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Issue Date: 02/05/21

LAMPONE INVESTMENT INC

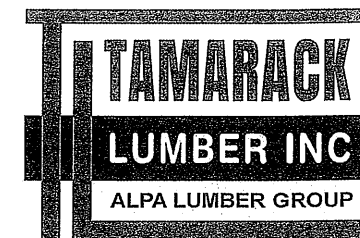
ALL CONSTRUCTION SHALL COMPLY WITH THE
ONTARIO BUILDING CODE.

CITY OF MARKHAM

FLOOR JOISTS SHOP DRAWINGS

MODEL NAME : KIMBERLY 2

ELEV 1, 2 & 3



FROM PLAN DATED: JULY 2, 2020

BUILDER: GREENPARK HOMES

SITE: LAMPONE INVESTMENTS

MODEL: KIMBERLY 2

ELEVATION: 1,2,3

LOT:

CITY: MARKHAM

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: L.D.

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

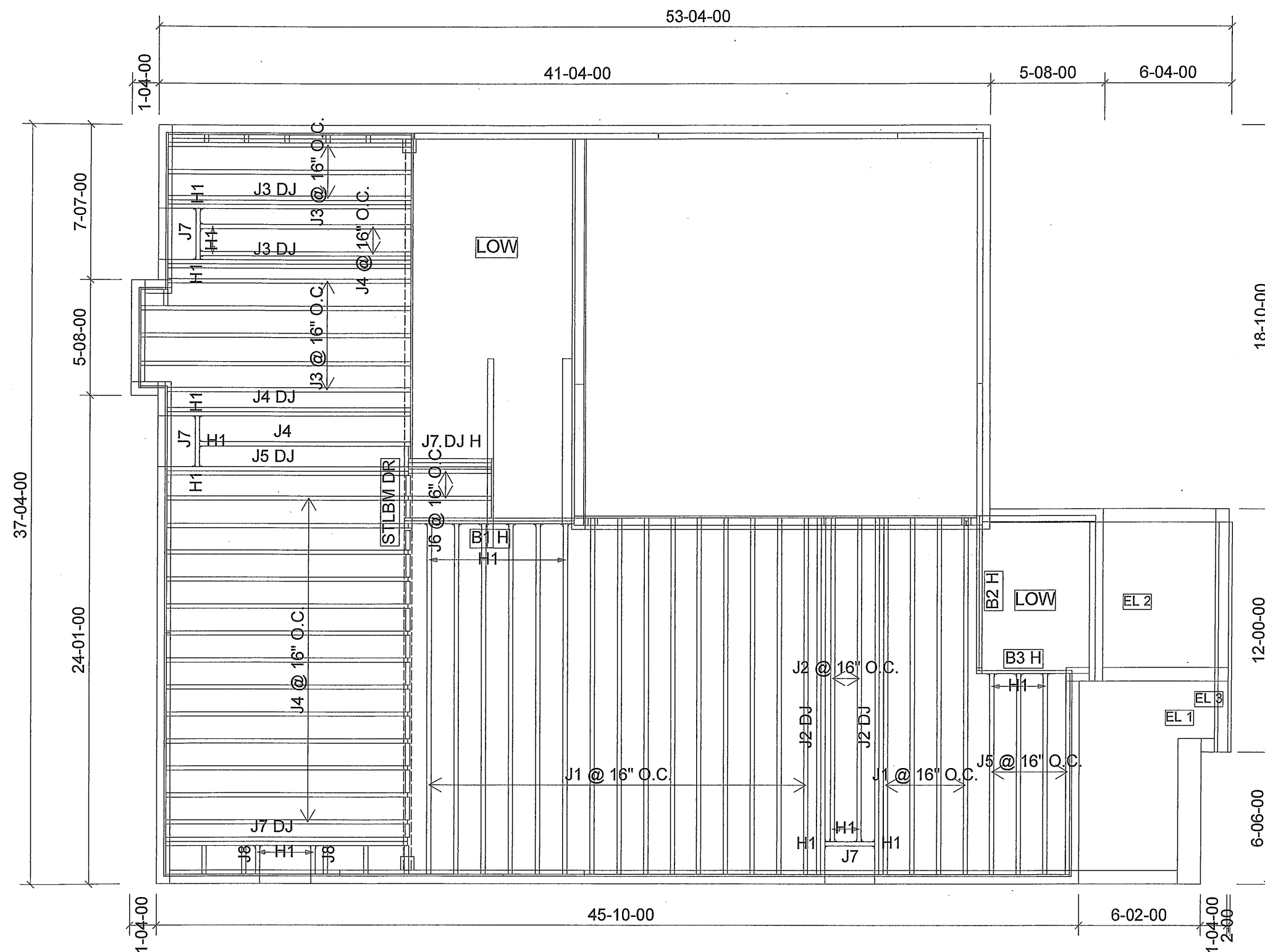
DEAD LOAD: 15.0 lb/ft²

TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2020-07-23

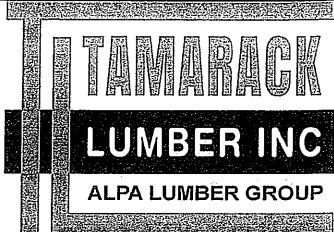
1st FLOOR



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	11 7/8" NI-40x	1	19	MFD
J2 DJ	18-00-00	11 7/8" NI-40x	2	4	MFD
J2	16-00-00	11 7/8" NI-40x	1	2	MFD
J3	14-00-00	11 7/8" NI-40x	1	8	MFD
J3 DJ	14-00-00	11 7/8" NI-40x	2	4	MFD
J4 DJ	14-00-00	11 7/8" NI-40x	2	2	MFD
J4	12-00-00	11 7/8" NI-40x	1	16	MFD
J5 DJ	12-00-00	11 7/8" NI-40x	2	2	MFD
J7 DJ	12-00-00	11 7/8" NI-40x	2	2	MFD
J5	10-00-00	11 7/8" NI-40x	1	4	MFD

Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J6	6-00-00	11 7/8" NI-40x	1	2	MFD
J7 DJ H	6-00-00	11 7/8" NI-40x	2	2	MFD
J7	4-00-00	11 7/8" NI-40x	1	3	MFD
J8	2-00-00	11 7/8" NI-40x	1	2	MFD
B1 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B2 H	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B3 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	MFD

Connector Summary		
Qty	Manuf	Product
3	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
5	H1	IUS2.56/11.88



FROM PLAN DATED: JULY 2, 2020

BUILDER: GREENPARK HOMES

SITE: LAMPONE INVESTMENTS

MODEL: KIMBERLY 2

ELEVATION: 1,2

LOT:

CITY: MARKHAM

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION:

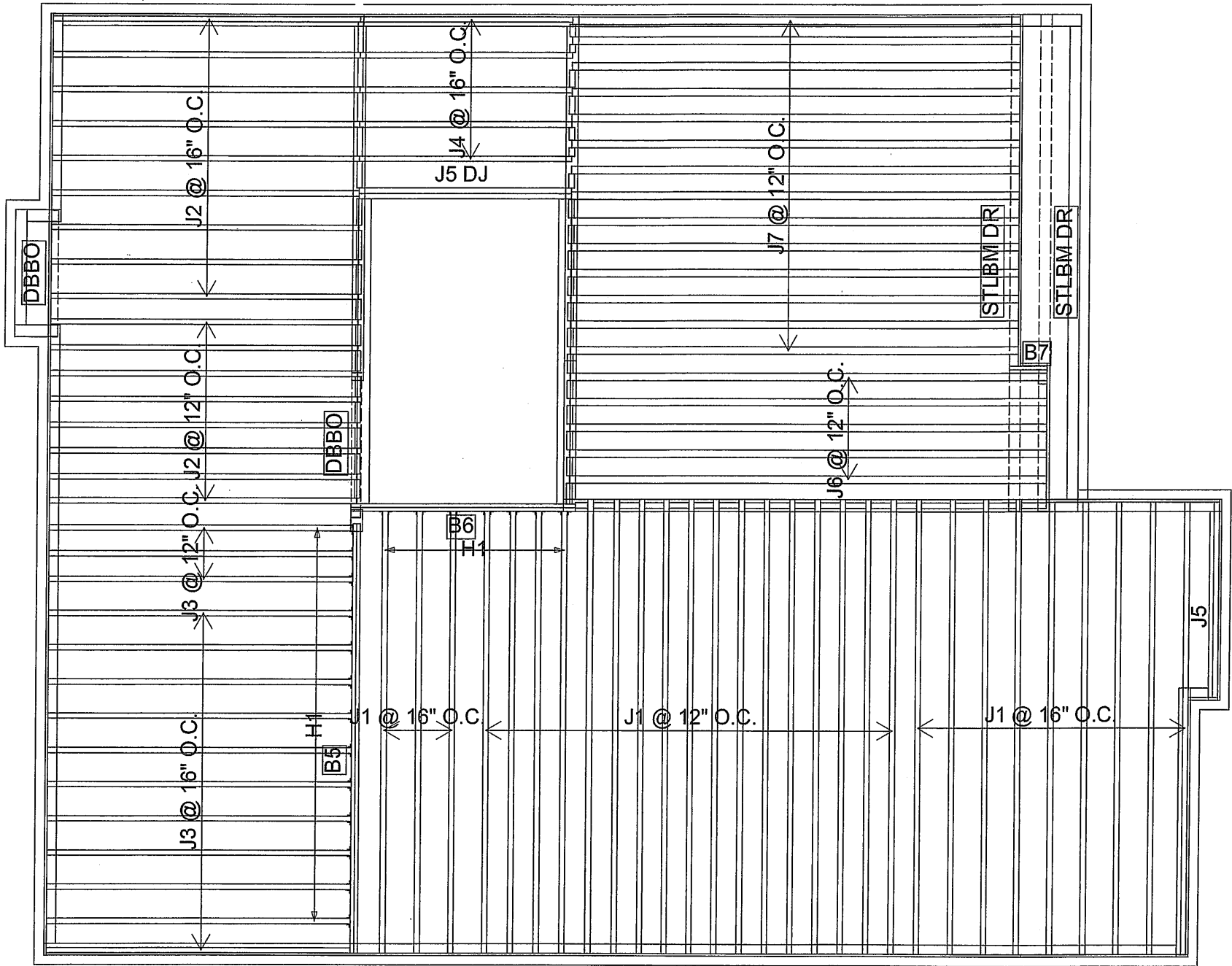
NOTES:
REFER TO THE NORDIC INSTALLATION GUIDE FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK**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

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

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2020-06-03

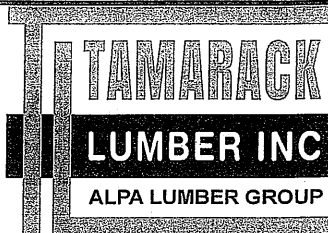
2nd FLOOR



Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	11 7/8" NI-40x	1	29	MFD
J2	14-00-00	11 7/8" NI-40x	1	17	MFD
J3	12-00-00	11 7/8" NI-40x	1	14	MFD
J4	10-00-00	11 7/8" NI-40x	1	5	MFD
J5 DJ	10-00-00	11 7/8" NI-40x	2	2	MFD
J5	8-00-00	11 7/8" NI-40x	1	1	MFD
J6	20-00-00	11 7/8" NI-80	1	5	MFD
J7	18-00-00	11 7/8" NI-80	1	14	MFD
B5	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B6	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD

Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
B7	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD

Connector Summary		
Qty	Manuf	Product
20	H1	IUS2.56/11.88



FROM PLAN DATED: JULY 2, 2020

BUILDER: GREENPARK HOMES

SITE: LAMPONE INVESTMENTS

MODEL: KIMBERLY 2

ELEVATION: 3

LOT:

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DESIGNER: L.D.

REVISION:

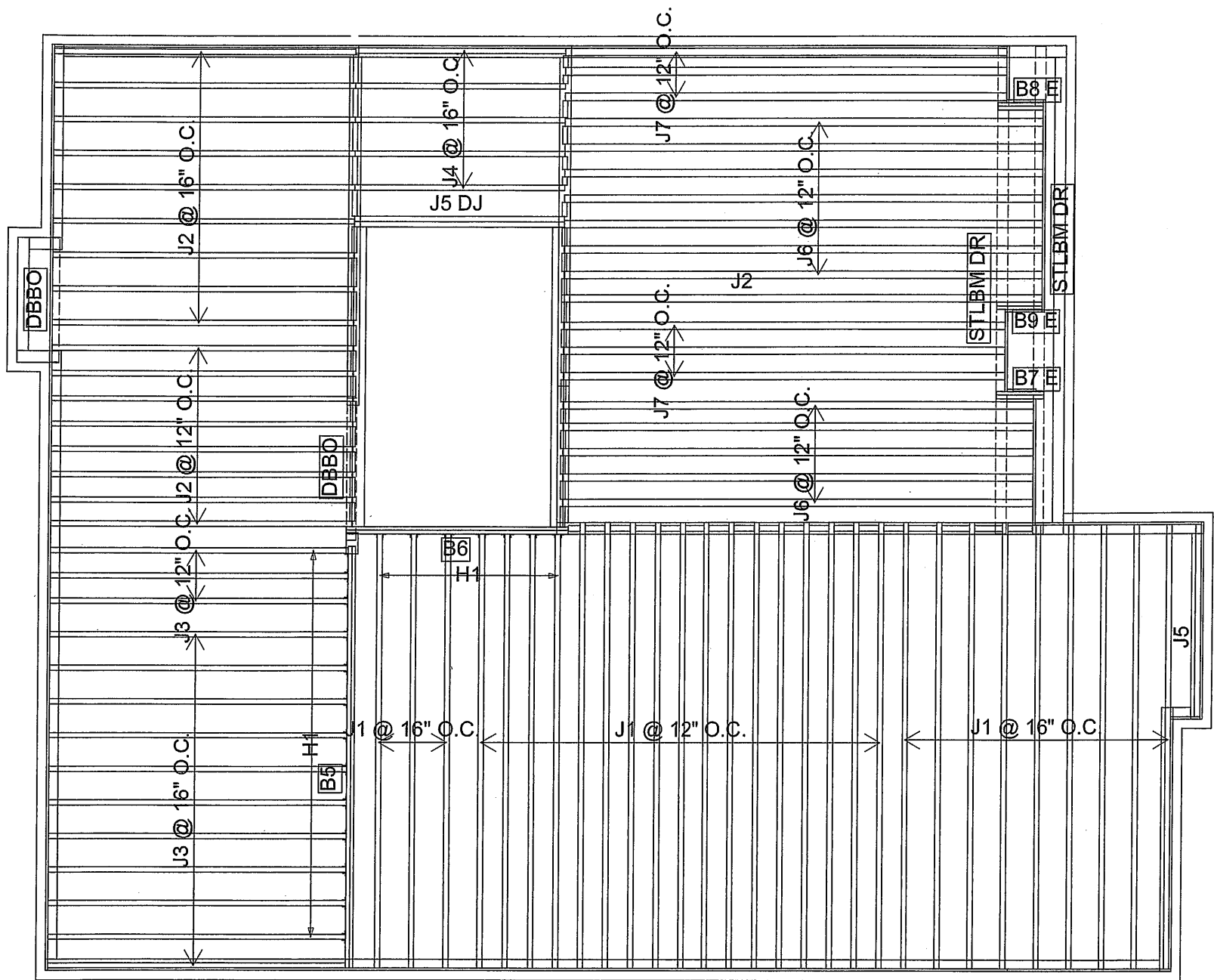
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LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2020-06-03

2nd FLOOR



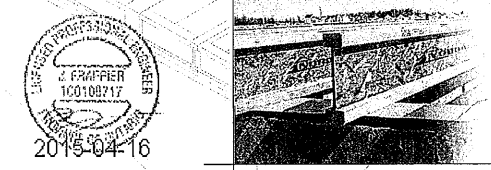
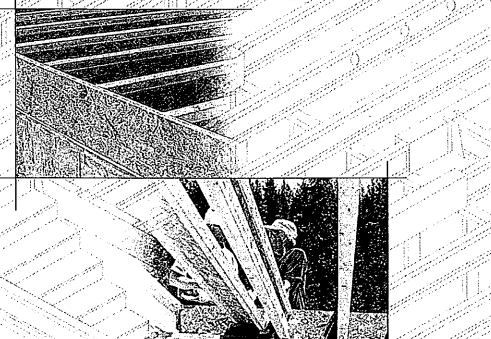
Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
J1	18-00-00	11 7/8" NI-40x	1	29	MFD
J2	14-00-00	11 7/8" NI-40x	1	17	MFD
J3	12-00-00	11 7/8" NI-40x	1	14	MFD
J4	10-00-00	11 7/8" NI-40x	1	5	MFD
J5 DJ	10-00-00	11 7/8" NI-40x	2	2	MFD
J5	8-00-00	11 7/8" NI-40x	1	1	MFD
J2	20-00-00	11 7/8" NI-80	1	1	MFD
J6	20-00-00	11 7/8" NI-80	1	12	MFD
J7	18-00-00	11 7/8" NI-80	1	6	MFD
B5	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD

Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
B6	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B7 E	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B8 E	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD
B9 E	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	MFD

Connector Summary		
Qty	Manuf	Product
20	H1	IUS2.56/11.88

INSTALLATION GUIDE

FOR RESIDENTIAL FLOORS

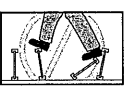


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N-C201 / November 2014

SAFETY AND CONSTRUCTION PRECAUTIONS



WARNING

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

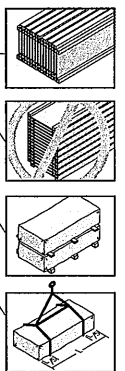
Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

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



MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to single-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- 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 CGOS-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.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate 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 uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C086-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

SINGLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	13'-1"	14'-2"	13'-9"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	NI-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-5"	15'-10"	15'-5"
	NI-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	16'-1"
	NI-70	17'-1"	16'-1"	15'-6"	15'-7"	18'-7"	17'-4"	16'-9"	16'-10"
	NI-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-10"	17'-6"	16'-11"	17'-0"
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	15'-4"	18'-4"	17'-3"	16'-8"	16'-7"
	NI-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-6"	17'-9"	17'-7"
	NI-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
	NI-70	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
	NI-80	19'-9"	18'-3"	17'-6"	17'-7"	21'-9"	20'-2"	19'-4"	19'-4"
14"	NI-90	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	NI-90x	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	NI-40x	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-6"	19'-8"	19'-4"
	NI-60	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
	NI-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-2"
16"	NI-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
	NI-90	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	NI-90x	22'-7"	20'-11"	19'-11"	20'-0"	25'-0"	23'-1"	22'-0"	22'-2"
	NI-60	22'-3"	20'-8"	19'-9"	19'-10"	24'-7"	22'-9"	21'-9"	21'-10"
	NI-70	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	23'-0"	23'-0"

CCMC EVALUATION REPORT 13032-R

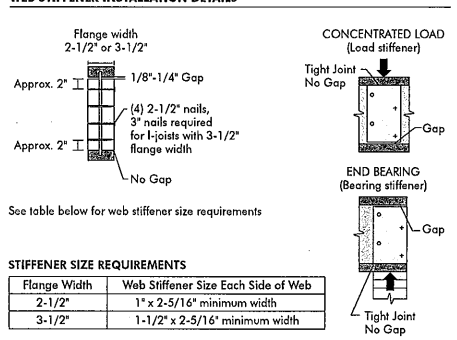
WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

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

NORDIC I-JOIST SERIES

Series	Depth	Flange Width	Flange Thickness	Web Thickness	Weight (lb/ft)
NI-20	9-1/2"	2-1/2"	1/8"	1/8"	2.0
NI-40x	11-7/8"	3-1/2"	1/8"	1/8"	4.0
NI-60	14"	3-1/2"	1/8"	1/8"	6.0
NI-70	14"	3-1/2"	1/8"	1/8"	7.0
NI-80	14"	3-1/2"	1/8"	1/8"	8.0
NI-90	16"	3-1/2"	1/8"	1/8"	10.0
NI-90x	16"	3-1/2"	1/8"	1/8"	11.0

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

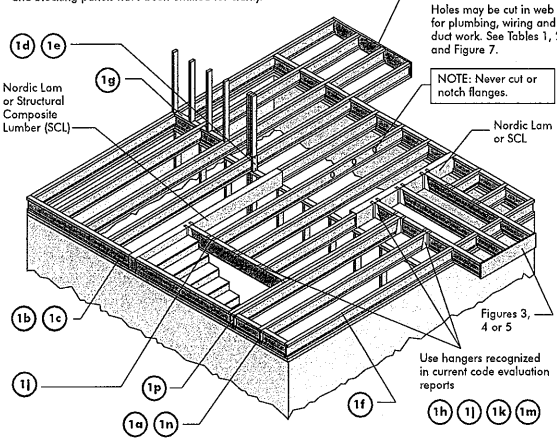
Nordic Engineered Wood I-joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.

INSTALLING NORDIC I-JOISTS

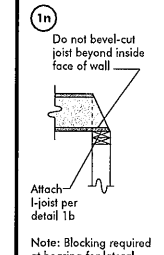
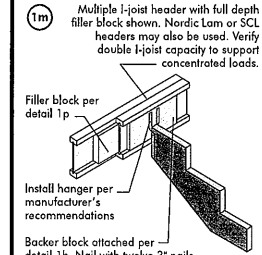
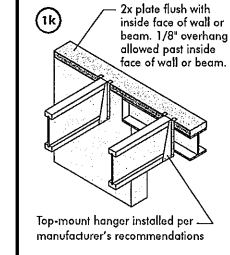
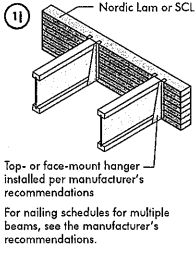
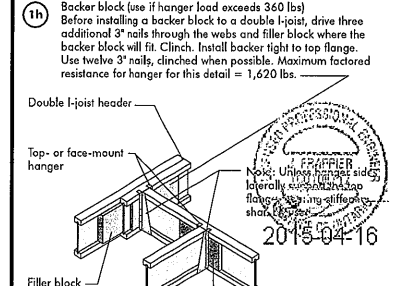
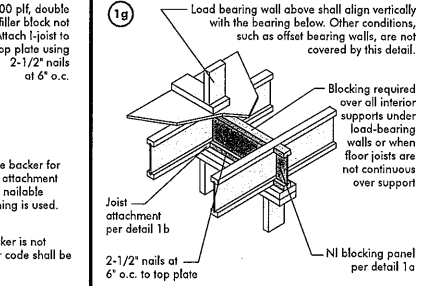
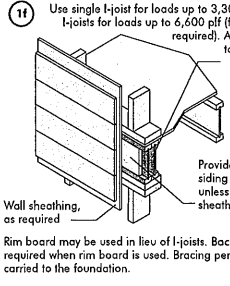
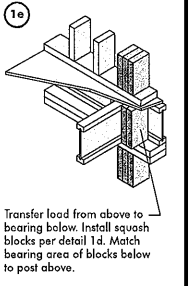
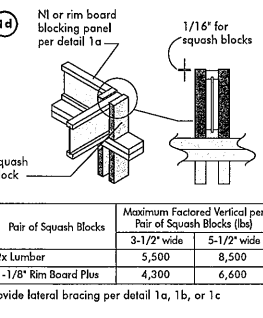
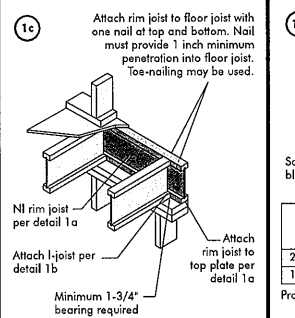
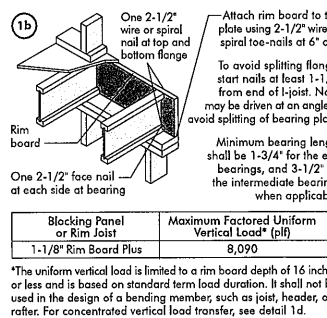
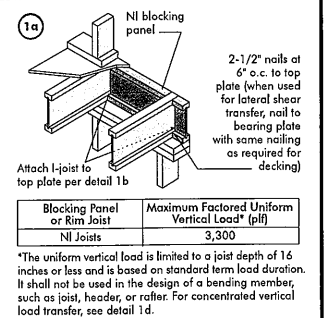
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true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

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

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



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.

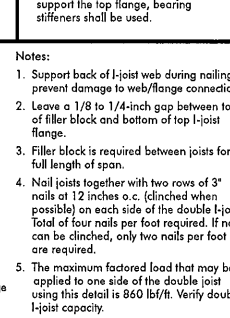
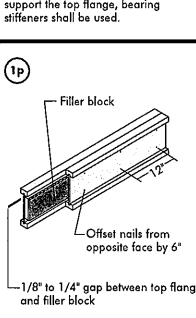


BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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

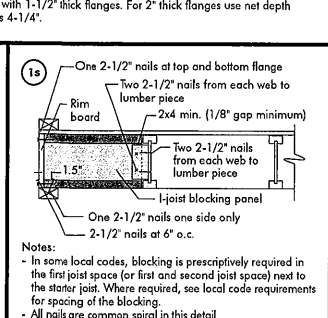
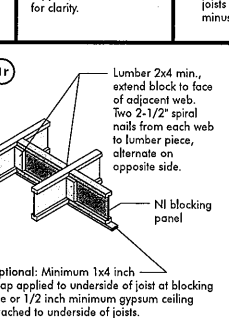
* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C082 or CAN/CSA-C087 Standard.

** 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".



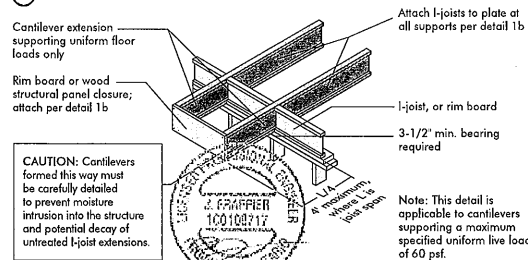
FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

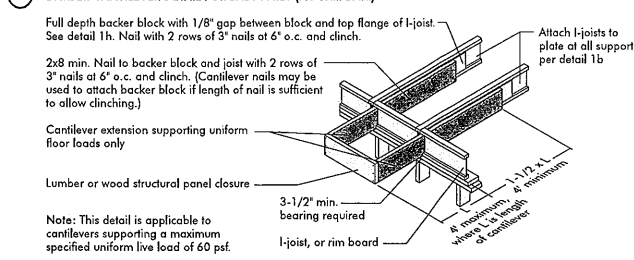


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

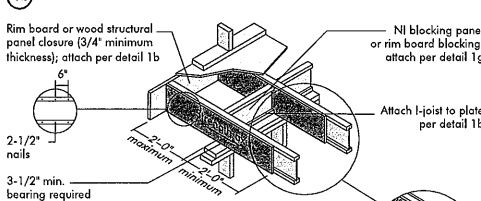


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

4b Alternate Method 2 — DOUBLE I-JOIST

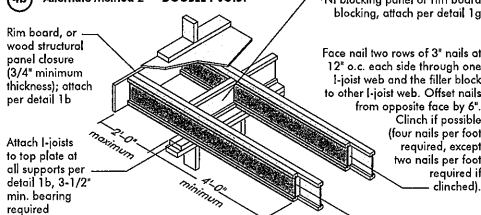
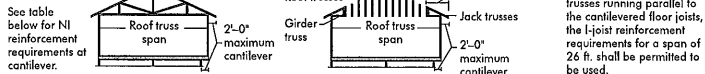


FIGURE 4 (continued)



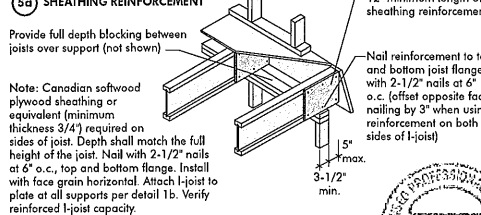
CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 12 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	1	1	X	N	1	2	X	1	2	X	X
	32	N	1	2	X	N	2	X	X	1	X	X	X
	34	N	1	2	X	N	2	X	X	1	X	X	X
11-7/8"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	1	2	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	1	2	X	N	2	X	X
	34	N	N	1	2	N	1	2	X	N	2	X	X
14"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	1	2	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	1	2	X	N	2	X	X
	34	N	N	1	2	N	1	2	X	N	2	X	X
16"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	1	2	N	1	2	X	N	2	X	X
	32	N	N	1	2	N	1	2	X	N	2	X	X
	34	N	N	1	2	N	1	2	X	N	2	X	X

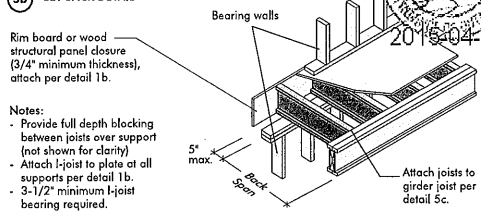
- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as a truss is used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

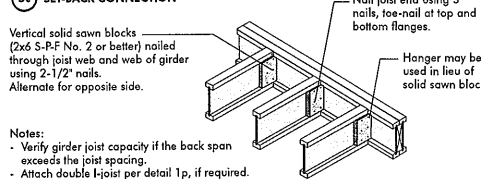
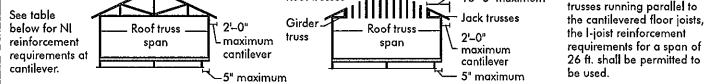


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X	2	X	X	X
11-7/8"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X
14"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X
16"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X	2	X	X	X

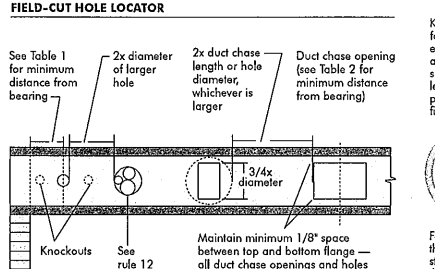
- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as a truss is used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

FIGURE 7 FIELD-CUT HOLE LOCATOR



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

TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft/in.)											
		Round hole diameter (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
11-7/8"	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
14"	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
16"	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"
	NI-20	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"	4'-1"

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

OPTIONAL:

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

Reduced = $\frac{\text{Actual Span}}{\text{Max Span}} \times D$

Where:

- Reduced = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications.
- Actual = The actual measured span distance between the inside faces of supports.
- Max = Span Adjustment Factor given in this table.
- D = The minimum distance from the inside face of any support to centre of hole from this table.
- If Actual is greater than 1, use 1 in the above calculation for Actual.

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

DUCT CHASE OPENING SIZES AND LOCATIONS – Simple Span Only													
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft/in.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
2-1/2"	N-20	4-11	4-5	4-0	5-1	5-8	6-1	6-8	7-1	7-5	7-9	8-2	8-6
	N-40x	4-5	4-0	3-6	4-0	4-5	5-0	5-3	5-8	6-1	6-5	6-9	7-3
	N-60	5-0	4-4	3-9	4-3	4-8	5-2	5-6	6-0	6-4	6-8	7-2	7-6
	N-80	5-1	5-5	5-10	5-3	5-7	6-1	6-5	6-9	7-3	7-7	8-1	8-4
	N-100	5-2	5-6	5-10	5-4	5-8	6-2	6-6	7-0	7-4	7-8	8-2	8-6
	N-120	5-3	5-7	5-11	5-5	5-9	6-3	6-7	7-1	7-5	7-9	8-3	8-7
11-7/8"	N-20	7-2	6-6	6-0	6-5	6-9	7-3	7-7	8-1	8-5	8-9	9-3	9-7
	N-40x	6-8	7-2	7-6	8-1	8-6	9-1	9-5	9-9	10-3	10-7	11-1	11-5
	N-60	6-9	7-3	7-7	8-2	8-6	9-1	9-5	9-9	10-3	10-7	11-1	11-5
	N-80	7-0	7-4	7-8	8-3	8-7	9-1	9-5	9-9	10-3	10-7	11-1	11-5
	N-100	7-1	7-5	7-9	8-4	8-8	9-2	9-6	10-0	10-4	10-8	11-2	11-6
	N-120	7-2	7-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7
14"	N-20	7-11	6-5	5-9	6-4	6-8	7-2	7-6	8-0	8-4	8-8	9-2	9-6
	N-40x	8-0	7-3	6-7	7-1	7-5	7-9	8-3	8-7	9-1	9-5	9-9	10-3
	N-60	8-0	7-3	6-7	7-1	7-5	7-9	8-3	8-7	9-1	9-5	9-9	10-3
	N-80	8-0	7-3	6-7	7-1	7-5	7-9	8-3	8-7	9-1	9-5	9-9	10-3
	N-100	8-0	7-3	6-7	7-1	7-5	7-9	8-3	8-7	9-1	9-5	9-9	10-3
	N-120	8-0	7-3	6-7	7-1	7-5	7-9	8-3	8-7	9-1	9-5	9-9	10-3
16	N-20	9-2	8-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7
	N-40x	9-2	8-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7
	N-60	9-2	8-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7
	N-80	9-2	8-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7
	N-100	9-2	8-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7
	N-120	9-2	8-6	8-0	8-5	8-9	9-3	9-7	10-1	10-5	10-9	11-3	11-7



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the 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 one may be a duct chase opening.
- A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

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

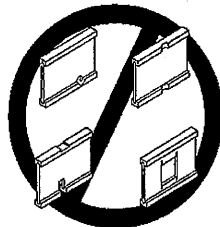
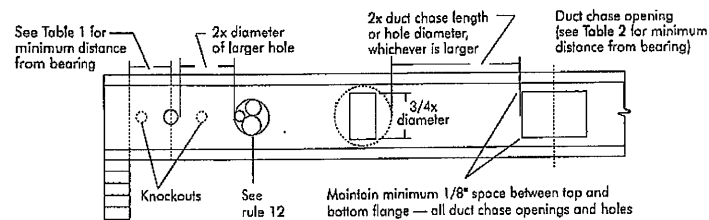
- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joints being used at their maximum spans.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

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS
Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.)													
		Duct Chase Length (in.)													
		8	10	12	14	16	18	20	22	24	26	28	30	32	34
9-1/2"	NI-20	4-1"	4-6"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---	---	---
	NI-40x	5-1"	5-6"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---	---	---
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	---	---	---	---	---
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---	---	---
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"	---	---	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	---	---	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"	---	---	---	---	---
	NI-80	7-2"	7-7"	8-0"	8-5"	9-3"	9-8"	10-2"	10-8"	11-1"	---	---	---	---	---
14"	NI-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-7"	11-1"	---	---	---	---	---
	NI-40x	7-7"	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"	12-0"	12-8"	---	---	---	---	---
	NI-70	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	13-3"	13-0"	---	---	---	---	---
	NI-80	8-7"	9-1"	9-5"	10-1"	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"	9-8"	10-0"	10-6"	10-11"	11-5"	11-9"	12-4"	12-11"	---	---	---	---	---
	NI-60	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---	---	---
	NI-70	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---	---	---
	NI-80	10-1"	10-5"	11-0"	11-4"	11-10"	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 precored 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.

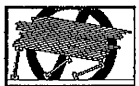
Holes in webs should be cut with a sharp saw.

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 unshored I-joints. Once sheathed, do not over-stress I-joints with concentrated loads from building materials.

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

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



PRODUCT WARRANTY

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

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

1a

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

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

Attach I-joint to top plate per detail 1b

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

1b

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

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

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

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

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

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

1d

Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	6,600

Provide lateral bracing per detail 1a or 1b

Squash block

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

1e

1f

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

Joist attachment per detail 1b

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

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

NI blocking panel per detail 1a

1h

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

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

Filler block per detail 1p

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

1i

1j

Top- or face-mount hanger

Double I-joint header

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

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

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

Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

1k

1m

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

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.

1n

1r

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.

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

NI blocking panel

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

1p

1s

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOINT CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

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:

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

1s

1t

Rim board

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

One 2-1/2" nail one side only

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

I-joint blocking panel

One 2-1/2" nail one side only

NOTES:

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

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

WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

NORDIC STRUCTURES

COMPANY
May 29, 2020 15:15

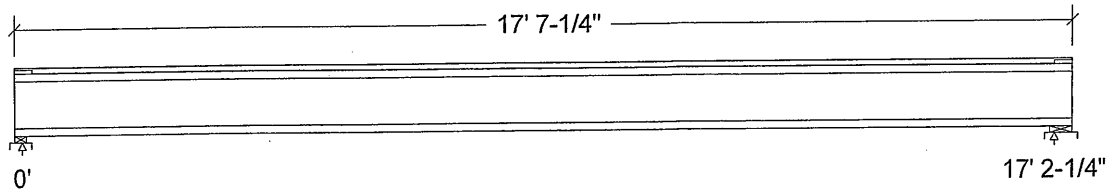
PROJECT
J1 - 1ST FLOOR

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	229		229
Live	458		458
Factored:			
Total	974		974
Bearing:			
Capacity			
Joist	2102		2336
Support	3981		7744
Des ratio			
Joist	0.46		0.42
Support	0.24		0.13
Load case	#2		#2
Length	2-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.09		1.15

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

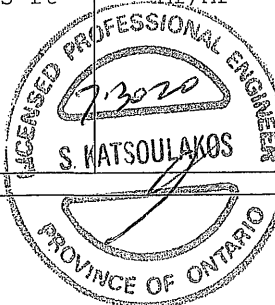
Supports: All - Lumber Sill plate, No.1/No.2

Total length: 17' 7-1/4"; Clear span: 17' 1/2"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 974	Vr = 2336	lbs	Vf/Vr = 0.42
Moment (+)	Mf = 4185	Mr = 6255	lbs-ft	Mf/Mr = 0.67
Perm. Defl'n	0.13 = < L/999	0.57 = L/360	in	0.23
Live Defl'n	0.26 = L/798	0.43 = L/480	in	0.60
Total Defl'n	0.39 = L/532	0.86 = L/240	in	0.45
Bare Defl'n	0.31 = L/659	0.57 = L/360	in	0.55
Vibration	Lmax = 17'-2.3	Lv = 18'-1.3	ft	0.95
Defl'n	= 0.031	= 0.037	in	0.85



NO. 11095-20
STRUCTURAL
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Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake

L=live(use,occupancy) Ls=live(storage,equipment) f=fire

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

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

CALCULATIONS:EI_{eff} = 459.76 lb-in² K= 6.18e06 lbs"Live" deflection is due to all non-dead loads (live, wind, snow...) **CONFORMS TO OBC 2012****Design Notes:****AMENDED 2020**

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



PCY
 DWG NO. TAM 11025-20
 STRUCTURAL
 COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
June 3, 2020 11:16

PROJECT
J6 - 2ND FLOOR CANT

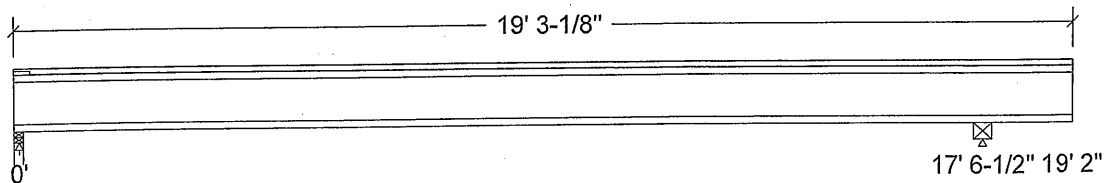
Design Check Calculation Sheet Nordic Sizer – Canada 7.2

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area	No		20.00	psf
Load2	Live	Full Area	Yes		40.00	psf
WALL	Dead	Point	No	19.13	100	lbs
ROOF	Dead	Point	No	19.13	45	lbs
ROOF SNOW	Snow	Point	Yes	19.13	72	lbs

Load magnitude does not include Normal Importance factor from O86 Table 5.2.3.2,
which is applied during analysis.

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



Unfactored:			
Dead	162		367
Live	351		419
Snow	-6		78
Factored:			
Total	728		1165
Bearing:			
Capacity			
Joist	2154		5006
Support	4520		-
Des ratio			
Joist	0.34		0.23
Support	0.16		-
Load case	#10		#4
Length	2		4
Min req'd	1-3/4		3-1/2
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		-
Kzcp sup	-		-

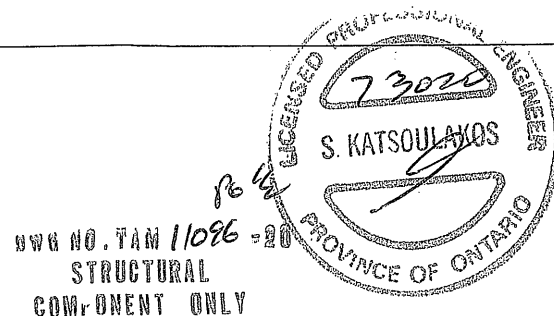
Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

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

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

Total length: 19' 3-1/8"; Clear span: 17' 3-5/8", 1' 5-1/2"; 5/8" nailed and glued OSB sheathing

This section PASSES the design code check.



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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 773	Vr = 2336	lbs	Vf/Vr = 0.33
Moment(+)	Mf = 3120	Mr = 11609	lbs-ft	Mf/Mr = 0.27
Moment(-)	Mf = 517	Mr = 7546	lbs-ft	Mf/Mr = 0.07
Deflection:				
Interior Perm	0.07 = < L/999	0.58 = L/360	in	0.11
Live	0.16 = < L/999	0.44 = L/480	in	0.37
Total	0.23 = L/919	0.88 = L/240	in	0.26
Cantil. Perm	-0.01 = < L/999	0.11 = L/180	in	0.13
Live	-0.04 = L/473	0.08 = L/240	in	0.51
Total	-0.05 = L/356	0.16 = L/120	in	0.34
Bare Defl'n	-0.05 = L/422	0.11 = L/180	in	0.43
Vibration	Lmax = 17'-6.5	Lv = 19'-11	ft	0.88
Defl'n	= 0.026	= 0.036	in	0.72

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#4
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#10
Mr-	11609	0.65	1.00	-	1.000	-	-	-	#5
EI	547.1 million	-	-	-	-	-	-	-	#10

CRITICAL LOAD COMBINATIONS:

Shear : LC #4 = 1.25D + 1.5L + (1.0)1.0S
 Moment(+) : LC #10 = 1.25D + 1.5L (pattern: L₋)
 Moment(-) : LC #5 = 1.25D + (1.0)1.5S + 1.0L
 Deflection: LC #1 = 1.0D (permanent)
 LC #10 = 1.0D + 1.0L (pattern: L₋) (live)
 LC #10 = 1.0D + 1.0L (pattern: L₋) (total)
 LC #10 = 1.0D + 1.0L (pattern: L₋) (bare joist)
 Bearing : Support 1 - LC #10 = 1.25D + 1.5L (pattern: L₋)
 Support 2 - LC #4 = 1.25D + 1.5L + (1.0)1.0S
 Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake
 L=live(use,occupancy) Ls=live(storage,equipment) f=fire
 Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

EI_{eff} = 613.27 lb-in² K= 6.18e06 lbs

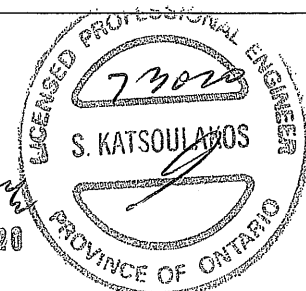
"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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



OWG NO. TAM 11096-20
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B1 H(i14160) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 3 spans | R cant.

June 10, 2020 08:31:55

Build 7493

Job name:

File name: KIMBERLY 2 - EL 1,2.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1 H(i14160)

City, Province, Postal Code: MARKHAM

Specifier:

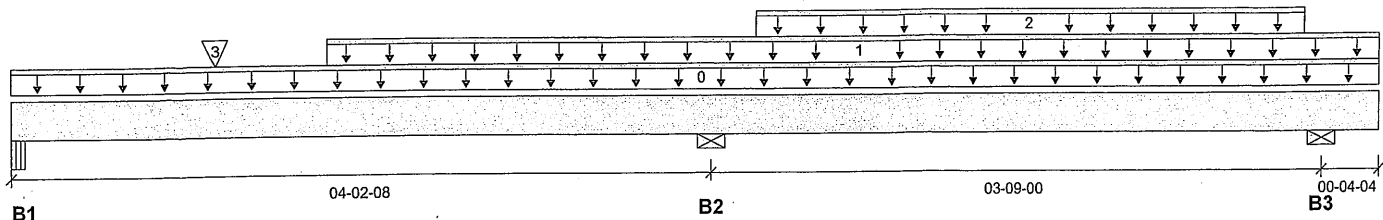
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	486 / 126	202 / 0		
B2, 3-1/2"	2154 / 0	1134 / 0		
B3, 5-1/2"	1191 / 89	571 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-03-12	Top		12			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-12	08-03-12	Top	366	183			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	04-05-12	07-10-04	Top	240	120			n/a
3	J1(i14173)	Conc. Pt. (lbs)	L	01-02-12	01-02-12	Top	415	208			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1638 ft-lbs	35392 ft-lbs	4.6%	3	06-06-12
Neg. Moment	-1797 ft-lbs	-35392 ft-lbs	5.1%	4	04-02-08
End Shear	820 lbs	14464 lbs	5.7%	2	01-04-06
Cont. Shear	2307 lbs	14464 lbs	15.9%	4	05-04-02
Total Load Deflection	L/999 (0.003")	n/a	n/a	14	06-02-10
Live Load Deflection	L/999 (0.002")	n/a	n/a	19	06-02-03
Total Neg. Defl.	2xL/1998 (-0.001")	n/a	n/a	14	08-03-12
Max Defl.	0.003"	n/a	n/a	14	06-02-10
Span / Depth	3.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	4-1/2" x 3-1/2"	980 lbs	11.7%	5.1%	Unspecified
B2 Wall/Plate	3-1/2" x 3-1/2"	4649 lbs	61.7%	31.1%	Spruce-Pine-Fir
B3 Wall/Plate	5-1/2" x 3-1/2"	2500 lbs	21.1%	10.6%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

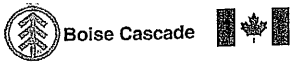
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM 11097-20
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B1 H(i14160) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

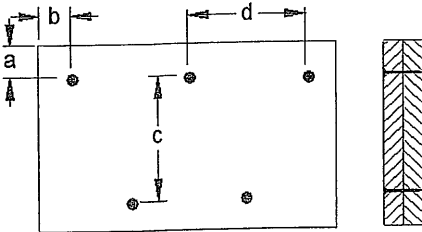
Dry | 3 spans | R cant.

June 10, 2020 08:31:55

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

File name: KIMBERLY 2 - EL 1,2.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1 H(i14160)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 8"

Calculated Side Load = 1003.0 lb/ft

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



OWN NO. TAM 11097-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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



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

1ST FLR FRAMING\Flush Beams\B2 H(i14109) (Flush Beam)

PASSED

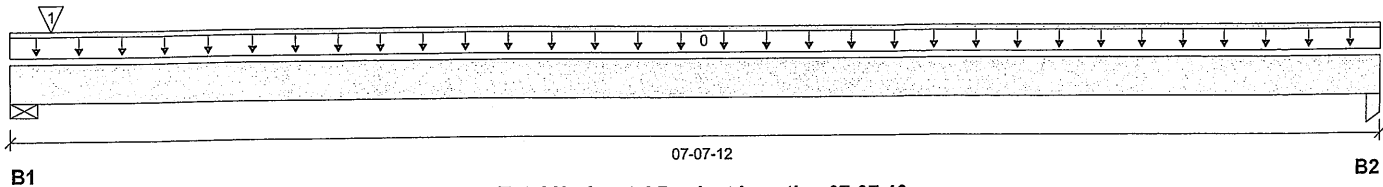
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

June 10, 2020 08:31:55

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

File name: KIMBERLY 2 - EL 1,2.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B2 H(i14109)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 07-07-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"		120 / 0		
B2, 1-3/4"		44 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-07-12	Top		12			00-00-00
1	2(i72)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		72			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	108 ft-lbs	23005 ft-lbs	0.5%	0	03-11-12
End Shear	43 lbs	9401 lbs	0.5%	0	01-05-06
Total Load Deflection	L/999 (0.001")	n/a	n/a	1	03-11-12
Max Defl.	0.001"	n/a	n/a	1	03-11-12
Span / Depth	7.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	168 lbs	2.2%	1.1%	Spruce-Pine-Fir
B2	Column 1-3/4" x 3-1/2"	62 lbs	1.9%	1.3%	Unspecified

Notes

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

Calculations assume member is fully braced.

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

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

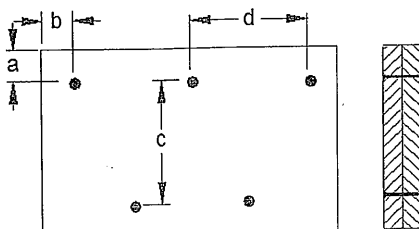
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



DWG NO. TAM 11098-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade



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

1ST FLR FRAMING\Flush Beams\B2 H(i14109) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 10, 2020 08:31:55

Build 7493

Job name:

File name: KIMBERLY 2 - EL 1,2.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B2 H(i14109)

City, Province, Postal Code: MARKHAM

Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member

a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 2 1/2"

Connectors are: () : Nails

3 1/2" ARDUX SPIRAL



BWG NO. TAM 1109B-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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BC CALC® Member Report

Build 7493

Job name:

File name: KIMBERLY 2 - EL 1,2.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3 H(i14151)

City, Province, Postal Code: MARKHAM

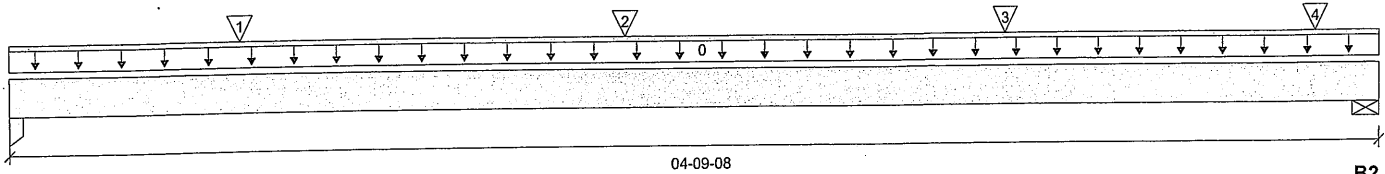
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 04-09-08

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	449 / 0	238 / 0		
B2, 3-1/2"	541 / 0	339 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-09-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	J5(i14156)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	Top	269	134			n/a
2	J5(i14104)	Conc. Pt. (lbs)	L	02-01-08	02-01-08	Top	269	134			n/a
3	J5(i14189)	Conc. Pt. (lbs)	L	03-05-08	03-05-08	Top	249	124			n/a
4	E45(i65)	Conc. Pt. (lbs)	L	04-06-12	04-06-12	Top	203	156			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1062 ft-lbs	17696 ft-lbs	6.0%	1	02-01-08
End Shear	726 lbs	7232 lbs	10.0%	1	03-06-02
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	02-04-08
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-04-08
Max Defl.	0.005"	n/a	n/a	4	02-04-08
Span / Depth	4.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	971 lbs	19.5%	13.0%	Unspecified
B2	Wall/Plate 3-1/2" x 1-3/4"	1235 lbs	32.8%	16.5%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAW 11099-20

STRUCTURAL

COMPONENT ONLY

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



Boise Cascade



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

2ND FLR FRAMING\Flush Beams\B5(i14229) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 10, 2020 08:31:55

Build 7493

Job name:

File name: KIMBERLY 2 - EL 1,2.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B5(i14229)

City, Province, Postal Code: MARKHAM

Specifier:

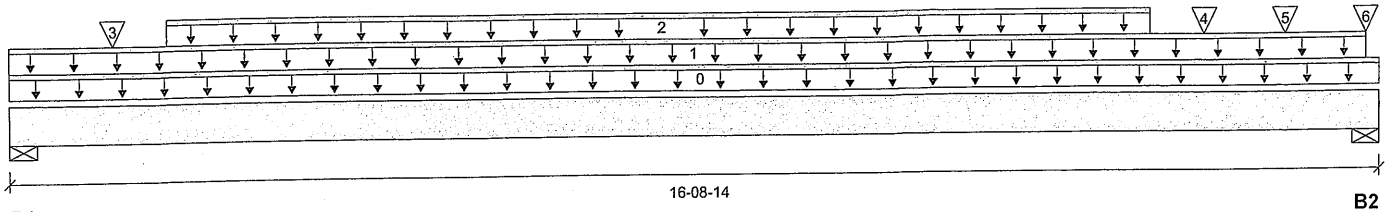
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



B1

B2

Total Horizontal Product Length = 16-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	2020 / 0	1111 / 0		
B2, 3-1/2"	2330 / 0	1266 / 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	16-08-14	Top	12				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-06-14	Top	22	11			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-14	13-10-14	Top	237	119			n/a
3	J3(i14466)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	293	146			n/a
4	J3(i14322)	Conc. Pt. (lbs)	L	14-06-14	14-06-14	Top	277	138			n/a
5	J3(i14442)	Conc. Pt. (lbs)	L	15-06-14	15-06-14	Top	237	119			n/a
6	J3(i14324)	Conc. Pt. (lbs)	L	16-06-14	16-06-14	Top	329	165			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	18550 ft-lbs	35392 ft-lbs	52.4%	1	07-10-14
End Shear	4262 lbs	14464 lbs	29.5%	1	01-04-04
Total Load Deflection	L/306 (0.636")	n/a	78.4%	4	08-04-14
Live Load Deflection	L/473 (0.411")	n/a	76.1%	5	08-04-14
Max Defl.	0.636"	n/a	n/a	4	08-04-14
Span / Depth	16.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	4418 lbs	46.9%	23.7%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	5076 lbs	67.4%	34.0%	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



ENG. NO. TAM/1100-20
STRUCTURAL
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B5(i14229) (Flush Beam)****PASSED**

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: MARKHAM

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 10, 2020 08:31:55

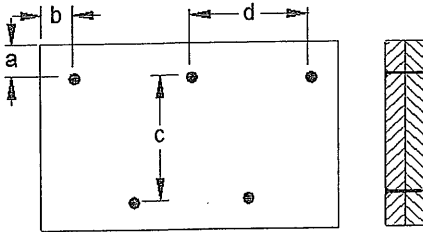
File name: KIMBERLY 2 - EL 1,2.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B5(i14229)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member

a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 8"

Calculated Side Load = 671.5 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

OWN NO. TAM 11/00-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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

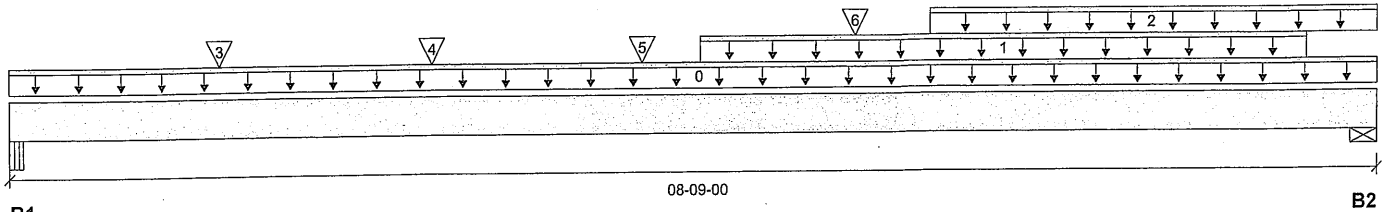
BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

June 10, 2020 08:31:55

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

File name: KIMBERLY 2 - EL 1,2.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B6(i14465)
 Specifier:
 Designer: L.D.
 Company:



Total Horizontal Product Length = 08-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	1466 / 0	785 / 0		
B2, 5-1/2"	2283 / 0	1194 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-09-00	Top		12			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	04-04-08	08-03-08	Top	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	05-10-02	08-09-00	Top	360	179			n/a
3	J1(i14487)	Conc. Pt. (lbs)	L	01-04-02	01-04-02	Top	408	204			n/a
4	J1(i14364)	Conc. Pt. (lbs)	L	02-08-02	02-08-02	Top	468	234			n/a
5	J1(i14478)	Conc. Pt. (lbs)	L	04-00-02	04-00-02	Top	468	234			n/a
6	J1(i14390)	Conc. Pt. (lbs)	L	05-04-02	05-04-02	Top	409	205			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8108 ft-lbs	35392 ft-lbs	22.9%	1	04-10-05
End Shear	3627 lbs	14464 lbs	25.1%	1	07-03-10
Total Load Deflection	L/999 (0.068")	n/a	n/a	4	04-04-08
Live Load Deflection	L/999 (0.045")	n/a	n/a	5	04-04-08
Max Defl.	0.068"	n/a	n/a	4	04-04-08
Span / Depth	8.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 4-1/2" x 3-1/2"	3181 lbs	37.8%	16.6%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	4917 lbs	41.5%	20.9%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM 11/01-20
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B6(i14465) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

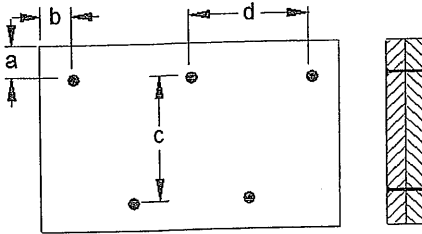
Dry | 1 span | No cant.

June 10, 2020 08:31:55

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

File name: KIMBERLY 2 - EL 1,2.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B6(i14465)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6" 6"

Calculated Side Load = 994.5 lb/ft

Connectors are: Nails

3 1/2" ARDOX SPIRAL



DWG NO. TAM 11/01-20
STRUCTURAL
COMPONENT ONLY

Disclosure

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

BC CALC® Member Report

Dry | 1 span | No cant.

June 10, 2020 08:31:55

Build 7493

Job name:

File name: KIMBERLY 2 - EL 1,2.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B7(i14446)

City, Province, Postal Code: MARKHAM

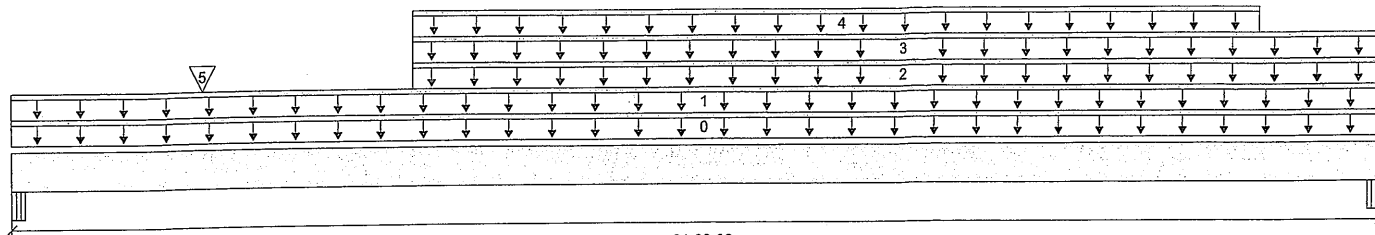
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 01-06-02

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	6 / 0	178 / 0	179 / 0	
B2, 4-1/8"	8 / 0	176 / 0	171 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-06-02	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-06-02	Top	6	3			n/a
2	E25(i49)	Unf. Lin. (lb/ft)	L	00-05-04	01-06-02	Top		81			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	01-06-02	Top	5				n/a
4	E25(i49)	Unf. Lin. (lb/ft)	L	00-05-04	01-04-08	Top		188	300		n/a
5	E63(i12426)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top		67	69		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	74 ft-lbs	35392 ft-lbs	0.2%	13	00-09-10
End Shear	300 lbs	14464 lbs	2.1%	13	00-05-04
Span / Depth	0.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	498 lbs	5.1%	2.2%	Unspecified
B2 Beam	4-1/8" x 3-1/2"	484 lbs	6.3%	2.8%	Unspecified

Notes

Calculations assume member is fully braced.

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

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

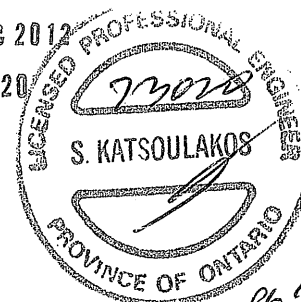
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. FAM 11/02-20
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B7(i14446) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

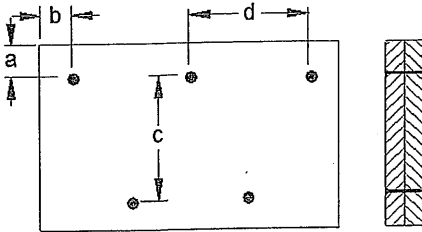
Dry | 1 span | No cant.

June 10, 2020 08:31:55

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

File name: KIMBERLY 2 - EL 1,2.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B7(i14446)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 6"

Connectors are: Nails

3 1/2" ARDOX SPIRAL



OWN NO. 11/02/20
STRUCTURAL
COMPONENT ONLY

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

BC CALC® Member Report

Dry | 1 span | No cant.

June 3, 2020 11:38:10

Build 7493

Job name:

File name: KIMBERLY 2 - EL 3.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B7 E(i13007)

City, Province, Postal Code: MARKHAM

Specifier:

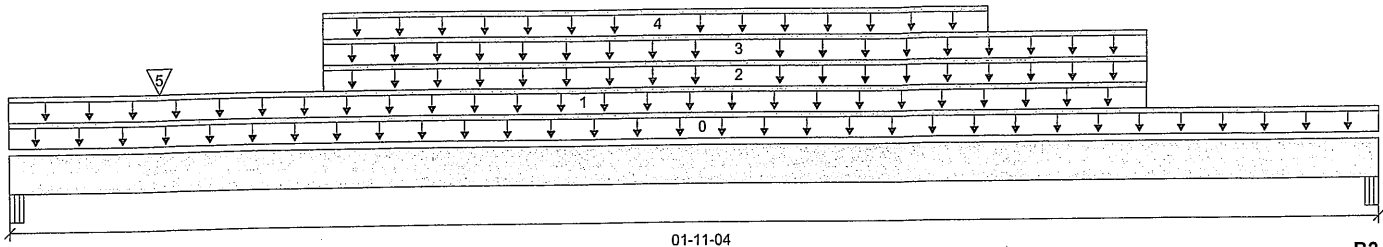
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 01-11-04

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	13 / 0	119 / 0	54 / 0	
B2, 5-1/4"	11 / 0	88 / 0	30 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-11-04	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-07-04	Top	8	4			n/a
2	E25(i49)	Unf. Lin. (lb/ft)	L	00-05-04	01-07-04	Top		81			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	01-07-04	Top	10	5			n/a
4	E25(i49)	Unf. Lin. (lb/ft)	L	00-05-04	01-04-08	Top		45	72		n/a
5	E55(i11100)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top		34	17		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	36 ft-lbs	23005 ft-lbs	0.2%	0	00-11-10
End Shear	39 lbs	9401 lbs	0.4%	0	00-06-02
Span / Depth	1.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	166 lbs	2.6%	1.1%	Unspecified
B2	Beam 5-1/4" x 3-1/2"	123 lbs	1.9%	0.8%	Unspecified

Notes

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

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

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

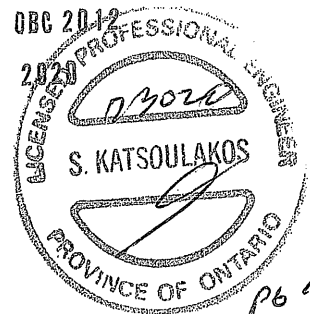
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

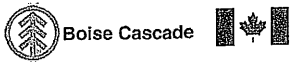
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. TAM 11/03-20
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B7 E(i13007) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

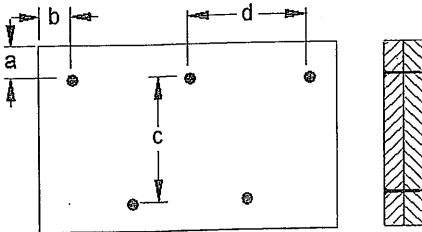
Dry | 1 span | No cant.

June 3, 2020 11:38:10

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

File name: KIMBERLY 2 - EL 3.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B7 E(i13007)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 8"

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



DWG NO. TAM 11103-20
STRUCTURAL
COMPONENT ONLY

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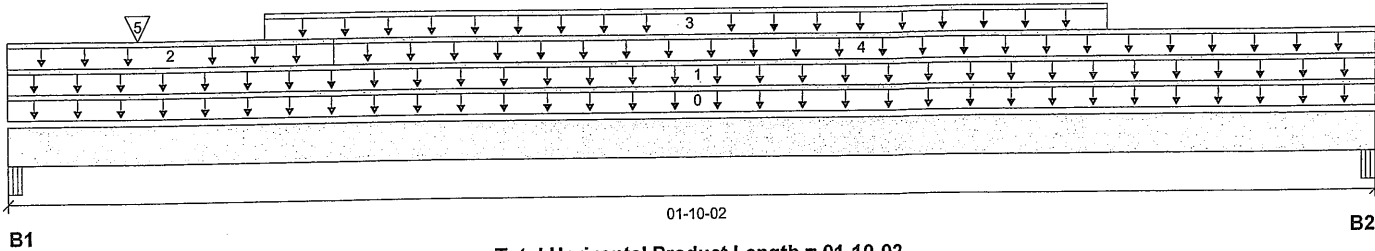
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: MARKHAM
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 3, 2020 11:38:09

File name: KIMBERLY 2 - EL 3.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B8 E(i12984)
Specifier:
Designer: L.D.
Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	18 / 0	186 / 0	139 / 0	
B2, 4-1/8"	15 / 0	106 / 0	74 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-10-02	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-10-02	Top	13	6			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-04	Top	7				n/a
3	E61(i11117)	Unf. Lin. (lb/ft)	L	00-04-02	01-05-12	Top		171	144		n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	01-10-02	Top	5	2			n/a
5	E61(i11117)	Conc. Pt. (lbs)	L	00-02-01	00-02-01	Top		59	49		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	83 ft-lbs	35392 ft-lbs	0.2%	13	00-11-10
End Shear	218 lbs	14464 lbs	1.5%	13	01-05-02
Span / Depth	1.2				

Bearing Supports

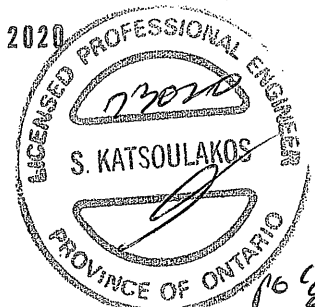
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	458 lbs	4.7%	2.0%	Unspecified
B2	Beam 4-1/8" x 3-1/2"	259 lbs	3.4%	1.5%	Unspecified

Notes

Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. YAM 11/04-20
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B8 E(i12984) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

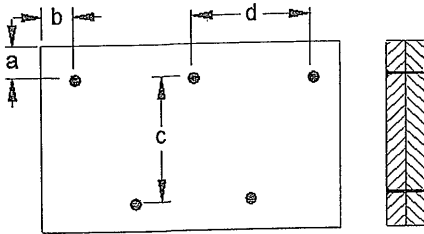
Dry | 1 span | No cant.

June 3, 2020 11:38:09

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

File name: KIMBERLY 2 - EL 3.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B8 E(i12984)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member

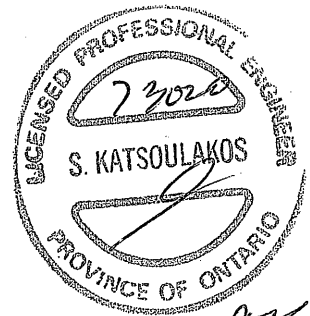


a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 6"

Connectors are: 1 Nails

3/4" ARDOX SPIRAL



DWN NO. TAM 11/04-20
STRUCTURAL
COMPONENT ONLY

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

BC CALC® Member Report

Dry | 1 span | No cant.

June 3, 2020 11:38:10

Build 7493

Job name:

File name: KIMBERLY 2 - EL 3.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B9 E(i12998)

City, Province, Postal Code: MARKHAM

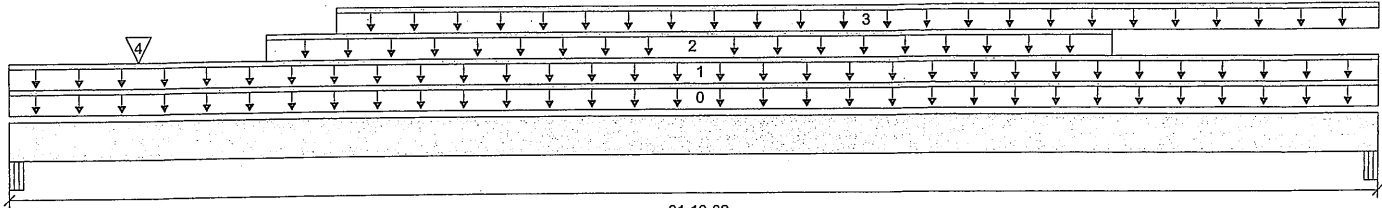
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



01-10-02

B1

B2

Total Horizontal Product Length = 01-10-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	8 / 0	181 / 0	140 / 0	
B2, 4-1/8"	9 / 0	103 / 0	74 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-10-02	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-10-02	Top	6	3			n/a
2	E62(i11237)	Unf. Lin. (lb/ft)	L	00-04-02	01-05-12	Top		171	144		n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	01-10-02	Top	5	2			n/a
4	E62(i11237)	Conc. Pt. (lbs)	L	00-02-01	00-02-01	Top		59	50		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	81 ft-lbs	35392 ft-lbs	0.2%	13	00-11-10
End Shear	213 lbs	14464 lbs	1.5%	13	01-05-02
Span / Depth	1.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	444 lbs	4.5%	2.0%	Unspecified
B2	Beam 4-1/8" x 3-1/2"	249 lbs	3.2%	1.4%	Unspecified

Notes

Calculations assume member is fully braced.

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

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

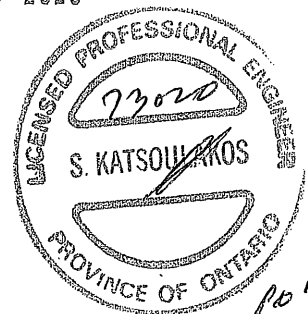
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



006 NO. 1AM 11/05-20
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade



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

2ND FLR FRAMING\Flush Beams\B9 E(i12998) (Flush Beam)

Dry | 1 span | No cant.

PASSED

June 3, 2020 11:38:10

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: MARKHAM

Customer:

Code reports: CCMC 12472-R

File name: KIMBERLY 2 - EL 3.mmdl

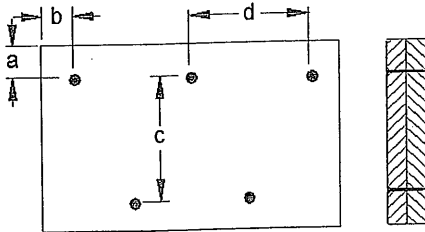
Description: 2ND FLR FRAMING\Flush Beams\B9 E(i12998)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 6"

Connectors are: 1 Nails

3/4" ARDOX SPIRAL



DWG NO. TAM 11/05-20
STRUCTURAL
COMPONENT ONLY

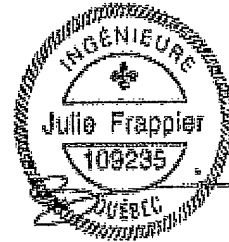
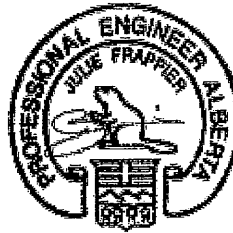
Disclosure

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

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

Maximum Floor Spans

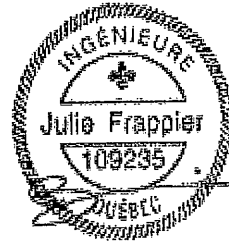
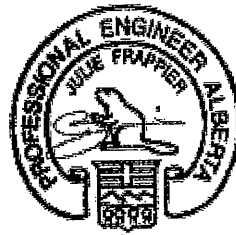
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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
	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
14"	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
	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
16"	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
	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
14"	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
	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
16"	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

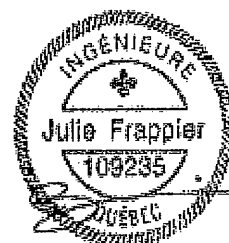
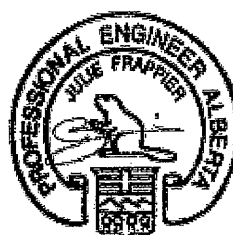
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"	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"	22'-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

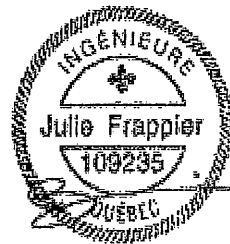
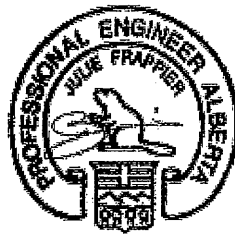
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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
	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
14"	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
	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
16"	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
	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
14"	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
	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
16"	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	24'-10"	23'-4"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

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



Maximum Floor Spans

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

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

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

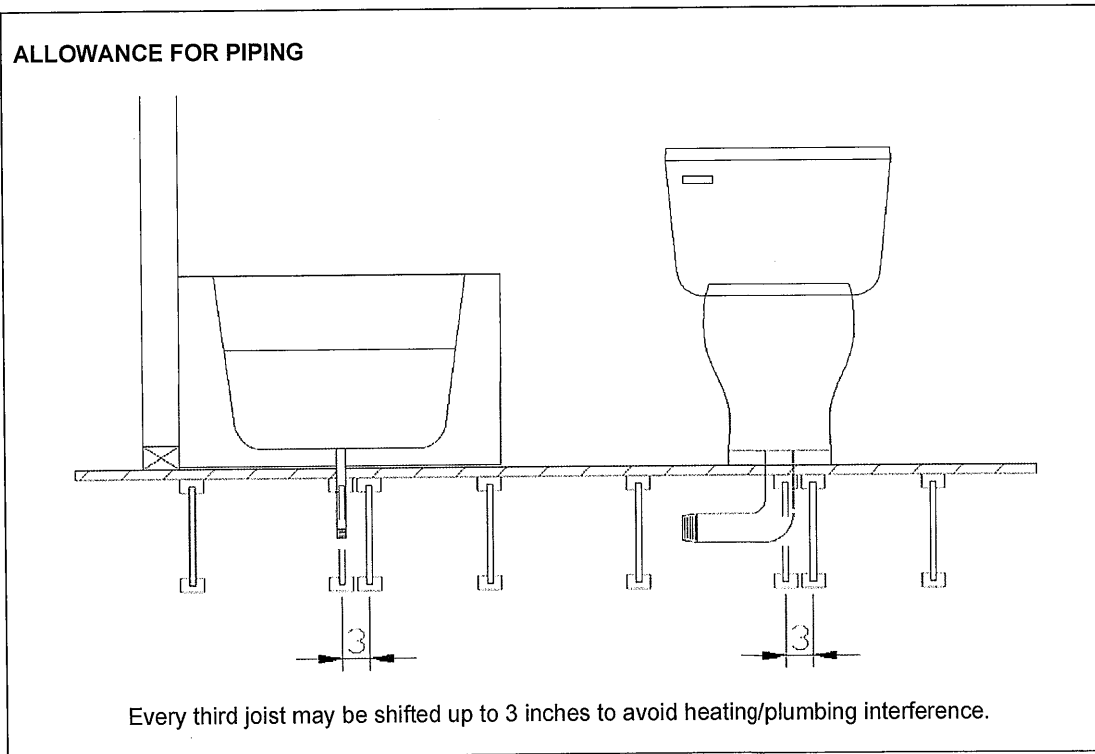
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of $1.50L + 1.25D$. The serviceability limit states include the consideration for floor vibration, a live 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.

Allowance for Piping (Installation Notes)

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

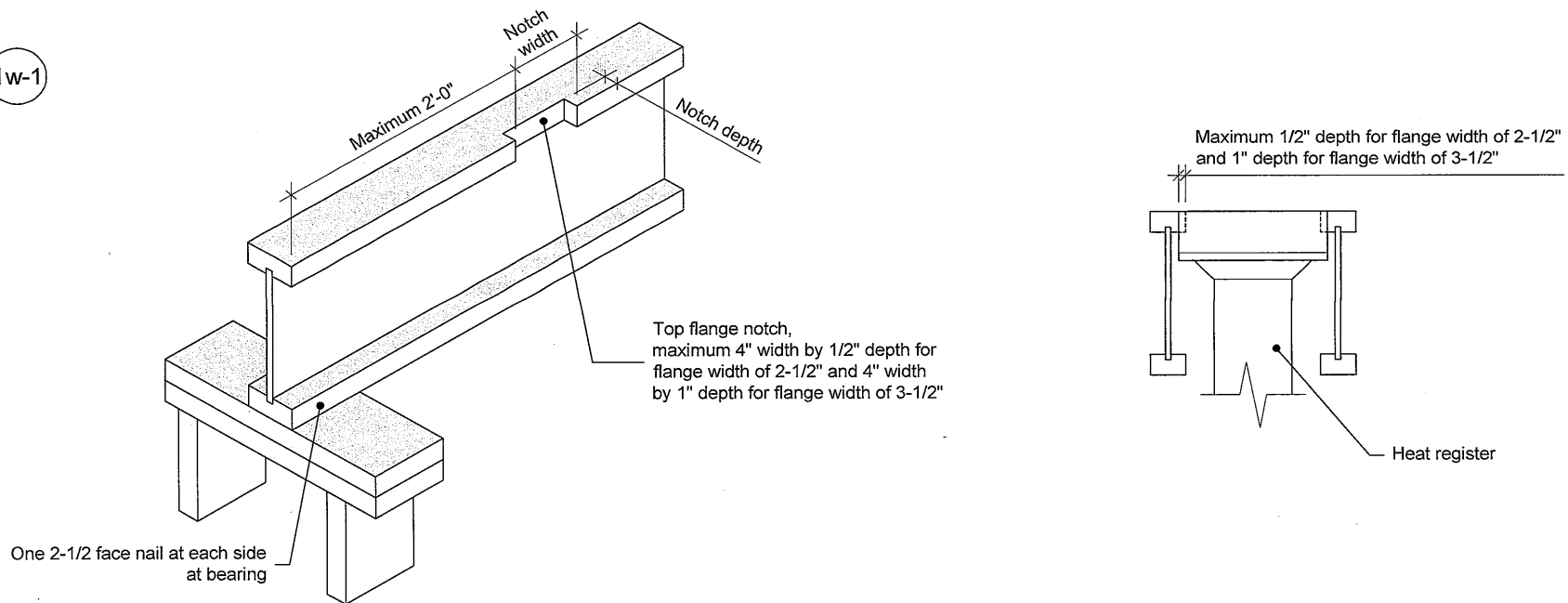
Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced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

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



Revised April 12, 2012

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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.

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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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2018-04-10

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