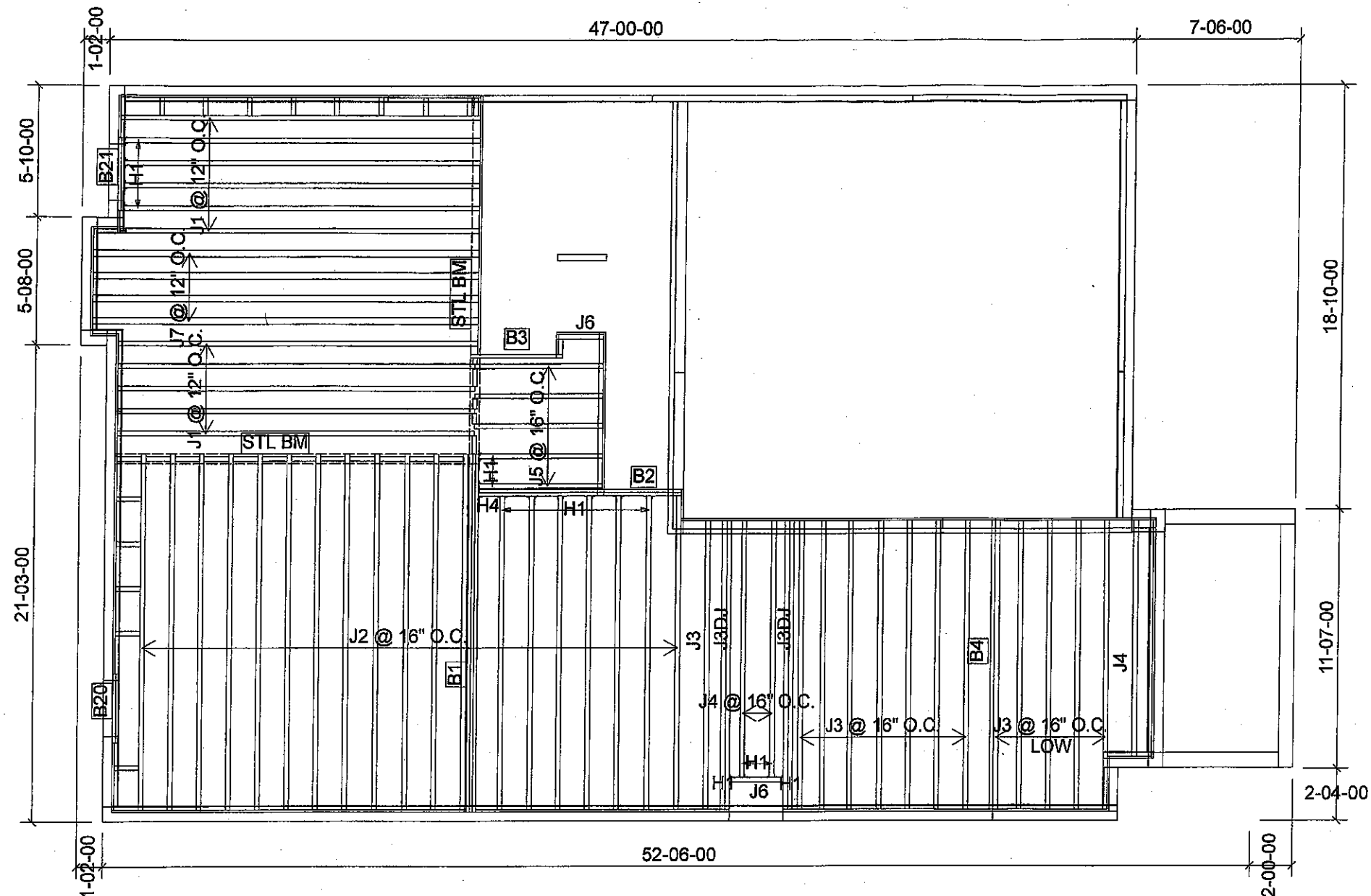
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DECK CONDITION



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J5	6-00-00	9 1/2" NI-40x	1	5	MFD
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J7	18-00-00	9 1/2" NI-80	1	4	MFD
B1	18-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	3	3	MFD
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LOT:

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DESIGNER: AJ

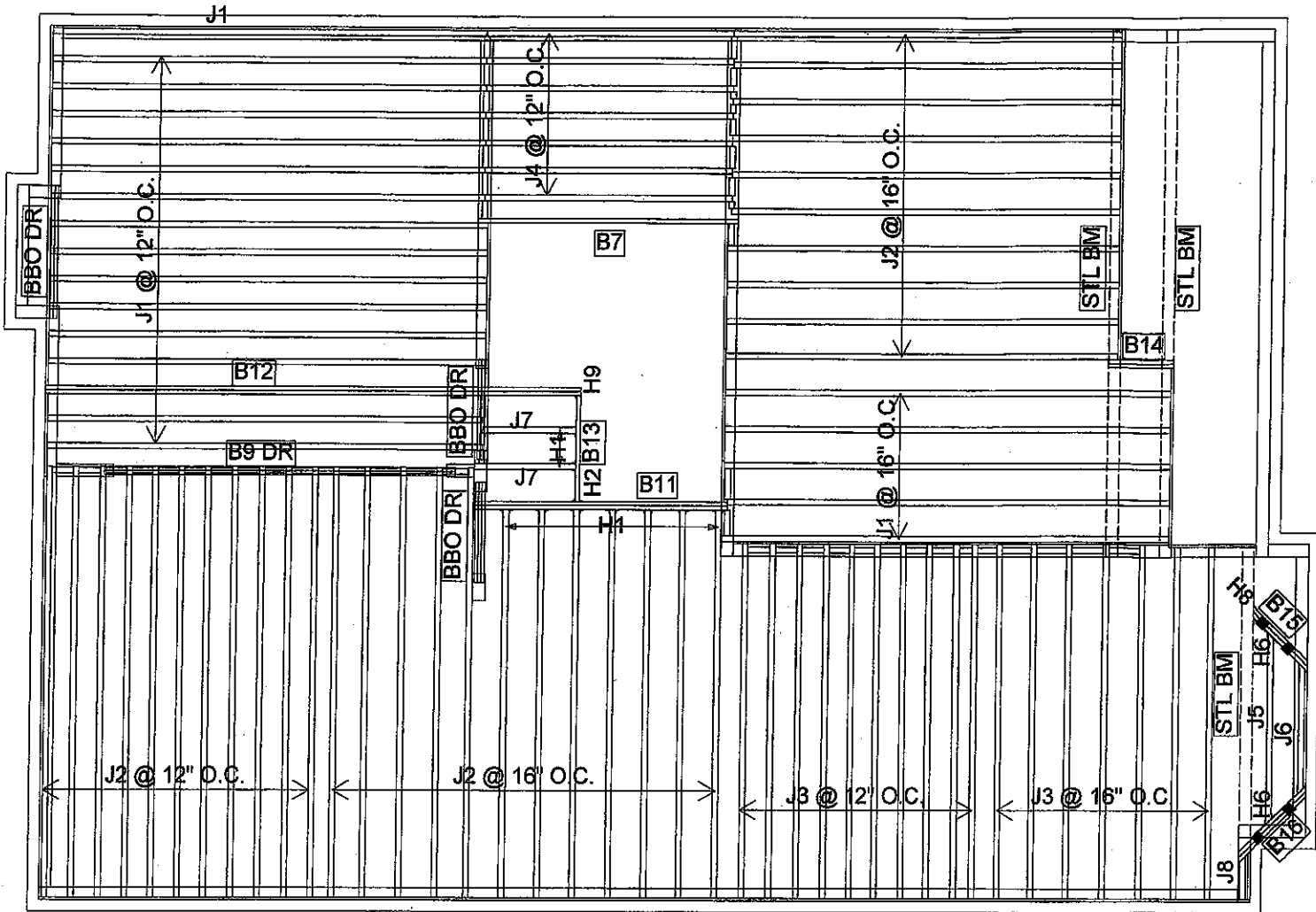
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DATE: 2020-02-12

2nd FLOOR



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	9 1/2" NI-40x	1	20	MFD
J2	16-00-00	9 1/2" NI-40x	1	33	MFD
J3	14-00-00	9 1/2" NI-40x	1	17	MFD
J4	10-00-00	9 1/2" NI-40x	1	7	MFD
J5	8-00-00	9 1/2" NI-40x	1	1	MFD
J6	6-00-00	9 1/2" NI-40x	1	1	MFD
J7	4-00-00	9 1/2" NI-40x	1	2	MFD
J8	2-00-00	9 1/2" NI-40x	1	1	MFD
B12	22-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B9 DR	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
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B15	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B16	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	MFD

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2	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5
1	H2	HUS1.81/10
1	H6	LSSR2.56Z
1	H6	LSSR2.56Z
1	H8	LSSR410Z
1	H9	LS90

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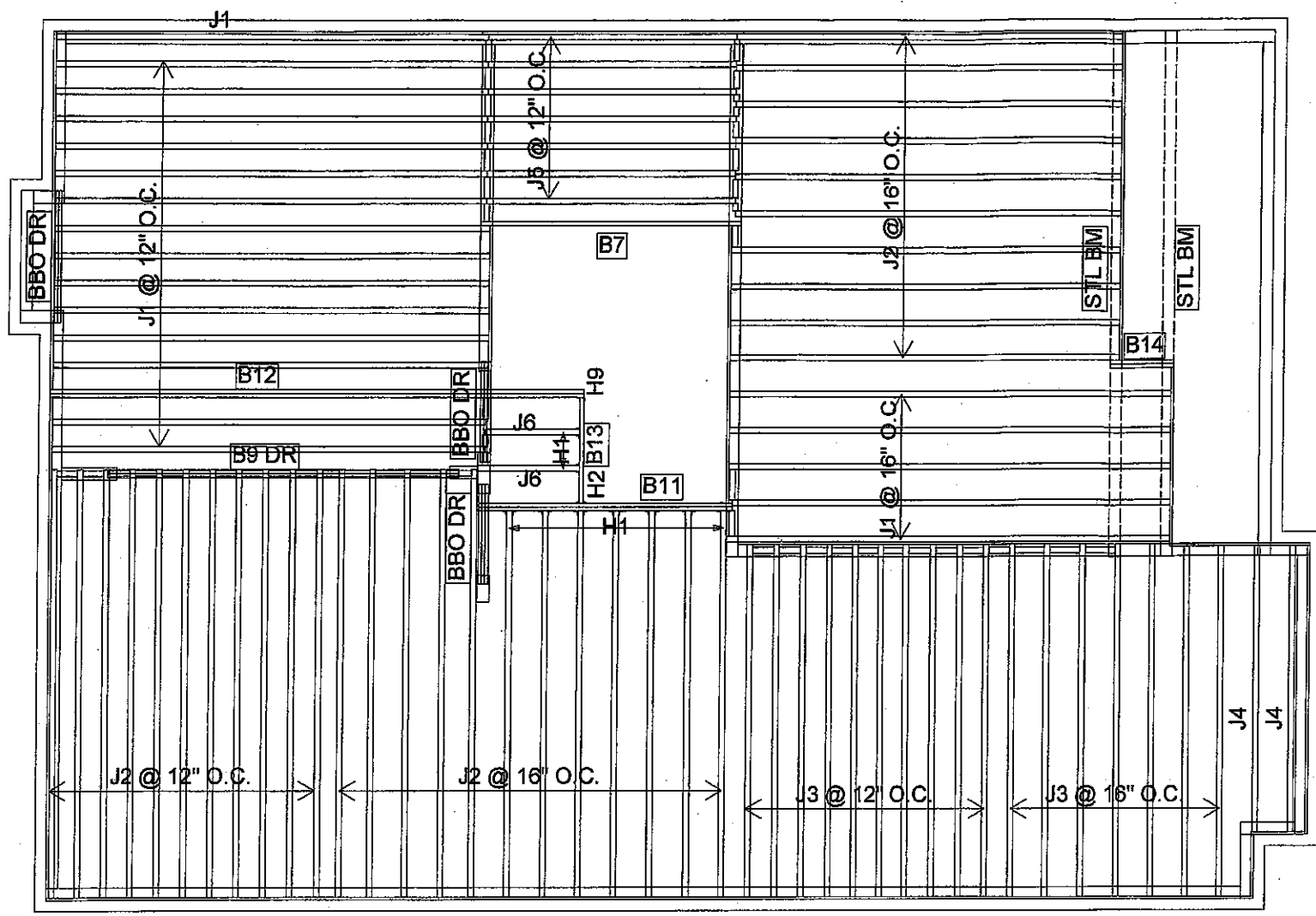
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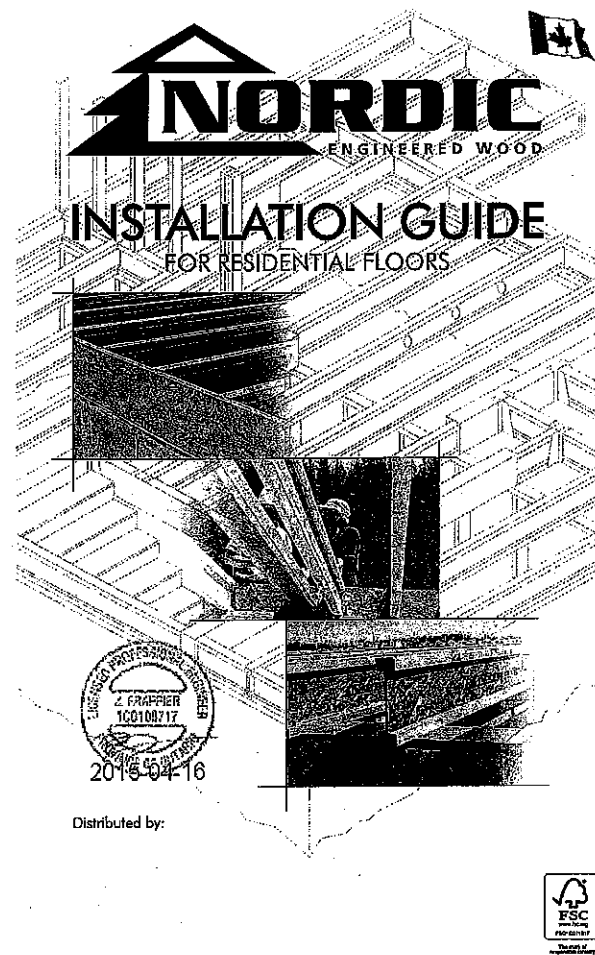
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SAFETY AND CONSTRUCTION PRECAUTIONS

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

Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-briding at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
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 dense panels, rim board, or cross-briding.
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 flatwise.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.

MAXIMUM FLOOR SPANS

1. Maximum clear 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 1.5DL + 1.25L. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.

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

3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 2-1/2 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-C086-09 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

SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On center spacing	12"	16"	19.2"	12"	16"	19.2"	24"
9 1/2"	NL-20	15'-1"	14'-2"	13'-9"	13'-5"	15'-3"	14'-4"	14'-10"	14'-7"
	NL-40	16'-1"	15'-2"	14'-8"	14'-4"	17'-5"	16'-5"	16'-10"	15'-8"
	NL-60	17'-1"	16'-1"	15'-4"	14'-10"	18'-7"	17'-6"	17'-1"	16'-1"
	NL-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-10"	17'-8"	17'-0"	17'-0"
11 1/2"	NL-20	16'-11"	16'-0"	15'-5"	15'-5"	18'-4"	17'-3"	16'-8"	16'-3"
	NL-40	18'-1"	17'-0"	16'-5"	16'-5"	20'-0"	18'-6"	17'-9"	17'-3"
	NL-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
	NL-80	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
13 1/2"	NL-20	19'-9"	18'-3"	17'-8"	17'-7"	21'-9"	20'-4"	19'-4"	19'-4"
	NL-40	20'-2"	18'-7"	17'-11"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	NL-60	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	NL-80	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-8"	19'-8"	19'-4"
15 1/2"	NL-20	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
	NL-40	21'-7"	20'-4"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-2"
	NL-60	21'-11"	20'-5"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
	NL-80	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
17 1/2"	NL-20	22'-7"	20'-11"	19'-1"	19'-1"	25'-0"	23'-1"	22'-0"	22'-2"
	NL-40	22'-3"	20'-8"	19'-9"	19'-10"	24'-7"	22'-9"	21'-9"	21'-10"
	NL-60	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	23'-0"
	NL-80	23'-1"	22'-1"	21'-11"	21'-9"	26'-3"	24'-3"	23'-4"	23'-4"
19 1/2"	NL-20	24'-8"	22'-9"	21'-9"	21'-9"	27'-3"	25'-2"	24'-0"	24'-1"
	NL-40	24'-5"	22'-6"	21'-5"	21'-6"	26'-11"	24'-10"	23'-9"	23'-9"
	NL-60	25'-2"	23'-2"	22'-2"	22'-2"	27'-10"	25'-10"	24'-10"	24'-10"
	NL-80	25'-2"	23'-2"	22'-2"	22'-2"	27'-3"	25'-2"	24'-0"	24'-1"

CCNC EVALUATION REPORT 13032-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.

Top Mount, Skewed, Face Mount

WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2 WEB STIFFENER INSTALLATION DETAILS

CONCENTRATED LOAD (Load stiffener)
Flange width 2-1/2" or 3-1/2"
Approx. 2" gap
Approx. 2" gap
No Gap
See table below for web stiffener size requirements

END BEARING (Bearing stiffener)
Gap
Tight Joint
No Gap

STIFFENER SIZE REQUIREMENTS

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

NORDIC I-JOIST SERIES

Chambers Chibougamau Ltd. harvests its own trees, which are then processed into lumber products to adhere to strict quality control procedures through the manufacturing process. Every phase of the operation, from the forest to the finished product, reflects our commitment to quality.

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

2015-04-16

INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact 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-span applications 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 (ripple 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 an I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

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

NOTE: Never cut or notch flanges.

Use hangers recognized in current code evaluation reports.

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

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

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

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

1d. Backer block (use if hanger load exceeds 340 lbs) Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch, install backer right to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

1e. Double I-joist header.

1f. Top- or face-mount hanger.

1g. Filler block—per detail 1g.

1h. Backer block required (both sides for face-mount hangers).

1i. For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

1j. BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting).

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C086 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 net depth minus 4-1/4".

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NL Joists	3,300
1-1/8" Rim Board Plus	8,090

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

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

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

1d. Attach rim joist to top plate per detail 1a.

1e. Attach rim joist to top plate per detail 1a.

1f. Attach rim joist to top plate per detail 1a.

1g. Attach rim joist to top plate per detail 1a.

1h. Attach rim joist to top plate per detail 1a.

1i. Attach rim joist to top plate per detail 1a.

1j. Attach rim joist to top plate per detail 1a.

1k. Attach rim joist to top plate per detail 1a.

1l. Attach rim joist to top plate per detail 1a.

1m. Attach rim joist to top plate per detail 1a.

1n. Attach rim joist to top plate per detail 1a.

1o. Attach rim joist to top plate per detail 1a.

1p. Attach rim joist to top plate per detail 1a.

1q. Attach rim joist to top plate per detail 1a.

1r. Attach rim joist to top plate per detail 1a.

1s. Attach rim joist to top plate per detail 1a.

1t. Attach rim joist to top plate per detail 1a.

1u. Attach rim joist to top plate per detail 1a.

1v. Attach rim joist to top plate per detail 1a.

1w. Attach rim joist to top plate per detail 1a.

1x. Attach rim joist to top plate per detail 1a.

1y. Attach rim joist to top plate per detail 1a.

1z. Attach rim joist to top plate per detail 1a.

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

Notes:

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

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

1s. One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum).

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

1u. One 2-1/2" nails one side only. 2-1/2" nails at 6" o.c.

Notes:

- In some local codes, blocking is prescriptively required in the first joist space (for first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

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



4g) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



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



CHESTING REINFORCEMENT



1. N = No reinforcement required. For larger openings, or multiple 3'-0" width 4. For conventional roof construction using a

reinforcing.

b

1. N = No reinforcement required. For larger openings, or multiple 3'-0" width

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1000

Figure 1. A schematic diagram of the experimental setup. The subject is seated in a chair, viewing a screen displaying a target. The target is a horizontal line. The subject's hand is positioned at the starting point, and the distance from the starting point to the target is indicated. The subject is instructed to move their hand to the target. The distance from the starting point to the target is 10 cm. The subject is instructed to move their hand to the target. The distance from the starting point to the target is 10 cm. The subject is instructed to move their hand to the target. The distance from the starting point to the target is 10 cm.

[illegible]

- [illegible]

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.

Point	Point	Minimum distance from inside face of any support to centre of hole (ft.-in.)	Span
-------	-------	--	------

1. Above table may be used for joist spacing of 24 inches on centre or less.

OPTIONAL:

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

L_{actual} = The actual measured span distance between the inside faces of supports (7).

Minimum distance from inside face of any support to centre of opening (ft-in)

1. Above table may be used for bolt spacing of 24 inches on center or less.

8d ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



QUANTITIES
OF THE ORDER

Chambers Chibungwanu guarantees that, in accordance with

our specifications, Nordic products are free from manufacturing defects in material and workmanship.

will meet or exceed our specifications for the lifetime of the structure.



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

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

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)											
		Round Hole Diameter (in.)											
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	---
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---
	NI-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	---	---	---	---	---	---
	NI-80	2-9"	3-6"	5-0"	6-4"	8-2"	8-9"	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-5"	7-0"	8-4"	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	---	---	---
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-5"	10-3"	11-4"	---	---	---
14"	NI-20	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	---	---	---
	NI-40x	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---
	NI-60	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	8-3"	10-2"	---
	NI-70	0-7"	0-8"	1-8"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	9-8"	10-4"	11-9"
	NI-80	0-7"	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"
16"	NI-20	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"
	NI-40x	0-7"	0-8"	0-10"	2-5"	4-0"	4-5"	5-9"	7-5"	8-8"	9-4"	11-4"	12-11"
	NI-60	0-7"	0-8"	0-8"	2-0"	3-6"	4-2"	5-5"	7-3"	8-5"	9-2"	---	---
	NI-70	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-3"	6-4"	7-0"	8-5"	9-8"
	NI-80	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"

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

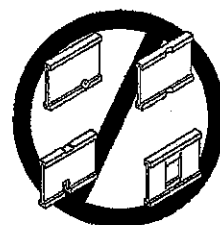
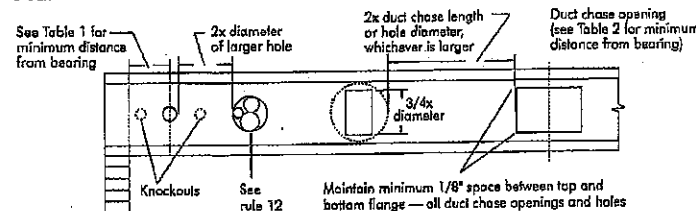
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.)											
		Duct Chase Length (in.)											
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---
	NI-70	5-1"	5-6"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	---	---	---
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
11-7/8"	NI-20	5-0"	5-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-8"	---	---	---
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-8"	---	---	---
14"	NI-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-7"	10-11"	---	---	---
	NI-40x	7-2"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	11-2"	---	---	---
	NI-60	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	11-7"	12-0"	---	---	---
	NI-70	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-1"	12-6"	---	---	---
	NI-80	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---
16"	NI-20	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---
	NI-40x	9-2"	9-6"	10-0"	10-6"	11-0"	11-5"	11-9"	12-4"	12-11"	---	---	---
	NI-60	9-4"	9-9"	10-2"	10-7"	11-2"	11-7"	12-1"	12-6"	13-2"	---	---	---
	NI-70	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	13-7"	14-1"	---	---	---
	NI-80	10-1"	10-5"	11-0"	11-4"	11-9"	12-3"	12-8"	13-3"	14-0"	---	---	---

- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
- The above table is based on the I-joints being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

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

PRODUCT WARRANTY

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

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

1a NI blocking panel

Blocking Panel or Rim Joist
NI Joists

Maximum Factored Uniform Vertical Load* (psf)
3,300

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

Attach I-joint to top plate per detail 1b

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

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

Pair of Squash Blocks

Maximum Factored Uniform Vertical Load per Pair of Squash Blocks (lbs)

3x Lumber	5,500	8,500
1-1/8" Rim Board Plus	4,300	6,600

Provide lateral bracing per detail 1a or 1b

1h Backer block (use if hanger load exceeds 340 lbs). Before installing a backer block to a double I-joint, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer block to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail is 1,620 lbs.

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C308 or CAN/CSA-C437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

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

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

Top-mount hanger installed per manufacturer's recommendations

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

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

Install hanger per manufacturer's recommendations

Filler block per detail 1p

Maximum support capacity = 1,620 lbs.

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

NOTES:

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

1b Rim board

Blocking Panel or Rim Joist
1-1/8" Rim Board Plus

Maximum Factored Uniform Vertical Load* (psf)
8,090

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

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

Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c.

To avoid splitting flange, start nails at least 1-1/2" from end of I-joint. Nails may be driven at an angle to avoid splitting of bearing plate.

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

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

1g Joist attachment per detail 1b

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

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

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

NI blocking panel per detail 1a

1i Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

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

Attach I-joint per detail 1b

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

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

NI blocking panel

OPTIONAL: Minimum 1x4 inch strip applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joist.

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

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

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

I-joint blocking panel

One 2-1/2" nail one side only

NOTES:

- In some local codes, blocking is prescriptively required in the first joist space (for first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

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

WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

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

Approx. 2"

1/8"-1/4" Gap

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

No Gap

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

STIFFENER SIZE REQUIREMENTS

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

See the adjacent table for web stiffener size requirements

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

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

Attach I-joint to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

4b Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

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

RIM BOARD INSTALLATION DETAILS

4a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

2-1/2" nails at 6" o.c. (typical)

2-1/2" toe-nails at 6" o.c. (typical)

Rim board joint

Rim board joint at Corner

1-1/2"

Rim board joint

1-1/2"

4b TOE-NAIL CONNECTION AT RIM BOARD

Rim board

Top or sole plate

30°

6"

NORDIC STRUCTURES

COMPANY
Feb. 12, 2020 16:26

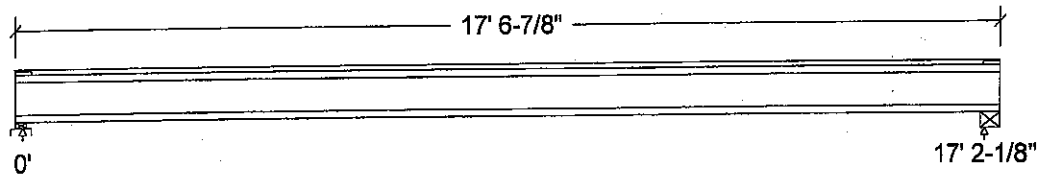
PROJECT
J7 1ST FLOOR.wwb

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):



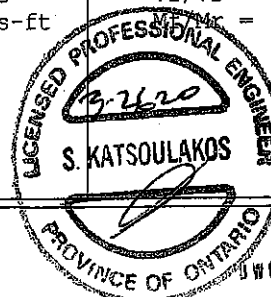
Unfactored:			
Dead	172		172
Live	344		344
Factored:			
Total	730		730
Bearing:			
Capacity			
Joist	1893		1893
Support	5573		-
Des ratio			
Joist	0.39		0.39
Support	0.13		-
Load case	#2		#2
Length	2-3/8		4-1/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.09		-

Nordic Joist 9-1/2" NI-80 Floor joist @ 12" o.c.

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;
Total length: 17' 6-7/8"; Clear span: 17' 3/8"; 3/4" nailed and glued OSB sheathing
This section PASSES the design code check.

Limit States Design using CSA-O86-09 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 730	Vr = 1895	lbs	Vf/Vr = 0.39
Moment (+)	Mf = 3135	Mr = 8958	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = < L/999	0.57 = L/360	in	0.21
Live Defl'n	0.24 = L/868	0.43 = L/480	in	0.55
Total Defl'n	0.36 = L/578	0.86 = L/240	in	0.41
Bare Defl'n	0.27 = L/762	0.57 = L/360	in	0.47
Vibration	Lmax = 17'-2.1	Lv = 18'-4.9	ft	0.93
Defl'n	= 0.030	= 0.037	in	0.82



18/12
JWB NO. YAM5527 -20
STRUCTURAL
COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

CALCULATIONS:E_Ieff = 375.38 lb-in² K= 4.94e06 lbs

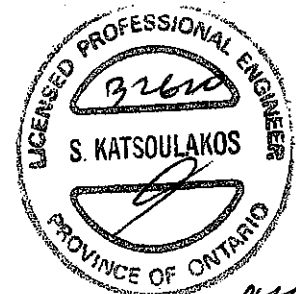
"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1
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. TAM 5527 -20
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

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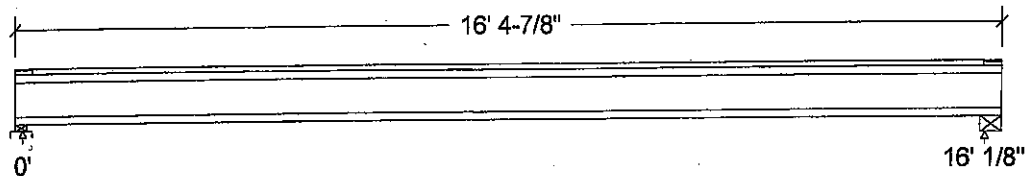
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J1 1ST FLOOR.wwb

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	160		160
Live	320		320
Factored:			
Total	680		680
Bearing:			
Capacity			
Joist	1865		1893
Support	3981		-
Des ratio			
Joist	0.36		0.36
Support	0.17		-
Load case	#2		#2
Length	2-3/8		4-1/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.09		-

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

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;

Total length: 16' 4-7/8"; Clear span: 15' 10-3/8"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

Limit States Design using CSA-086-09 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 680	Vr = 1895	lbs	Vf/Vr = 0.36
Moment(+)	Mf = 2723	Mr = 4824	lbs-ft	Mf/Mr = 0.56
Perm. Defl'n	0.12 = < L/999	0.53 = L/360	in	0.23
Live Defl'n	0.25 = L/775	0.40 = L/480	in	0.62
Total Defl'n	0.37 = L/516	0.80 = L/240	in	0.46
Bare Defl'n	0.30 = L/649	0.53 = L/360	in	0.55
Vibration	Lmax = 16'-0.1	Lv = 17'-1.8	ft	0.93
Defl'n	= 0.032	= 0.040	in	0.80



NO. YAM 5528-20
STRUCTURAL
COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

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

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

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1
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 552B-20
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Dropped Beams\B9(i1603) (Dropped Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

February 12, 2020 16:12:50

Build 7239

Job name:

File name: VALLEYCREEK 2 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9(i1603)

City, Province, Postal Code:

Specifier:

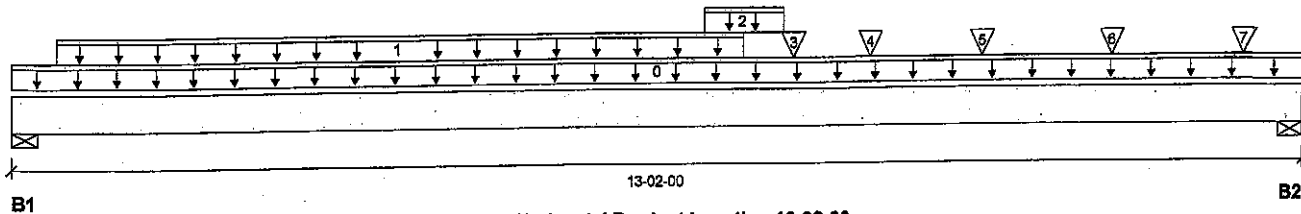
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 13-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1950 / 0	1036 / 0		
B2, 4"	2107 / 0	1116 / 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	13-02-00	Top	10				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-06	07-05-06	Top	307	153			n/a
2	Bk2(i1580)	Unf. Lin. (lb/ft)	L	07-00-10	07-10-02	Top	151	75			n/a
3	J2(i1539)	Conc. Pt. (lbs)	L	07-11-06	07-11-06	Top	277	138			n/a
4	J2(i1464)	Conc. Pt. (lbs)	L	08-09-00	08-09-00	Top	302	151			n/a
5	J2(i1465)	Conc. Pt. (lbs)	L	09-11-00	09-11-00	Top	384	192			n/a
6	J2(i1466)	Conc. Pt. (lbs)	L	11-03-00	11-03-00	Top	409	205			n/a
7	J2(i1467)	Conc. Pt. (lbs)	L	12-07-00	12-07-00	Top	384	192			n/a

Controls Summary

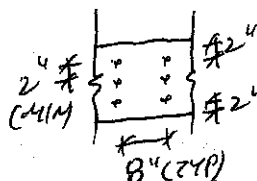
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14192 ft-lbs	23220 ft-lbs	61.1%	1	06-11-06
End Shear	4059 lbs	11571 lbs	35.1%	1	01-01-08
Total Load Deflection	L/266 (0.57")	n/a	90.2%	4	06-08-06
Live Load Deflection	L/406 (0.373")	n/a	88.6%	5	06-08-06
Max Defl.	0.57"	n/a	n/a	4	06-08-06
Span / Depth	15.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	4219 lbs	22.6%	24.7%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	4554 lbs	24.4%	26.7%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-01-15, Bottom: 00-01-15.
 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 @ 8" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



ENG. NO. TAM 5529-20
 STRUCTURAL
 COMPONENT ONLY

Disclosure

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



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B11(i1679) (Flush Beam)

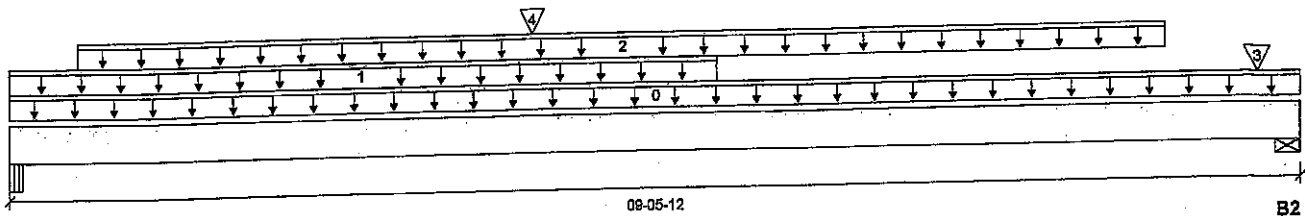
PASSED

February 12, 2020 16:12:50

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

CCMC 12472-R

File name: VALLEYCREEK 2 EL 1.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B11(i1679)
Specifier:
Designer:
Company:



B1

Total Horizontal Product Length = 09-05-12

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	1340 / 0	722 / 0		
B2, 2-3/4"	1465 / 0	782 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-05-12	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-02-00	Top	6	3			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-00	08-06-00	Top	288	144			n/a
3	J2(i1475)	Conc. Pt. (lbs)	L	09-02-00	09-02-00	Top	331	166			n/a
4	B13(i1650)	Conc. Pt. (lbs)	L	03-10-02	03-10-02	Top	143	81			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6932 ft-lbs	23220 ft-lbs	29.9%	1	05-02-00
End Shear	2884 lbs	11571 lbs	24.9%	1	01-02-00
Total Load Deflection	L/759 (0.142")	n/a	31.6%	4	04-10-04
Live Load Deflection	L/999 (0.093")	n/a	n/a	5	04-10-04
Max Defl.	0.142"	n/a	n/a	4	04-10-04
Span / Depth	11.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	4-1/2" x 3-1/2"	2913 lbs	30.1%	15.2%	Spruce-Pine-Fir
B2 Wall/Plate	2-3/4" x 3-1/2"	3175 lbs	53.6%	27.0%	Spruce-Pine-Fir

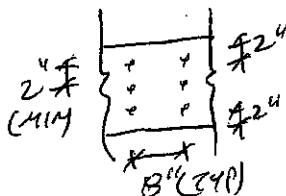
Notes

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



DWG NO. TAM 5530-20

STRUCTURAL

COMPONENT ONLY

Disclosure

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



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B12(i1447) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 2 spans | R cant.

February 12, 2020 16:12:50

Build 7239

Job name:

File name: VALLEYCREEK 2 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B12(i1447)

City, Province, Postal Code:

Specifier:

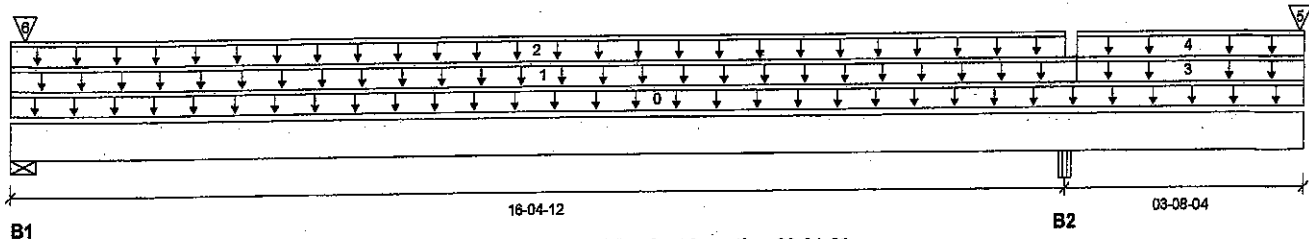
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 20-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	350 / 87	230 / 0		
B2, 4-1/2"	1057 / 0	657 / 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	20-01-00	Top	10	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-07-00	Top	21	10			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-04-12	Top	21	10			n/a
3	STAIR	Unf. Lin. (lb/ft)	L	16-07-00	20-01-00	Top	120	60			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	16-07-00	20-01-00	Top	31	16			n/a
5	B13(i1650)	Conc. Pt. (lbs)	L	20-00-02	20-00-02	Top	103	61			n/a
6	E25(i1220)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	24				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2738 ft-lbs	23220 ft-lbs	11.8%	2	07-08-01
Neg. Moment	-3096 ft-lbs	-23220 ft-lbs	13.3%	1	16-04-12
End Shear	656 lbs	11571 lbs	5.7%	2	01-03-00
Cont. Shear	1134 lbs	11571 lbs	9.8%	1	17-04-08
Total Load Deflection	L/1138 (0.169")	n/a	21.1%	9	08-01-06
Live Load Deflection	L/999 (0.123")	n/a	n/a	12	08-04-00
Total Neg. Defl.	2xL/1998 (-0.092")	n/a	n/a	9	20-01-00
Max Defl.	0.169"	n/a	n/a	9	08-01-06
Span / Depth	20.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	812 lbs	6.9%	3.5%	Spruce-Pine-Fir
B2	Beam 4-1/2" x 3-1/2"	2407 lbs	24.8%	12.5%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

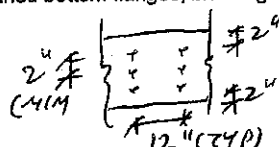
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

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



OWN NO. YAM5531 -20
STRUCTURAL

Disclosure

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

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



Boise Cascade



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

2ND FLR FRAMING\Flush Beams\B13(i1650) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

February 12, 2020 16:12:50

Build 7239

Job name:

File name: VALLEYCREEK 2 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B13(i1650)

City, Province, Postal Code:

Specifier:

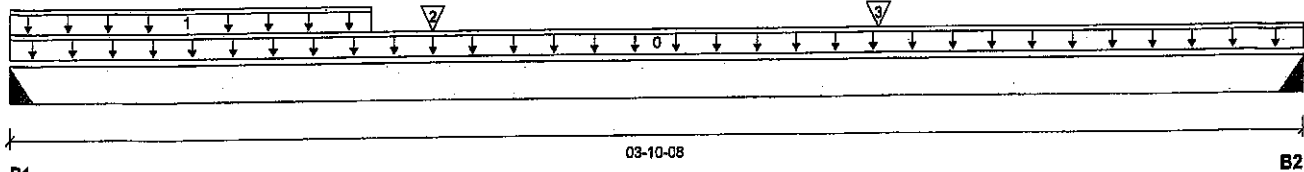
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 03-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	147 / 0	83 / 0		
B2, 2"	100 / 0	59 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-10-08	Top	5				00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-01-00	Top	82	41			n/a
2	J7(1463)	Conc. Pt. (lbs)	L	01-03-04	01-03-04	Top	51	26			n/a
3	J7(1525)	Conc. Pt. (lbs)	L	02-07-04	02-07-04	Top	107	53			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	256 ft-lbs	11610 ft-lbs	2.2%	1	02-07-04
End Shear	218 lbs	5785 lbs	3.8%	1	02-11-00
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	01-11-04
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-11-04
Max Defl.	0.002"	n/a	n/a	4	01-11-04
Span / Depth	4.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 1-3/4"	323 lbs	n/a	7.6%	HUS1.81/10
B2 Hanger	2" x 1-3/4"	224 lbs	n/a	5.2%	LS90

Cautions

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

Header for the hanger LS90 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model LS90 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM 5532-20
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®.



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B14(i1377) (Flush Beam)

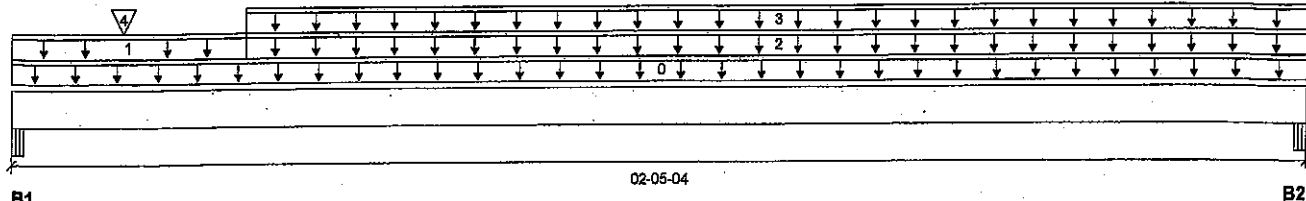
PASSED

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

Dry | 1 span | No cant.

February 12, 2020 16:12:50

File name: VALLEYCREEK 2 EL 1.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B14(i1377)
Specifier:
Designer:
Company:



Total Horizontal Product Length = 02-05-04

Reaction Summary (Down / Uplift) (lbs)

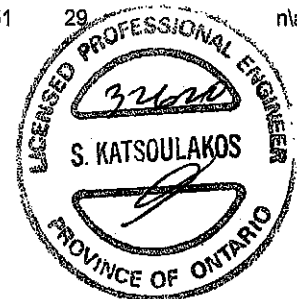
Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	72 / 0	165 / 0	78 / 0	
B2, 5-1/4"	70 / 0	162 / 0	77 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-05-04	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-04	Top	27	13			n/a
2	E28(i1210)	Unf. Lin. (lb/ft)	L	00-05-04	02-05-04	Top	33	111	63		n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	02-05-04	Top	25	12			n/a
4	E27(i1214)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	15	51	29		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	113 ft-lbs	23220 ft-lbs	0.5%	13	01-02-12
End Shear	2 lbs	7521 lbs	n/a	0	01-02-12
Total Load Deflection	L/999 (0")	n/a	n/a	35	01-02-12
Live Load Deflection	L/999 (0")	n/a	n/a	51	01-02-12
Max Defl.	0"	n/a	n/a	35	01-02-12
Span / Depth	2.1				



UWG NO. TAM 5533 -20
STRUCTURAL
COMPONENT ONLY

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	395 lbs	4.0%	1.8%	Unspecified
B2	Beam 5-1/4" x 3-1/2"	387 lbs	3.9%	1.7%	Unspecified

Notes

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

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

Calculations assume 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.

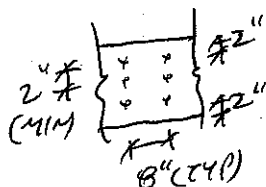
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

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



Disclosure

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



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

PASSED

2ND FLR FRAMING\Flush Beams\B15(i1206) (Flush Beam)

Dry | 1 span | No cant.

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

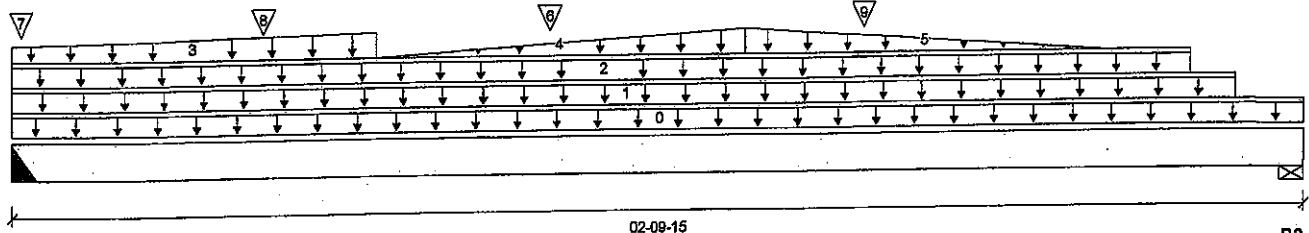
File name: VALLEYCREEK 2 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15(i1206)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 02-09-15

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	226 / 1	254 / 0	146 / 0	
B2, 7-3/4"	213 / 0	273 / 0	149 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-09-15	Top		10			00-00-00
1	E32(i1209)	Unf. Lin. (lb/ft)	L	00-00-00	02-08-03	Top		81			n/a
2	E32(i1209)	Unf. Lin. (lb/ft)	L	00-00-00	02-07-01	Top	33	30	63		n/a
3	FC3 Floor Material	Trapezoidal (lb/ft)	L	00-00-00		Top	20	10			n/a
					00-09-09		32	16			
4	FC3 Floor Material	Trapezoidal (lb/ft)	L	00-09-09		Top	0				n/a
					01-07-03		16				
5	FC3 Floor Material	Trapezoidal (lb/ft)	L	01-07-03		Top	32	16			n/a
					02-04-13		0	0			
6	J5(i1485)	Conc. Pt. (lbs)	L	01-02-02	01-02-02	Top	243	122			n/a
7	E32(i1209)	Conc. Pt. (lbs)	L	00-00-04	00-00-04	Top			6		n/a
8	WINDOW	Conc. Pt. (lbs)	L	00-06-10	00-06-10	Top	33	30	63		n/a
9	WINDOW	Conc. Pt. (lbs)	L	01-10-06	01-10-06	Top	33	30	63		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	476 ft-lbs	23220 ft-lbs	2.0%	1	01-02-02
End Shear	410 lbs	11571 lbs	3.5%	1	01-00-08
Total Load Deflection	L/999 (0.001")	n/a	n/a	58	01-02-07
Live Load Deflection	L/999 (0")	n/a	n/a	85	01-02-07
Max Defl.	0.001"	n/a	n/a	58	01-02-07
Span / Depth	2.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 3" x 3-1/2"	802 lbs	n/a	6.3%	LSSR410Z
B2	Wall/Plate 7-3/4" x 3-1/2"	809 lbs	4.8%	2.4%	Spruce-Pine-Fir

Cautions

Hanger model LSSR410Z and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



32140
S. KATSOULAKOS
PROVINCE OF ONTARIO
P.E.
2020 NO. YAM5534 -28
STRUCTURAL
COMPONENT ONLY



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B15(i1206) (Flush Beam)

PASSED

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

Dry | 1 span | No cant.

File name: VALLEYCREEK 2 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15(i1206)

Specifier:

Designer:

Company:

Notes

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

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

Calculations assume unbraced length of Top: 00-03-08, Bottom: 00-03-08.

Hanger Manufacturer: Unassigned

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

CONFORMS TO OBC 2012

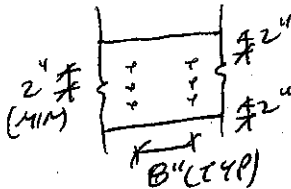
AMENDED 2020

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



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



DESIGN NO. YAM 5534-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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



Boise Cascade



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

2ND FLR FRAMING\Flush Beams\B16(i1207) (Flush Beam)

PASSED

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

Dry | 2 spans | No cant.

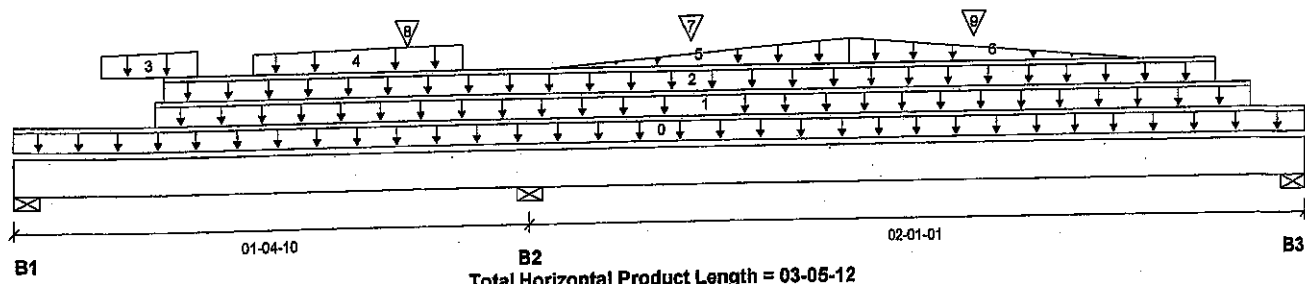
File name: VALLEYCREEK 2 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B16(i1207)

Specifier:

Designer:

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 7-3/4"	44 / 63	33 / 0	48 / 0	
B2, 7-3/4"	355 / 0	349 / 0	142 / 0	
B3, 7-3/4"	119 / 2	181 / 0	123 / 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	03-05-12	Top		10			00-00-00
1	E34(i1216)	Unf. Lin. (lb/ft)	L	00-04-09	03-04-00	Top		81			n/a
2	E34(i1216)	Unf. Lin. (lb/ft)	L	00-04-14	03-02-13	Top	33	30	63		n/a
3	FC3 Floor Material	Trapezoidal (lb/ft)	L	00-02-13	00-06-00	Top	19				n/a
4	FC3 Floor Material	Trapezoidal (lb/ft)	L	00-07-12	01-02-08	Top	24	12			n/a
5	FC3 Floor Material	Trapezoidal (lb/ft)	L	01-05-05	02-02-13	Top	0	15			n/a
6	FC3 Floor Material	Trapezoidal (lb/ft)	L	02-02-13	03-00-08	Top	32	16			n/a
7	-	Conc. Pt. (lbs)	L	01-09-13	01-09-13	Top	251	122			n/a
8	WINDOW	Conc. Pt. (lbs)	L	01-00-12	01-00-12	Top	33	30	63		n/a
9	WINDOW	Conc. Pt. (lbs)	L	02-07-00	02-07-00	Top	33	30	63		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	124 ft-lbs	23220 ft-lbs	0.5%	18	01-11-13
Neg. Moment	-161 ft-lbs	-23220 ft-lbs	0.7%	19	01-04-10
End Shear	101 lbs	11571 lbs	0.9%	45	00-07-12
Cont. Shear	133 lbs	11571 lbs	1.1%	45	00-03-04
Total Load Deflection	L/999 (0")	n/a	n/a	126	02-01-10
Live Load Deflection	L/999 (0")	n/a	n/a	178	02-01-10
Max Defl.	0"	n/a	n/a	126	02-01-10
Span / Depth	1.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 7-3/4" x 3-1/2"	158 lbs	0.9%	0.5%	Spruce-Pine-Fir
B2	Wall/Plate 7-3/4" x 3-1/2"	1112 lbs	6.6%	3.3%	Spruce-Pine-Fir
B3	Wall/Plate 7-3/4" x 3-1/2"	529 lbs	3.2%	1.6%	Spruce-Pine-Fir



HWG NO. YAM 5535 -20
STRUCTURAL
COMPONENT ONLY



Boise Cascade



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B16(i1207) (Flush Beam)

PASSED

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

Dry | 2 spans | No cant.

File name: VALLEYCREEK 2 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B16(i1207)

Specifier:

Designer:

Company:

Cautions

Uplift of 65 lbs found at bearing B1. (SIMPSON 2-H254 @ D.B1)

Notes

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

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

Calculations assume unbraced length of Top: 00-03-08, Bottom: 00-03-08.

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.

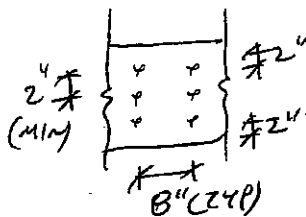
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



DWG NO. TAM 5535-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B7(i1225) (Flush Beam)****PASSED**

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

Dry | 1 span | No cant.

February 12, 2020 16:12:50

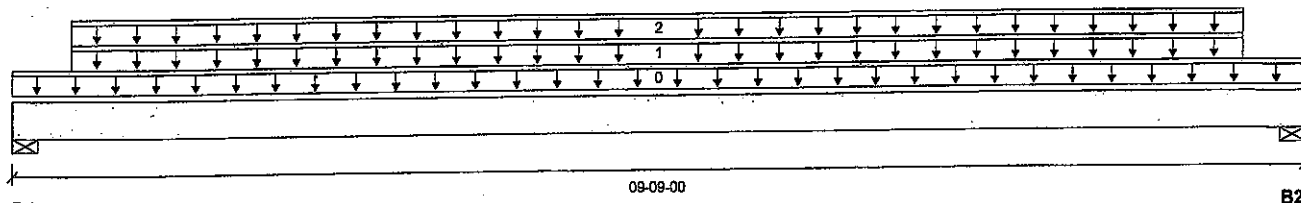
File name: VALLEYCREEK 2 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B7(i1225)

Specifier:

Designer:

Company:



B1

B2

Total Horizontal Product Length = 09-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	81 / 0	329 / 0		
B2, 5-1/2"	81 / 0	329 / 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	09-09-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-05-08	09-03-08	Top		60			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	09-03-08	Top	18	9			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1037 ft-lbs	7546 ft-lbs	13.7%	0	04-10-08
End Shear	375 lbs	3761 lbs	10.0%	0	01-03-00
Total Load Deflection	L/999 (0.053")	n/a	n/a	4	04-10-08
Live Load Deflection	L/999 (0.011")	n/a	n/a	5	04-10-08
Max Defl.	0.053"	n/a	n/a	4	04-10-08
Span / Depth	11.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	460 lbs	12.0%	6.0%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	460 lbs	12.0%	6.0%	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

DWG NO. YAM5536-20
STRUCTURAL
COMPONENT ONLY**Disclosure**

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

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File name: VALLEYCREEK 2 EL 1.mmdl

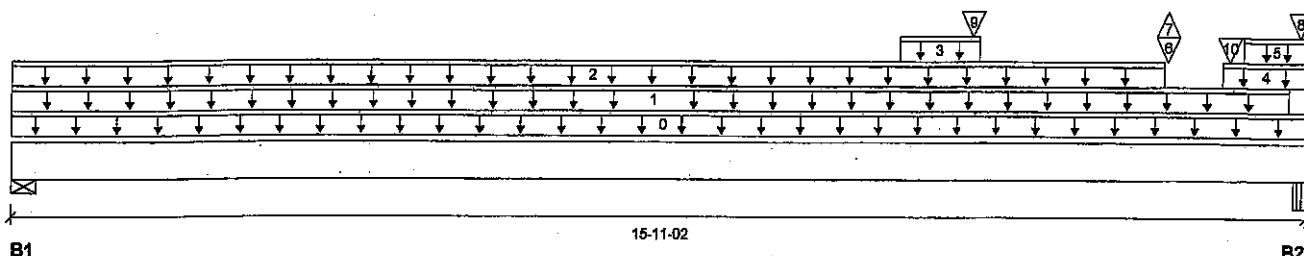
Description: 1ST FLR FRAMING\Flush Beams\B1(i1242)

Specifier:

Designer:

Company:

February 12, 2020 16:12:50



Total Horizontal Product Length = 15-11-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-7/8"	415 / 4	351 / 0		
B2, 5-3/8"	2290 / 44	1478 / 0		

Load Summary

Load Summary							Live	Dead	Snow	Wind	Tributary
Tag	Description	Load Type	Ref.	Start	End	Loc.	1.00	0.65	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-11-02	Top		14			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	15-08-06	Top	8	4			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-02-06	Top	26	13			n/a
3	13(i545)	Unf. Lin. (lb/ft)	L	10-10-14	11-10-14	Top		81			n/a
4	10(i539)	Unf. Lin. (lb/ft)	L	14-10-14	15-11-02	Top		81			n/a
5	10(i539)	Unf. Lin. (lb/ft)	L	15-01-14	15-11-02	Top	38				n/a
6	-	Conc. Pt. (lbs)	L	14-02-15	14-02-15	Top	665	330			n/a
7	-	Conc. Pt. (lbs)	L	14-02-15	14-02-15	Top	-48				n/a
8	-	Conc. Pt. (lbs)	L	15-10-00	15-10-00	Top	193	97			n/a
9	13(i545)	Conc. Pt. (lbs)	L	11-09-14	11-09-14	Top	245	149			n/a
10	10(i539)	Conc. Pt. (lbs)	L	14-11-14	14-11-14	Top	1085	601			n/a



Controls Summary

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	6180 ft-lbs	36222 ft-lbs	17.1%	1	11-04-06
End Shear	3841 lbs	17356 lbs	22.1%	1	14-08-04
Total Load Deflection	L/758 (0.244")	n/a	31.6%	6	08-05-00
Live Load Deflection	L/1359 (0.136")	n/a	26.5%	8	08-05-00
Max Defl.	0.244"	n/a	n/a	6	08-05-00
Span / Depth	19.5				

UWG NO. TAM 5537 -20

STRUCTURAL

COMPONENT ONLY

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

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 ϕ 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.

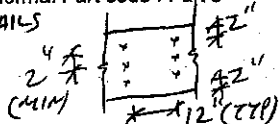
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

STAGGER NAILS

6" BETWEEN

PHES.



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

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B1A(i1665) (Flush Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 12, 2020 16:12:50

Build 7239

Job name:

File name: VALLEYCREEK 2 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1A(i1665)

City, Province, Postal Code:

Specifier:

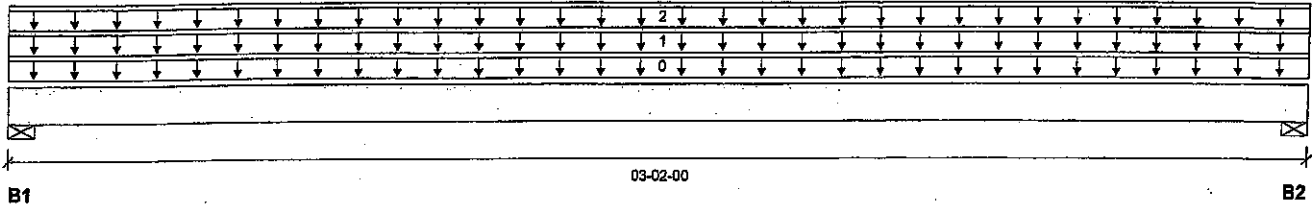
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 3-7/16"	87 / 0	323 / 0		
B2, 3-7/16"	87 / 0	323 / 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	03-02-00	Top		10			00-00-00
1	E13(i513)	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	Top	28	181			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	Top	27	13			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	264 ft-lbs	15093 ft-lbs	1.7%	0	01-07-00
End Shear	144 lbs	7521 lbs	1.9%	0	01-00-15
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-07-00
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-07-00
Max Defl.	0.001"	n/a	n/a	4	01-07-00
Span / Depth	3.4				



DWG NO. TAM 553B-20
STRUCTURAL
COMPONENT ONLY

Bearing Supports	Dlm. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-7/16" x 3-1/2"	452 lbs	9.4%	4.7%	Spruce-Pine-Fir
B2	Wall/Plate 3-7/16" x 3-1/2"	452 lbs	9.4%	4.7%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

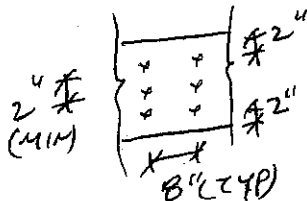
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO CBC 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

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**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B2(i1234) (Flush Beam)**

Dry | 2 spans | No cant.

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

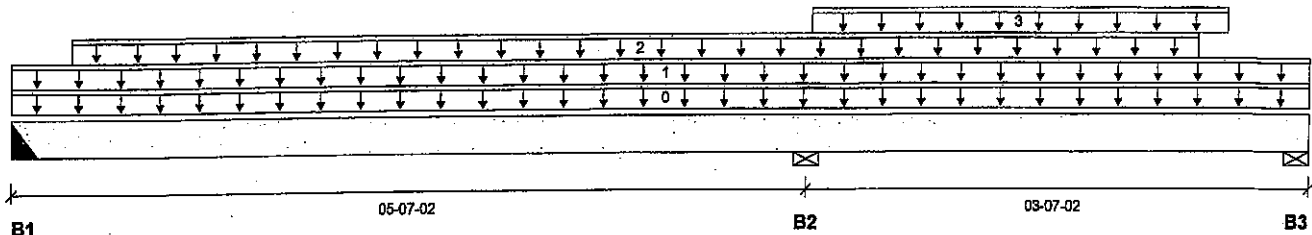
File name: VALLEYCREEK 2 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B2(i1234)

Specifier:

Designer:

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 4"	609 / 52	301 / 0		
B2, 3-1/2"	2089 / 0	1097 / 0		
B3, 4-3/8"	605 / 199	214 / 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	09-02-04	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-02-04	Top	6	3			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-00	08-05-00	Top	285	142			n/a
3	STAIR	Unf. Lin. (lb/ft)	L	05-07-09	08-07-06	Top	240	120			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1632 ft-lbs	23220 ft-lbs	7.0%	2	02-05-00
Neg. Moment	-2011 ft-lbs	-23220 ft-lbs	8.7%	1	05-07-02
End Shear	1220 lbs	11571 lbs	10.5%	2	01-01-08
Cont. Shear	1753 lbs	11571 lbs	15.1%	1	06-06-06
Total Load Deflection	L/999 (0.01")	n/a	n/a	9	02-08-00
Live Load Deflection	L/999 (0.007")	n/a	n/a	12	02-09-00
Total Neg. Defl.	L/999 (-0.001")	n/a	n/a	9	06-08-11
Max Defl.	0.01"	n/a	n/a	9	02-08-00
Span / Depth	6.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	4" x 3-1/2"	1290 lbs	n/a	7.6%	HGUS410
B2 Wall/Plate	3-1/2" x 3-1/2"	4504 lbs	59.8%	30.1%	Spruce-Pine-Fir
B3 Wall/Plate	4-3/8" x 3-1/2"	1174 lbs	12.5%	6.3%	Spruce-Pine-Fir
B3 Uplift		106 lbs			

Cautions

Uplift of 106 lbs found at bearing B3. (SIMPSON 2-H2SA @ JT B3).

Header for the hanger HGUS410 at B1 is a Triple 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

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

TWO NO. YAM 5539-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B2(i1234) (Flush Beam)****PASSED**

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

Dry | 2 spans | No cant.

File name: VALLEYCREEK 2 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B2(i1234)

Specifier:

Designer:

Company:

Notes

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

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

Calculations assume member is fully braced.

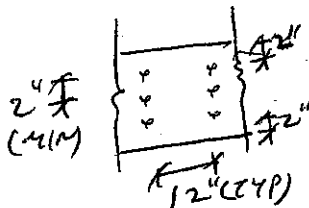
Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012**AMENDED 2020**

PROVIDE 3 ROWS OF 3 1/2" ARBOX
SPIRAL NAILS @ 12" O/C FOR
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A MIN. 2" LUMBER EDGE/END
DISTANCE. DO NOT USE AIR NAILS



OWN NO. TAM 5539-20
STRUCTURAL
COMPONENT ONLY

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

PASSED

1ST FLR FRAMING\Flush Beams\B3(1239) (Flush Beam)

Dry | 1 span | No cant.

February 12, 2020 16:12:50

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

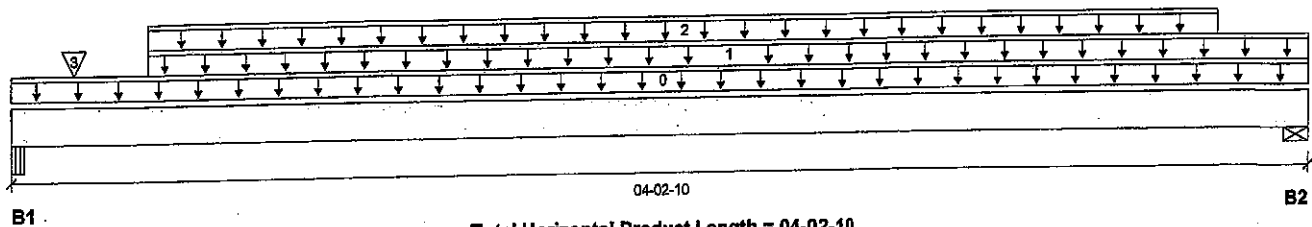
File name: VALLEYCREEK 2 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B3(1239)

Specifier:

Designer:

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	277 / 0	160 / 0		
B2, 3-1/2"	265 / 0	142 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-02-10	Top		5			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-05-04	04-02-10	Top	120	60			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	03-11-02	Top	10	5			n/a
3	9(i538)	Conc. Pt. (lbs)	L	00-02-06	00-02-06	Top	49	36			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	462 ft-lbs	11610 ft-lbs	4.0%	1	02-02-03
End Shear	270 lbs	5785 lbs	4.7%	1	01-02-12
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	02-02-03
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	02-02-03
Max Defl.	0.003"	n/a	n/a	4	02-02-03
Span / Depth	4.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 1-3/4"	615 lbs	12.5%	5.5%	Unspecified
B2	Wall/Plate 3-1/2" x 1-3/4"	576 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.

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 5540-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B4(I1200) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

February 12, 2020 16:12:50

Build 7239

Job name:

File name: VALLEYCREEK 2 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B4(I1200)

City, Province, Postal Code:

Specifier:

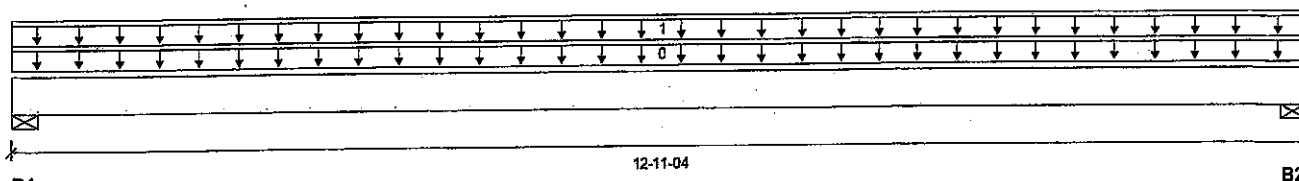
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 12-11-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-7/8"	167 / 0	114 / 0		
B2, 4-3/8"	173 / 0	118 / 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	12-11-04	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-11-04	Top	26	13			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1215 ft-lbs	11610 ft-lbs	10.5%	1	06-05-04
End Shear	335 lbs	5785 lbs	5.8%	1	00-11-06
Total Load Deflection	L/999 (0.098")	n/a	n/a	4	06-05-04
Live Load Deflection	L/999 (0.058")	n/a	n/a	5	06-05-04
Max Defl.	0.098"	n/a	n/a	4	06-05-04
Span / Depth	15.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 1-7/8" x 1-3/4"	393 lbs	19.5%	9.8%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 1-3/4"	406 lbs	8.6%	4.3%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. YAM 5541 -20
STRUCTURAL
COMPONENT ONLY

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



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

PASSED

1ST FLR FRAMING\Flush Beams\B1B(i1796) (Flush Beam)

February 12, 2020 16:24:09

BC CALC® Member Report

Dry | 1 span | No cant

Build 7239

Job name:

File name: VALLEYCREEK 2 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1B(i1796)

City, Province, Postal Code: WATERDOWN

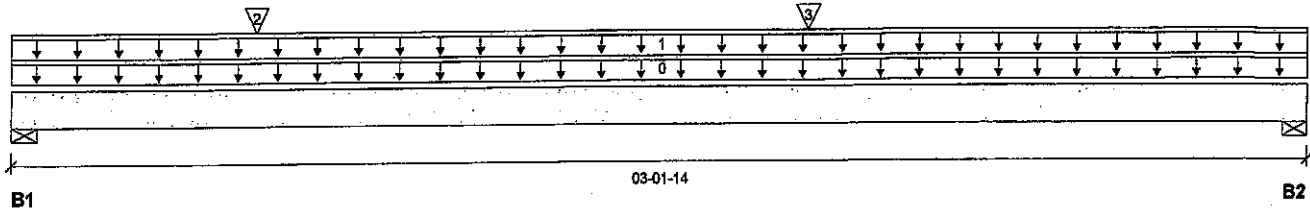
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 03-01-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-7/16"	849 / 0	695 / 0		
B2, 3-7/16"	686 / 0	613 / 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	03-01-14	Top		10			00-00-00
1	E24(i516)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-14	Top	266	294			n/a
2	J3(i1718)	Conc. Pt. (lbs)	L	00-07-02	00-07-02	Top	348	174			n/a
3	J3(i1709)	Conc. Pt. (lbs)	L	01-11-02	01-11-02	Top	348	174			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1244 ft-lbs	23220 ft-lbs	5.4%	1	01-09-08
End Shear	1563 lbs	11571 lbs	13.5%	1	02-00-15
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	01-07-00
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-07-00
Max Defl.	0.002"	n/a	n/a	4	01-07-00
Span / Depth	3.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-7/16" x 3-1/2"	2142 lbs	29.0%	14.6%	Spruce-Pine-Fir
B2	Wall/Plate 3-7/16" x 3-1/2"	1795 lbs	24.3%	12.3%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

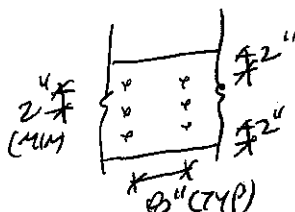
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



DOB NO. TAM 5542-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B20(i1830) (Flush Beam)**

Dry | 1 span | No cant.

March 24, 2020 15:13:31

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

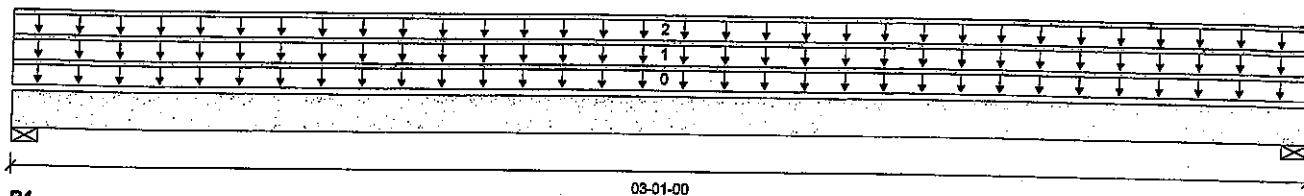
File name: VALLEYCREEK 2 EL 1 DECK CONDITION.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B20(i1830)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 03-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	84 / 0	314 / 0		
B2, 3"	84 / 0	314 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	1.00	0.65	1.00	1.15	
1	E13(i513)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	28	181			00-00-00
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	262 ft-lbs	15093 ft-lbs	1.7%	0	01-06-08
End Shear	143 lbs	7521 lbs	1.9%	0	01-00-08
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-06-08
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-06-08
Max Defl.	0.001"	n/a	n/a	4	01-06-08
Span / Depth	3.4				



DWG NO. TAM5543-20
STRUCTURAL
COMPONENT ONLY

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	440 lbs	10.5%	5.3%	Spruce-Pine-Fir
B2	Wall/Plate 3" x 3-1/2"	440 lbs	10.5%	5.3%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

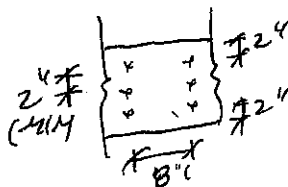
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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

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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

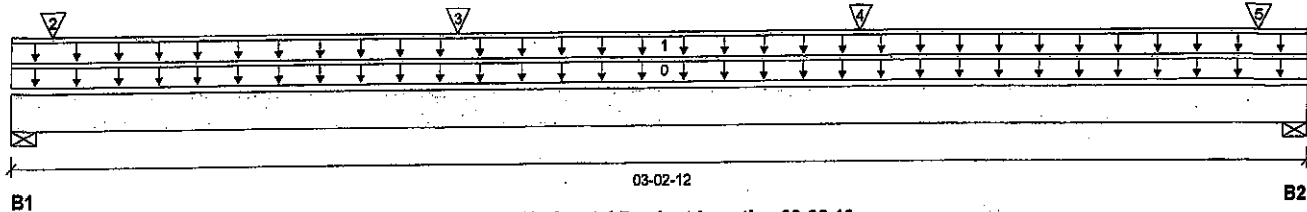
File name: VALLEYCREEK 2 EL 1 DECK CONDITION.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B21(i1833)

Specifier:

Designer: AJ

Company:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	1237 / 0	905 / 0		
B2, 3"	1159 / 0	845 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-02-12	Top	10				00-00-00
1	E17(i517)	Unf. Lin. (lb/ft)	L	00-00-00	03-02-12	Top	332	328			n/a
2	J1(i1805)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	330	165			n/a
3	J1(i1746)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	331	165			n/a
4	J1(i1737)	Conc. Pt. (lbs)	L	02-01-04	02-01-04	Top	331	165			n/a
5	J1(i1740)	Conc. Pt. (lbs)	L	03-01-04	03-01-04	Top	331	165			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1464 ft-lbs	23220 ft-lbs	6.3%	1	01-08-11
End Shear	1155 lbs	11571 lbs	10.0%	1	01-02-00
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-08-00
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-08-00
Max Defl.	0.003"	n/a	n/a	4	01-08-00
Span / Depth	3.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-1/2" x 3-1/2"	2987 lbs	30.8%	15.5%	Spruce-Pine-Fir
B2	Wall/Plate 3" x 3-1/2"	2795 lbs	43.3%	21.8%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

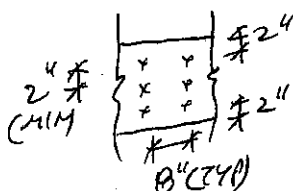
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

AMENDED 2020



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



DRG NO. TAM5544 -20
STRUCTURAL
COMPONENT ONLY

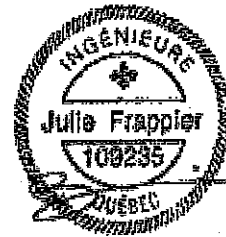
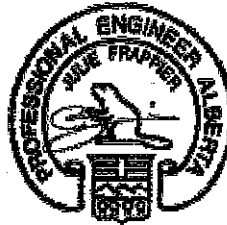
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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

Maximum Floor Spans

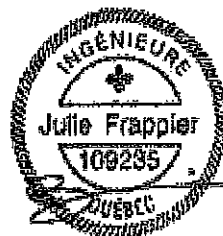
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing



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

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

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



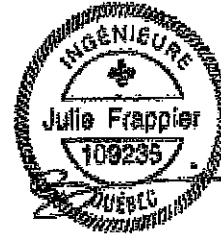
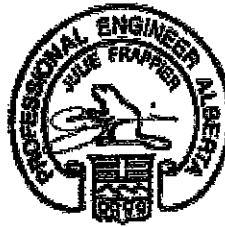
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

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

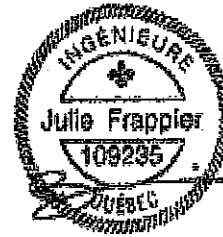
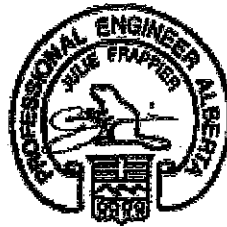
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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

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

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

Maximum Floor Spans

Live Load = 40 psf; Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
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.



Construction Detail

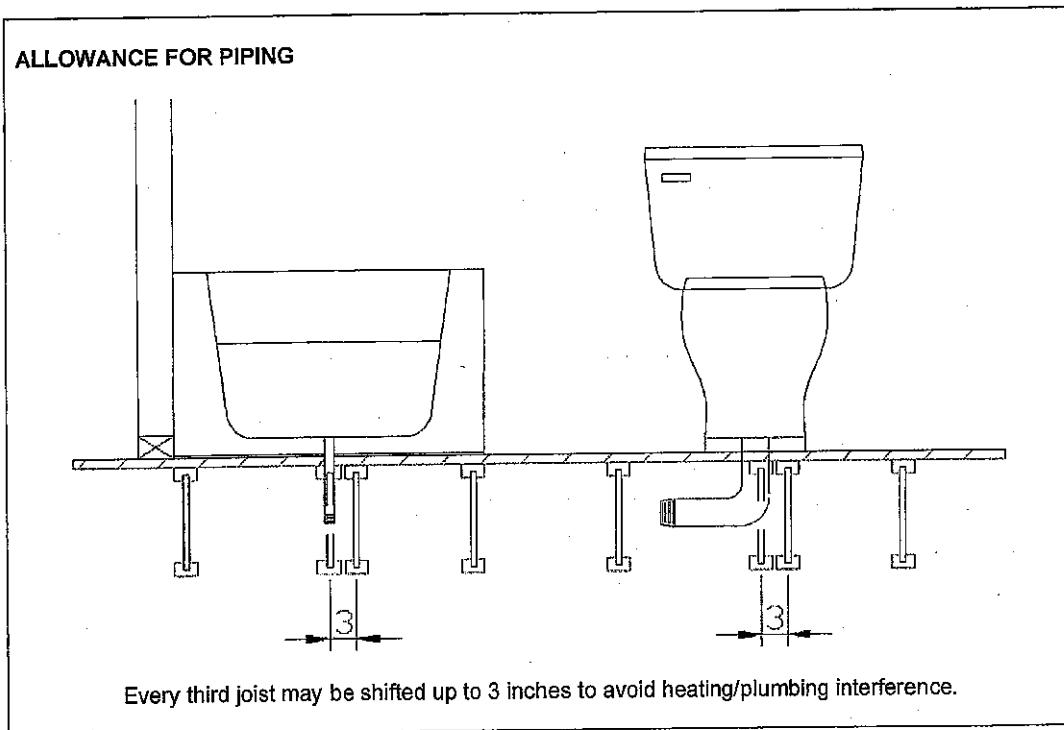
Limit States Design

Allowance for Piping (Installation Notes)

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

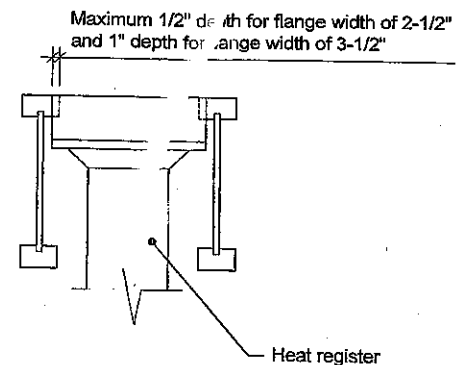
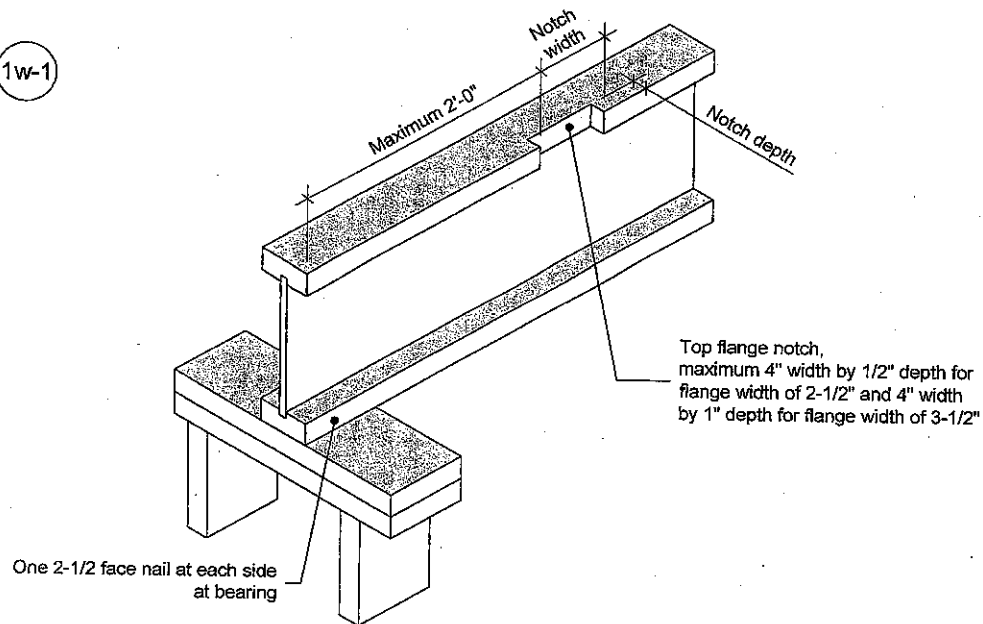
Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced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

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



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Notes:

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

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

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

**NORDIC
STRUCTURES**

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TITLE

Notch in I-joist for Heat Register

CATEGORY

I-joist - Typical Floor Framing and Construction Details

DOCUMENT

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DATE

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NUMBER

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