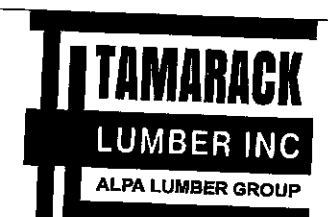


Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	11 7/8" NI-40x	1	15
J2	14-00-00	11 7/8" NI-40x	1	10
J3	12-00-00	11 7/8" NI-40x	1	24
J4	4-00-00	11 7/8" NI-40x	1	5
J5	2-00-00	11 7/8" NI-40x	1	7
J6	20-00-00	11 7/8" NI-80	1	77
B13 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B16 DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B14H	20-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B39 E	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2

Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
B40 E	10-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2	2	H2	IUS2.56/11.88
B37 E	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2	2	N/A	H2.5A
B38 E	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2	1	H3	HUS1.81/10
B15H	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1	3	H4C	HUC410

DATE: 2021-11-09

2ND FLOOR



FROM PLAN DATED: FEB 9, 2021

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS

MODEL: GRANDVILLE 3

ELEVATION: 3

LOT: 593

CITY: HAMILTON

SALESMAN: RICK DICIANO

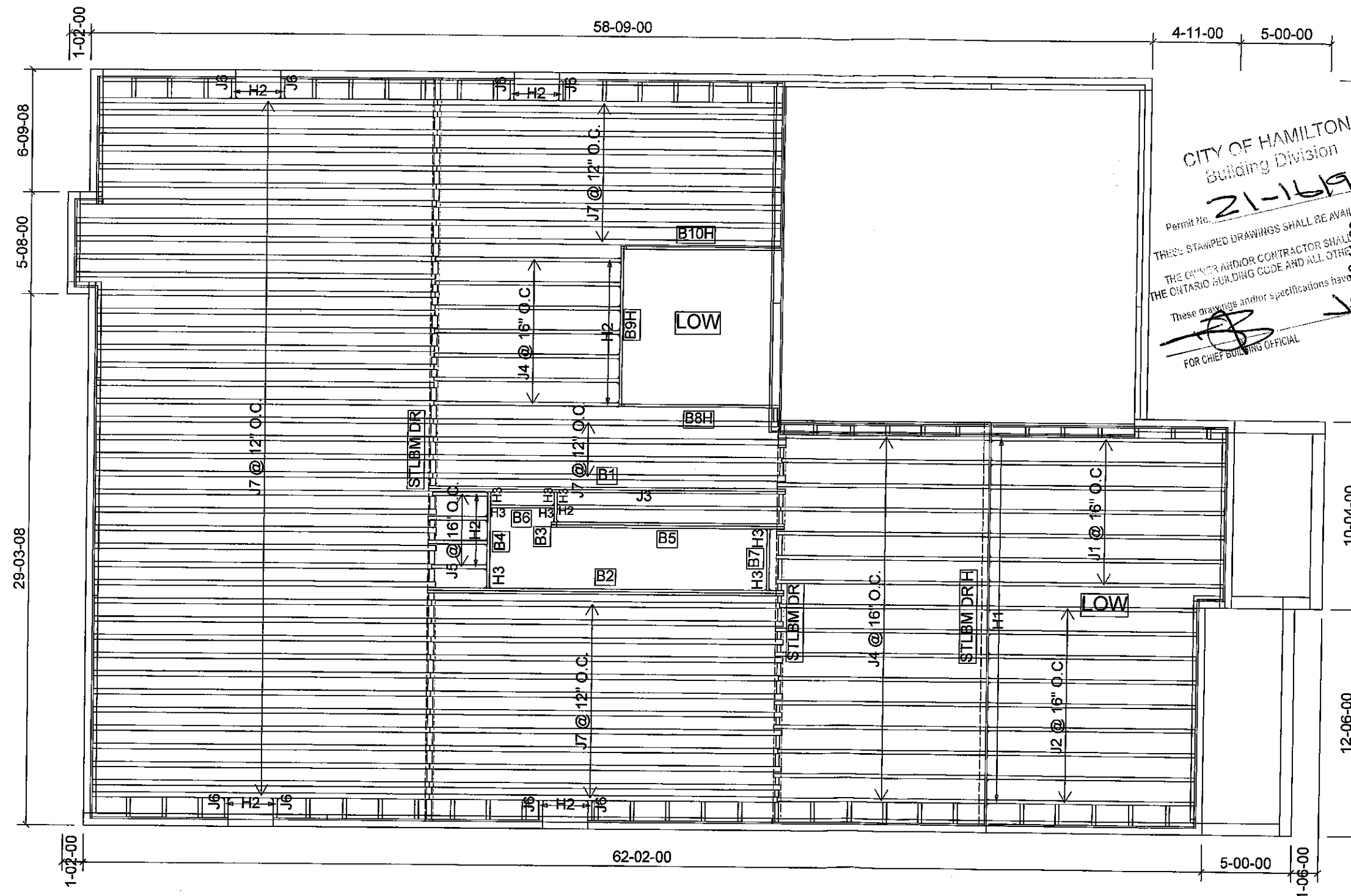
DESIGNER: L.D.

REVISION:

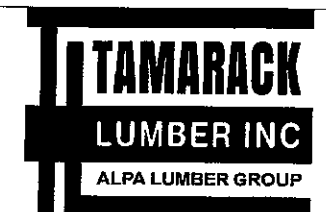
NOTES:
REFER TO THE **NORDIC INSTALLATION**
GUIDE FOR PROPER STORAGE AND
INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F
REQ'D UNDER INTERIOR UNIFORM LOAD
BEARING WALLS. **MULTIPLE SQUASH**
BLOCKS REQ'D UNDER CONCENTRATED
LOADS. SEE FIGURE 1. **CANTILEVERED**
JOISTS INCLUDING CANT' OVER BRICK REQ.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

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

SUBFLOOR: 5/8" GLUED AND NAIL FD



CITY OF HAMILTON
Building Division
Permit No. 21-16911
THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE
THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW
These drawings and/or specifications have been reviewed by
[Signature]
FOR CHIEF BUILDING OFFICIAL
DATE JAN 5/22



FROM PLAN DATED: FEB 9, 2021
BUILDER: GREENPARK HOMES
SITE: RUSSELL GARDENS
MODEL: GRANDVILLE 3
ELEVATION: 1,3
LOT:
CITY: HAMILTON
SALESMAN: RICK DICIANO
DESIGNER: L.D.
REVISION: lbv

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

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

SUBFLOOR: 3/4" GLUED AND NAILED

Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	7
J2	12-00-00	9 1/2" NI-40x	1	9
J3	14-00-00	11 7/8" NI-40x	1	1
J4	12-00-00	11 7/8" NI-40x	1	23
J5	4-00-00	11 7/8" NI-40x	1	4
J6	2-00-00	11 7/8" NI-40x	1	8
J7	20-00-00	11 7/8" NI-80	1	65
B1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Products				
PlotID	Length	Product	Plies	Net Qty
B10H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B8H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B9H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B4	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B7	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
16	H1	IUS2.56/9.5
12	H2	IUS2.56/11.88
8	H2	IUS2.56/11.88
2	H3	HUS1.81/10
6	H3	HUS1.81/10

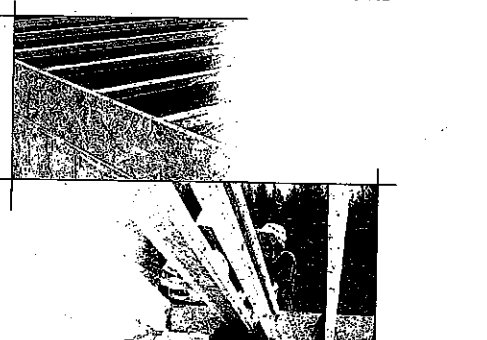
DATE: 2021-08-10

1st FLOOR

WALK OUT
CONDITION

INSTALLATION GUIDE

FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



WARNING

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

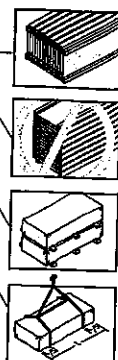
Avoid Accidents by Following these Important Guidelines:

1. Do not walk on I-joists until fully fastened and braced, or serious injuries can result.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rafter or buckling.
3. Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of adjoining bracing over at least two I-joists.
4. O₂ 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.
5. For cantilevered I-joists, brace top and bottom flanges, and brace ends with dense panels, rim board, or cross-bracing.
6. 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.
7. Never install a damaged I-joist.

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

STORAGE AND HANDLING GUIDELINES

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



MAXIMUM FLOOR SPANS

1. Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.5L + 1.75D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.2.6 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm, 1 foot = 0.305 m

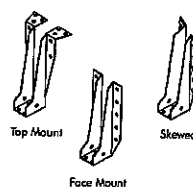
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		16"	19.2"	24"	30"	16"	19.2"	24"	30"
9-1/2"	N-20	15'-1"	14'-2"	13'-9"	13'-5"	15'-3"	14'-4"	14'-10"	14'-7"
	N-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-7"	15'-10"	15'-5"
	N-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-9"	16'-0"	15'-6"
	N-80	17'-3"	16'-5"	15'-8"	15'-9"	18'-10"	17'-8"	16'-9"	16'-10"
11-7/8"	N-20	16'-11"	16'-0"	15'-5"	15'-6"	17'-3"	16'-8"	16'-7"	16'-7"
	N-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-9"	17'-9"	17'-2"
	N-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-1"	18'-1"
	N-80	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
14"	N-20	19'-9"	18'-3"	17'-2"	17'-1"	21'-9"	20'-2"	19'-3"	19'-4"
	N-40x	20'-4"	18'-7"	17'-11"	18'-0"	22'-3"	20'-9"	19'-8"	19'-9"
	N-60	20'-5"	18'-7"	17'-10"	17'-11"	22'-3"	20'-9"	19'-8"	19'-4"
	N-80	21'-7"	20'-4"	19'-1"	19'-2"	23'-10"	22'-11"	20'-0"	20'-1"
16"	N-20	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
	N-40x	22'-5"	20'-9"	19'-5"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	N-60	22'-5"	20'-9"	19'-5"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	N-80	23'-11"	22'-1"	21'-11"	22'-2"	25'-11"	24'-0"	23'-0"	23'-0"
18"	N-20	24'-5"	22'-6"	21'-5"	21'-6"	26'-11"	25'-9"	23'-9"	23'-9"
	N-40x	24'-8"	22'-8"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"
	N-60	24'-8"	22'-8"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"
	N-80	25'-8"	23'-8"	22'-9"	22'-10"	28'-3"	26'-2"	25'-0"	25'-0"

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

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



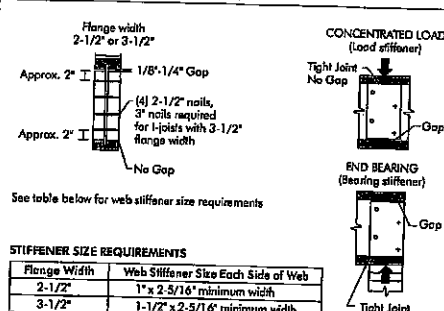
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the reaction 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 the flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

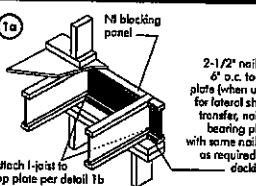


STIFFENER SIZE REQUIREMENTS

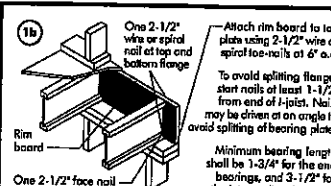
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

INSTALLING NORDIC I-JOISTS

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

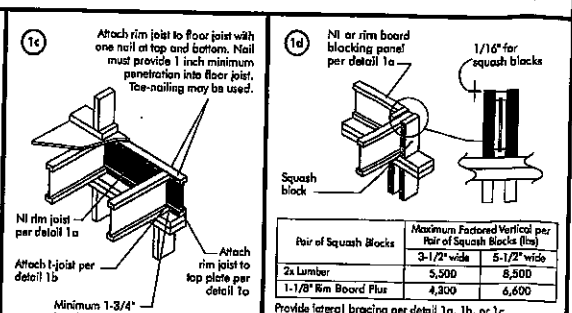
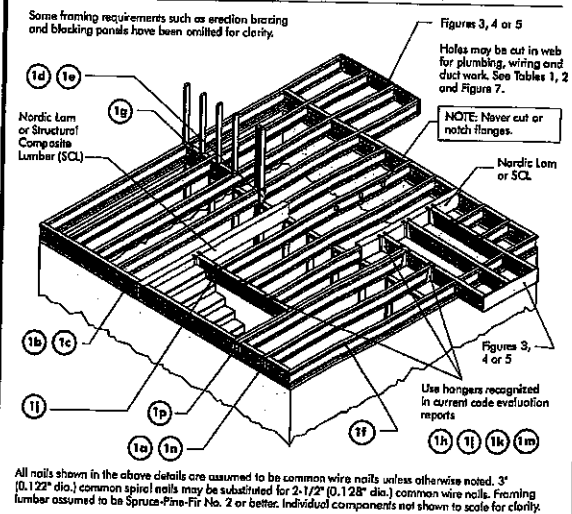


*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

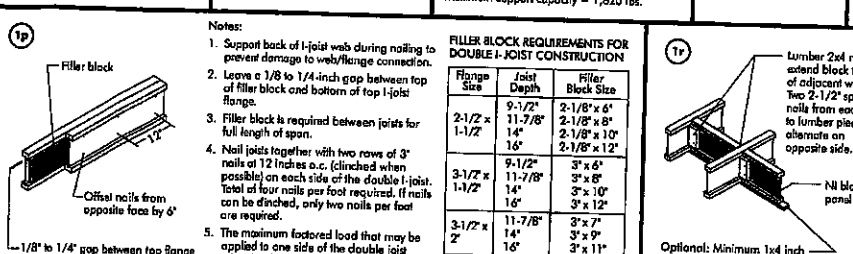
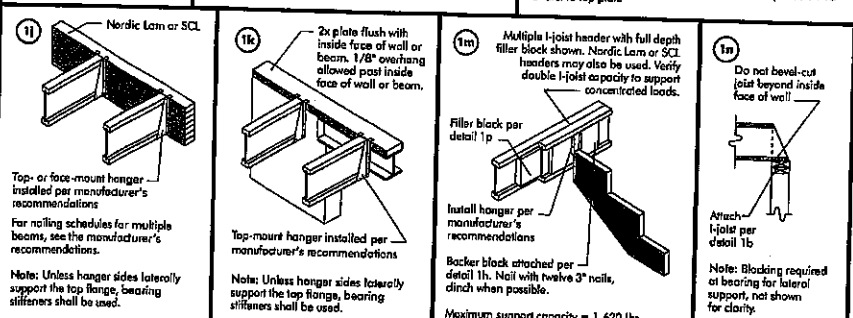
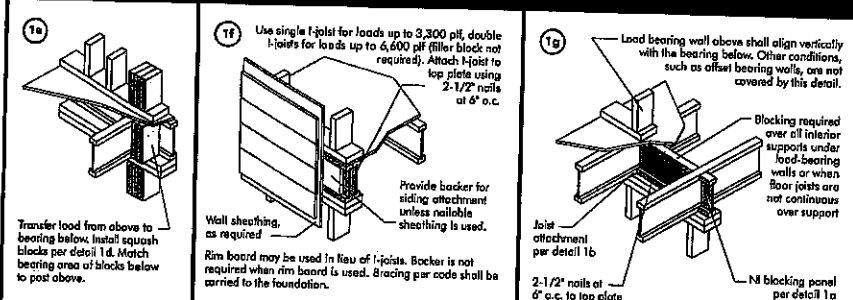


*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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

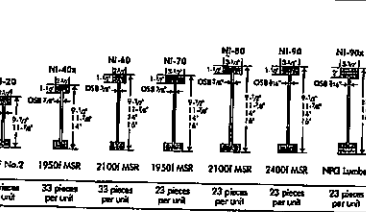


*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*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.

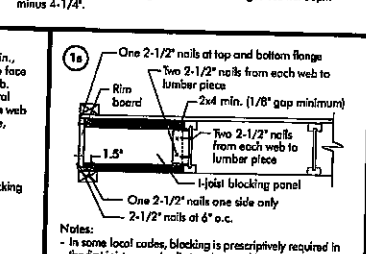
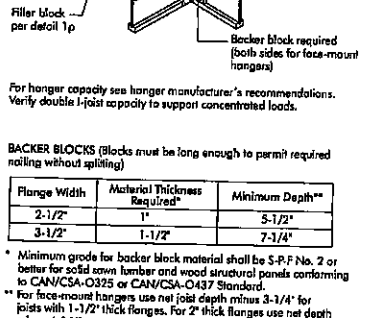
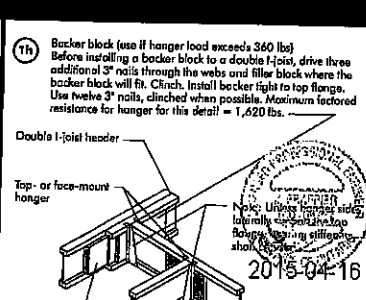
NORDIC I-JOIST SERIES



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

Nordic Engineered Wood I-joists use only finger-jointed stock species - P.F.R. lumber in their flanges, ensuring consistent quality, superior strength and longer span carrying capacity.

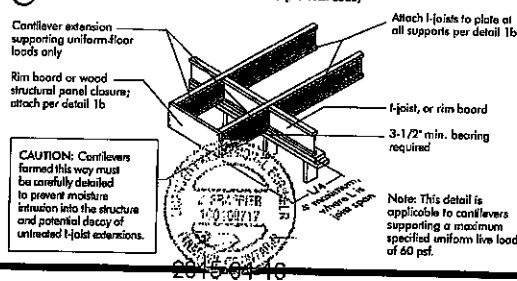
2015-04-16



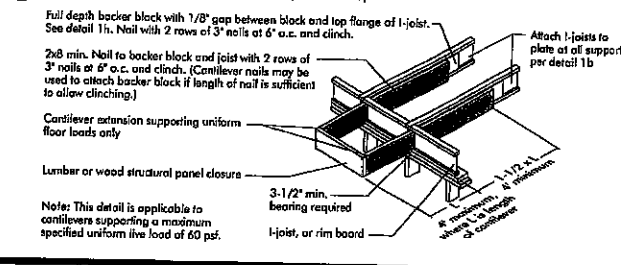
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

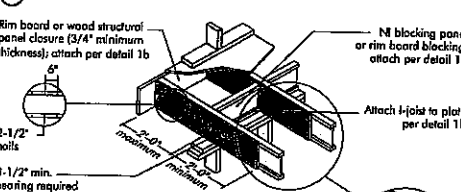


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

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\"/>

Alternate Method 2 — DOUBLE I-JOIST

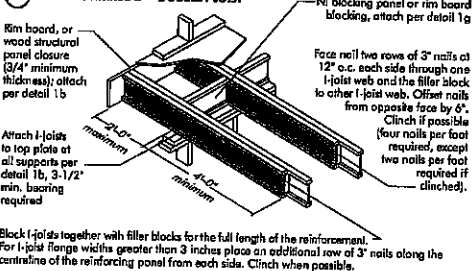
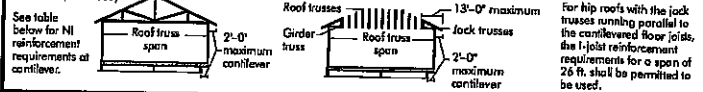


FIGURE 4 (continued)



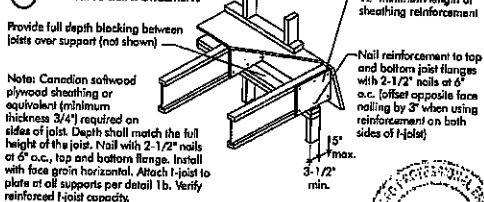
CANTILEVER REINFORCEMENT METHODS ALLOWED

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			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N
11-7/8"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N
14"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N
16"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N

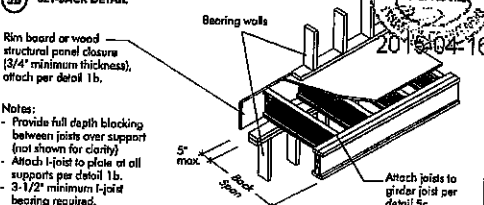
1. N = No reinforcement required.
2. N = Reinforced with 3/4" wood structural panel on one side only.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. 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 board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joist supporting girder trusses or roof beams may require additional reinforcing.

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

3a SHEATHING REINFORCEMENT



3b SET-BACK DETAIL



3c SET-BACK CONNECTION

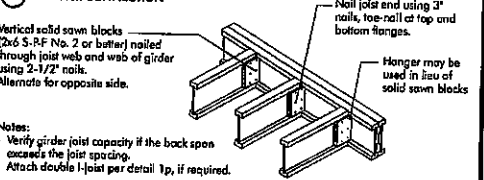
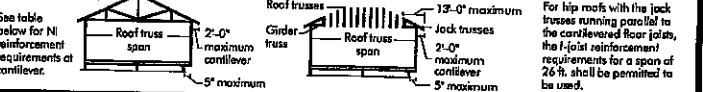


FIGURE 5 (continued)



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			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N
11-7/8"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N
14"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N
16"	26	N	N	N	N	N	N	N	N	N	N	N	N
	28	N	N	N	N	N	N	N	N	N	N	N	N
	30	N	N	N	N	N	N	N	N	N	N	N	N
	32	N	N	N	N	N	N	N	N	N	N	N	N
	34	N	N	N	N	N	N	N	N	N	N	N	N

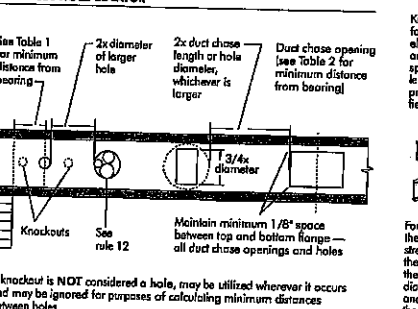
1. N = No reinforcement required.
2. N = Reinforced with 3/4" wood structural panel on one side only.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. 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 board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joist supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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



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

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 hole between the holes is another good method to minimize damage to the I-joist.

TABLE 1 JOIST WEBS

Joist Depth	Joist Series	Minimum distance from inside face of any support to center of hole (in.)											
		3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11
9-1/2"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
11-7/8"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
14"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
16"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4

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

OPTIONAL:

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

$$D_{reduced} = \frac{L_{actual}}{L_{max}} \times D$$

Where:
 D_{reduced} = Distance from the inside face of any support to center of hole, reduced for less than maximum span application.
 L_{actual} = The actual measured span distance between the inside face of supports (ft.).
 L_{max} = Span Adjustment Factor given in this table.
 D = The minimum distance from the inside face of any support to center of hole from this table.
 * L_{actual} is greater than 1, use 1 in the above calculation for L_{actual}.

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

DUCT CHASE OPENING SIZES AND LOCATIONS - Simple Span Only													
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (in.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
11-7/8"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
14"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
16"	N-10	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-12	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-14	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-16	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4
	N-18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4



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

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller 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.)											
		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"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---
	NI-70	2-0"	3-4"	4-8"	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"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-60	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	8-10"	10-0"	11-2"	---	---	---
	NI-80	1-6"	2-10"	4-0"	5-4"	7-0"	7-5"	8-10"	10-0"	11-2"	---	---	---
14"	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"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-60	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	8-10"	10-0"	11-2"	---	---	---
	NI-80	1-6"	2-10"	4-0"	5-4"	7-0"	7-5"	8-10"	10-0"	11-2"	---	---	---
16"	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"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-60	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-5"	7-9"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	8-10"	10-0"	11-2"	---	---	---
	NI-80	1-6"	2-10"	4-0"	5-4"	7-0"	7-5"	8-10"	10-0"	11-2"	---	---	---

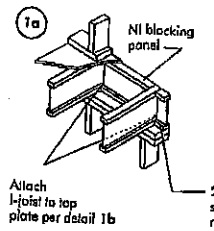
- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joints being used at their maximum spans.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

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

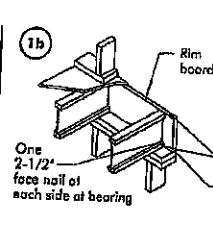
Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-5"	7-1"	7-5"	---	---	---
	NI-40x	5-3"	5-8"	6-0"	6-3"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	---	---	---
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
11-7/8"	NI-20	5-9"	6-2"	7-4"	7-8"	8-1"	8-5"	9-1"	9-6"	10-1"	10-9"	---	---
	NI-40x	6-8"	7-2"	8-4"	8-8"	9-1"	9-5"	10-1"	10-6"	11-1"	11-9"	---	---
	NI-60	6-8"	7-2"	8-4"	8-8"	9-1"	9-5"	10-1"	10-6"	11-1"	11-9"	---	---
	NI-70	7-1"	7-4"	8-6"	9-0"	9-3"	9-7"	10-3"	10-8"	11-3"	12-1"	---	---
	NI-80	7-2"	7-5"	8-7"	9-1"	9-4"	9-8"	10-4"	10-9"	11-4"	12-2"	---	---
14"	NI-20	7-2"	7-5"	8-7"	9-1"	9-4"	9-8"	10-4"	10-9"	11-4"	12-2"	---	---
	NI-40x	8-1"	8-4"	9-6"	10-0"	10-3"	10-7"	11-3"	11-8"	12-3"	13-1"	---	---
	NI-60	8-2"	8-5"	9-7"	10-1"	10-4"	10-8"	11-4"	11-9"	12-4"	13-2"	---	---
	NI-70	8-7"	9-0"	10-2"	10-6"	10-9"	11-3"	11-8"	12-3"	12-8"	13-6"	---	---
	NI-80	9-0"	9-3"	10-5"	10-9"	11-2"	11-6"	12-1"	12-6"	13-1"	13-9"	---	---
16"	NI-20	9-2"	9-5"	10-7"	11-1"	11-4"	11-8"	12-4"	12-9"	13-4"	14-2"	---	---
	NI-40x	10-1"	10-4"	11-6"	12-0"	12-3"	12-7"	13-3"	13-8"	14-3"	15-1"	---	---
	NI-60	10-2"	10-5"	11-7"	12-1"	12-4"	12-8"	13-4"	13-9"	14-4"	15-2"	---	---
	NI-70	10-7"	11-0"	12-2"	12-6"	12-9"	13-3"	13-8"	14-3"	14-8"	15-6"	---	---
	NI-80	10-9"	11-2"	12-4"	12-8"	13-1"	13-5"	14-1"	14-6"	15-1"	15-9"	---	---

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



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

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



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

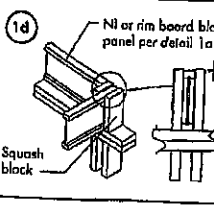
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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

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

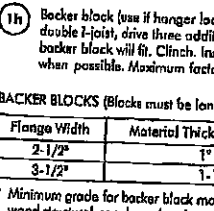
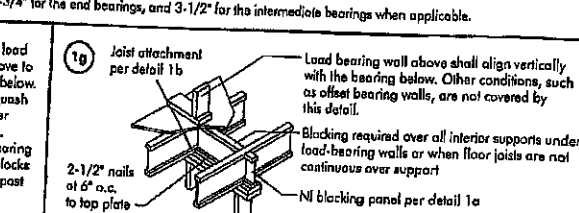
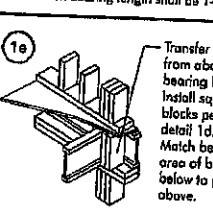
To avoid splitting flange, start nails at least 1-1/2" from end of I-joint. Nails may be driven at an angle to avoid splitting of bearing plate.

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



Pair of Squash Blocks	Maximum Factored Uniform Vertical Load per Pair of Squash Blocks (lb)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

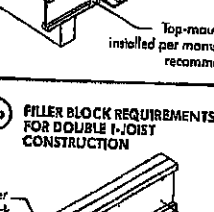
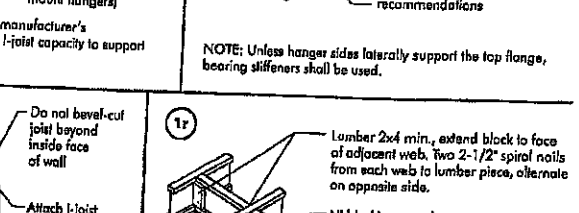
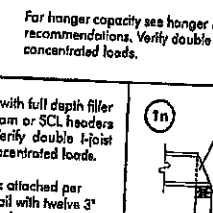
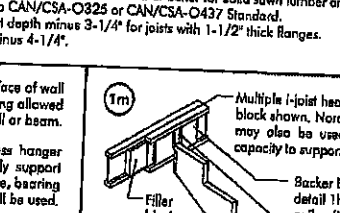
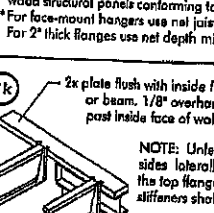
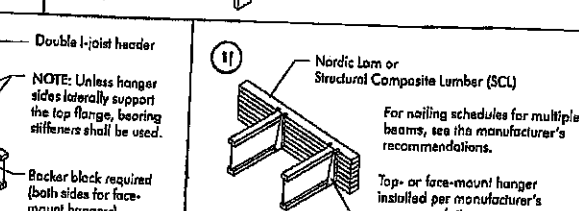
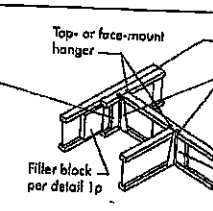
Provide lateral bracing per detail 1a or 1b



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

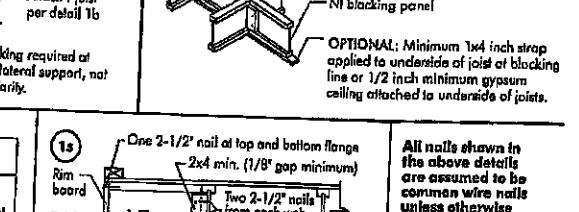
*Minimum grade for backer block material shall be S-PF No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C308.2 or CAN/CSA-C437 Standard.

**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".



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

Flange Size	Net Depth	Filler Block Size
2-1/2" x 14"	11-7/8"	2-1/8" x 6"
2-1/2" x 16"	14"	2-1/8" x 8"
3-1/2" x 14"	11-7/8"	3" x 6"
3-1/2" x 16"	14"	3" x 8"
3-1/2" x 18"	16"	3" x 10"
3-1/2" x 20"	18"	3" x 12"

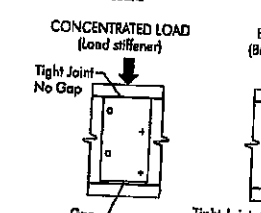
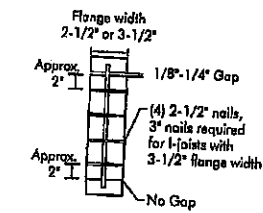


WEB STIFFENERS

RECOMMENDATIONS:

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

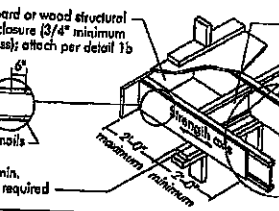
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



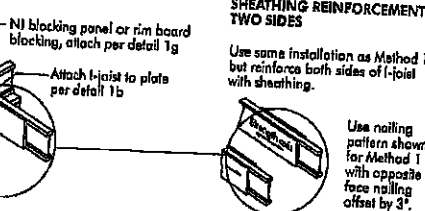
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE



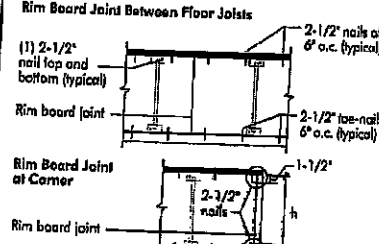
Method 2 — SHEATHING REINFORCEMENT TWO SIDES



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

RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD

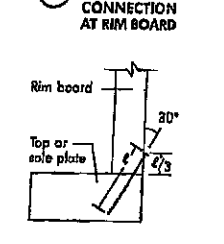
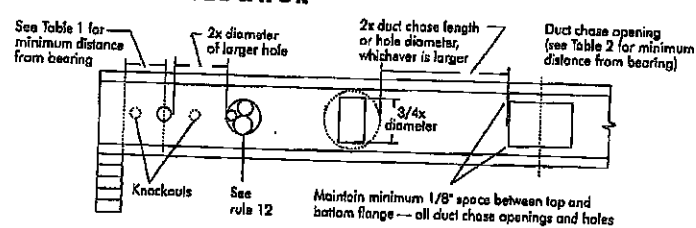
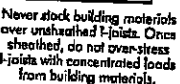


FIGURE 7
FIELD-CUT HOLE LOCATOR



SAFETY AND CONSTRUCTION PRECAUTIONS



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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

PRODUCT WARRANTY

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

Furthermore, Chambers Chikongman 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.

NORDIC STRUCTURES

COMPANY
Mar. 19, 2021 16:23

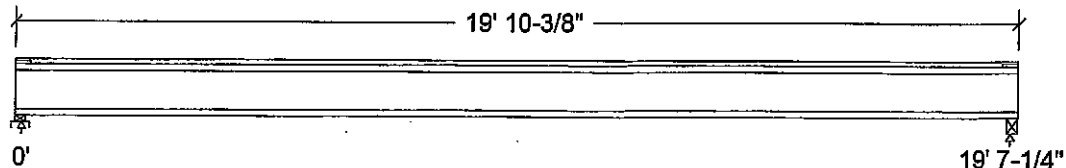
PROJECT
J7 - 1ST FLOOR

Design Check Calculation Sheet Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	196		196
Live	392		392
Factored:			
Total	833		833
Bearing:			
Capacity			
Joist	2188		2199
Support	5573		-
Des ratio			
Joist	0.38		0.38
Support	0.15		-
Load case	#2		#2
Length	2-3/8		2-1/2
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.09		-

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

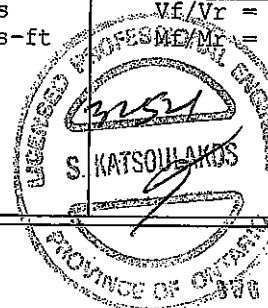
Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;

Total length: 19' 10-3/8"; Clear span: 19' 5-1/2"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 833	Vr = 2336	lbs	Vf/Vr = 0.36
Moment (+)	Mf = 4083	Mr = 11609	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = < L/999	0.65 = L/360	in	0.19
Live Defl'n	0.24 = L/970	0.49 = L/480	in	0.49
Total Defl'n	0.36 = L/646	0.98 = L/240	in	0.37
Bare Defl'n	0.27 = L/862	0.65 = L/360	in	0.42
Vibration	Lmax = 19'-7.3	Lv = 21'-2.7	ft	0.92
Defl'n	= 0.027	= 0.033	in	0.82



STRUCTURAL
COMPONENT ONLY

J7 - 1ST FLOOR

Nordic Sizer – Canada 7.2

Page 2

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake
L=live(use, occupancy) Ls=live(storage, equipment) f=fireLoad 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 = 625.37 lb-in² K= 6.18e06 lbs

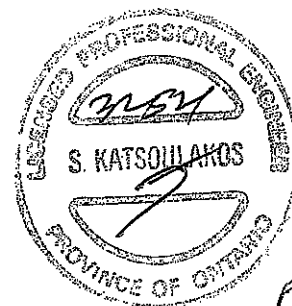
"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

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.

AMENDED 2020



OWB NU. TAM 7368-21
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
Mar. 19, 2021 16:28

PROJECT
J6 - 2ND FLOOR

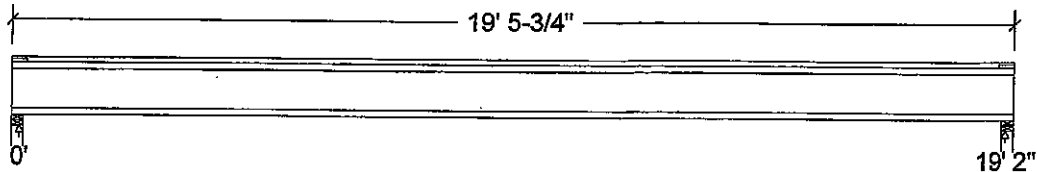
Design Check Calculation Sheet

Nordic Sizer - Canada 7.2

Loads:

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

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



Unfactored:			
Dead	192		192
Live	383		383
Factored:			
Total	815		815
Bearing:			
Capacity			
Joist	2221		2221
Support	6659		6659
Des ratio			
Joist	0.37		0.37
Support	0.12		0.12
Load case	#2		#2
Length	2-3/4		2-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		769
Kzcp sup	-		-

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

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

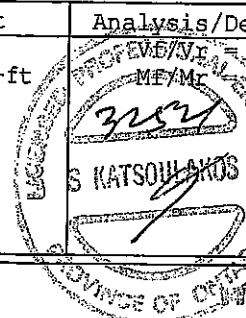
Supports: All - Lumber Wall, No.1/No.2

Total length: 19' 5-3/4"; Clear span: 19' 1/4"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 815	Vr = 2336	lbs	0.35
Moment(+)	Mf = 3903	Mr = 11609	lbs-ft	0.34
Perm. Defl'n	0.11 = < L/999	0.64 = L/360	in	0.18
Live Defl'n	0.23 = < L/999	0.48 = L/480	in	0.47
Total Defl'n	0.34 = L/676	0.96 = L/240	in	0.35
Bare Defl'n	0.25 = L/917	0.64 = L/360	in	0.39
Vibration	Lmax = 19'-2	Lv = 20'-5.8	ft	0.94
Defl'n	= 0.028	= 0.033	in	0.85



NO. 7369-21
STRUCTURAL
COMPONENT ONLY

J6 - 2ND FLOOR

Nordic Sizer - Canada 7.2

Page 2

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L
 Moment(+) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #2 = 1.0D + 1.0L (live)
 LC #2 = 1.0D + 1.0L (total)
 LC #2 = 1.0D + 1.0L (bare joist)

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

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

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

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

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

CONFORMS TO CBC 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.



SWR NO. TAM 7369-21
 STRUCTURAL
 COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B1(i5062) (Flush Beam)

Dry | 1 span | No cant.

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

File name: GRANDVILLE 3 - EL1,3.mmdl

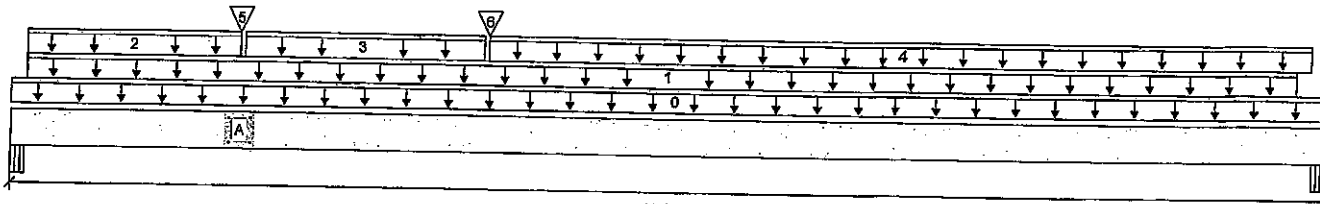
Description: 1ST FLR FRAMING\Flush Beams\B1(i5062)

Specifier:

Designer: L.D.

Company:

Code reports: CCMC 12472-R



B1

19-09-04

B2

Total Horizontal Product Length = 19-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	1153 / 0	835 / 0		
B2, 5-1/4"	564 / 0	430 / 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	19-09-04	Top	1.00	0.65	1.00	1.15	
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	19-04-00	Top	14	7			00-00-00 n/a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	03-04-10	Top	33	16			n/a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-05-08	07-00-02	Top	21	10			n/a
4	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	07-01-00	19-06-10	Top	19	10			n/a
5	B4(i5061)	Conc. Pt. (lbs)	L	03-04-10	03-04-10	Top	636	476			n/a
6	B3(i5075)	Conc. Pt. (lbs)	L	07-01-00	07-01-00	Top	394	207			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10355 ft-lbs	35392 ft-lbs	29.3%	1	07-01-00
End Shear	2633 lbs	14464 lbs	18.2%	1	01-05-02
Total Load Deflection	L/499 (0.457")	n/a	48.1%	4	09-02-06
Live Load Deflection	L/855 (0.267")	n/a	42.1%	5	09-02-06
Max Defl.	0.457"	n/a	n/a	4	09-02-06
Span / Depth	19.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	2774 lbs	28.3%	12.4%	Unspecified
B2 Beam	5-1/4" x 3-1/2"	1383 lbs	14.1%	6.2%	Unspecified

Notes

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

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

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 12-02-02.

CONFORMS TO OBC 2012

AMENDED 2020



WOOD NO. 7441 2370-21

STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B1(i5062) (Flush Beam)

Dry | 1 span | No cant.

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

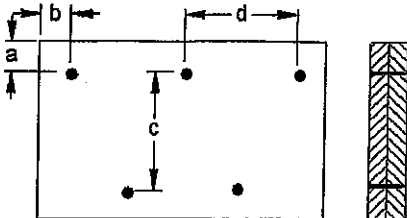
Description: 1ST FLR FRAMING\Flush Beams\B1(i5062)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 8"

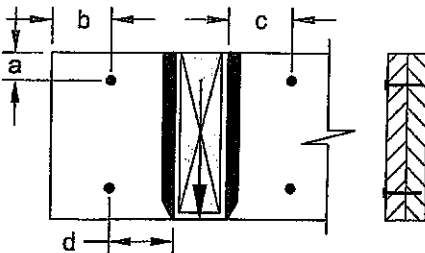
Calculated Side Load = 424.9 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 3



a minimum = 2"

b minimum = 4"

c minimum = 4"

d maximum = 12"

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL



BWG NO. TAM 2320-21

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

1ST FLR FRAMING\Flush Beams\B2(i5015) (Flush Beam)

Dry | 1 span | No cant.

PASSED

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

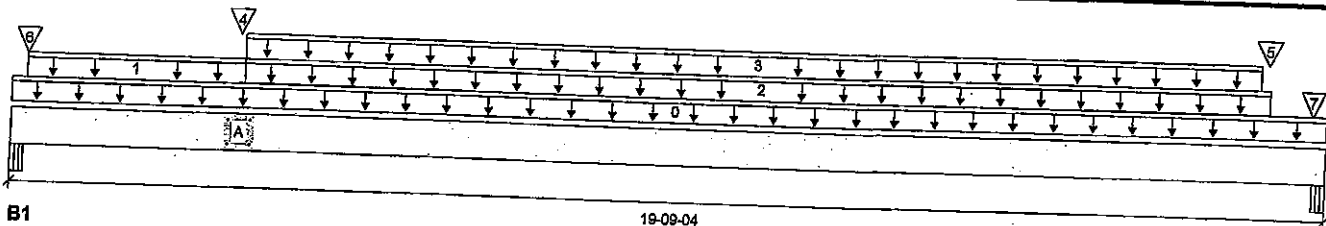
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B2(i5015)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 19-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	916 / 0	1369 / 0		
B2, 5-1/4"	834 / 0	1490 / 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	19-09-04	Top	1.00	0.65	1.00	1.15	
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	03-05-08	Top	40	20			00-00-00
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-05-08	18-11-02	Top	17	8			n/a
3	18(i730)	Unf. Lin. (lb/ft)	L	03-05-08	18-09-08	Top	20	94			n/a
4	-	Conc. Pt. (lbs)	L	03-04-09	03-04-09	Top	372	438			n/a
5	-	Conc. Pt. (lbs)	L	18-10-12	18-10-12	Top	255	298			n/a
6	8(i651)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	219	133			n/a
7	14(i659)	Conc. Pt. (lbs)	L	19-06-12	19-06-12	Top	191	119			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7977 ft-lbs	23005 ft-lbs	34.7%	0	09-06-01
End Shear	1673 lbs	9401 lbs	17.8%	0	01-05-02
Total Load Deflection	L/418 (0.546")	n/a	57.4%	4	09-08-14
Live Load Deflection	L/1415 (0.161")	n/a	25.4%	5	09-06-01
Max Defl.	0.546"	n/a	n/a	4	09-08-14
Span / Depth	19.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	3085 lbs	31.4%	13.8%	Unspecified
B2 Beam	5-1/4" x 3-1/2"	2086 lbs	32.7%	14.3%	Unspecified

Notes

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

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

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.

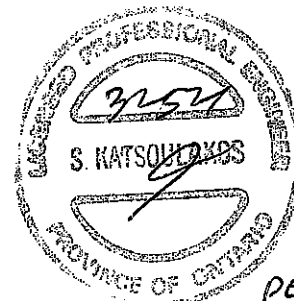
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 15-04-00.

CONFORMS TO OBC 2012

AMENDED 2020



UWD NO. TAM 7371-21
STRUCTURAL
COMPONENT ONLY



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

1ST FLR FRAMING\Flush Beams\B2(i5015) (Flush Beam)

Dry | 1 span | No cant.

PASSED

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

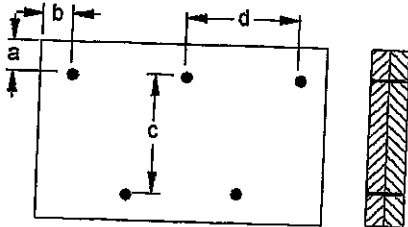
Description: 1ST FLR FRAMING\Flush Beams\B2(i5015)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 8"

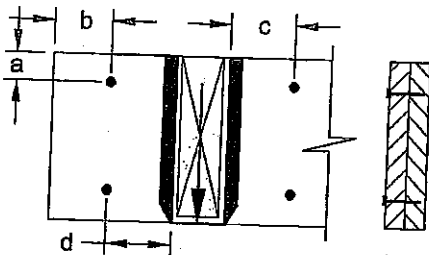
Calculated Side Load = 326.4 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 4



a minimum = 2"

b minimum = 4"

c minimum = 4"

d maximum = 12"

Connectors are:

Nails

3 1/2" ARDOX SPIRAL



DWG NO. TAM 7371-21

STRUCTURAL

Disclosure 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\B5(i5067) (Flush Beam)

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

March 23, 2021 17:20:52

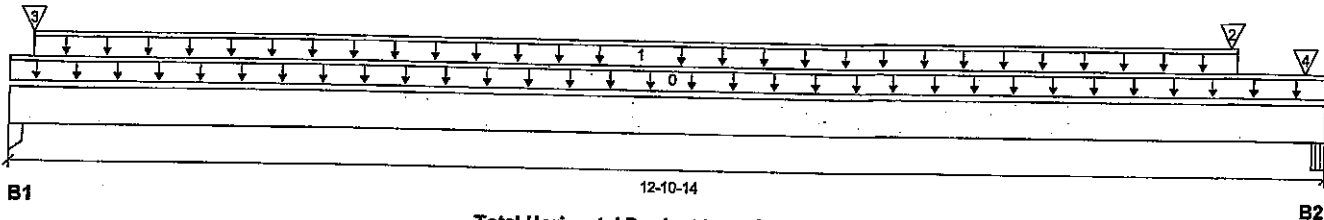
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B5(i5067)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 12-10-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	606 / 0	397 / 0		
B2, 5-1/4"	387 / 0	437 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-10-14	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	12-00-12	Top	23	11			n/a
2	B7(i5285)	Conc. Pt. (lbs)	L	12-00-00	12-00-00	Top	232	264			n/a
3	B3(i5075)	Conc. Pt. (lbs)	L	00-02-10	00-02-10	Top	458	240			n/a
4	14(i659)	Conc. Pt. (lbs)	L	12-08-06	12-08-06	Top	33	40			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1374 ft-lbs	35392 ft-lbs	3.9%	1	06-10-05
End Shear	647 lbs	14464 lbs	4.5%	1	11-05-12
Total Load Deflection	L/999 (0.029")	n/a	n/a	4	06-06-08
Live Load Deflection	L/999 (0.014")	n/a	n/a	5	06-06-08
Max Defl.	0.029"	n/a	n/a	4	06-06-08
Span / Depth	12.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Column	3-1/2" x 3-1/2"	1407 lbs	14.1%	9.4%	Unspecified
B2 Beam	5-1/4" x 3-1/2"	1128 lbs	11.5%	5.0%	Unspecified

Notes

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

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

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 11-07-10.

CONFORMS TO OBC 2012

AMENDED 2020



BWR NO. TAN 2372-21
STRUCTURAL
COMPONENT ONLY



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

1ST FLR FRAMING\Flush Beams\B5(i5067) (Flush Beam)

Dry | 1 span | No cant.

PASSED

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

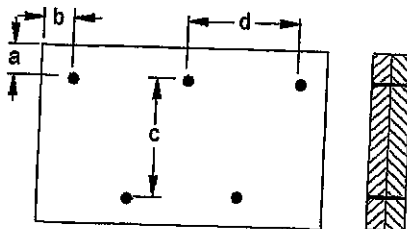
Description: 1ST FLR FRAMING\Flush Beams\B5(i5067)

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 = 493.5 lb/ft

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



DWG NO. YAM 7372-21

STRUCTURAL

COMPONENT ONLY

Disclosure

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



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

1ST FLR FRAMING\Flush Beams\B8H(i5852) (Flush Beam)

Dry | 1 span | No cant.

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

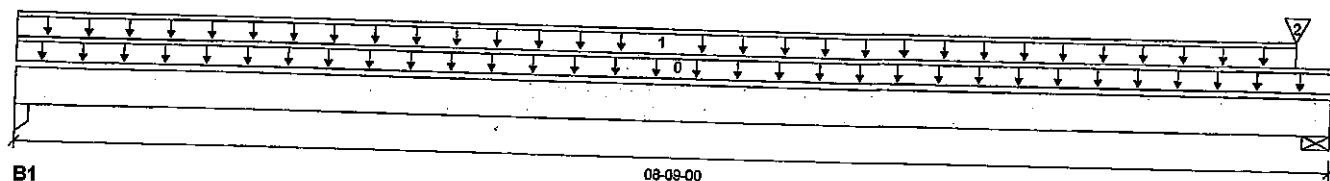
Description: 1ST FLR FRAMING\Flush Beams\B8H(i5852)

Specifier:

Designer: L.D.

Company:

March 23, 2021 17:20:52



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	88 / 0	69 / 0		
B2, 5-1/2"	196 / 0	137 / 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	08-09-00	Top	1.00	0.65	1.00	1.15	
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	08-06-04	Top	21	10			00-00-00
2	2(i50)	Conc. Pt. (lbs)	L	08-06-04	08-06-04	Top	106	65			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	443 ft-lbs	17696 ft-lbs	2.5%	1	04-02-10
End Shear	160 lbs	7232 lbs	2.2%	1	01-01-10
Total Load Deflection	L/999 (0.008")	n/a	n/a	4	04-02-10
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	04-02-10
Max Defl.	0.008"	n/a	n/a	4	04-02-10
Span / Depth	8.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	219 lbs	8.8%	5.8%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	465 lbs	7.8%	4.0%	Spruce-Pine-Fir

Notes

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

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

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

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. YAM 7374-21
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®



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B10H(i5762) (Flush Beam)
 Dry | 1 span | No cant.

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

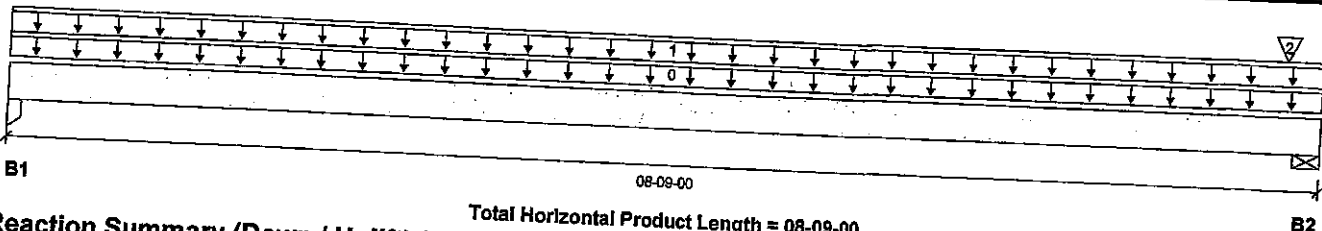
Description: 1ST FLR FRAMING\Flush Beams\B10H(i5762)

Specifier:

Designer: L.D.

Company:

March 23, 2021 17:20:52



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	32 / 0	41 / 0		
B2, 5-1/2"	134 / 0	106 / 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	08-09-00	Top	1.00	0.65	1.00	1.15	
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	08-09-00	Top	8	4			00-00-00
2	4(i80)	Conc. Pt. (lbs)	L	08-06-04	08-06-04	Top	100	62			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	201 ft-lbs	17696 ft-lbs	1.1%	1	04-02-10
End Shear	72 lbs	7232 lbs	1.0%	1	01-01-10
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	04-02-10
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	04-02-10
Max Defl.	0.004"	n/a	n/a	4	04-02-10
Span / Depth	8.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	99 lbs	4.0%	2.6%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	334 lbs	5.6%	2.8%	Spruce-Pine-Fir

Notes

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

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

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.

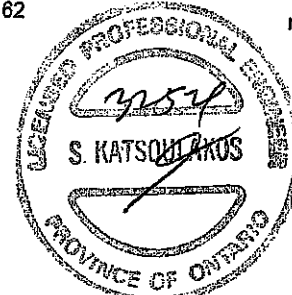
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

CONFORMS TO CBC 2012

UNENDED 2020



BWG NO. YAM 7373 -21
STRUCTURAL COMPONENT ONLY

Disclosure

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC1®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®.



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

PASSED

1ST FLR FRAMING\Flush Beams\B9H(i5048) (Flush Beam)

Dry | 1 span | No cant.

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

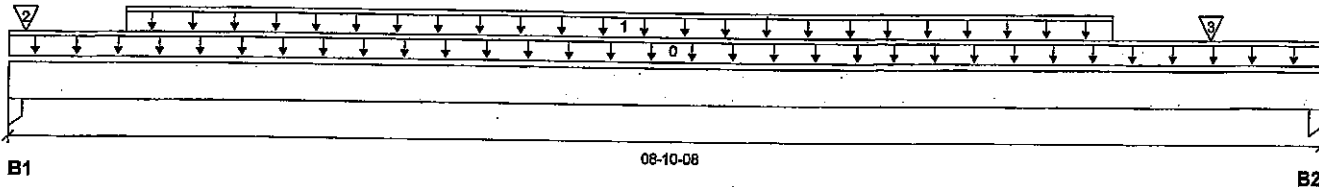
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B9H(i5048)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 08-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	1002 / 0	528 / 0		
B2, 1-3/4"	861 / 0	458 / 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	08-10-08	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	07-05-04	Top	206	103			n/a
2	J4(i4996)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	236	118			n/a
3	J4(i5017)	Conc. Pt. (lbs)	L	08-01-04	08-01-04	Top	243	122			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4236 ft-lbs	17696 ft-lbs	23.9%	1	04-01-04
End Shear	1665 lbs	7232 lbs	23.0%	1	07-08-14
Total Load Deflection	L/999 (0.083")	n/a	n/a	4	04-05-04
Live Load Deflection	L/999 (0.054")	n/a	n/a	5	04-05-04
Max Defl.	0.083"	n/a	n/a	4	04-05-04
Span / Depth	8.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	2162 lbs	86.9%	57.9%	Unspecified
B2	Column 1-3/4" x 1-3/4"	1864 lbs	75.0%	49.9%	Unspecified

Notes

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

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

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. YAM7375 -2 L
STRUCTURAL
COMPONENT ONLY

Disclosure

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Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods.

Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

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



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

PASSED

1ST FLR FRAMING\Flush Beams\B4(i5061) (Flush Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

March 23, 2021 17:20:52

Build 7773

Job name:

File name: GRANDVILLE 3 - EL1,3.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B4(i5061)

City, Province, Postal Code: HAMILTON

Specifier:

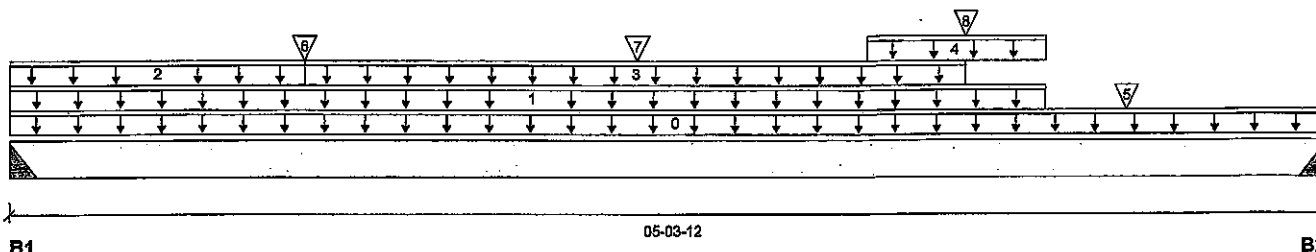
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 05-03-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	356 / 0	402 / 0		
B2, 3"	651 / 0	481 / 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	05-03-12	Top		6			00-00-00
1	16(i664)	Unf. Lin. (lb/ft)	L	00-00-00	04-02-00	Top		81			n/a
2	16(i664)	Unf. Lin. (lb/ft)	L	00-00-00	01-02-00	Top	53	26			n/a
3	16(i664)	Unf. Lin. (lb/ft)	L	01-02-00	03-10-00	Top	70	35			n/a
4	16(i664)	Unf. Lin. (lb/ft)	L	03-05-00	04-02-00	Top	64	39			n/a
5	B6(i5076)	Conc. Pt. (lbs)	L	04-06-00	04-06-00	Top	463	242			n/a
6	J5(i5000)	Conc. Pt. (lbs)	L	01-02-00	01-02-00	Top	81	40			n/a
7	J5(i5046)	Conc. Pt. (lbs)	L	02-06-00	02-06-00	Top	78	37			n/a
8	J5(i5037)	Conc. Pt. (lbs)	L	03-10-00	03-10-00	Top	86	41			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1472 ft-lbs	17696 ft-lbs	8.3%	1	02-10-13
End Shear	1138 lbs	7232 lbs	15.7%	1	04-00-14
Total Load Deflection	L/999 (0.01")	n/a	n/a	4	02-08-12
Live Load Deflection	L/999 (0.005")	n/a	n/a	5	02-08-12
Max Defl.	0.01"	n/a	n/a	4	02-08-12
Span / Depth	5.0				

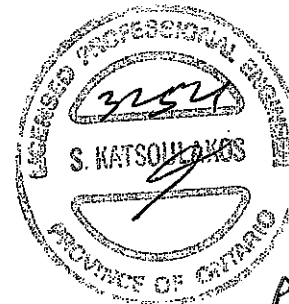
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 3" x 1-3/4"	1036 lbs	n/a	16.2%	HUS1.81/10
B2	Hanger 3" x 1-3/4"	1579 lbs	n/a	24.6%	HUS1.81/10

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.



SWH NO. TAM 7376 -21
STRUCTURAL
COMPONENT ONLY



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

1ST FLR FRAMING\Flush Beams\B4(I5061) (Flush Beam)

Dry | 1 span | No cant.

PASSED

March 23, 2021 17:20:52

BC CALC® Member Report
Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B4(I5061)

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.

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. YAM 7376-21
STRUCTURAL
COMPONENT ONLY

Disclosure

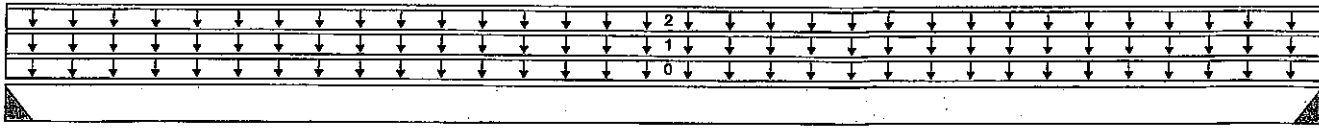
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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B6(I5076) (Flush Beam)**BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

March 23, 2021 17:20:52

Job name:
Address:
City, Province, Postal Code: HAMILTON
Customer:
Code reports: CCMC 12472-RFile name: GRANDVILLE 3 - EL1,3.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B6(I5076)
Specifier:
Designer: L.D.
Company:B1 03-06-10 B2
Total Horizontal Product Length = 03-06-10**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B1, 3"	463 / 0	242 / 0		
B2, 3"	463 / 0	242 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-06-10	Top		6			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-00-00	03-06-10	Top	240	120			n/a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-06-10	Top	21	10			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	708 ft-lbs	17696 ft-lbs	4.0%	1	01-09-05
End Shear	301 lbs	7232 lbs	4.2%	1	01-02-14
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	01-09-05
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-09-05
Max Defl.	0.002"	n/a	n/a	4	01-09-05
Span / Depth	3.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	3" x 1-3/4"	997 lbs	n/a	15.6%	HUS1.81/10
B2 Hanger	3" x 1-3/4"	997 lbs	n/a	15.6%	HUS1.81/10

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.
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
Calculations assume unbraced length of Top: 00-00-00, Bottom: 03-06-10.

CONFORMS TO OBC 2012

AMENDED 2020



UUC NO. 7377-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

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

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B7(I5285) (Flush Beam)**

Dry | 1 span | No cant.

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

File name: GRANDVILLE 3 - EL1,3.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B7(I5285)

City, Province, Postal Code: HAMILTON

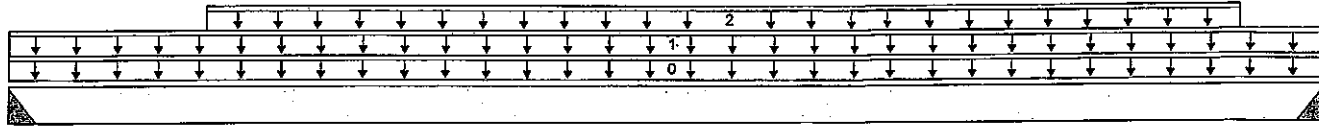
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

03-04-08

B2

Total Horizontal Product Length = 03-04-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	221 / 0	257 / 0		
B2, 3"	232 / 0	264 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-04-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	11(i656)	Unf. Lin. (lb/ft)	L	00-00-00	03-04-08	Top	121	142			n/a
2	11(i656)	Unf. Lin. (lb/ft)	L	00-06-00	03-02-00	Top	15	8			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	448 ft-lbs	17696 ft-lbs	2.5%	1	01-08-03
End Shear	556 lbs	7232 lbs	7.7%	1	01-02-14
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-08-03
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-08-03
Max Defl.	0.001"	n/a	n/a	4	01-08-03
Span / Depth	3.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 3" x 1-3/4"	653 lbs	n/a	10.2%	HUS1.81/10
B2	Hanger 3" x 1-3/4"	678 lbs	n/a	10.6%	HUS1.81/10

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.

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 03-04-08.

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAN 7378-21

STRUCTURAL

COMPONENT ONLY

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

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B3(I5075) (Flush Beam)**

Dry | 1 span | No cant.

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

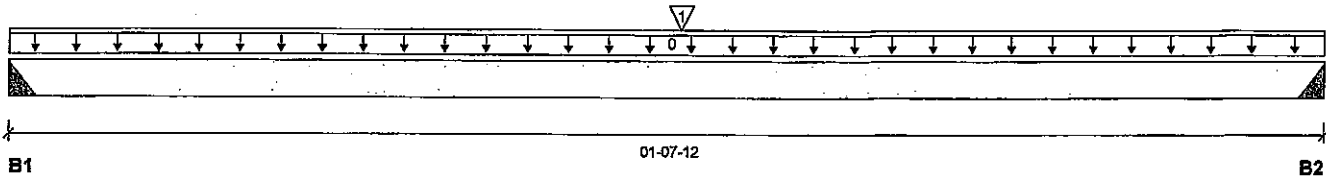
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B3(I5075)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 01-07-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	418 / 0	219 / 0		
B2, 3"	433 / 0	227 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-07-12	Top	1.00	0.65	1.00	1.15	00-00-00
1	-	Conc. Pt. (lbs)	L	00-10-00	00-10-00	Top	846	434			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	578 ft-lbs	17696 ft-lbs	3.3%	1	00-10-00
End Shear	147 lbs	7232 lbs	2.0%	1	01-02-14
Total Load Deflection	L/999 (0")	n/a	n/a	4	00-10-00
Live Load Deflection	L/999 (0")	n/a	n/a	5	00-10-00
Max Defl.	0"	n/a	n/a	4	00-10-00
Span / Depth	1.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	3" x 1-3/4"	901 lbs	n/a	14.1%	HUS1.81/10
B2 Hanger	3" x 1-3/4"	933 lbs	n/a	14.6%	HUS1.81/10

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.

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-08-12.



OWG NO. 7329-21
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®

CONFORMS TO OBC 2012

AMENDED 2020

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B18(i7647) (Flush Beam)**

Dry | 1 span | No cant.

March 24, 2021 16:57:42

BC CALC® Member Report

Build 7773

Job name:

File name: GRANDVILLE 3 - EL1,3 - DECK COND.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B18(i7647)

City, Province, Postal Code: HAMILTON

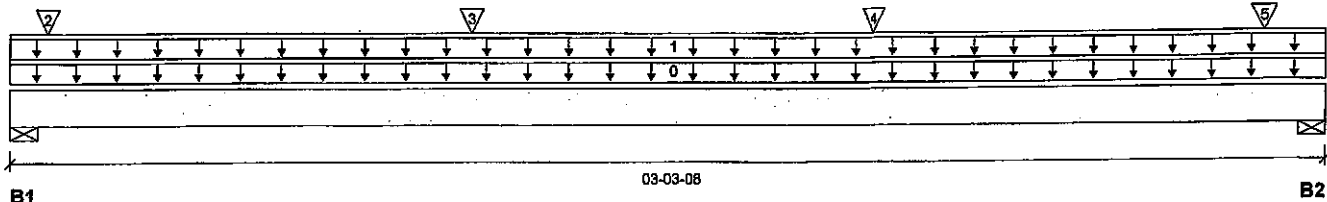
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 03-03-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-3/4"	1727 / 0	1258 / 0	222 / 0	
B2, 3-3/4"	1329 / 0	1021 / 0	201 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-03-08	Top		12			00-00-00
1	E5(i42)	Unf. Lin. (lb/ft)	L	00-00-00	03-03-08	Top	381	407	129		n/a
2	-	Conc. Pt. (lbs)	L	00-01-02	00-01-02	Top	665	332			n/a
3	J7(i7620)	Conc. Pt. (lbs)	L	01-01-12	01-01-12	Top	379	189			n/a
4	J7(i7786)	Conc. Pt. (lbs)	L	02-01-12	02-01-12	Top	379	189			n/a
5	J7(i7675)	Conc. Pt. (lbs)	L	03-01-12	03-01-12	Top	379	189			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1709 ft-lbs	35392 ft-lbs	4.8%	1	01-09-02
End Shear	945 lbs	14464 lbs	6.5%	1	01-11-14
Total Load Deflection	L/999 (0.002")	n/a	n/a	35	01-08-12
Live Load Deflection	L/999 (0.001")	n/a	n/a	51	01-08-12
Max Defl.	0.002"	n/a	n/a	35	01-08-12
Span / Depth	2.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-3/4" x 3-1/2"	4385 lbs	35.4%	17.9%	Spruce-Pine-Fir
B2	Wall/Plate 3-3/4" x 3-1/2"	3471 lbs	43.0%	21.7%	Spruce-Pine-Fir

Notes

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

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

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.

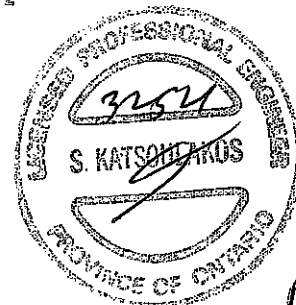
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

AMENDED 2020



124 NO. YAN 7380-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B18(i7647) (Flush Beam)

Dry | 1 span | No cant.

March 24, 2021 16:57:42

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3 - DECK COND.mmdl

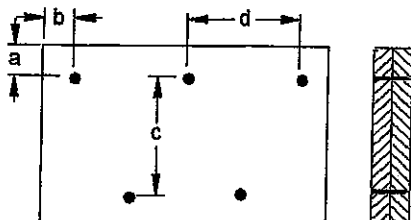
Description: 1ST FLR FRAMING\Flush Beams\B18(i7647)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 8"

Calculated Side Load = 402.4 lb/ft

Connectors are: 16d Nails

3/4" ARDOX SPIRAL



OWG NO. TAM 7380-21
STRUCTURAL
COMPONENT ONLY

Disclosure

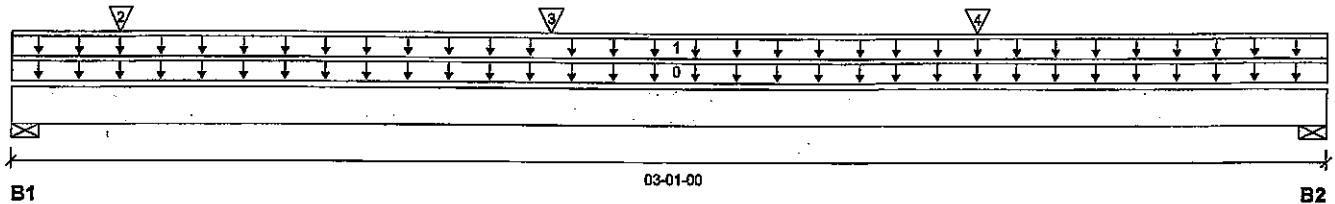
Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability 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\B19(i7652) (Flush Beam)**BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

March 24, 2021 16:57:42

Job name:
Address:
City, Province, Postal Code: HAMILTON
Customer:
Code reports: CCMC 12472-RFile name: GRANDVILLE 3 - EL1,3 - DECK COND.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B19(i7652)
Specifier:
Designer: L.D.
Company:**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1286 / 0	995 / 0	198 / 0	
B2, 3-1/2"	1027 / 0	866 / 0	198 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top		12			00-00-00
1	E1(i45)	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top	381	408	129		n/a
2	J7(i7732)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	379	189			n/a
3	J7(i7690)	Conc. Pt. (lbs)	L	01-03-00	01-03-00	Top	379	189			n/a
4	J7(i7646)	Conc. Pt. (lbs)	L	02-03-00	02-03-00	Top	379	189			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1716 ft-lbs	35392 ft-lbs	4.8%	1	01-05-05
End Shear	971 lbs	14464 lbs	6.7%	1	01-03-06
Total Load Deflection	L/999 (0.002")	n/a	n/a	35	01-06-08
Live Load Deflection	L/999 (0.001")	n/a	n/a	51	01-06-08
Max Defl.	0.002"	n/a	n/a	35	01-06-08
Span / Depth	2.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	3371 lbs	44.7%	22.6%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	2821 lbs	37.4%	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.

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

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

CONFORMS TO OBC 2012

AMENDED 2020

GWS NO. TAN 7391-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B19(i7652) (Flush Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

March 24, 2021 16:57:42

Build 7773

Job name:

File name: GRANDVILLE 3 - EL1,3 - DECK COND.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B19(i7652)

City, Province, Postal Code: HAMILTON

Specifier:

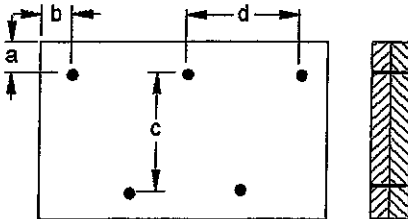
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8" u

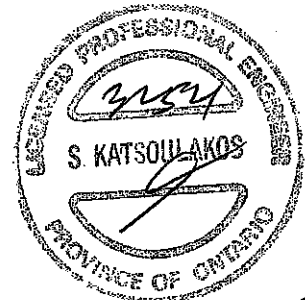
b minimum = 3"

d = 8" u

Calculated Side Load = 402.4 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL



DATE NO. TAM 7381-21

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\B13 DR(i5334) (Dropped Beam)

PASSED

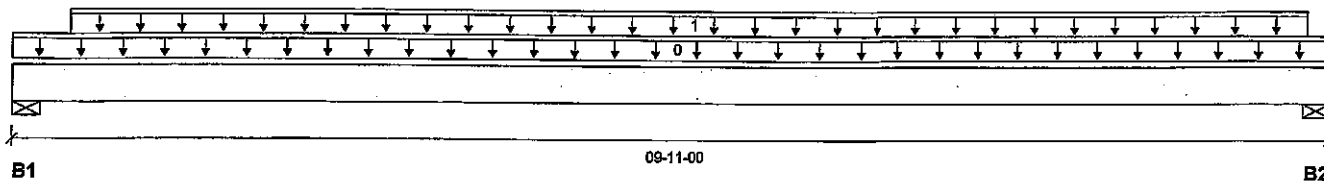
BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

March 23, 2021 17:20:52

Job name:
Address:
City, Province, Postal Code: HAMILTON
Customer:
Code reports: GCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl
Description: 2ND FLR FRAMING\Dropped Beams\B13 DR(i5334)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 09-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2972 / 0	1533 / 0		
B2, 3-1/2"	2992 / 0	1543 / 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	09-11-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-00	09-09-00	Top	639	319			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14739 ft-lbs	23219 ft-lbs	63.5%	1	05-01-00
End Shear	5674 lbs	11571 lbs	49.0%	1	01-01-00
Total Load Deflection	L/339 (0.335")	n/a	70.8%	4	04-11-00
Live Load Deflection	L/514 (0.221")	n/a	70.1%	5	04-11-00
Max Defl.	0.335"	n/a	n/a	4	04-11-00
Span / Depth	11.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	6374 lbs	39.0%	42.6%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	6416 lbs	39.3%	42.9%	Spruce-Pine-Fir

Notes

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

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

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.

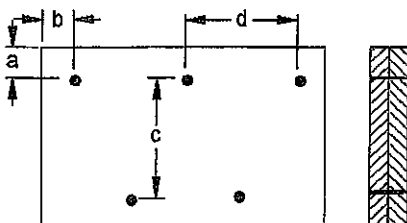
Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-09-06, Bottom: 09-11-00.

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



REG NO. 738221
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B13 DR(i5334) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

March 23, 2021 17:20:52

Build 7773

Job name:

File name: GRANDVILLE 3 - EL1,3.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B13 DR(i5334)

City, Province, Postal Code: HAMILTON

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

3/4" ARDOX SPIRAL



DWG NO. TAN 7302-21
STRUCTURAL

COMPONENT ONLY

Disclosure

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**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B16 DR(I5870) (Dropped Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 23, 2021 17:20:52

Build 7773

Job name:

File name: GRANDVILLE 3 - EL1,3.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B16 DR(I5870)

City, Province, Postal Code: HAMILTON

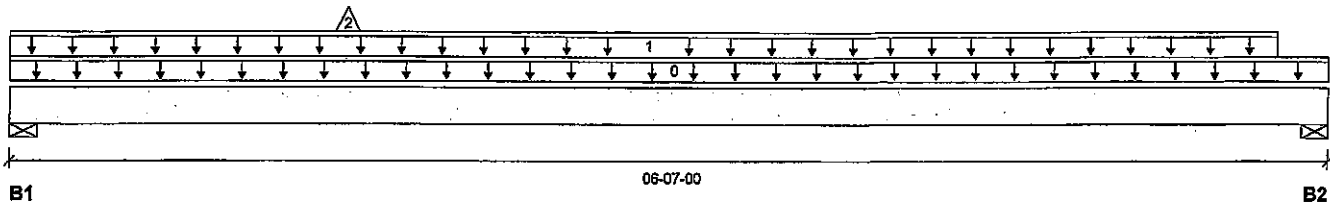
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1794 / 0	929 / 0		
B2, 3-1/2"	1460 / 0	762 / 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	06-04-00	Top	514	257			n/a
2	J2(I5704)	Conc. Pt. (lbs)	L	01-08-00	01-08-00	Top	-1				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4931 ft-lbs	23219 ft-lbs	21.2%	1	03-00-00
End Shear	2838 lbs	11571 lbs	24.5%	1	05-06-00
Total Load Deflection	L/999 (0.046")	n/a	n/a	6	03-04-00
Live Load Deflection	L/999 (0.03")	n/a	n/a	8	03-04-00
Max Defl.	0.046"	n/a	n/a	6	03-04-00
Span / Depth	7.7				

Bearing Supports

	Dlm. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	3851 lbs	23.6%	25.8%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	3143 lbs	19.2%	21.0%	Spruce-Pine-Fir

Notes

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

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

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

Calculations assume unbraced length of Top: 01-02-12, Bottom: 06-07-00.

CONFORMS TO OBC 2012

AMENDED 2020



32524
S. KATSOULAKOS
P64
THE NO. YAM 7383-21
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(I5870) (Dropped Beam)

Dry | 1 span | No cant.

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

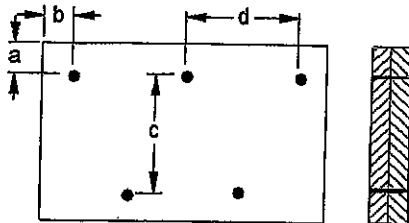
Description: 2ND FLR FRAMING\Dropped Beams\B16 DR(I5870)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 8"

Connectors are: 3/4" ARDOX SPIRAL Nails



ENG. NO. TAM 7389-21

STRUCTURAL

COMPONENT ONLY

Disclosure

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

2ND FLR FRAMING\Flush Beams\B14(i5064) (Flush Beam)

Dry | 1 span | No cant.

PASSED

BC CALC® Member Report
Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

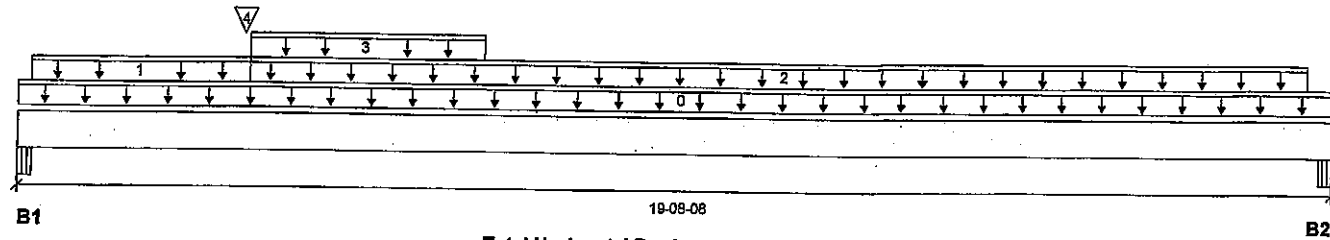
Description: 2ND FLR FRAMING\Flush Beams\B14(i5064)

Specifier:

Designer: L.D.

Company:

March 23, 2021 17:20:52



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	787 / 0	515 / 0		
B2, 4-1/2"	283 / 0	261 / 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	19-08-08	Top		12			00-00-00
1	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-04	03-05-00	Top	33	17			n/a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-05-00	19-04-00	Top	6	3			n/a
3	STAIRS	Unf. Lin. (lb/ft)	L	03-05-00	06-11-00	Top	240	120			n/a
4	B15(i5736)	Conc. Pt. (lbs)	L	03-04-02	03-04-02	Top	26	17			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	7247 ft-lbs	35392 ft-lbs	20.5%	1	06-03-02
End Shear	1720 lbs	14464 lbs	11.9%	1	01-04-06
Total Load Deflection	L/759 (0.302")	n/a	31.6%	4	09-00-12
Live Load Deflection	L/1298 (0.176")	n/a	27.7%	5	08-10-09
Max Defl.	0.302"	n/a	n/a	4	09-00-12
Span / Depth	19.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 4-1/2" x 3-1/2"	1824 lbs	21.7%	9.5%	Unspecified
B2	Beam 4-1/2" x 3-1/2"	750 lbs	8.9%	3.9%	Unspecified

Notes

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

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

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 15-11-00.

CONFORMS TO OBC 2012

AMENDED 2020



100 NO. TAN 7384-21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B14(i5064) (Flush Beam)
 Dry | 1 span | No cant.

PASSED

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

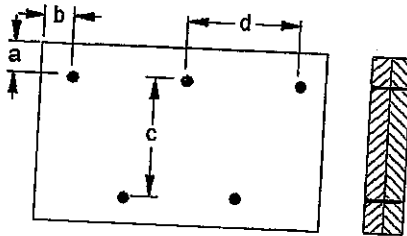
Description: 2ND FLR FRAMING\Flush Beams\B14(i5064)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 6"

Calculated Side Load = 30.1 lb/ft

Connectors are: 3 1/2" ARDOX SPIRAL Nails



ENG NO. TAN 7384-21

STRUCTURAL

COMPONENT ONLY

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Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B15(i5736) (Flush Beam)
 Dry | 1 span | No cant.

PASSED

March 23, 2021 17:20:52

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

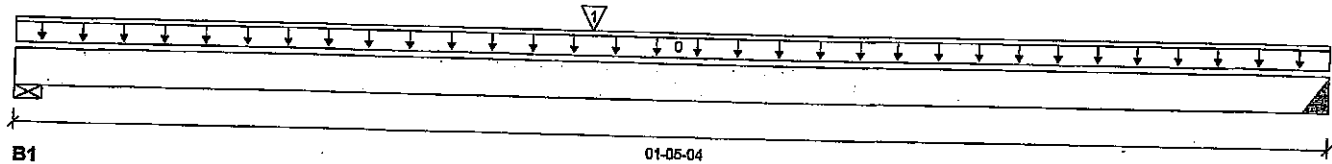
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B15(i5736)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 01-05-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	45 / 0	27 / 0		
B2, 3"	29 / 0	19 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-05-04	Top	1.00	0.65	1.00	1.15	
1	J4(i5848)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	Top	74	37			00-00-00 n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	39 ft-lbs	17696 ft-lbs	0.2%	1	00-07-08
End Shear	99 lbs	7232 lbs	1.4%	1	00-03-08
Span / Depth	1.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	102 lbs	2.7%	1.4%	Spruce-Pine-Fir
B2	Hanger 3" x 1-3/4"	66 lbs	n/a	1.0%	HUS1.81/10

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

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

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM 2305-21
 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****PASSED****2ND FLR FRAMING\Flush Beams\B99(i11391) (Flush Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 24, 2021 17:09:10

Build 7773

Job name:

File name: GRANDVILLE 3 - EL 2.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B99(i11391)

City, Province, Postal Code: HAMILTON

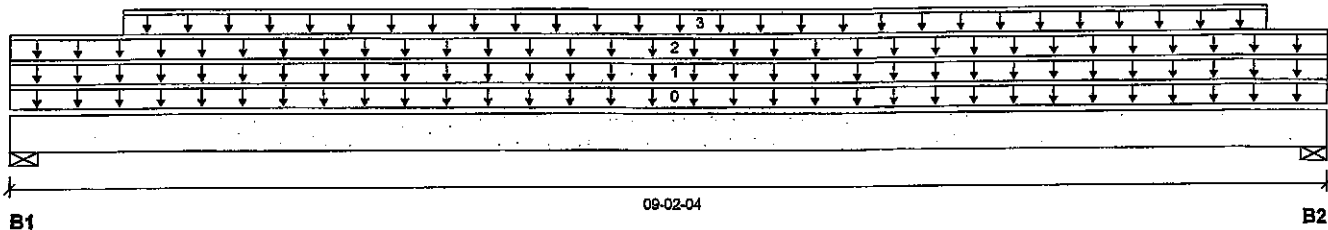
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-02-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 6-3/4"	928 / 0	1124 / 0	511 / 0	
B2, 5-1/2"	986 / 0	1138 / 0	500 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-02-04	Top		12			00-00-00
1	E47(i6411)	Unf. Lin. (lb/ft)	L	00-00-00	09-02-04	Top		108	71		n/a
2	J20 F	Unf. Lin. (lb/ft)	L	00-00-00	09-02-04	Top		23	39		n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	08-09-04	Top	239	119			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	6842 ft-lbs	35392 ft-lbs	19.3%	1	04-05-04
End Shear	2783 lbs	14464 lbs	19.2%	1	01-08-10
Total Load Deflection	L/999 (0.067")	n/a	n/a	35	04-08-04
Live Load Deflection	L/999 (0.038")	n/a	n/a	51	04-08-04
Max Defl.	0.067"	n/a	n/a	35	04-08-04
Span / Depth	8.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 6-3/4" x 3-1/2"	3309 lbs	22.8%	11.5%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	3401 lbs	28.7%	14.5%	Spruce-Pine-Fir

Notes

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

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

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

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO CBC 2012

REVISED 2020

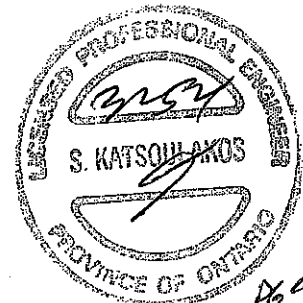


FIG NO. TAM 2306-21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B99(i11391) (Flush Beam)

PASSED

BC CALC® Member Report
 Build 7773

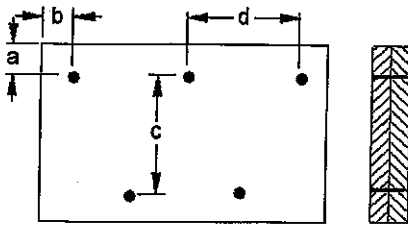
Dry | 1 span | No cant.

March 24, 2021 17:09:10

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

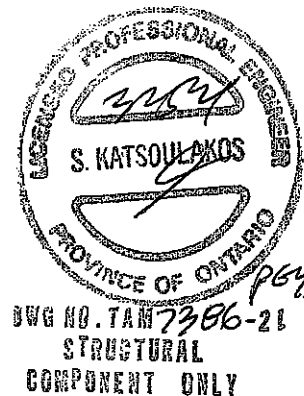
File name: GRANDVILLE 3 - EL 2.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B99(i11391)
 Specifier:
 Designer: L.D.
 Company:

Connection Diagram: Full Length of Member



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

Calculated Side Load = 677.3 lb/ft
 Connectors are: 16d Nails
3 1/2" ARDOX SPIRAL



Disclosure

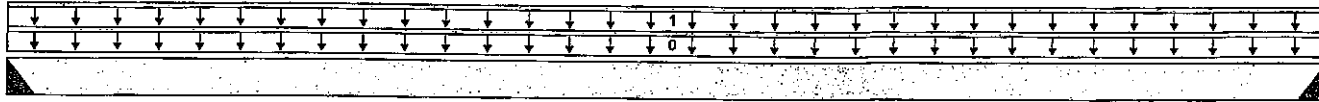
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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Dropped Beams\B39 E(I6529) (Dropped Beam)**BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

June 15, 2021 11:09:21

Job name:
Address:
City, Province, Postal Code: HAMILTON
Customer:
Code reports: CCMC 12472-RFile name: GRANDVILLE 3 - EL1,3.mmdl
Description: 2ND FLR FRAMING\Dropped Beams\B39 E(I6529)
Specifier:
Designer: L.D.
Company:

B1

09-00-08

B2

Total Horizontal Product Length = 09-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"		122 / 0	285 / 0	
B2, 2-1/2"		122 / 0	285 / 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	09-00-08	Top		12			00-00-00
1	DRIFT	Unf. Lin. (lb/ft)	L	00-00-00	09-00-08	Top		15	63		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1228 ft-lbs	22013 ft-lbs	5.6%	1	04-06-04
End Shear	426 lbs	14464 lbs	2.9%	1	01-02-06
Total Load Deflection	L/999 (0.012")	n/a	n/a	12	04-06-04
Live Load Deflection	L/999 (0.009")	n/a	n/a	17	04-06-04
Max Defl.	0.012"	n/a	n/a	12	04-06-04
Span / Depth	8.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	2-1/2" x 3-1/2"	580 lbs	n/a	5.4%	HUC410
B2 Hanger	2-1/2" x 3-1/2"	580 lbs	n/a	5.4%	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.
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
Calculations assume unbraced length of Top: 09-00-08, Bottom: 09-00-08.

CONFORMS TO CBC 2012

AMENDED 2020

DWG NO. TAM13/29 -21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Dropped Beams\B39 E(i6529) (Dropped Beam)
 Dry | 1 span | No cant.

PASSED

BC CALC® Member Report
 Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B39 E(i6529)

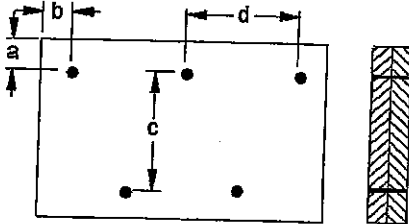
Specifier:

Designer: L.D.

Company:

June 15, 2021 11:09:21

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



SWG NO. TAM 13129-21
 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

2ND FLR FRAMING\Flush Beams\B37 E(i6544) (Flush Beam)

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

Dry | 3 spans | R cant.

June 15, 2021 11:09:21

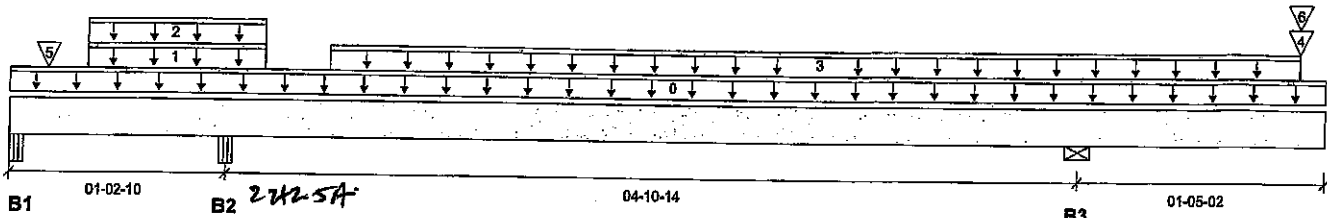
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B37 E(i6544)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 07-06-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	8 / 0	160 / 0	323 / 0	
B2, 5-1/4"	14 / 0	0 / 59	6 / 486	
B3, 5-1/2"	0 / 0	442 / 0	1038 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-06-10	Top	1.00	0.65	1.00	1.15	
1	E17(i52)	Unf. Lin. (lb/ft)	L	00-05-04	01-05-04	Top		81			00-00-00
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-05-04	01-05-04	Top	20	10			n/a
3	DRIFT	Unf. Lin. (lb/ft)	L	01-09-12	07-04-14	Top		15	63		n/a
4	-	Conc. Pt. (lbs)	L	07-04-14	07-04-14	Top		248	580		n/a
5	-	Conc. Pt. (lbs)	L	00-02-09	00-02-09	Top	1	24			n/a
6	DRIFT	Conc. Pt. (lbs)	L	07-04-14	07-04-14	Top			18		n/a

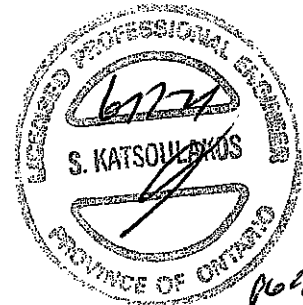
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	507 ft-lbs	29713 ft-lbs	1.7%	96	01-02-10
Neg. Moment	-1665 ft-lbs	-32063 ft-lbs	5.2%	49	06-01-08
End Shear	654 lbs	14464 lbs	4.5%	64	00-05-04
Cont. Shear	1223 lbs	14464 lbs	8.5%	49	07-04-02
Total Load Deflection	2xL/1998 (0.005")	n/a	n/a	125	07-06-10
Live Load Deflection	2xL/1998 (0.003")	n/a	n/a	177	07-06-10
Total Neg. Defl.	L/999 (-0.002")	n/a	n/a	125	04-06-04
Max Defl.	-0.002"	n/a	n/a	125	04-06-04
Span / Depth	5.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	693 lbs	7.1%	3.1%	Unspecified
B2 Beam	5-1/4" x 3-1/2"	0 lbs	n/a	n/a	Unspecified
B2 Uplift		803 lbs			
B3 Wall/Plate	5-1/2" x 3-1/2"	2110 lbs	17.8%	9.0%	Spruce-Pine-Fir

Cautions

Uplift of 803 lbs found at bearing B2. (SIMPSON 2-H2-54 @ 815 B2+A3)



DWG NO. TAN/3/30-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B37 E(16544) (Flush Beam)

Dry | 3 spans | R cant.

PASSED

BC CALC® Member Report
Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B37 E(16544)

Specifier:

Designer: L.D.

Company:

June 15, 2021 11:09:21

Notes

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

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

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

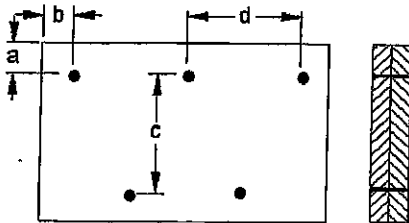
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

Calculations assume unbraced length of Top: 05-09-14, Bottom: 04-05-08.

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

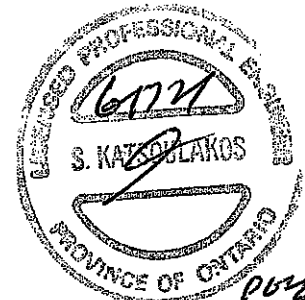
c = 7-7/8"

d = 8"

Calculated Side Load = 300.0 lb/ft

Connectors are: 16d x Nails

3/4" ARDOX SPIRAL



OWN NO. TAM 13/30-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

2ND FLR FRAMING\Flush Beams\B38 E(i6517) (Flush Beam)

Dry | 1 span | R cant.

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: GRANDVILLE 3 - EL1,3.mmdl

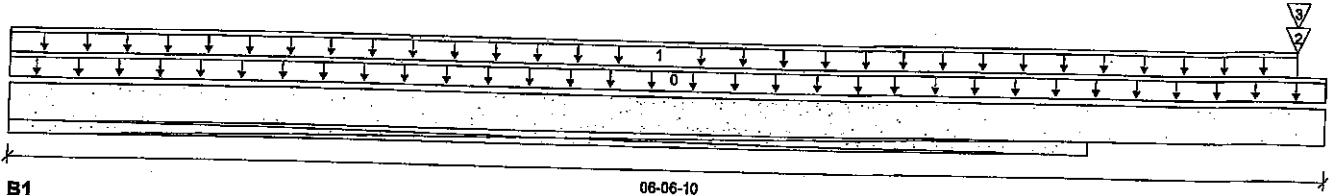
Description: 2ND FLR FRAMING\Flush Beams\B38 E(i6517)

Specifier:

Designer: L.D.

Company:

June 15, 2021 11:09:21



Total Horizontal Product Length = 06-06-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 64-1/4"		299 / 0	698 / 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	06-06-10	Top	1.00	0.65	1.00	1.15	
1	DRIFT	Unf. Lin. (lb/ft)	L	00-00-00	06-04-14	Top		12			00-00-00
2	B39 E(i6529)	Conc. Pt. (lbs)	L	06-04-14	06-04-14	Top		15	63		n/a
3	DRIFT	Conc. Pt. (lbs)	L	06-04-14	06-04-14	Top		122	285		n/a
								9			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	0 ft-lbs	21202 ft-lbs	n/a	0	06-06-10
Neg. Moment	-702 ft-lbs	-29713 ft-lbs	2.4%	1	05-04-04
End Shear	607 lbs	14464 lbs	4.2%	1	06-04-02
Total Load Deflection	2xL/1998 (0")	n/a	n/a	12	06-06-10
Live Load Deflection	2xL/1998 (0")	n/a	n/a	17	06-06-10
Span / Depth	1.2				
Dist. Load (B1)	113.25 lb/ft	57645.1 lb/ft	0.2%		

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 64-1/4" x 3-1/2"	1421 lbs	1.2%	0.5%	Unspecified

Notes

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

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

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.

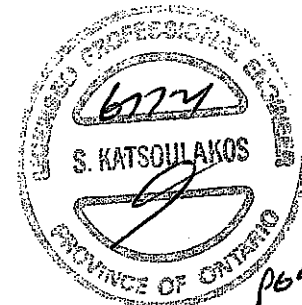
Importance Factor : Normal Part code : Part 9

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

Calculations assume unbraced length of Top: 06-03-02, Bottom: 05-09-14.

CONFORMS TO CBC 2012

AMENDED 2020



HWB NO. YAM/3131-21

STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B38 E(i6517) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7773

Dry | 1 span | R cant.

June 15, 2021 11:09:21

Job name:

File name: GRANDVILLE 3 - EL1,3.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B38 E(i6517)

City, Province, Postal Code: HAMILTON

Specifier:

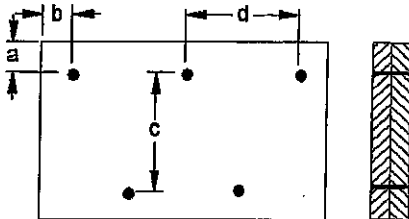
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

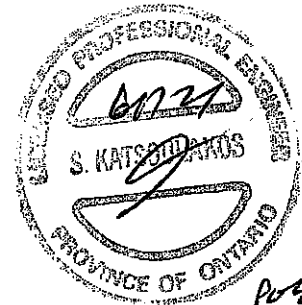
b minimum = 3"

d = 6"

Calculated Side Load = 290.0 lb/ft

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL



06/23/21
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 11-7/8" VERSA-LAM® 2.0 3100 SP

2ND FLR FRAMING\Flush Beams\B40 E(i6500) (Flush Beam)

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 15, 2021 11:09:21

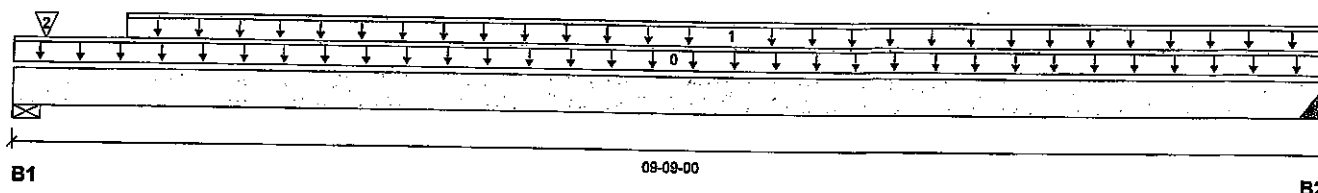
File name: GRANDVILLE 3 - EL1,3.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B40 E(i6500)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 09-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"		147 / 0	263 / 0	
B2, 2-1/2"		128 / 0	299 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-09-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	DRIFT	Unf. Lin. (lb/ft)	L	00-10-00	09-09-00	Top		15	63		n/a
2	E19(i60)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		24			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1354 ft-lbs	21421 ft-lbs	6.3%	1	05-00-00
End Shear	527 lbs	14464 lbs	3.6%	1	01-05-06
Total Load Deflection	L/999 (0.015")	n/a	n/a	12	05-00-00
Live Load Deflection	L/999 (0.01")	n/a	n/a	17	05-00-00
Max Defl.	0.015"	n/a	n/a	12	05-00-00
Span / Depth	9.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	578 lbs	4.9%	2.5%	Spruce-Pine-Fir
B2	Hanger 2-1/2" x 3-1/2"	608 lbs	n/a	5.7%	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.

Notes

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

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

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.

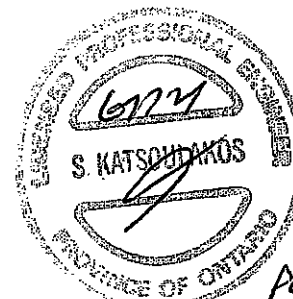
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 09-03-08, Bottom: 09-03-08.

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAN 13/32-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B40 E(i6500) (Flush Beam)

PASSED

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

June 15, 2021 11:09:21

File name: GRANDVILLE 3 - EL1,3.mmdl

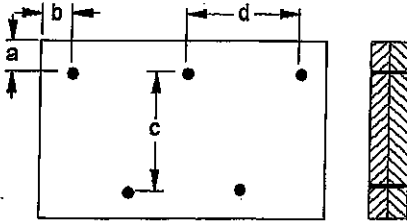
Description: 2ND FLR FRAMING\Flush Beams\B40 E(i6500)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

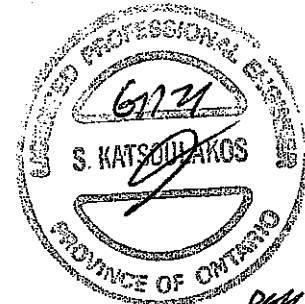
b minimum = 3"

c = 7-7/8"

d = 6"

Connectors are: 1/2" ARDOX SPIRAL

3 1/2" ARDOX SPIRAL



OWB NO. 7AM 13132-21

**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 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B17(i7271) (Flush Beam)****PASSED**BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

October 12, 2021 10:24:15

Job name:

File name: GRANDVILLE 3 EL 4.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(i7271)

City, Province, Postal Code: HAMILTON

Specifier:

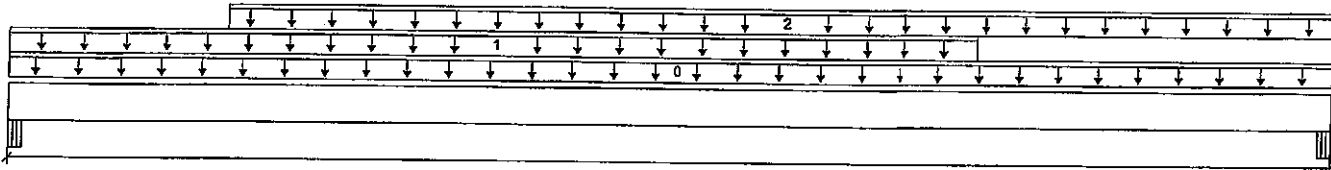
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



B1

01-04-02

B2

Total Horizontal Product Length = 01-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	6 / 0	69 / 0		
B2, 4-1/8"	7 / 0	32 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-04-02	Top	1.00	0.65	1.00	1.15	00-00-00
1	E17(i52)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-12	Top		81			n/a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	01-04-02	Top	11	6			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8 ft-lbs	23005 ft-lbs	n/a	0	00-08-10
End Shear	38 lbs	9401 lbs	0.4%	0	00-05-04
Span / Depth	0.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	97 lbs	1.5%	0.7%	Unspecified
B2 Beam	4-1/8" x 3-1/2"	45 lbs	0.9%	0.4%	Unspecified

Notes

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

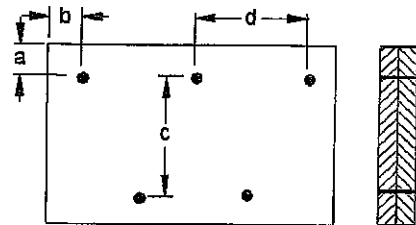
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86. CONFORMS TO CBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-06-12.

AMENDED 2020

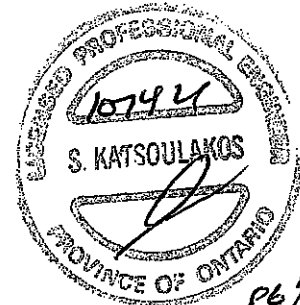
Connection Diagram: Full Length of Member

a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 6"

JWG NO. TAM 22510-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B17(i7271) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

October 12, 2021 10:24:15

Build 7773

Job name:

File name: GRANDVILLE 3 EL 4.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(i7271)

City, Province, Postal Code: HAMILTON

Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member

Connectors are: Nails

3 1/2" ARDOX SPIRAL



OWN NO. TAM 2251021
STRUCTURAL
COMPONENT ONLY

Disclosure

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

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B18(i8545) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

November 10, 2021 17:05:25

Build 7773

Job name:

File name: NEWB17 (1).mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B18(i8545)

City, Province, Postal Code: HAMILTON

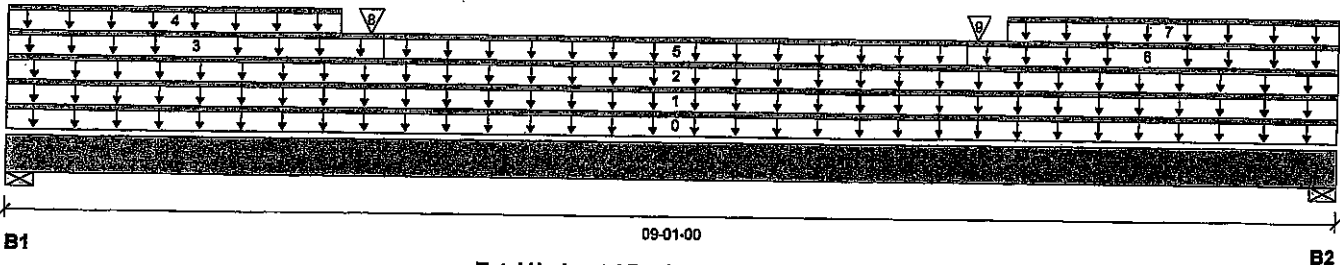
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	190 / 0	1820 / 0	2829 / 0	
B2, 5-1/2"	190 / 0	1816 / 0	2821 / 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	09-01-00	Top	1.00	0.65	1.00	1.15	
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	09-01-00	Top	33	30	63		00-00-00
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	09-01-00	Top	9	4			n/a
3	E53(i8727)	Unf. Lin. (lb/ft)	L	00-00-00	02-06-08	Top		81			n/a
4	E53(i8727)	Unf. Lin. (lb/ft)	L	00-00-00	02-03-00	Top		283	559		n/a
5	E52(i8726)	Unf. Lin. (lb/ft)	L	02-06-08	06-06-08	Top		41			n/a
6	E51(i8725)	Unf. Lin. (lb/ft)	L	06-06-08	09-01-00	Top		81			n/a
7	E51(i8725)	Unf. Lin. (lb/ft)	L	06-10-00	09-01-00	Top		283	559		n/a
8	E53(i8727)	Conc. Pt. (lbs)	L	02-05-08	02-05-08	Top		687	1289		n/a
9	E51(i8725)	Conc. Pt. (lbs)	L	06-07-08	06-07-08	Top		679	1273		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9993 ft-lbs	35392 ft-lbs	28.2%	13	04-06-08
End Shear	4554 lbs	14464 lbs	31.5%	13	01-05-06
Total Load Deflection	L/999 (0.1")	n/a	n/a	35	04-06-08
Live Load Deflection	L/999 (0.062")	n/a	n/a	51	04-06-08
Max Defl.	0.1"	n/a	n/a	35	04-06-08
Span / Depth	8.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	6708 lbs	56.6%	28.6%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	6690 lbs	56.5%	28.5%	Spruce-Pine-Fir



2021-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B18(i8545) (Flush Beam)

Dry | 1 span | No cant.

PASSED

BC CALC® Member Report
Build 7773

Job name:

Address:

City, Province, Postal Code: HAMILTON

Customer:

Code reports: CCMC 12472-R

File name: NEW B17 (1).mmdl

Description: 2ND FLR FRAMING\Flush Beams\B18(i8545)

Specifier:

Designer: L.D.

Company:

November 10, 2021 17:05:25

Notes

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

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

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.

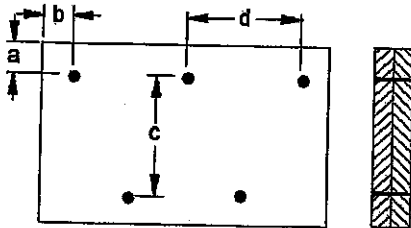
Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 09-01-00.

CONFORMS TO CBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 8"

Connectors are: 3/4" x 3" ARDOX SPIRAL Nails

3/4" ARDOX SPIRAL



OWG NO. TAM 24 201-21
**STRUCTURAL
COMPONENT ONLY**

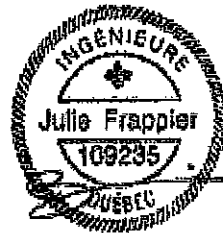
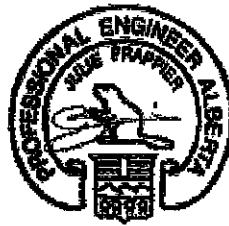
Disclosure

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Maximum Floor Spans

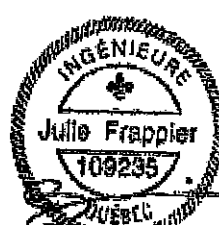
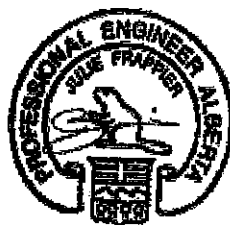
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A

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

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



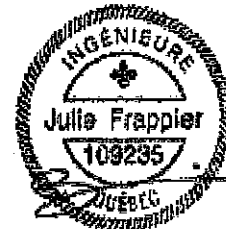
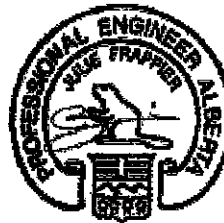
Maximum Floor Spans

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'-4"	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.



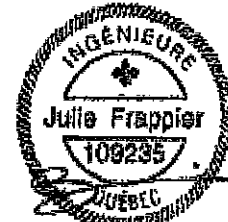
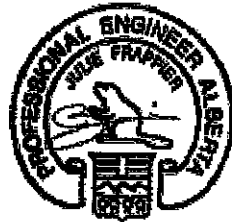
Maximum Floor Spans

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"	15'-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'-5"	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 1.5DL + 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.



Construction Detail

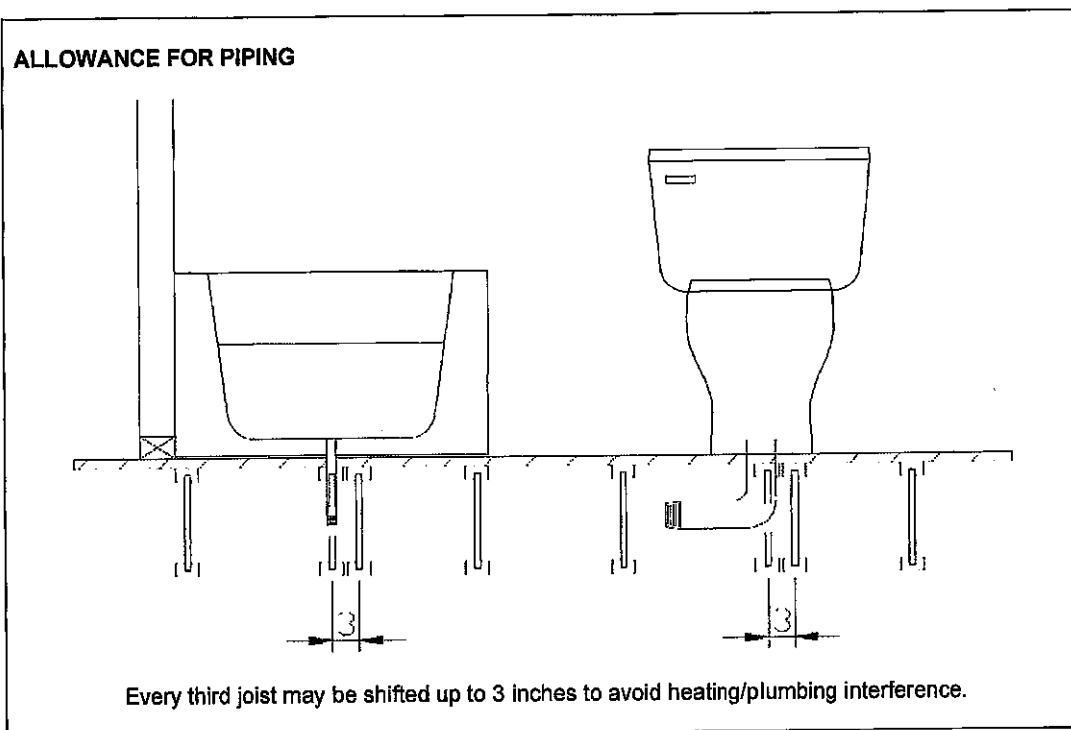
Limit States Design

Allowance for Piping (Installation Notes)

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

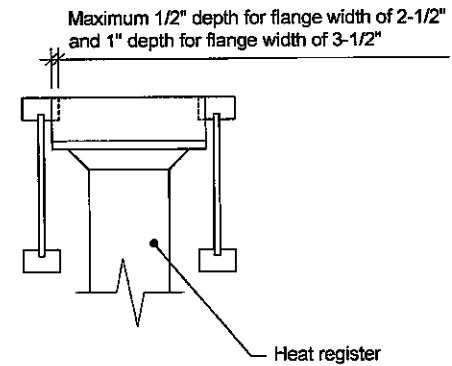
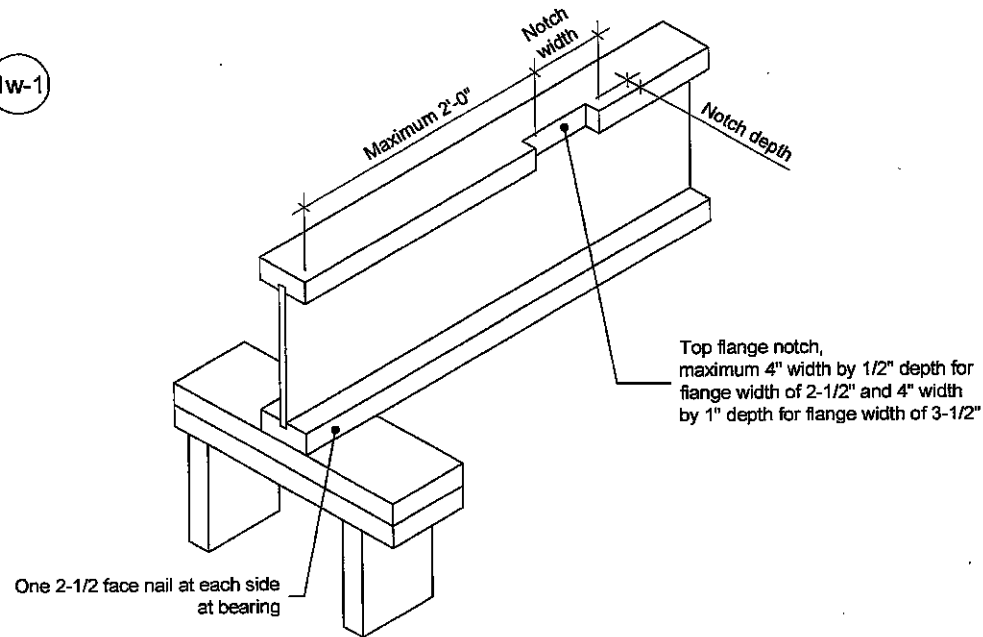
Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced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

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



Revised April 12, 2012

1w-1



Notes:

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

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

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

**NORDIC
STRUCTURES**

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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

1w-1