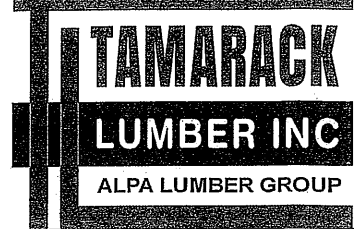


Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
3	H1	IUS2.56/11.88
5	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4C	HUC410
3	H5	HU312-2



FROM PLAN DATED: MAY 13, 2020

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4500

ELEVATION: A,B

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: L.D.

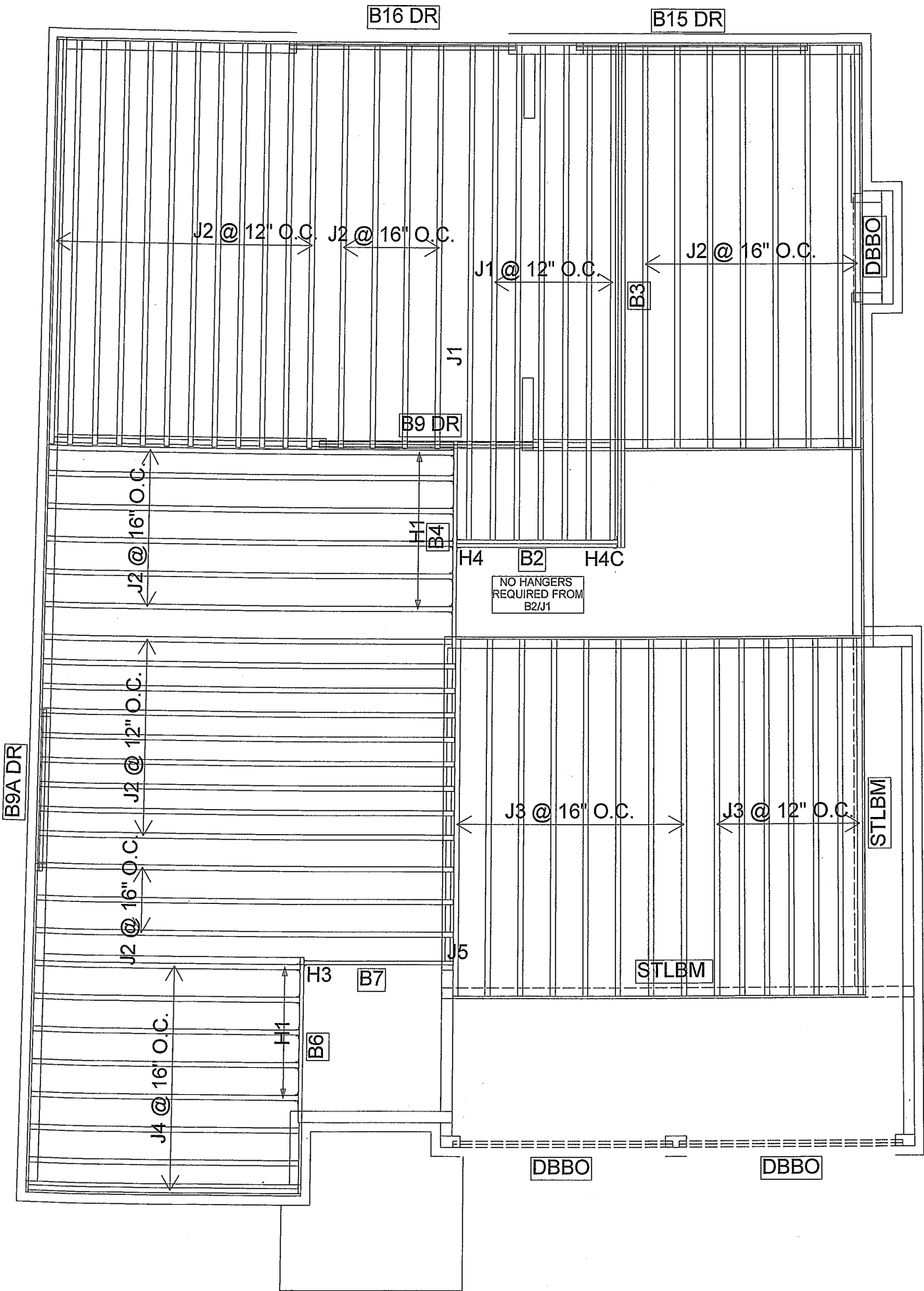
NOTES:
REFER TO THE NORDIC **INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERFERENCE OF UNIFORM LOAD BEARING WALLS. **MULTIPLY SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE **CANTILEVERED JOISTS** INCLUDING **CANTILEVERED JOISTS** INCLUDING **CANTILEVERED JOISTS** OVER BRICK REQ. I-JOIST BLOCKING BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **CUT OPENINGS** SEE FIGURE 7 TABLES 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

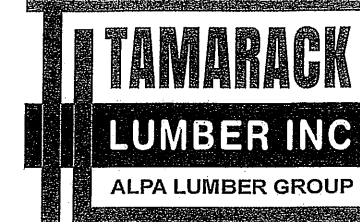
DATE: 2020-09-02

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	22-00-00	11 7/8" NI-40x	1	7
J2	18-00-00	11 7/8" NI-40x	1	42
J3	16-00-00	11 7/8" NI-40x	1	15
J4	12-00-00	11 7/8" NI-40x	1	8
J5	2-00-00	11 7/8" NI-40x	1	1
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9A DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B7	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4C	HUC410
1	H4	HGUS410



FROM PLAN DATED: JULY 13, 2020

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4500

ELEVATION: C

LOT:

CITY: RICHMOND HILL

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 2x2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTI SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1 **CANTILEVERED JOISTS** INCLUDING **CAN OVER BRICK** REQ. I-JOIST BLOCKING AT BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FI CUT OPENINGS** SEE FIGURE 7 TABLES OF THE INSTALLATION GUIDE. **CERAMIC** APPLICATION AS PER O.B.C. 9.30.6

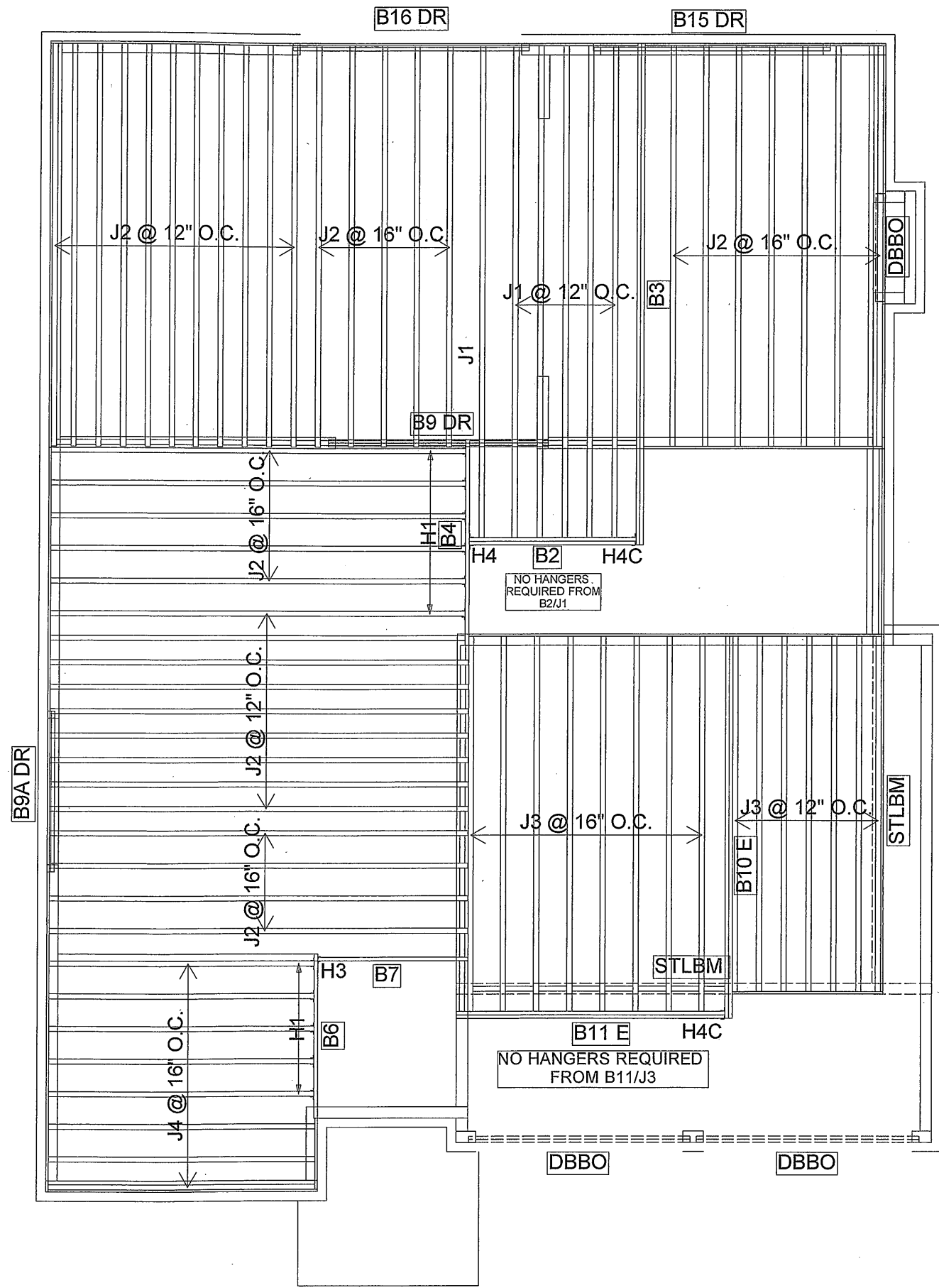
LOADING:

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: 2020-09-02

2nd FLOOR

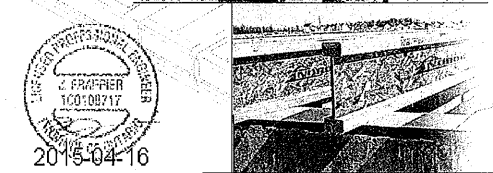
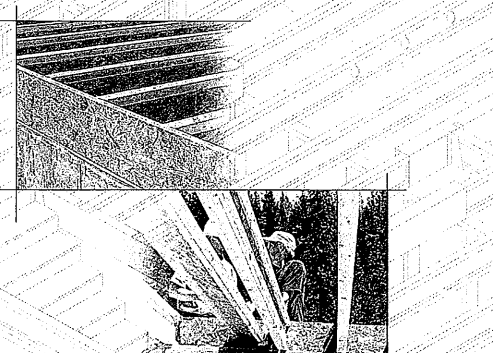


Products				
PlotID	Length	Product	Plies	Net Qty
J1	22-00-00	11 7/8" NI-40x	1	6
J2	18-00-00	11 7/8" NI-40x	1	42
J3	16-00-00	11 7/8" NI-40x	1	15
J4	12-00-00	11 7/8" NI-40x	1	8
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9A DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B10 E	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11 E	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B7	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/11.88
1	H3	HUS1.81/10
2	H4C	HUC410
1	H4	HGUS410

INSTALLATION GUIDE

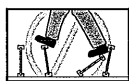
FOR RESIDENTIAL FLOORS



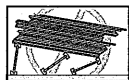
Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

WARNING

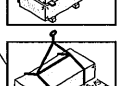
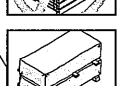
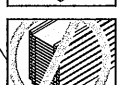
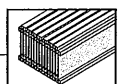
I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

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

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 simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- 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 C08-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm, 1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

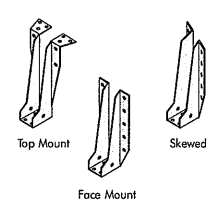
SIMPLE AND MULTIPLE SPANS

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	15'-1"	14'-2"	13'-9"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	Ni-40x	16'-1"	15'-2"	14'-9"	14'-9"	17'-3"	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'-3"	19'-4"
14"	Ni-20	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	Ni-40x	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	Ni-60	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-6"	19'-8"	19'-4"
	Ni-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-2"
	Ni-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
16"	Ni-20	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	Ni-40x	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"	22'-11"	23'-0"
	Ni-80	23'-11"	22'-1"	21'-1"	21'-2"	26'-5"	24'-5"	23'-4"	23'-4"
	Ni-90	24'-5"	22'-6"	21'-5"	21'-6"	26'-11"	24'-10"	23'-9"	23'-9"
	Ni-90x	24'-8"	22'-9"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

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



WEB STIFFENERS

RECOMMENDATIONS:

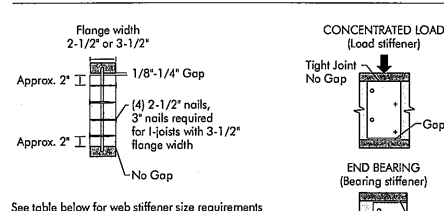
■ A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.

■ A **bearing stiffener** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.

■ A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange 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

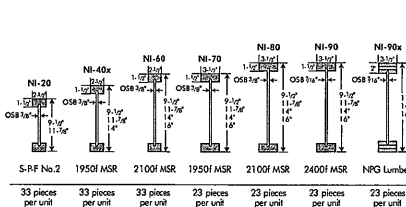


See table below for web stiffener size requirements

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



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 forest to finished product, reflects our commitment to quality.

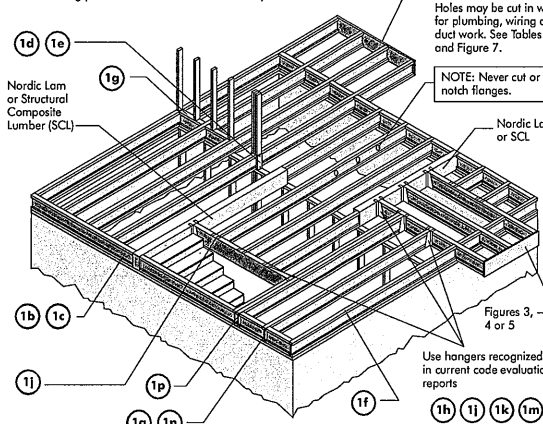
Nordic Engineered Wood I-joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength and longer span carrying capacity.

INSTALLING NORDIC I-JOISTS

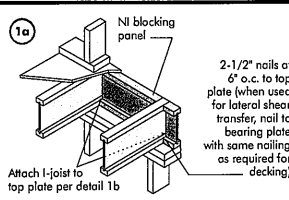
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
- I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span applications must be level.
- Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
- When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
- Leave a 1/16-inch gap between the I-joist end and a header.
- Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include truck 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 on I-joist-compatible depths 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

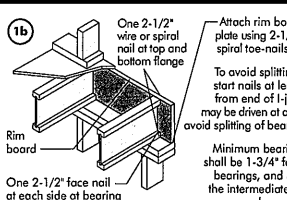
Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.



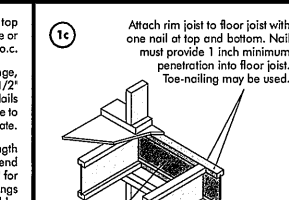
All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



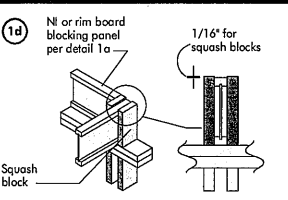
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



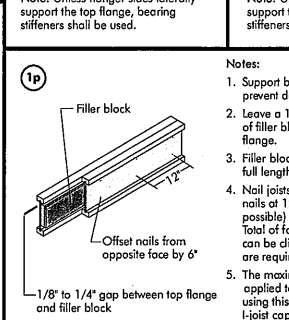
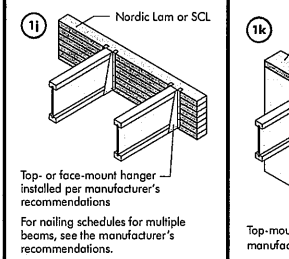
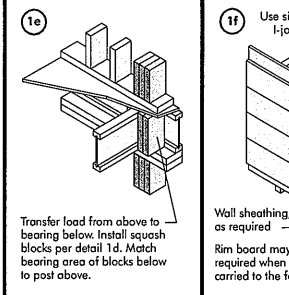
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



Minimum 1-3/4" bearing required

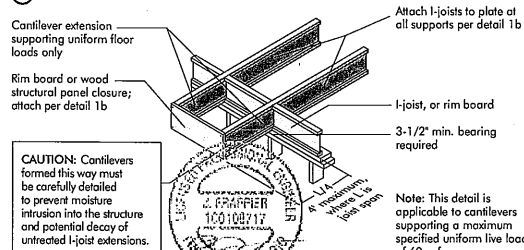


Provide lateral bracing per detail 1a, 1b, or 1c

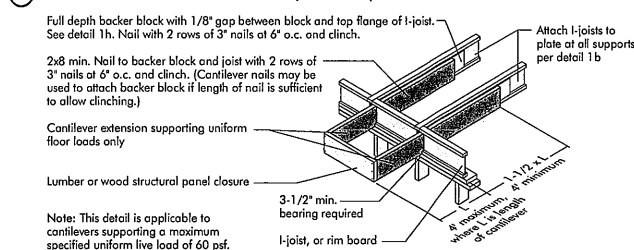


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

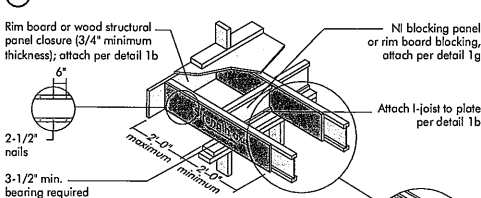


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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\"/>

4b Alternate Method 2 — DOUBLE I-JOIST

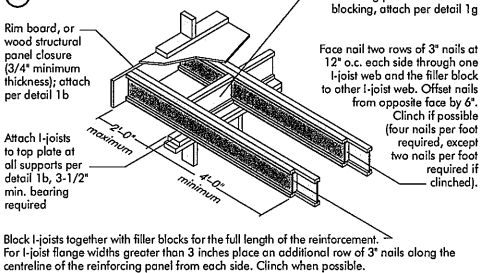


FIGURE 4 (continued)



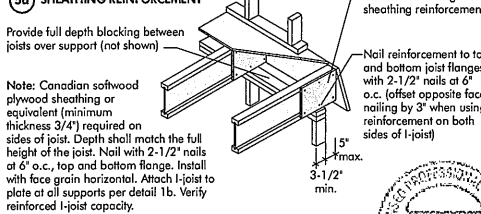
CANTILEVER REINFORCEMENT METHODS ALLOWED

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 = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	X	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	1	X	X	X
	28	N	N	1	N	N	1	2	N	1	1	1	1
	30	N	N	1	N	N	1	2	N	1	2	X	X
	32	N	N	1	1	N	N	1	2	N	1	2	X
	34	N	N	1	2	N	1	2	X	N	1	2	X
14"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	N	N	1	N	N	1	N	1	1
	30	N	N	1	N	N	1	N	N	1	N	1	2
	32	N	N	1	N	N	1	N	N	1	N	1	2
	34	N	N	1	N	N	1	N	N	1	N	1	2
16"	26	N	N	1	N	N	1	2	N	1	1	1	X
	28	N	N	1	N	N	1	2	N	1	1	2	X
	30	N	N	1	N	N	1	2	N	1	1	2	X
	32	N	N	1	N	N	1	2	N	1	1	2	X
	34	N	N	1	N	N	1	2	N	1	1	2	X

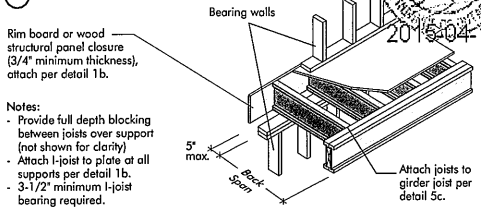
- N = No reinforcement required.
- Ni reinforced with 3/4" wood structural panel on one side only.
- Ni reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, 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 between 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 if a truss is used.
- Conflicted 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

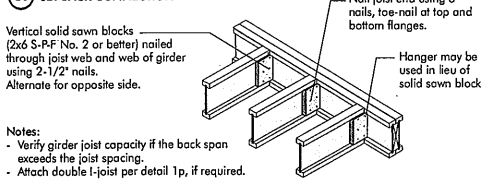


FIGURE 5 (continued)



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	X	X	X	X
	30	1	X	X	X	2	X	X	X	X	X	X	X
	32	2	X	X	X	X	X	X	X	X	X	X	X
	34	2	X	X	X	X	X	X	X	X	X	X	X
11-7/8"	26	N	2	X	X	1	X	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X	2	X	X	X
	30	N	2	X	X	1	X	X	X	2	X	X	X
	32	1	2	X	X	X	X	X	X	2	X	X	X
	34	1	2	X	X	2	X	X	X	2	X	X	X
14"	26	N	1	X	X	2	X	X	X	2	X	X	X
	28	N	1	X	X	2	X	X	X	1	X	X	X
	30	N	2	X	X	1	2	X	X	1	2	X	X
	32	N	2	X	X	1	X	X	X	2	X	X	X
	34	N	2	X	X	1	X	X	X	2	X	X	X
16"	26	N	2	X	X	1	X	X	X	2	X	X	X
	28	N	2	X	X	1	X	X	X	2	X	X	X
	30	N	2	X	X	1	X	X	X	2	X	X	X
	32	N	2	X	X	1	X	X	X	2	X	X	X
	34	N	2	X	X	1	X	X	X	2	X	X	X

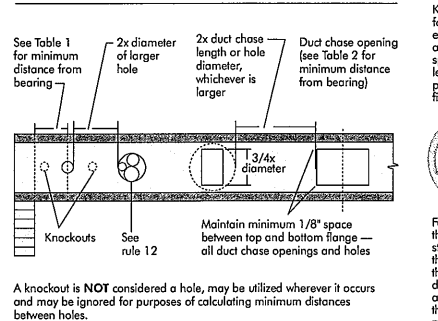
- N = No reinforcement required.
- Ni reinforced with 3/4" wood structural panel on one side only.
- Ni reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, 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 between 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 if a truss is used.
- Conflicted 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 longest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is NOT considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at 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.)																Span adjustment factor
		Round hole diameter (in.)																
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4		
9-1/2"	N-20	0-7"	1-6"	2-10"	4-5"	5-8"	6-0"	...	...	...	...	...	...	...	...	...	13-6"
	N-40	0-7"	1-6"	2-10"	4-5"	5-8"	6-0"	...	...	...	...	...	...	...	...	...	14-9"
	N-60	1-3"	2-6"	4-0"	5-4"	7-0"	8-4"	...	...	...	...	...	...	...	...	...	14-11"
	N-70	1-3"	2-6"	4-0"	5-4"	7-0"	8-4"	...	...	...	...	...	...	...	...	...	15-9"
	N-80	2-3"	3-4"	5-0"	6-4"	8-0"	9-4"	...	...	...	...	...	...	...	...	...	15-9"
11-7/8"	N-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-2"	7-9"	...	...	...	...	...	...	15-6"
	N-40	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-2"	7-9"	8-4"	...	...	...	...	...	16-9"
	N-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	10-0"	...	...	...	...	...	16-9"
	N-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-0"	8-4"	10-0"	11-2"	...	...	...	...	...	...	17-9"
	N-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-0"	10-3"	11-4"	...	...	...	...	...	...	17-11"
14"	N-20	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	10-2"	...	...	...	...	...	18-0"
	N-40	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	10-2"	10-2"	...	...	...	...	18-0"
	N-60	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	10-2"	10-2"	10-2"	...	...	...	18-0"
	N-70	0-8"	1-10"	3-4"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-0"	...	...	...	19-2"
	N-80	0-8"	1-10"	3-4"	4-5"	6-0"	7-6"	9-0"	10-9"	10-9"	12-4"	13-4"	15-0"	...	...	...	19-9"
16"	N-20	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	10-2"	10-2"	10-2"	10-2"	...	...	18-0"
	N-40	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	10-2"	10-2"	10-2"	10-2"	10-2"	...	18-0"	
	N-60	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	10-2"	10-2"	10-2"	10-2"	10-2"	10-2"	18-0"	
	N-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-8"	8-8"	9-9"	12-0"	12-4"	14-0"	15-6"	20-0"	
	N-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-9"	11-0"	12-5"	12-5"	13-9"	14-5"	16-0"	21-0"	
	N-90	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-0"	7-9"	8-4"	10-0"	10-4"	12-0"	12-0"	14-0"	21-0"	

- 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:
D_{reduced} = $\frac{D_{actual}}{S_{AF}} \times D$
Where:
D_{reduced} = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications.
D_{actual} = The actual measured span distance between the inside faces of supports (ft.).
S_{AF} = Span



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

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

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

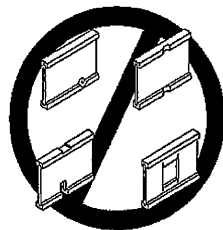
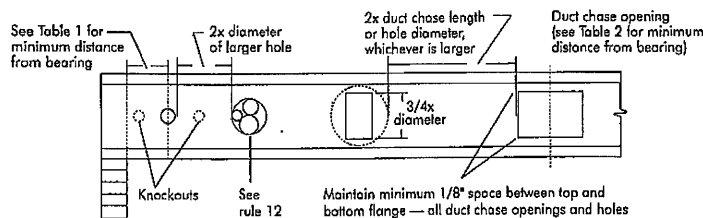
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

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			
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"			
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"			
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"			
	NI-70	5-1"	5-5"	6-0"	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"	8-9"	9-3"	9-8"	10-2"	10-8"			
14"	NI-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-7"	10-11"			
	NI-40x	7-7"	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"	12-3"	13-0"			
	NI-80	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"			
16"	NI-20	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"			
	NI-40x	9-2"	9-6"	10-0"	10-6"	11-0"	11-5"	11-9"	12-4"	12-11"			
	NI-60	9-4"	9-9"	10-3"	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-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
- The above table is based on the I-joists 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 prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

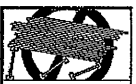
Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

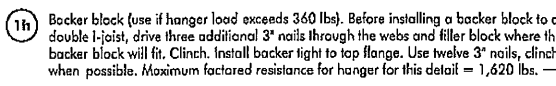
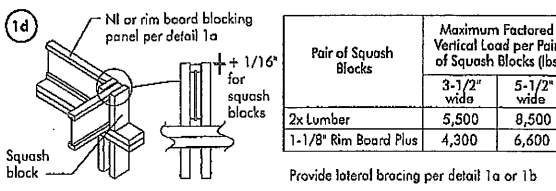
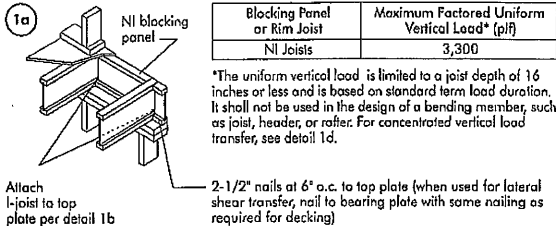
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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



PRODUCT WARRANTY

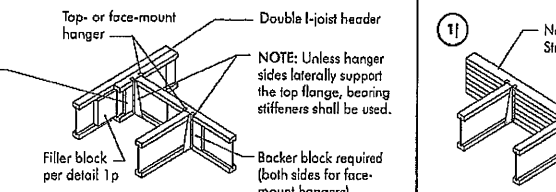
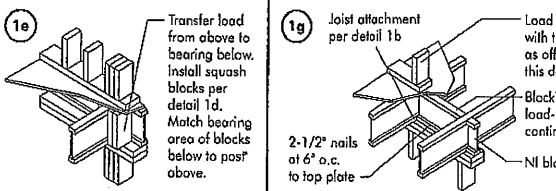
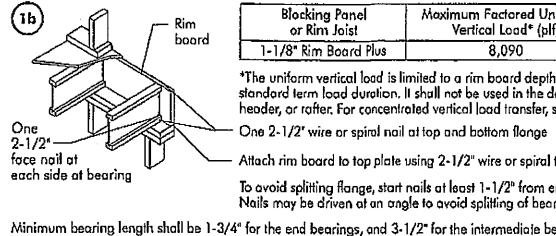
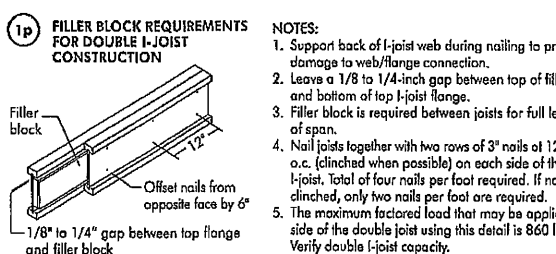
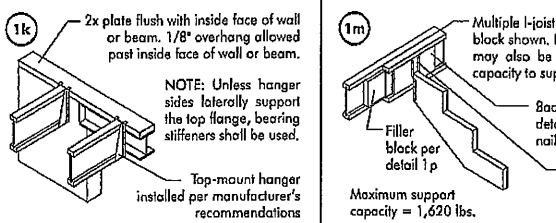
Chantiers Chibougamau guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

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

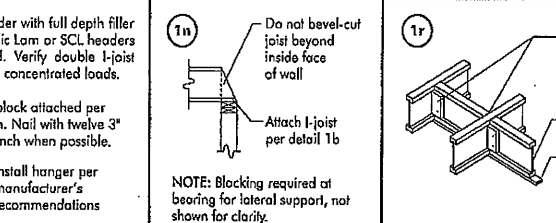


Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* 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-C325 or CAN/CSA-C437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



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



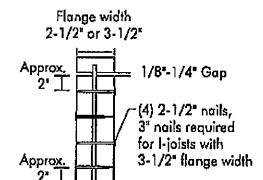
Flange Size	Net Depth	Filler Block Size
9-1/2"	11-7/8"	2-1/8" x 6"
2-1/2" x 1-1/2"	16"	2-1/8" x 10"
		2-1/8" x 12"
3-1/2" x 1-1/2"	11-7/8"	3" x 6"
	14"	3" x 8"
	16"	3" x 10"
3-1/2" x 2"	11-7/8"	3" x 7"
	14"	3" x 9"
	16"	3" x 11"

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

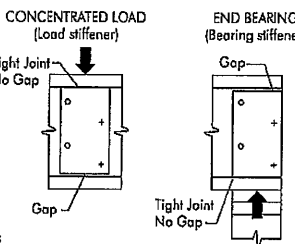
WEB STIFFENERS

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.



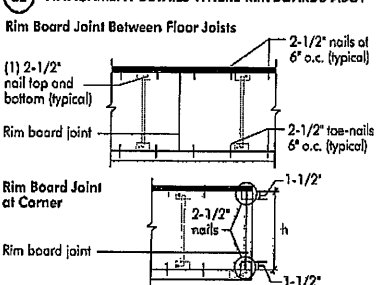
See the adjacent table for web stiffener size requirements



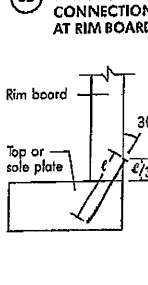
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

RIM BOARD INSTALLATION DETAILS

ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



TOE-NAIL CONNECTION AT RIM BOARD



NORDIC STRUCTURES

COMPANY
Aug. 7, 2020 16:50

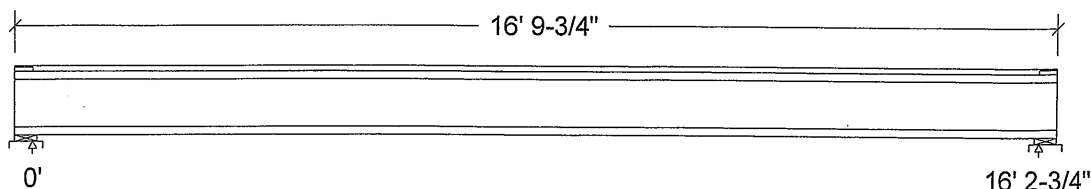
PROJECT
J1 - 1ST FLOOR.wwb

Design Check Calculation Sheet Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	216		216
Live	433		433
Factored:			
Total	920		920
Bearing:			
Capacity			
Joist	2336		2336
Support	7744		7744
Des ratio			
Joist	0.39		0.39
Support	0.12		0.12
Load case	#2		#2
Length	4-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.15

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

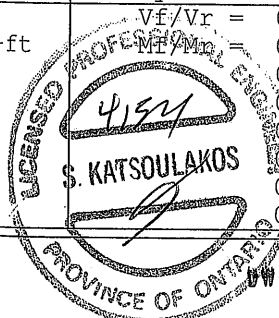
Supports: All - Lumber Sill plate, No.1/No.2

Total length: 16' 9-3/4"; Clear span: 16' 1"; 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 = 920	Vr = 2336	lbs	Vf/Vr = 0.39
Moment (+)	Mf = 3731	Mr = 6255	lbs-ft	Mf/Mr = 0.60
Perm. Defl'n	0.10 = < L/999	0.54 = L/360	in	0.19
Live Defl'n	0.21 = L/934	0.41 = L/480	in	0.51
Total Defl'n	0.31 = L/623	0.81 = L/240	in	0.39
Bare Defl'n	0.25 = L/774	0.54 = L/360	in	0.47
Vibration	Lmax = 16'-2.8	Lv = 18'-1.3	ft	0.90
Defl'n	= 0.028	= 0.039	in	0.71



PROV. NO. TAM8695 - 21
STRUCTURAL
COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

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

CALCULATIONS:E_Ieff = 459.76 lb-in² K= 6.18e06 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...) CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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



NORDIC STRUCTURES

COMPANY
Sep. 2, 2020 14:28

PROJECT
J1 - 2ND FLOOR CANT

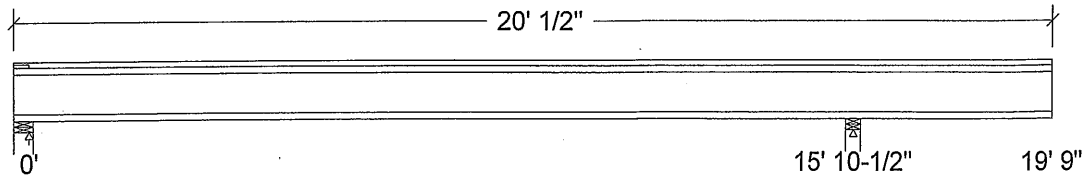
Design Check Calculation Sheet

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

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



Unfactored:					
Dead	199		328		
Live	423		655		
Factored:					
Total	884		1392		
Bearing:					
Capacity					
Joist	2336		4734		
Support	7744		6188		
Des ratio					
Joist	0.38		0.29		
Support	0.11		0.23		
Load case	#4		#2		
Length	4-3/8		3-1/2		
Min req'd	1-3/4		3-1/2		
Stiffener	No		No		
KD	1.00		1.00		
KB support	-		-		
fcp sup	769		769		
Kzcp sup	-		-		

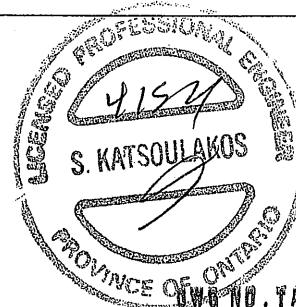
Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

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

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

Total length: 20' 1/2"; Clear span: 15' 7-7/8", 3' 8-3/4"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.



NO. YAM 8696-21
STRUCTURAL
COMPONENT ONLY

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 953	Vr = 2336	lbs	Vf/Vr = 0.41
Moment (+)	Mf = 3446	Mr = 6255	lbs-ft	Mf/Mr = 0.55
Moment (-)	Mf = 851	Mr = 6255	lbs-ft	Mf/Mr = 0.14
Deflection:				
Interior Perm	0.08 = < L/999	0.53 = L/360	in	0.16
Live	0.20 = L/970	0.40 = L/480	in	0.49
Total	0.28 = L/679	0.79 = L/240	in	0.35
Cantil. Perm	-0.05 = L/973	0.26 = L/180	in	0.18
Live	-0.13 = L/349	0.19 = L/240	in	0.69
Total	-0.18 = L/257	0.39 = L/120	in	0.47
Bare Defl'n	-0.16 = L/289	0.26 = L/180	in	0.62
Vibration	Lmax = 15'-10.5	Lv = 17'-8.1	ft	0.90
Defl'n	= 0.029	= 0.041	in	0.71

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	-	-	-	#4
Mr-	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#4

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L
 Moment (+) : LC #4 = 1.25D + 1.5L (pattern: L₋)
 Moment (-) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #4 = 1.0D + 1.0L (pattern: L₋) (live)
 LC #4 = 1.0D + 1.0L (pattern: L₋) (total)
 LC #4 = 1.0D + 1.0L (pattern: L₋) (bare joist)
 Bearing : Support 1 - LC #4 = 1.25D + 1.5L (pattern: L₋)
 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} = 447.63 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.



NO. TAW B696-21
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL C - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B10 E(i6608)

City, Province, Postal Code: RICHMOND HILL

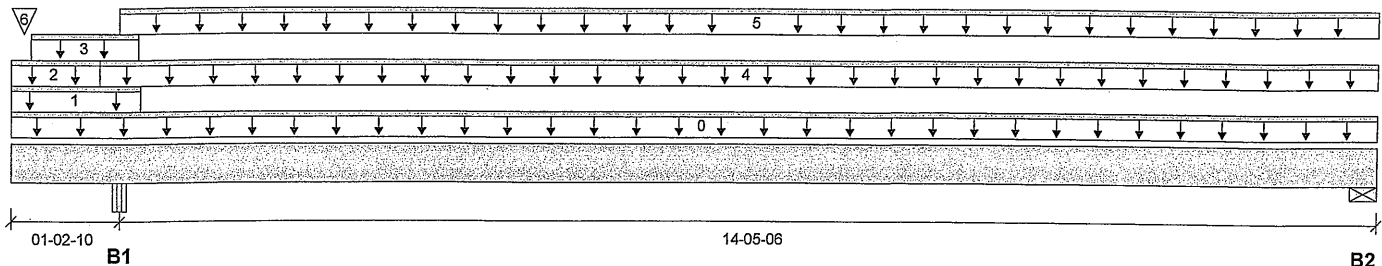
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 15-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	312 / 0	1169 / 0	666 / 0	
B2, 4-3/8"	200 / 8	127 / 0	0 / 43	

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	15-08-00	Top		12			00-00-00
1	E50(i5833)	Unf. Lin. (lb/ft)	L	00-00-00	01-05-08	Top		81			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-00-00	Top	6				n/a
3	E50(i5833)	Unf. Lin. (lb/ft)	L	00-02-12	01-05-04	Top		45	75		n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-00-00	15-08-00	Top	5	3			n/a
5	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-02-10	15-08-00	Top	22	11			n/a
6	-	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	105	735	533		n/a

Controls Summary

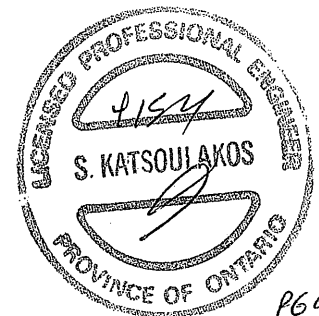
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1308 ft-lbs	35392 ft-lbs	3.7%	45	09-03-09
Neg. Moment	-2130 ft-lbs	-35392 ft-lbs	6.0%	49	01-02-10
End Shear	359 lbs	14464 lbs	2.5%	45	14-03-12
Cont. Shear	1701 lbs	14464 lbs	11.8%	49	00-00-02
Total Load Deflection	L/999 (0.029")	n/a	n/a	108	08-11-02
Live Load Deflection	L/999 (0.025")	n/a	n/a	160	08-04-07
Total Neg. Defl.	L/999 (-0.015")	n/a	n/a	122	05-07-00
Max Defl.	0.029"	n/a	n/a	108	08-11-02
Span / Depth	14.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	2772 lbs	28.3%	12.4%	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	458 lbs	4.9%	2.5%	Spruce-Pine-Fir

Cautions

Concentrated side load(s) 3 are closer than 18" from end of member. Please consult a technical representative or Professional of Record.



STRUCTURAL COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Flush Beams\B10 E(i6608) (Flush Beam)

Dry | 2 spans | L cant.

September 2, 2020 15:16:08

BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL C - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B10 E(i6608)

City, Province, Postal Code: RICHMOND HILL

Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Notes

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

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

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.

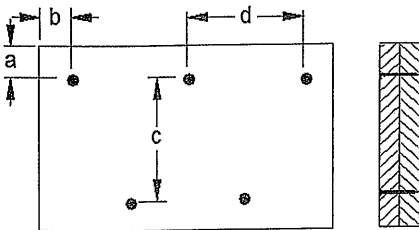
Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 3"

Calculated Side Load = 381.8 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIKAL



OWN NO. TAM B697-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL C - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B11 E(i6606)

City, Province, Postal Code: RICHMOND HILL

Specifier:

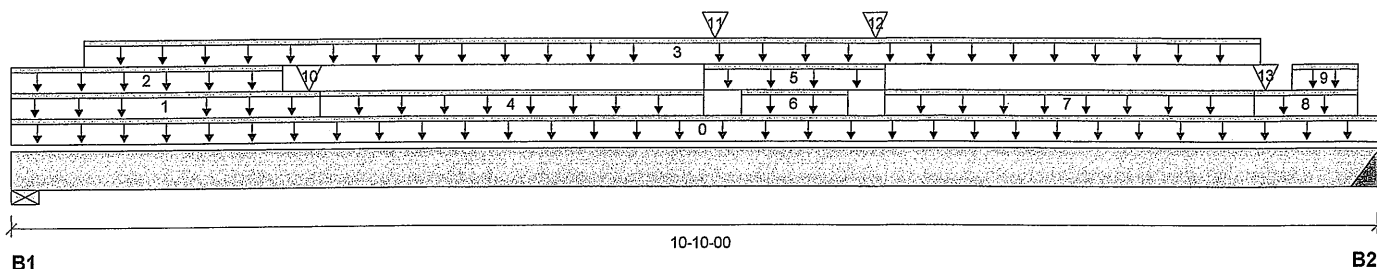
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 10-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	121 / 0	808 / 0	555 / 0	
B2, 2-1/2"	106 / 0	727 / 0	511 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-10-00	Top		12			00-00-00
1	E51(i6508)	Unf. Lin. (lb/ft)	L	00-00-00	02-05-00	Top		81			n/a
2	E51(i6508)	Unf. Lin. (lb/ft)	L	00-00-00	02-01-08	Top		52	100		n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-06-12	09-10-08	Top	24	12			n/a
4	E52(i6509)	Unf. Lin. (lb/ft)	L	02-05-00	05-05-00	Top		41			n/a
5	E53(i6510)	Unf. Lin. (lb/ft)	L	05-05-00	06-10-00	Top		81			n/a
6	E53(i6510)	Unf. Lin. (lb/ft)	L	05-08-08	06-06-08	Top		52	100		n/a
7	E54(i6511)	Unf. Lin. (lb/ft)	L	06-10-00	09-10-00	Top		41			n/a
8	E48(i5777)	Unf. Lin. (lb/ft)	L	09-10-00	10-08-00	Top		81			n/a
9	E48(i5777)	Unf. Lin. (lb/ft)	L	10-01-08	10-08-00	Top		52	100		n/a
10	E51(i6508)	Conc. Pt. (lbs)	L	02-04-00	02-04-00	Top		122	181		n/a
11	E53(i6510)	Conc. Pt. (lbs)	L	05-06-00	05-06-00	Top		120	177		n/a
12	E53(i6510)	Conc. Pt. (lbs)	L	06-09-00	06-09-00	Top		122	181		n/a
13	E48(i5777)	Conc. Pt. (lbs)	L	09-11-00	09-11-00	Top		120	177		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4670 ft-lbs	35392 ft-lbs	13.2%	13	05-06-00
End Shear	1632 lbs	14464 lbs	11.3%	13	09-07-10
Total Load Deflection	L/999 (0.067")	n/a	n/a	35	05-06-00
Live Load Deflection	L/999 (0.031")	n/a	n/a	51	05-06-00
Max Defl.	0.067"	n/a	n/a	35	05-06-00
Span / Depth	10.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	1964 lbs	16.6%	8.4%	Spruce-Pine-Fir
B2	Hanger 2-1/2" x 3-1/2"	1781 lbs	n/a	16.7%	HUC410

Cautions

Header for the hanger HUC410 is a Double 1-3/4" x 11-7/8" LVL Beam.

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


DWG NO. TAM8698 -21
**STRUCTURAL
COMPONENT ONLY**



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

PASSED

2ND FLR FRAMING\Flush Beams\B11 E(i6606) (Flush Beam)

Dry | 1 span | No cant.

September 2, 2020 15:16:08

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4500 - EL C - 2ND FLOOR.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B11 E(i6606)

Specifier:

Designer: L.D.

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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

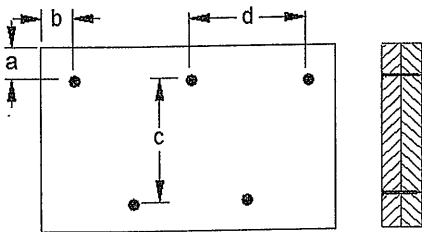
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

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. TAM8698-21
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

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B20(i6637)

City, Province, Postal Code: RICHMOND HILL

Specifier:

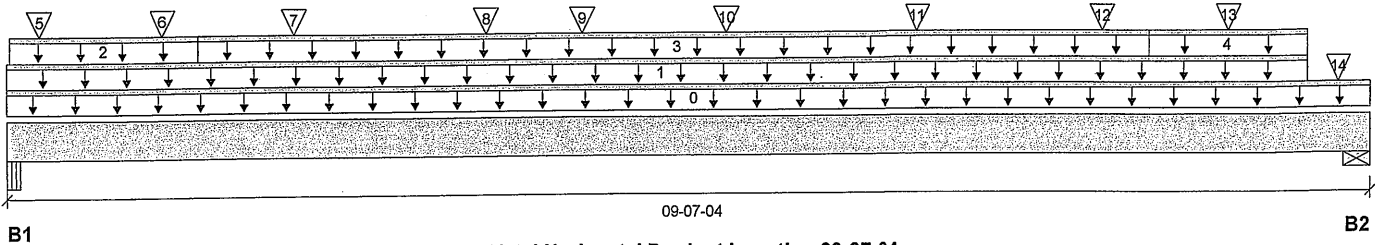
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	3046 / 0	2013 / 0	18 / 0	
B2, 3-1/2"	2838 / 0	2089 / 0	324 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-07-04	Top		12			00-00-00
1	4(i320)	Unf. Lin. (lb/ft)	L	00-00-00	09-01-12	Top		81			n/a
2	4(i320)	Unf. Lin. (lb/ft)	L	00-00-04	01-04-04	Top	289	145			n/a
3	4(i320)	Unf. Lin. (lb/ft)	L	01-04-04	08-00-04	Top	332	166			n/a
4	4(i320)	Unf. Lin. (lb/ft)	L	08-00-04	09-01-12	Top	300	150			n/a
5	B3 H(i6634)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		40			n/a
6	J1 DJ(i6633)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	405	202			n/a
7	J2(i6629)	Conc. Pt. (lbs)	L	02-00-04	02-00-04	Top	344	172			n/a
8	J2(i6632)	Conc. Pt. (lbs)	L	03-04-04	03-04-04	Top	306	153			n/a
9	J1 DJ(i6647)	Conc. Pt. (lbs)	L	04-00-04	04-00-04	Top	304	152			n/a
10	J1(i6638)	Conc. Pt. (lbs)	L	05-00-04	05-00-04	Top	385	193			n/a
11	J1(i6631)	Conc. Pt. (lbs)	L	06-04-04	06-04-04	Top	440	220			n/a
12	J1(i6642)	Conc. Pt. (lbs)	L	07-08-04	07-08-04	Top	368	184			n/a
13	J1 DJ(i6645)	Conc. Pt. (lbs)	L	08-07-00	08-07-00	Top	351	336	205		n/a
14	E7(i125)	Conc. Pt. (lbs)	L	09-04-08	09-04-08	Top		120	137		n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	15864 ft-lbs	35392 ft-lbs	44.8%	1	05-00-04
End Shear	6576 lbs	14464 lbs	45.5%	1	08-03-14
Total Load Deflection	L/635 (0.171")	n/a	37.8%	35	04-10-12
Live Load Deflection	L/999 (0.104")	n/a	n/a	51	04-10-12
Max Defl.	0.171"	n/a	n/a	35	04-10-12
Span / Depth	9.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	4-1/2" x 3-1/2"	7102 lbs	84.4%	37.0%	Unspecified
B2 Wall/Plate	3-1/2" x 3-1/2"	7193 lbs	95.4%	48.1%	Spruce-Pine-Fir



BWG NO. 7AM 8699-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B20(i6637) (Flush Beam)

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 2, 2020 16:43:11

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

File name: 4500 - EL A,B,C.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B20(i6637)
Specifier:
Designer: L.D.
Company:

Notes

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

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

Calculations assume member is fully braced.

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

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

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

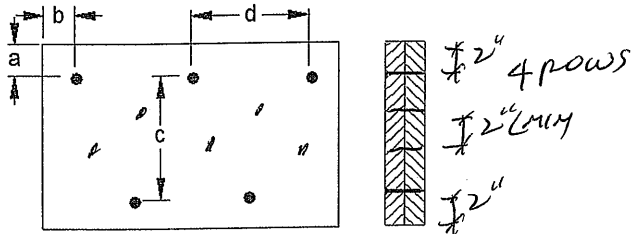
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



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

Calculated Side Load = 1057.5 lb/ft

Connectors are: Nails

3 1/2" ARDOX SPIRAL



ENG NO. TAM 0699-21
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****PASSED****1ST FLR FRAMING\Flush Beams\B3 H(i6634) (Flush Beam)**

Dry | 1 span | No cant.

September 2, 2020 16:43:11

BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3 H(i6634)

City, Province, Postal Code: RICHMOND HILL

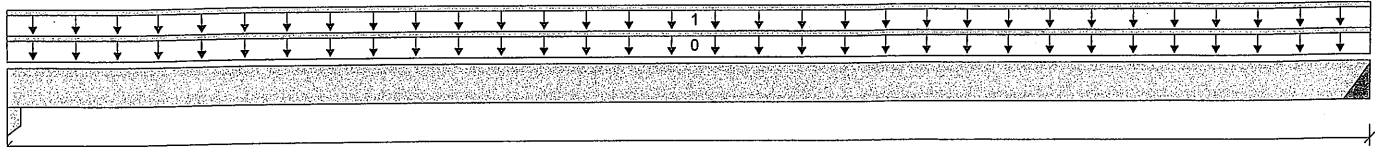
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

04-03-09

B2

Total Horizontal Product Length = 04-03-09

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	29 / 0	40 / 0		
B2, 2-1/2"	30 / 0	41 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-09	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-03-09	Top	14	7			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	92 ft-lbs	35392 ft-lbs	0.3%	1	02-01-06
End Shear	43 lbs	14464 lbs	0.3%	1	01-01-10
Total Load Deflection	L/999 (0")	n/a	n/a	4	02-01-06
Live Load Deflection	L/999 (0")	n/a	n/a	5	02-01-06
Max Defl.	0"	n/a	n/a	4	02-01-06
Span / Depth	4.1				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Column	1-3/4" x 3-1/2"	94 lbs	1.9%	1.3%	Unspecified
B2 Hanger	2-1/2" x 3-1/2"	96 lbs	n/a	0.9%	HUC410

Cautions

Header for the hanger HUC410 is a Double 1-3/4" x 11-7/8" LVL Beam.

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

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. 1AM 8700-21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B3 H(i6634) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

September 2, 2020 16:43:11

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3 H(i6634)

City, Province, Postal Code: RICHMOND HILL

Specifier:

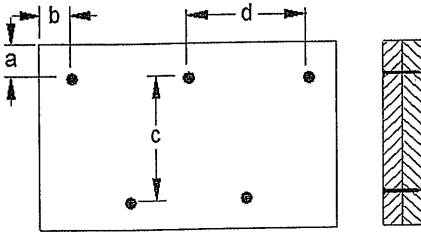
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8" *cf*

b minimum = 3"

d = ~~8~~ 8" *cf*

Connectors are: *A* Nails

3 1/2" ARDOX SPIRAL



pg 4
DWG NO. **TAM B700-21**
STRUCTURAL
COMPONENT ONLY

Disclosure

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



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Dropped Beams\B15 DR(i5066) (Dropped Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B15 DR(i5066)

City, Province, Postal Code: RICHMOND HILL

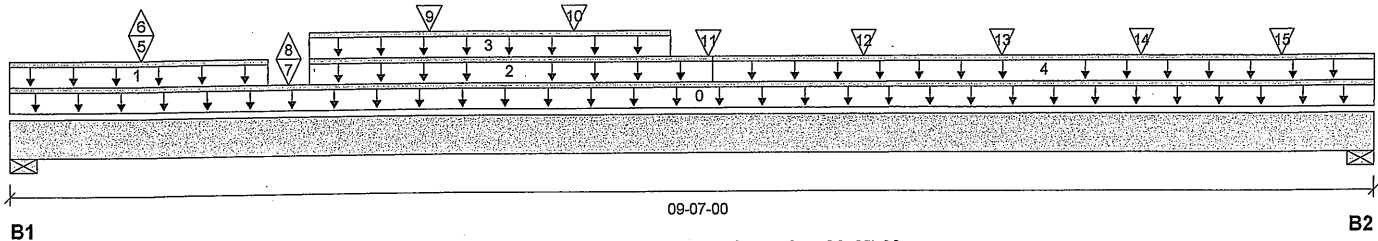
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1433 / 127	1424 / 0	667 / 0	
B2, 3-1/2"	1508 / 26	1220 / 0	345 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-07-00	Top		10			00-00-00
1	R1(i4137)	Unf. Lin. (lb/ft)	L	00-00-00	01-09-08	Top		136	128		n/a
2	R1(i4198)	Unf. Lin. (lb/ft)	L	02-01-00	04-10-08	Top		81			n/a
3	R1(i4198)	Unf. Lin. (lb/ft)	L	02-01-00	04-07-00	Top		56	128		n/a
4	R1(i4198)	Unf. Lin. (lb/ft)	L	04-10-08	09-07-00	Top		41			n/a
5	J1(i5132)	Conc. Pt. (lbs)	L	00-11-00	00-11-00	Top	333	155			n/a
6	J1(i5132)	Conc. Pt. (lbs)	L	00-11-00	00-11-00	Top	-23				n/a
7	B3(i5106)	Conc. Pt. (lbs)	L	01-11-04	01-11-04	Top	329	223	37		n/a
8	B3(i5106)	Conc. Pt. (lbs)	L	01-11-04	01-11-04	Top	-130				n/a
9	J2(i4126)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top	323	161			n/a
10	J2(i4126)	Conc. Pt. (lbs)	L	03-11-00	03-11-00	Top	326	163			n/a
11	-	Conc. Pt. (lbs)	L	04-10-02	04-10-02	Top	326	396	424		n/a
12	J2(i4126)	Conc. Pt. (lbs)	L	05-11-00	05-11-00	Top	326	163			n/a
13	J2(i4126)	Conc. Pt. (lbs)	L	06-11-00	06-11-00	Top	326	163			n/a
14	J2(i4126)	Conc. Pt. (lbs)	L	07-11-00	07-11-00	Top	326	163			n/a
15	J2(i4126)	Conc. Pt. (lbs)	L	08-11-00	08-11-00	Top	326	163			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10772 ft-lbs	23220 ft-lbs	46.4%	1	04-09-08
End Shear	4113 lbs	11571 lbs	35.5%	1	01-01-00
Total Load Deflection	L/459 (0.238")	n/a	52.3%	58	04-09-08
Live Load Deflection	L/761 (0.144")	n/a	47.3%	85	04-09-08
Max Defl.	0.238"	n/a	n/a	58	04-09-08
Span / Depth	11.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	4596 lbs	28.1%	30.7%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	4133 lbs	25.3%	27.7%	Spruce-Pine-Fir



OWG NO. TAW 8701-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B15 DR(i5066) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B15 DR(i5066)

City, Province, Postal Code: RICHMOND HILL

Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Notes

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

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

CONFORMS TO OBC 2012

Calculations assume unbraced length of Top: 00-10-05, Bottom: 00-10-05.

AMENDED 2020

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

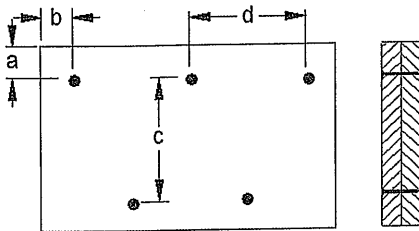
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 3"

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



OWN NO. TAM 8701-21
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.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B16 DR(i5110)

City, Province, Postal Code: RICHMOND HILL

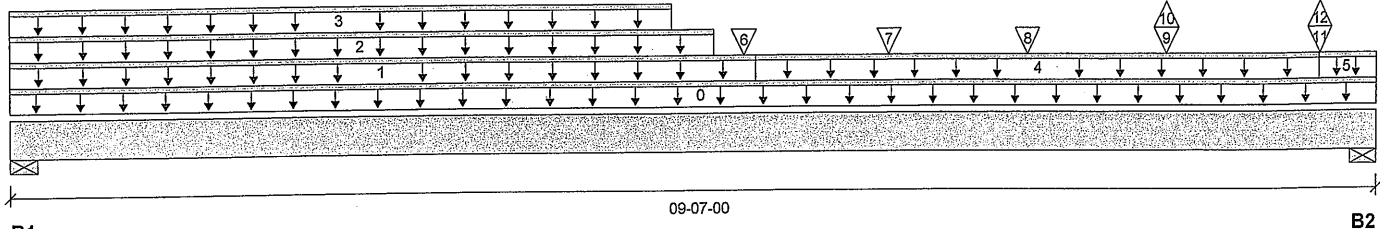
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1700 / 4	1526 / 0	613 / 0	
B2, 3-1/2"	1590 / 39	1409 / 0	619 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-07-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	R1(i4137)	Unf. Lin. (lb/ft)	L	00-00-00	05-02-00	Top		10			n/a
2	R1(i4137)	Unf. Lin. (lb/ft)	L	00-00-00	04-10-08	Top		81	128		n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-07-00	Top	359	180			n/a
4	R1(i4137)	Unf. Lin. (lb/ft)	L	05-02-00	09-02-00	Top		41			n/a
5	R1(i4137)	Unf. Lin. (lb/ft)	L	09-02-00	09-07-00	Top		81			n/a
6	-	Conc. Pt. (lbs)	L	05-01-00	05-01-00	Top	329	327	296		n/a
7	J2(i4475)	Conc. Pt. (lbs)	L	06-01-00	06-01-00	Top	329	165			n/a
8	J2(i4187)	Conc. Pt. (lbs)	L	07-01-00	07-01-00	Top	195	98			n/a
9	J1(i5101)	Conc. Pt. (lbs)	L	08-01-00	08-01-00	Top	463	221			n/a
10	J1(i5101)	Conc. Pt. (lbs)	L	08-01-00	08-01-00	Top	-21				n/a
11	-	Conc. Pt. (lbs)	L	09-02-01	09-02-01	Top	329	315	309		n/a
12	-	Conc. Pt. (lbs)	L	09-02-01	09-02-01	Top	-22				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10219 ft-lbs	23220 ft-lbs	44.0%	1	05-01-00
End Shear	4035 lbs	11571 lbs	34.9%	1	01-01-00
Total Load Deflection	L/480 (0.228")	n/a	50.0%	58	04-08-02
Live Load Deflection	L/798 (0.137")	n/a	45.1%	85	04-08-02
Max Defl.	0.228"	n/a	n/a	58	04-08-02
Span / Depth	11.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	5071 lbs	31.0%	33.9%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	4765 lbs	29.1%	31.9%	Spruce-Pine-Fir



OWN NO. TAM B702-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B16 DR(i5110) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B16 DR(i5110)

City, Province, Postal Code: RICHMOND HILL

Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Notes

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

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

Calculations assume unbraced length of Top: 00-10-10, Bottom: 00-10-10.

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.

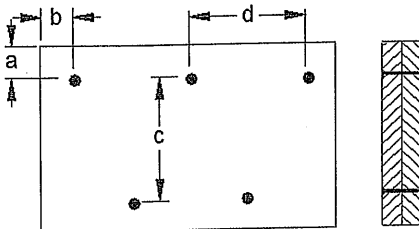
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 5-1/2"

d = 3"

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



OWB NO. YAM 0702-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

2ND FLR FRAMING\Dropped Beams\B9 DR(i5124) (Dropped Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9 DR(i5124)

City, Province, Postal Code: RICHMOND HILL

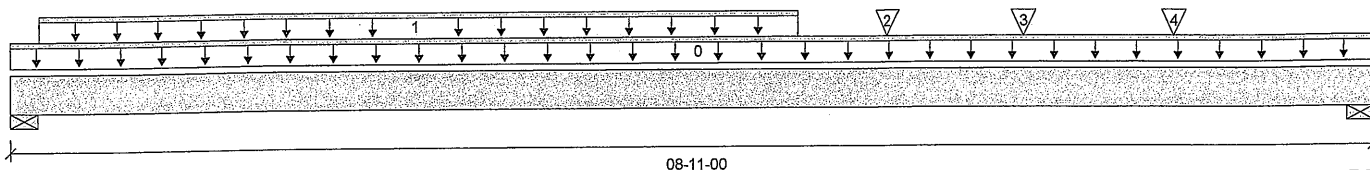
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 08-11-00

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1916 / 0	1016 / 0		
B2, 5-1/2"	2424 / 0	1285 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-11-00	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-02-04	05-01-00	Top	329	165			n/a
2	-	Conc. Pt. (lbs)	L	05-08-00	05-08-00	Top	1558	823			n/a
3	J1(i5101)	Conc. Pt. (lbs)	L	06-07-00	06-07-00	Top	631	315			n/a
4	J1(i5088)	Conc. Pt. (lbs)	L	07-07-00	07-07-00	Top	509	255			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11561 ft-lbs	23220 ft-lbs	49.8%	1	05-08-02
End Shear	5227 lbs	11571 lbs	45.2%	1	07-08-00
Total Load Deflection	L/524 (0.19")	n/a	45.8%	4	04-07-00
Live Load Deflection	L/999 (0.124")	n/a	n/a	5	04-07-00
Max Defl.	0.19"	n/a	n/a	4	04-07-00
Span / Depth	10.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	4144 lbs	25.3%	27.7%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	5242 lbs	20.4%	22.3%	Spruce-Pine-Fir

Notes

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

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

Calculations assume unbraced length of Top: 00-10-02, Bottom: 00-10-02.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. YAM B703-21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Dropped Beams\B9 DR(i5124) (Dropped Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9 DR(i5124)

City, Province, Postal Code: RICHMOND HILL

Specifier:

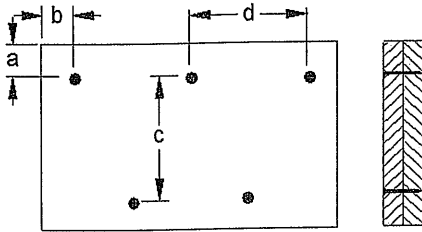
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

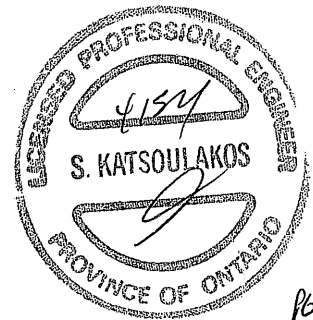
c = 5-1/2" *cl*

b minimum = 3"

d = *20* *B*

Connectors are: *1* Nails

3 1/2" ARDOX SPIRAL



pbz
OWN NO. YAM B703-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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



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

2ND FLR FRAMING\Dropped Beams\B9A DR(i4269) (Dropped Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9A DR(i4269)

City, Province, Postal Code: RICHMOND HILL

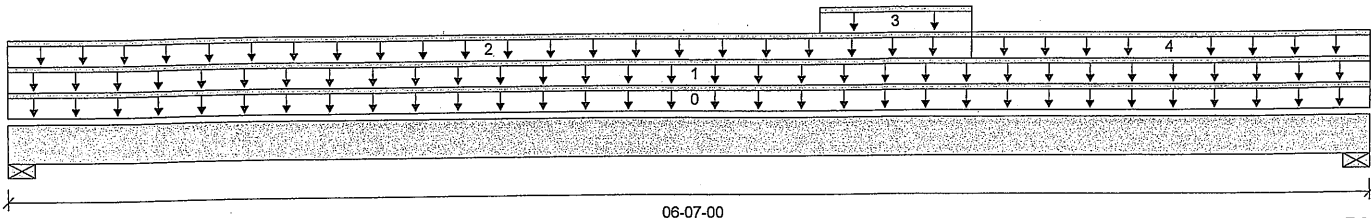
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 06-07-00

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1212 / 0	899 / 0		
B2, 3-1/2"	1189 / 0	835 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-07-00	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	06-07-00	Top	365	182			n/a
2	R1(i4279)	Unf. Lin. (lb/ft)	L	00-00-00	04-07-08	Top		81			n/a
3	R1(i4279)	Unf. Lin. (lb/ft)	L	03-10-08	04-07-08	Top		25			n/a
4	R1(i4279)	Unf. Lin. (lb/ft)	L	04-07-08	06-07-00	Top		41			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3908 ft-lbs	23220 ft-lbs	16.8%	1	03-03-00
End Shear	2091 lbs	11571 lbs	18.1%	1	01-01-00
Total Load Deflection	L/999 (0.037")	n/a	n/a	4	03-03-00
Live Load Deflection	L/999 (0.021")	n/a	n/a	5	03-03-00
Max Defl.	0.037"	n/a	n/a	4	03-03-00
Span / Depth	7.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	2942 lbs	18.0%	19.7%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	2827 lbs	17.3%	18.9%	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 unbraced length of Top: 00-10-05, Bottom: 00-10-05.
 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. 1AM8704-21
 STRUCTURAL
 COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B9A DR(i4269) (Dropped Beam)

Dry | 1 span | No cant.

August 7, 2020 16:52:58

BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9A DR(i4269)

City, Province, Postal Code: RICHMOND HILL

Specifier:

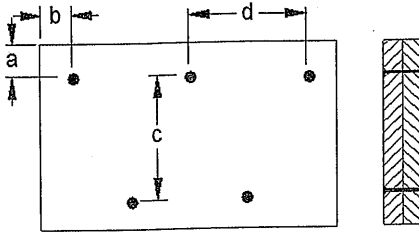
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 8"

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



ENG NO. FAM 8704-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B2(i5075)

City, Province, Postal Code: RICHMOND HILL

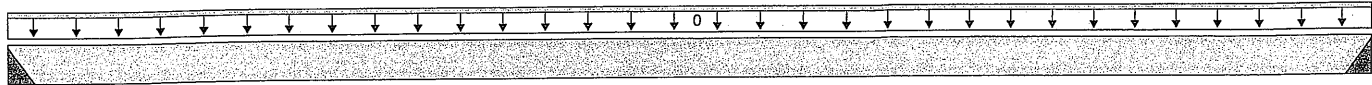
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 06-08-08

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"		40 / 0		
B2, 4"		40 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-08-08	Top		12			00-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	80 ft-lbs	23005 ft-lbs	0.3%	0	03-04-04
End Shear	34 lbs	9401 lbs	0.4%	0	01-03-14
Total Load Deflection	L/999 (0")	n/a	n/a	1	03-04-04
Max Defl.	0"	n/a	n/a	1	03-04-04
Span / Depth	6.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	57 lbs	n/a	0.5%	HGUS410
B2	Hanger 4" x 3-1/2"	57 lbs	n/a	0.5%	HUC410

Cautions

Header for the hanger HGUS410 is a Single 1-3/4" x 11-7/8" LVL Beam.

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

Header for the hanger HUC410 is a Double 1-3/4" x 11-7/8" LVL Beam.

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

Notes

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



UWB NO. FAM 0705-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Flush Beams\B2(i5075) (Flush Beam)

Dry | 1 span | No cant.

August 7, 2020 16:52:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4500 - EL A,B,C.mmdl

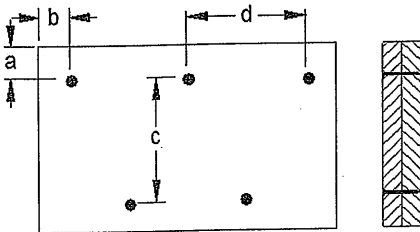
Description: 2ND FLR FRAMING\Flush Beams\B2(i5075)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

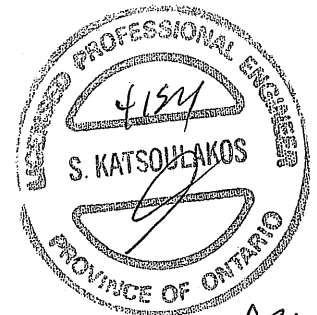
b minimum = 3"

c = 7-7/8"

d = B

Connectors are:

3 1/2" ARDOX SPIRAL



OWN NO. YAM B705-21
STRUCTURAL
COMPONENT ONLY

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

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B3(i5106)

City, Province, Postal Code: RICHMOND HILL

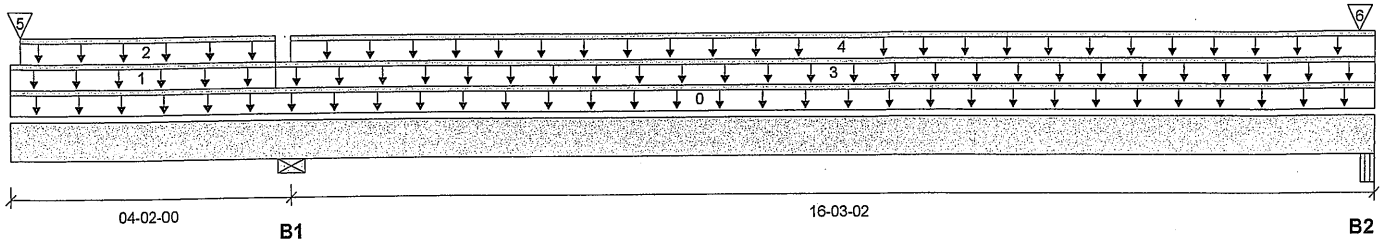
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1461 / 0	933 / 0		
B2, 3-1/2"	330 / 133	221 / 0	37 / 0	

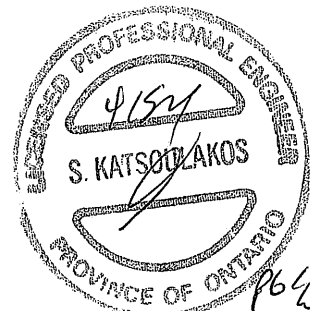
Load Summary

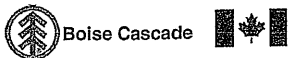
Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	20-05-02	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-11-04	Top	23	12			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-01-12	03-11-04	Top	240	120			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	03-11-04	20-05-02	Top	20	10			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-02-00	20-05-02	Top	20	10			n/a
5	B2(i5075)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top		40			n/a
6	E17(i423)	Conc. Pt. (lbs)	L	20-02-06	20-02-06	Top		40	37		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2434 ft-lbs	35392 ft-lbs	6.9%	3	13-01-08
Neg. Moment	-4872 ft-lbs	-35392 ft-lbs	13.8%	2	04-02-00
End Shear	593 lbs	14464 lbs	4.1%	3	19-01-12
Cont. Shear	1670 lbs	14464 lbs	11.5%	2	02-11-06
Total Load Deflection	2xL/1998 (0.123")	n/a	n/a	79	00-00-00
Live Load Deflection	2xL/1998 (0.1")	n/a	n/a	117	00-00-00
Total Neg. Defl.	L/999 (-0.055")	n/a	n/a	79	09-10-13
Max Defl.	0.072"	n/a	n/a	80	12-08-06
Span / Depth	16.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	3358 lbs	28.4%	14.3%	Spruce-Pine-Fir
B2	Beam 3-1/2" x 3-1/2"	808 lbs	5.4%	5.4%	VL 2.0 3100 SP


 UWG NO. TAM B706-21
 STRUCTURAL
 COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Flush Beams\B3(i5106) (Flush Beam)

Dry | 2 spans | L cant.

August 7, 2020 16:52:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4500 - EL A,B,C.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B3(i5106)

Specifier:

Designer: L.D.

Company:

Notes

Design meets User specified (2xL/240) Total load deflection criteria.

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

Calculations assume member is fully braced.

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

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.

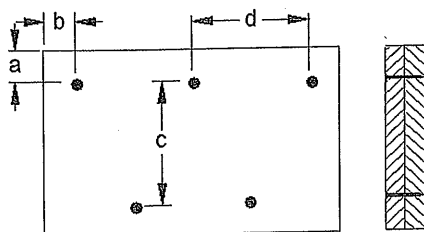
Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

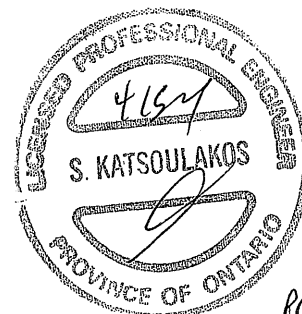
c = 7-7/8"

d = 8"

Calculated Side Load = 28.0 lb/ft

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



DWG NO. FAM B706-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B4(i5077)

City, Province, Postal Code: RICHMOND HILL

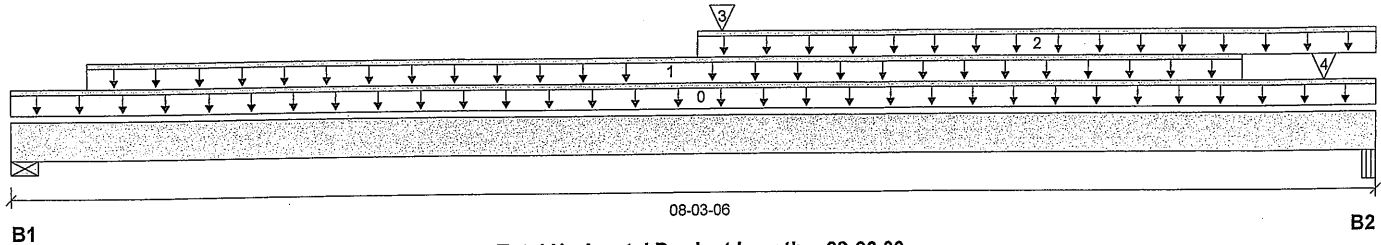
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 08-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1312 / 0	701 / 0		
B2, 1-3/4"	1346 / 0	717 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-03-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-08	07-05-08	Top	336	168			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-01-06	08-03-06	Top	18	9			n/a
3	B2(i5075)	Conc. Pt. (lbs)	L	04-03-02	04-03-02	Top		40			n/a
4	J2(i4237)	Conc. Pt. (lbs)	L	07-11-08	07-11-08	Top	221	111			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5756 ft-lbs	17696 ft-lbs	32.5%	1	03-11-08
End Shear	2477 lbs	7232 lbs	34.3%	1	01-05-06
Total Load Deflection	L/999 (0.091")	n/a	n/a	4	04-03-02
Live Load Deflection	L/999 (0.059")	n/a	n/a	5	04-03-02
Max Defl.	0.091"	n/a	n/a	4	04-03-02
Span / Depth	7.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	2844 lbs	48.0%	24.2%	Spruce-Pine-Fir
B2	Beam 1-3/4" x 1-3/4"	2916 lbs	78.1%	78.1%	VL 2.0 3100 SP

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.

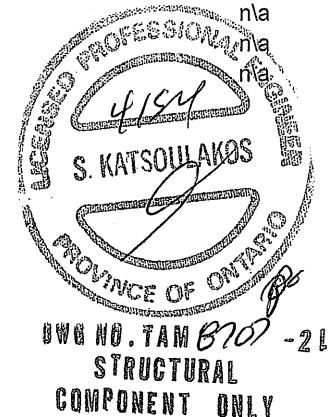
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



Disclosure

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

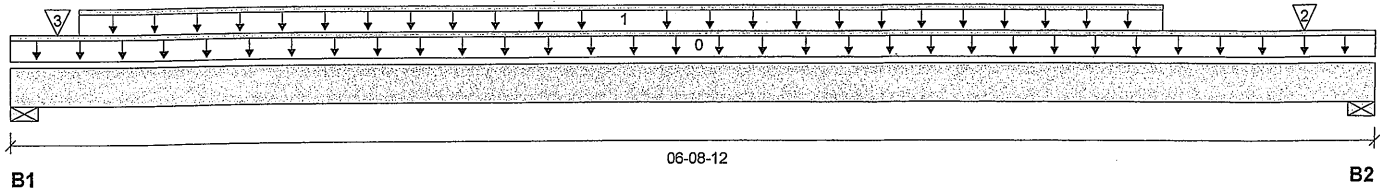
Build 7493
Job name:
File name: 4500 - EL A,B,C.mmdl

Address:
Description: 2ND FLR FRAMING\Flush Beams\B6(i4473)

City, Province, Postal Code: RICHMOND HILL

Specifier:
Customer:
Designer: L.D.

Code reports: CCMC 12472-R

Company:

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	670 / 0	394 / 0		
B2, 3-1/2"	789 / 0	432 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-08-12	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-00	05-08-00	Top	217	109			n/a
2	-	Conc. Pt. (lbs)	L	06-04-07	06-04-07	Top	303	168			n/a
3	E35(i347)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		37			n/a

Controls Summary

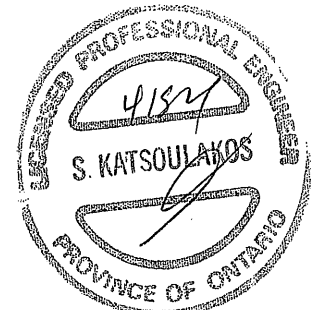
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2236 ft-lbs	17696 ft-lbs	12.6%	1	03-08-00
End Shear	1161 lbs	7232 lbs	16.1%	1	01-05-06
Total Load Deflection	L/999 (0.021")	n/a	n/a	4	03-05-00
Live Load Deflection	L/999 (0.014")	n/a	n/a	5	03-05-00
Max Defl.	0.021"	n/a	n/a	4	03-05-00
Span / Depth	6.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	1497 lbs	25.3%	12.7%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 1-3/4"	1724 lbs	45.7%	23.1%	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

**096 NO. 1 AM 8708-21
 STRUCTURAL
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BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

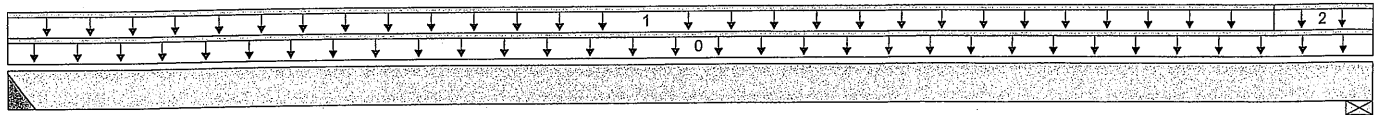
File name: 4500 - EL A,B,C.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B7(i4259)

Specifier:

Designer: L.D.

Company:



B1

06-01-00

B2

Total Horizontal Product Length = 06-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	53 / 0	44 / 0		
B2, 5-1/2"	49 / 0	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	06-01-00	Top		6			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-07-08	Top	18	9			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	05-07-08	06-01-00	Top	3				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	172 ft-lbs	17696 ft-lbs	1.0%	1	02-11-04
End Shear	77 lbs	7232 lbs	1.1%	1	01-02-14
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	02-11-04
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	02-11-04
Max Defl.	0.001"	n/a	n/a	4	02-11-04
Span / Depth	5.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	3" x 1-3/4"	134 lbs	n/a	2.1%	HUS1.81/10
B2 Wall/Plate	5-1/2" x 1-3/4"	129 lbs	2.2%	1.1%	Spruce-Pine-Fir



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STRUCTURAL
COMPONENT ONLY

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.

Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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AMENDED 2020

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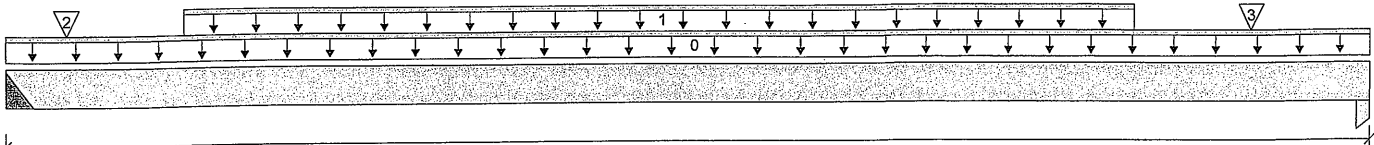
Build 7493
Job name:
File name: 4500 - EL A,B,C.mmdl

Address:
Description: 1ST FLR FRAMING\Flush Beams\B1 H(i5121)

City, Province, Postal Code: RICHMOND HILL

Specifier:
Customer:
Designer: L.D.

Code reports: CCMC 12472-R

Company:

B1
Total Horizontal Product Length = 07-08-04
B2
Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	348 / 0	196 / 0		
B2, 3-1/2"	327 / 0	187 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-08-04	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-00-00	06-04-00	Top	93	46			n/a
2	J4(i4463)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	Top	85	42			n/a
3	J4(i5076)	Conc. Pt. (lbs)	L	07-00-00	07-00-00	Top	94	47			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1337 ft-lbs	17696 ft-lbs	7.6%	1	04-04-00
End Shear	595 lbs	7232 lbs	8.2%	1	06-04-14
Total Load Deflection	L/999 (0.018")	n/a	n/a	4	03-10-00
Live Load Deflection	L/999 (0.012")	n/a	n/a	5	03-10-00
Max Defl.	0.018"	n/a	n/a	4	03-10-00
Span / Depth	7.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	3" x 1-3/4"	767 lbs	n/a	12.0%	HUS1.81/10
B2 Column	3-1/2" x 1-3/4"	724 lbs	14.6%	9.7%	Unspecified

Cautions

Header for the hanger HUS1.81/10 is a Double 1-3/4" x 11-7/8" LVL Beam.

Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO UBC 2012
AMENDED 2020

**UWB NO. YAM B710-21
STRUCTURAL
COMPONENT ONLY**
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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B2 H(i5089) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B2 H(i5089)

City, Province, Postal Code: RICHMOND HILL

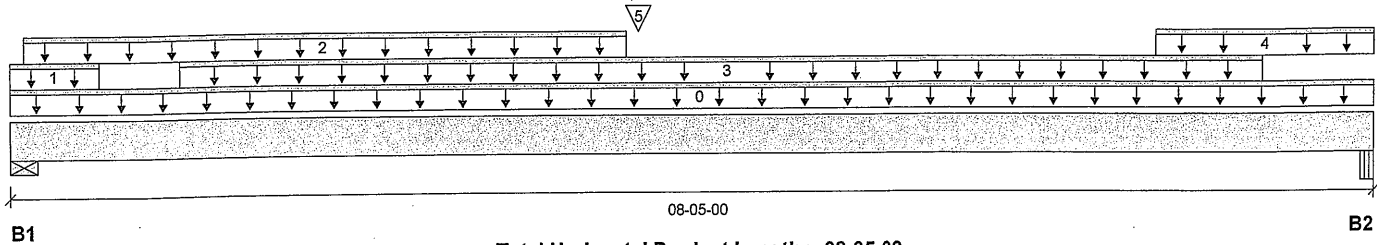
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 6-1/2"	3169 / 0	1727 / 0		
B2, 2-5/8"	1500 / 0	808 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-05-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	2(i274)	Unf. Lin. (lb/ft)	L	00-00-00	00-06-08	Top	2062	1174			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-01-00	03-09-01	Top	240	120			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-00-08	07-08-08	Top	335	168			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	07-00-08	08-05-00	Top	34				n/a
5	B1 H(i5121)	Conc. Pt. (lbs)	L	03-09-15	03-09-15	Top	340	192			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8433 ft-lbs	35392 ft-lbs	23.8%	1	03-09-15
End Shear	3680 lbs	14464 lbs	25.4%	1	01-06-06
Total Load Deflection	L/999 (0.065")	n/a	n/a	4	04-02-14
Live Load Deflection	L/999 (0.042")	n/a	n/a	5	04-02-14
Max Defl.	0.065"	n/a	n/a	4	04-02-14
Span / Depth	7.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 6-1/2" x 3-1/2"	6912 lbs	49.4%	24.9%	Spruce-Pine-Fir
B2	Beam 2-5/8" x 3-1/2"	3259 lbs	66.4%	29.1%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWG NO. 44W B211 -21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B2 H(i5089) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

August 7, 2020 16:52:58

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B2 H(i5089)

City, Province, Postal Code: RICHMOND HILL

Specifier:

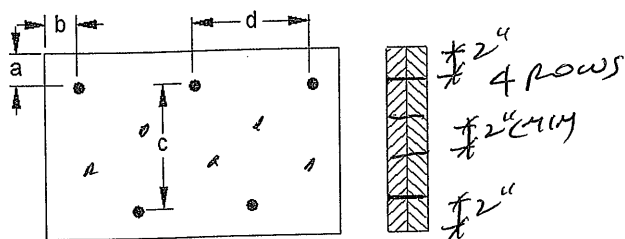
Customer:

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 = 8"

Calculated Side Load = 964.0 lb/ft

Connectors are: 3 1/2" ARDOX SPIRAL Nails



OWB NO. 74MB711 -21
**STRUCTURAL
COMPONENT ONLY**

Disclosure

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BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3 H(i5140)

City, Province, Postal Code: RICHMOND HILL

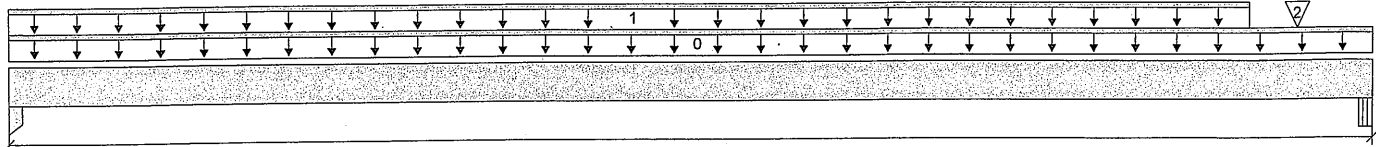
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 04-08-13

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	31 / 0	42 / 0		
B2, 5-1/4"	126 / 0	117 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-08-13	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-03-09	Top	14	7			n/a
2	4(i320)	Conc. Pt. (lbs)	L	04-05-09	04-05-09	Top	97	72			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	101 ft-lbs	35392 ft-lbs	0.3%	1	02-02-10
End Shear	48 lbs	14464 lbs	0.3%	1	01-01-10
Total Load Deflection	L/999 (0")	n/a	n/a	4	02-02-10
Live Load Deflection	L/999 (0")	n/a	n/a	5	02-02-10
Max Defl.	0"	n/a	n/a	4	02-02-10
Span / Depth	4.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Column	1-3/4" x 3-1/2"	98 lbs	2.0%	1.3%	Unspecified
B2 Beam	5-1/4" x 3-1/2"	334 lbs	3.4%	1.5%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

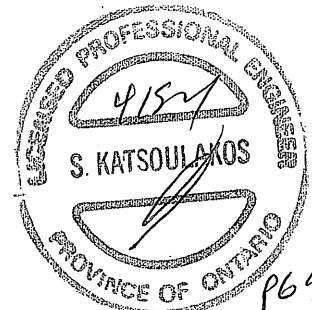
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

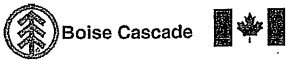
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



415
S. KATSOULAKOS
PROVINCE OF ONTARIO
P64
046 NO. 74112-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B3 H(i5140) (Flush Beam)

Dry | 1 span | No cant.

August 7, 2020 16:52:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4500 - EL A,B,C.mmdl

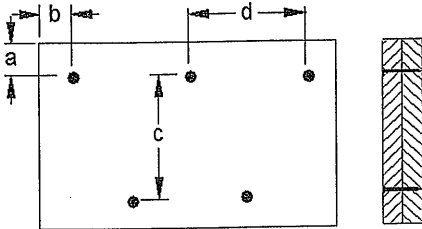
Description: 1ST FLR FRAMING\Flush Beams\B3 H(i5140)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 3"

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



UWB NO. 14M B712-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

BC CALC® Member Report

Build 7493

Job name:

File name: 4500 - EL A,B,C.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B8(i5116)

City, Province, Postal Code: RICHMOND HILL

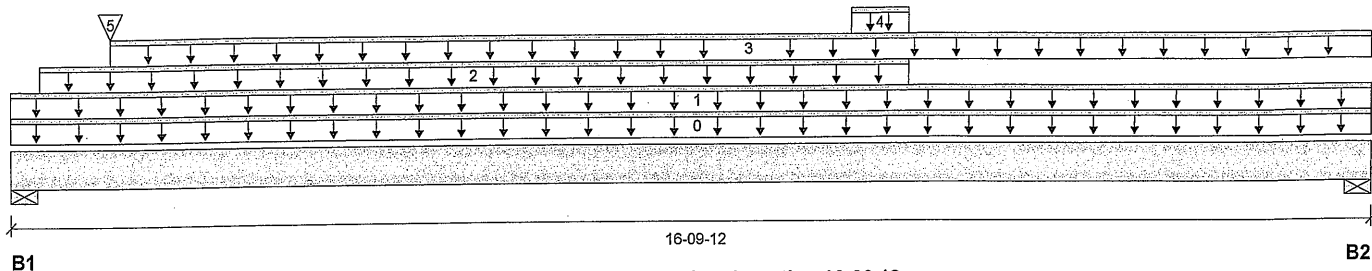
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 16-09-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	824 / 0	980 / 0		
B2, 4-3/8"	829 / 0	771 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-09-12	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-09-12	Top	5	2			n/a
2	10(i1683)	Unf. Lin. (lb/ft)	L	00-04-06	10-11-14	Top		65			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	01-02-14	16-09-12	Top	30	15			n/a
4	10(i1683)	Unf. Lin. (lb/ft)	L	10-03-00	10-11-14	Top	1077	585			n/a
5	J5(i5074)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	292	146			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	11216 ft-lbs	35392 ft-lbs	31.7%	1	10-03-00
End Shear	2415 lbs	14464 lbs	16.7%	1	01-02-04
Total Load Deflection	L/518 (0.379")	n/a	46.3%	4	08-06-11
Live Load Deflection	L/1074 (0.183")	n/a	33.5%	5	08-08-06
Max Defl.	0.379"	n/a	n/a	4	08-06-11
Span / Depth	16.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 2-3/8" x 3-1/2"	2460 lbs	48.1%	24.3%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 3-1/2"	2207 lbs	23.4%	11.8%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



ENGINEERED BY
 S. KATSOULAKOS
 STRUCTURAL
 COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B8(i5116) (Flush Beam)

Dry | 1 span | No cant.

August 7, 2020 16:52:58

BC CALC® Member Report

Build 7493

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File name: 4500 - EL A,B,C.mmdl

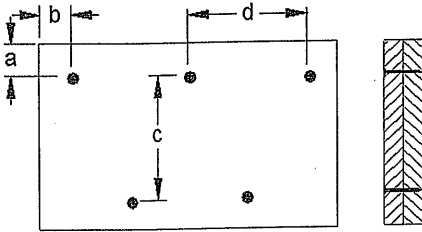
Description: 1ST FLR FRAMING\Flush Beams\B8(i5116)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

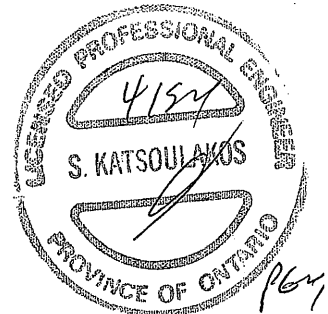
c = 7-7/8"

d = 8"

Calculated Side Load = 310.3 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

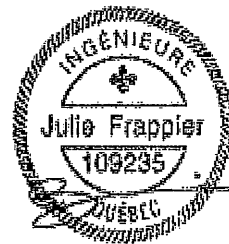
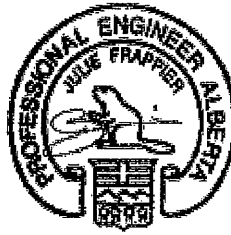


OWG NO. TAM 8713-2 L
STRUCTURAL
COMPONENT ONLY

Disclosure

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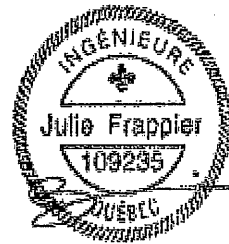
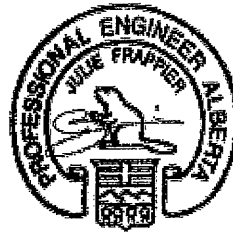
Maximum Floor Spans

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

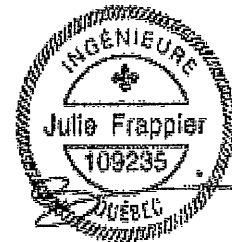
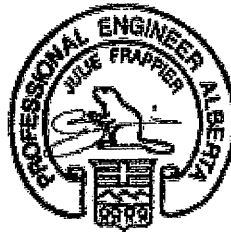
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

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"	21'-9"	19'-5"
	NI-60	24'-10"	23'-1"	22'-0"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	NI-70	26'-1"	24'-3"	23'-2"	21'-10"	26'-8"	24'-11"	23'-9"	22'-4"
	NI-80	26'-6"	24'-7"	23'-5"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
	NI-60	27'-3"	25'-5"	24'-2"	22'-10"	28'-0"	26'-2"	24'-9"	23'-1"
	NI-70	28'-8"	26'-8"	25'-4"	23'-11"	29'-3"	27'-4"	26'-1"	24'-8"
	NI-80	29'-1"	27'-0"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90x	29'-11"	27'-10"	26'-6"	25'-0"	30'-6"	28'-5"	27'-2"	25'-8"

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

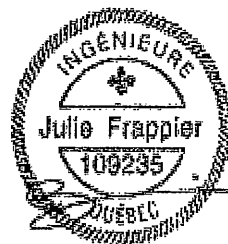
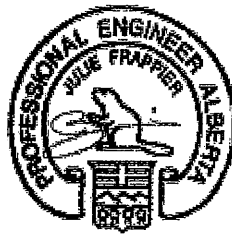
Maximum Floor Spans

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



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

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



Maximum Floor Spans

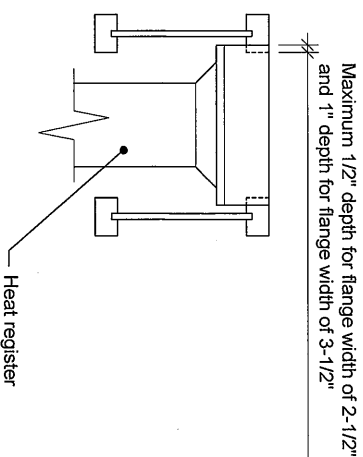
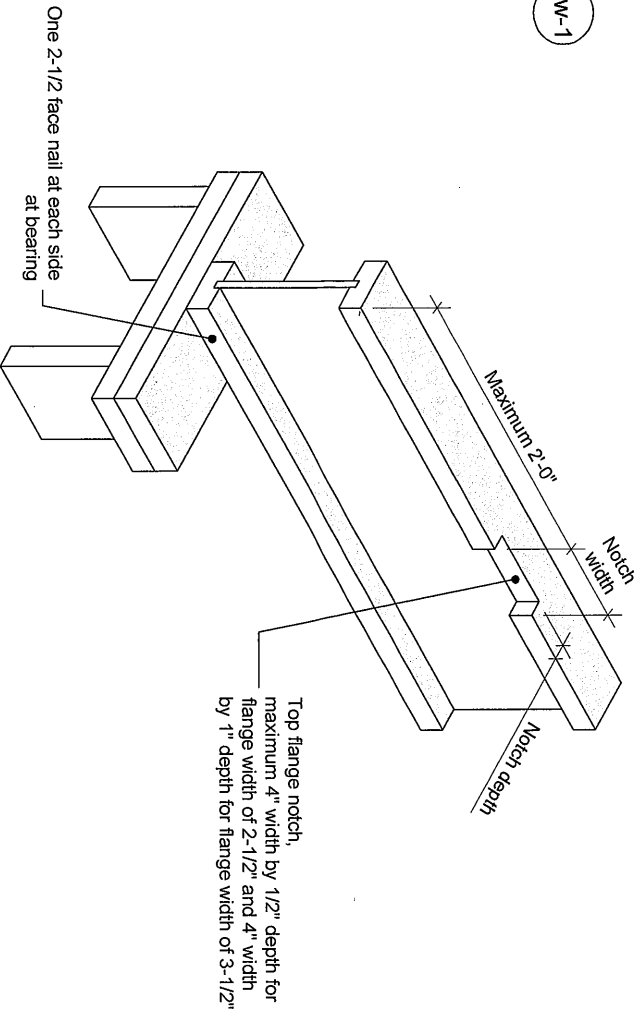
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

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

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

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

1w-1



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

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

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

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Title
Notch in I-joist for Heat Register

Category

I-joist - Typical Floor Framing and Construction Details

Document

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Date

2018-04-10

Number

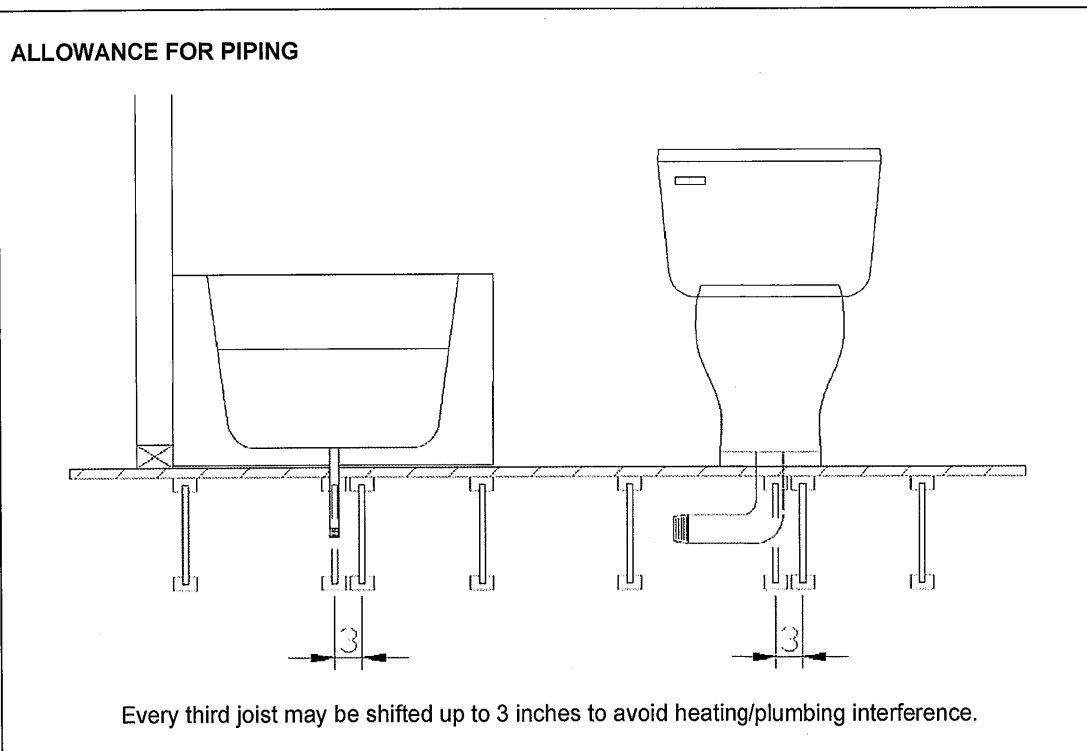
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Allowance for Piping (Installation Notes)

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

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

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



Revised April 12, 2012