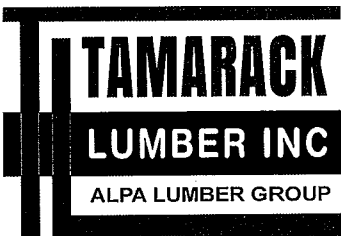


Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	12
J2	12-00-00	9 1/2" NI-40x	1	24
J2DJ	12-00-00	9 1/2" NI-40x	2	4
J3	10-00-00	9 1/2" NI-40x	1	2
J4	8-00-00	9 1/2" NI-40x	1	4
J5	6-00-00	9 1/2" NI-40x	1	8
J6	4-00-00	9 1/2" NI-40x	1	1
J7	2-00-00	9 1/2" NI-40x	1	2
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
12	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
2	H2	HUS1.81/10
2	H2	HUS1.81/10



FROM PLAN DATED:

BUILDER: BAYVIEW WELLINGTON

SITE: PASSAGE ON THE CANAL

MODEL: TH1E

ELEVATION: A,B

LOT:

CITY: ST CATHERINES

SALESMAN: M D

DESIGNER: AJ

REVISION:

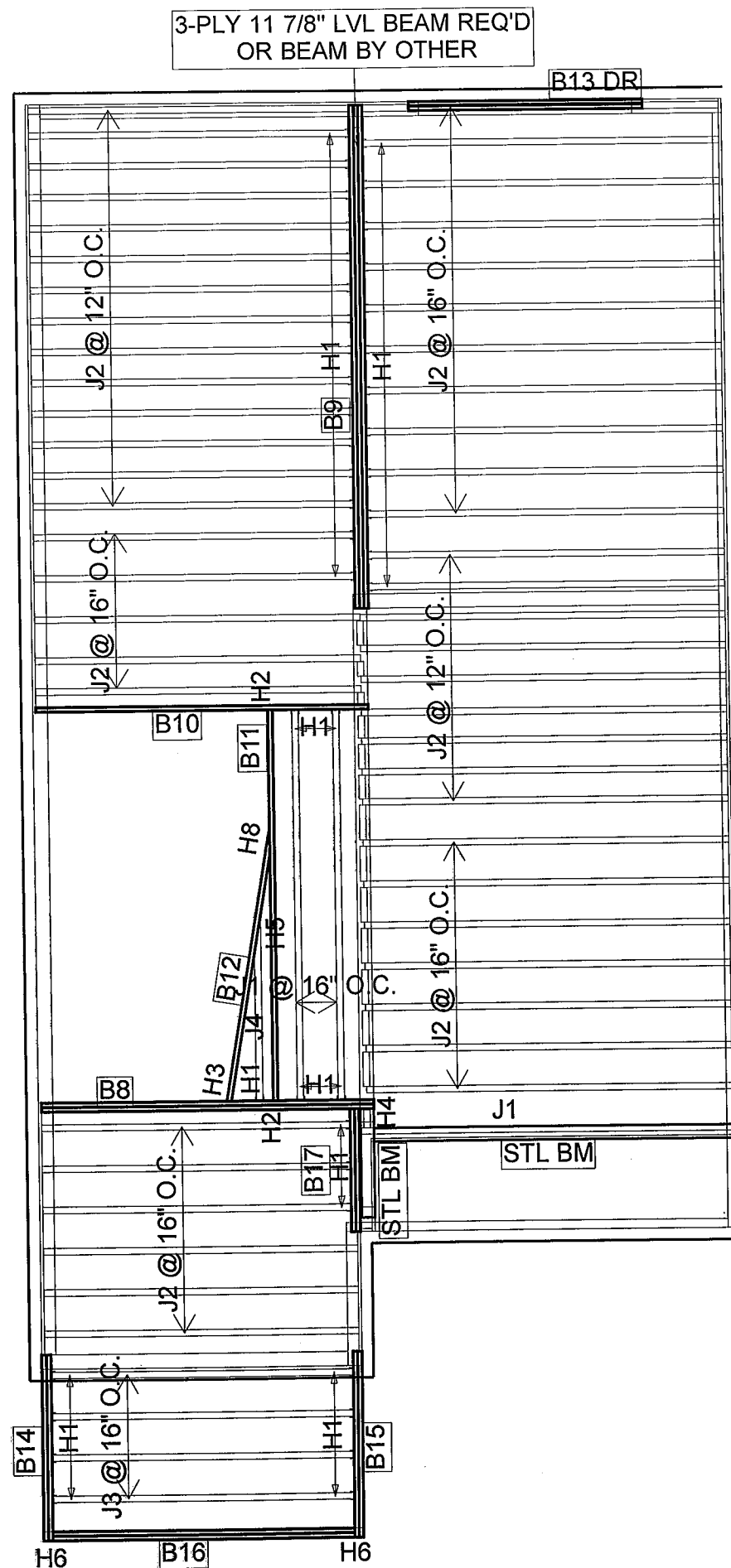
NOTES:

REFER TO THE NORDIC  
INSTALLATION GUIDE FOR PROPER  
STORAGE AND INSTALLATION.  
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2  
S.P.F REQ'D UNDER INTERIOR  
UNIFORM LOAD BEARING WALLS.  
MULTIPLE SQUASH BLOCKS REQ'D  
UNDER CONCENTRATED LOADS. SEE  
FIGURE 1. CANTILEVERED JOISTS  
INCLUDING CANT' OVER BRICK REQ.  
I-JOIST BLOCKING ALONG BEARING  
AND RIMBOARD CLOSURE AT ENDS.  
SEE FIGURES 4 & 5 FOR  
REINFORCEMENT REQUIREMENTS.  
FOR HOLES INCLUDING DUCT  
CHASE AND FIELD CUT OPENINGS  
SEE FIGURE 7, TABLES 1 & 2.  
CERAMIC TILE APPLICATION AS PER  
O.B.C 9.30.6.  
LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

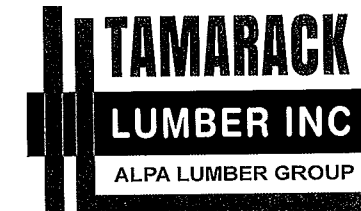
DATE: 10/24/2018

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	3
J2	12-00-00	9 1/2" NI-40x	1	52
J3	10-00-00	9 1/2" NI-40x	1	4
J4	6-00-00	9 1/2" NI-40x	1	1
B11	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B16	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13 DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B17	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
2	H1	IUS2.56/9.5
14	H1	IUS2.56/9.5
27	H1	IUS2.56/9.5
1	H2	HUS1.81/10
1	H2	HUS1.81/10
1	H3	LSSUI25
1	H4	HGUS410
1	H5	LSSUH310
2	H6	HUC410
1	H8	LS90



FROM PLAN DATED:

BUILDER: BAYVIEW WELLINGTON

SITE: PASSAGE ON THE CANAL

MODEL: TH1E

ELEVATION: A,B

LOT:

CITY: ST CATHERINES

SALESMAN: M D

DESIGNER: AJ

REVISION:

NOTES:

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft<sup>2</sup>

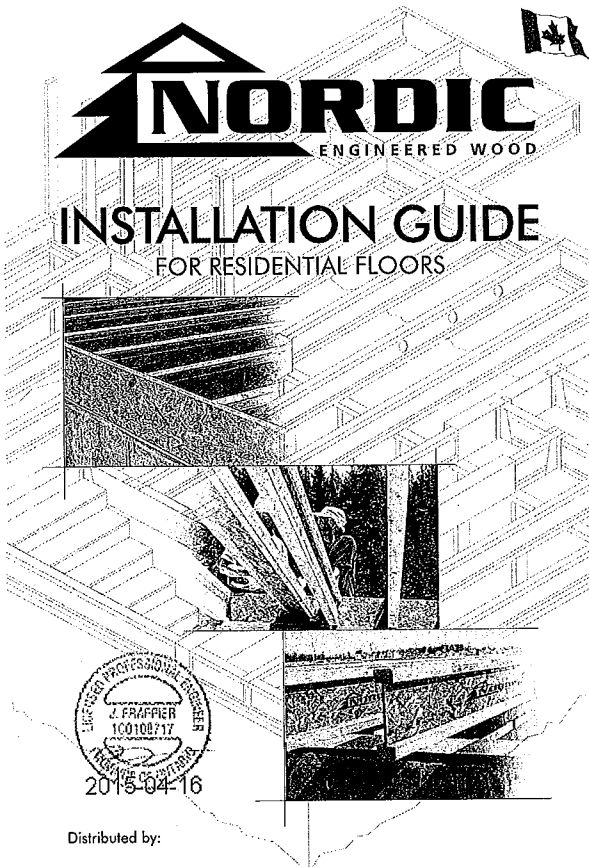
DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

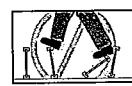
DATE: 10/25/2018

2nd FLOOR

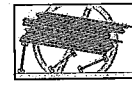


NCE 2015-04-16

## SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

- WARNING**
- I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.
- Avoid Accidents by Following these Important Guidelines:**
1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
  2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
    - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
    - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
  3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
  4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
  5. Never install a damaged I-joist.
- Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

## MAXIMUM FLOOR SPANS

1. Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-7.1.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

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

CCMC EVALUATION REPORT 13032-R

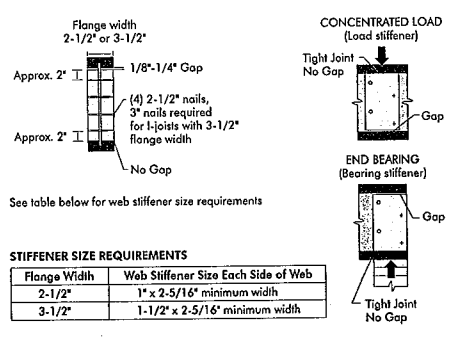
## STORAGE AND HANDLING GUIDELINES

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

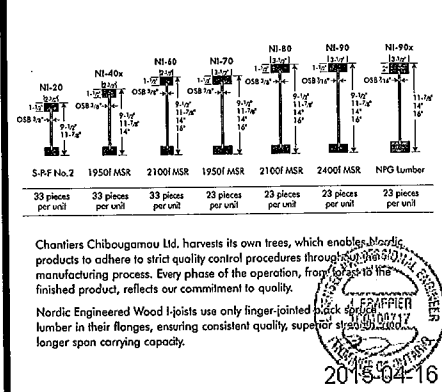
## WEB STIFFENERS

- RECOMMENDATIONS:**
- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
  - A **bearing stiffener** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
  - A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.
- SI units conversion: 1 inch = 25.4 mm

FIGURE 2 WEB STIFFENER INSTALLATION DETAILS



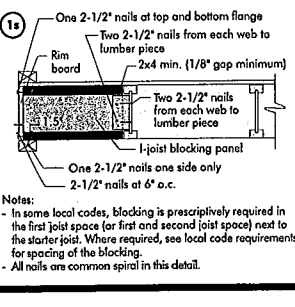
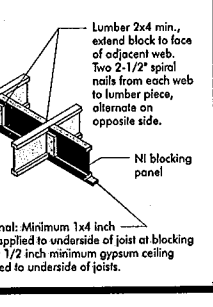
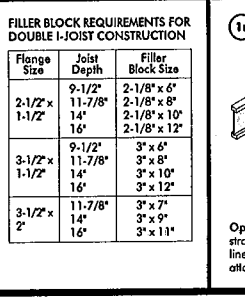
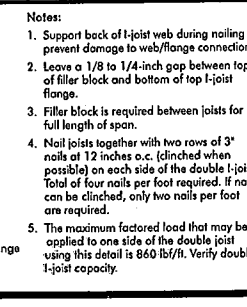
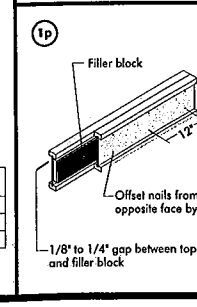
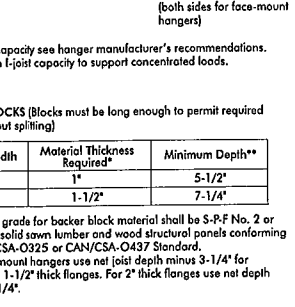
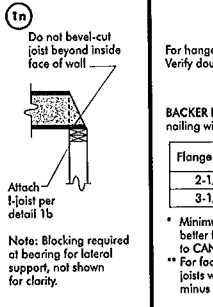
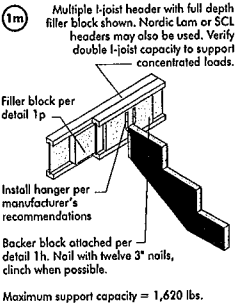
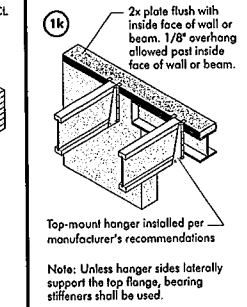
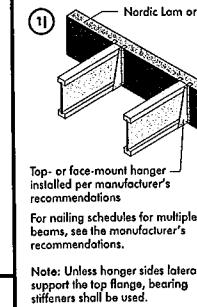
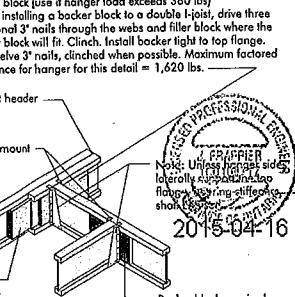
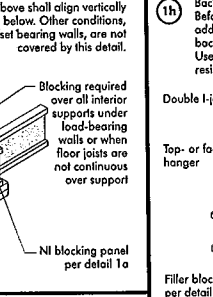
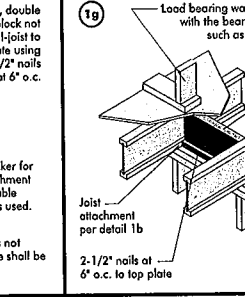
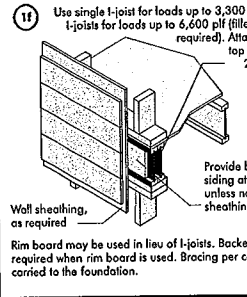
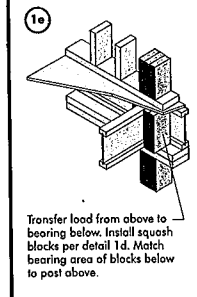
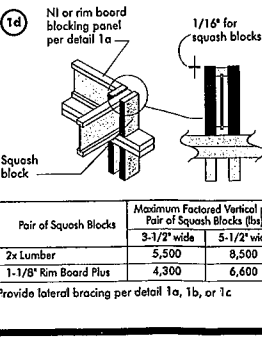
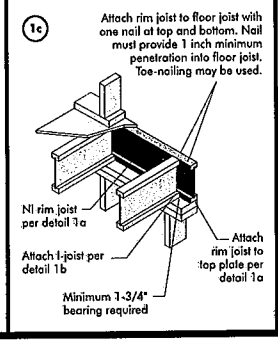
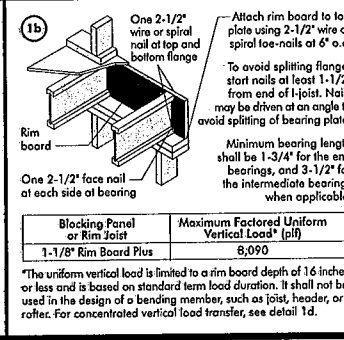
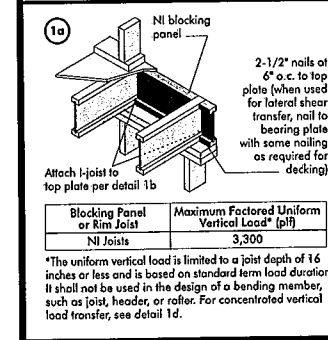
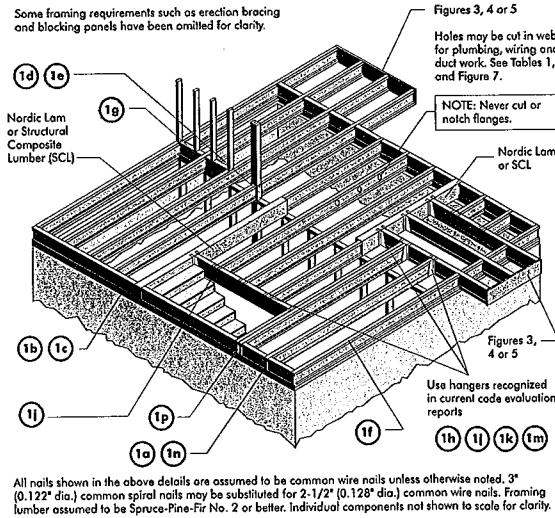
## NORDIC I-JOIST SERIES



## INSTALLING NORDIC I-JOISTS

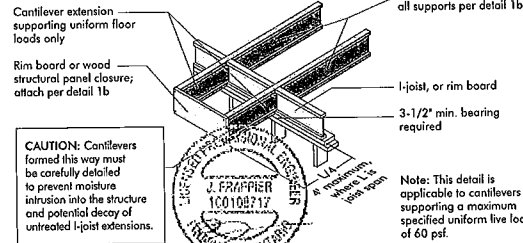
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, consult the supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true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

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



## CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

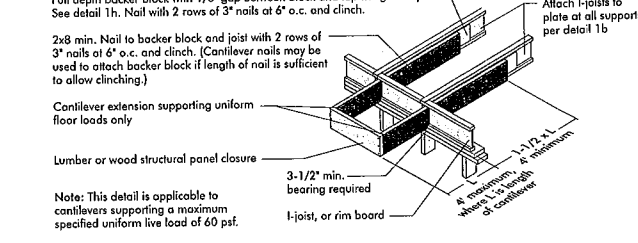
### 3a) I-JOIST CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



**CAUTION:** Cantilevers formed this way must be carefully detailed to prevent moisture intrusion into the structure and potential decay of untreated I-joist extensions.

Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

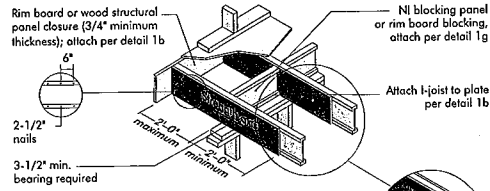
### 3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

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

### 4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE

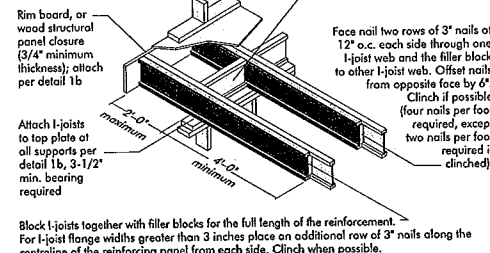


### Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

### 4b) Alternate Method 2 — DOUBLE I-JOIST



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3\" nails along the centreline of the reinforcing panel from each side. Clinch when possible.

### FIGURE 4 (continued)



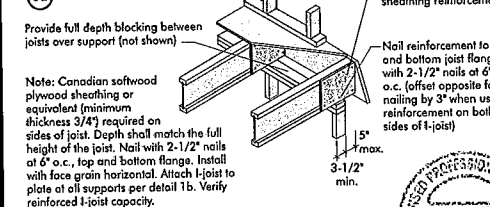
### CANTILEVER REINFORCEMENT METHODS ALLOWED

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

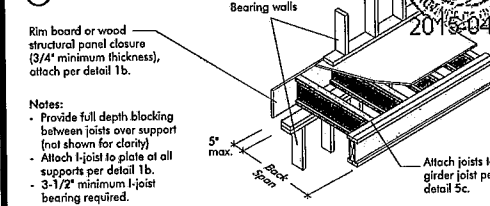
1. N = No reinforcement required.
2. N = NI reinforced with 3/4\" wood structural panel on one side only.
3. N = NI reinforced with 3/4\" wood structural panel on both sides, or double I-joist.
4. X = Try a deeper joist or closer spacing.
5. Maximum design dead load shall be 15 psf floor total load, and 80 psf wall load. Wall load is based on 3-0\" maximum width window or door openings.
6. For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joists beneath the opening's cripple studs may be required.
7. 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.
8. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcement.

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

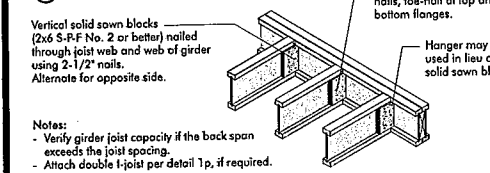
### 5a) SHEATHING REINFORCEMENT



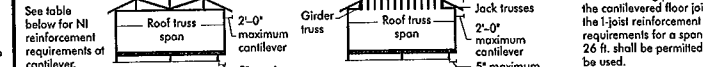
### 5b) SET-BACK DETAIL



### 5c) SET-BACK CONNECTION



### FIGURE 5 (continued)



### BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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

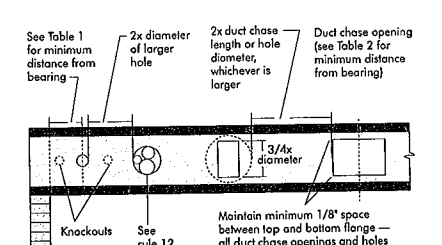
1. N = No reinforcement required.
2. N = NI reinforced with 3/4\" wood structural panel on one side only.
3. N = NI reinforced with 3/4\" wood structural panel on both sides, or double I-joist.
4. X = Try a deeper joist or closer spacing.
5. Maximum design dead load shall be 15 psf floor total load, and 80 psf wall load. Wall load is based on 3-0\" maximum width window or door openings.
6. For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joists beneath the opening's cripple studs may be required.
7. 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.
8. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcement.

## WEB HOLES

### RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centred 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 as illustrated in Figure 7.
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 cantilevered 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



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

### TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)																Span adjustment Factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4	14	
9-1/2"	NI-20	0-7"	1-0"	2-0"	4-3"	5-8"	6-0"	...	...	...	...	...	...	...	...	...	...	13-0"
	NI-40s	0-7"	1-0"	3-0"	4-4"	6-4"	6-4"	...	...	...	...	...	...	...	...	...	...	14-11"
	NI-60	1-3"	2-0"	4-0"	5-4"	7-0"	7-5"	...	...	...	...	...	...	...	...	...	...	15-7"
	NI-70	2-0"	3-4"	4-5"	6-3"	8-0"	8-4"	...	...	...	...	...	...	...	...	...	...	15-9"
	NI-80	3-0"	4-0"	5-0"	6-0"	8-2"	8-8"	...	...	...	...	...	...	...	...	...	...	15-9"
11-7/8"	NI-30	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-0"	6-0"	7-0"	...	...	...	...	...	...	16-6"
	NI-40s	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-0"	6-0"	7-0"	...	...	...	...	...	...	16-9"
	NI-60	0-7"	1-0"	3-0"	4-3"	6-0"	6-0"	7-3"	8-10"	10-0"	...	...	...	...	...	...	...	17-9"
	NI-70	1-3"	2-0"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	...	...	...	...	...	...	...	17-7"
	NI-80	1-6"	2-10"	4-5"	6-0"	7-0"	7-5"	8-6"	10-5"	11-4"	...	...	...	...	...	...	...	17-11"
14"	NI-20	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	18-0"
	NI-40s	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	18-2"
	NI-60	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	18-2"
	NI-70	0-8"	1-10"	3-0"	4-3"	6-2"	6-5"	7-9"	9-0"	10-8"	12-4"	13-9"	...	...	...	...	...	19-5"
	NI-80	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	19-9"
16"	NI-20	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	20-0"
	NI-40s	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	20-10"
	NI-60	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	21-2"
	NI-70	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	21-6"
	NI-80	0-7"	0-8"	1-0"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	...	...	...	...	...	...	...	21-10"

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

### OPTIONAL:

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

Reduced =  $\frac{D}{S} \times D$

Where:  $\frac{D}{S}$  = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (see Maximum Span Table).  
 $\frac{D}{S}$  = The actual measured span distance between the inside faces of supports (ft).  
 $S$  = Span Adjustment Factor given in this table.  
 $D$  = The minimum distance from the inside face of any support to centre of hole from this table.  
 If  $\frac{D}{S}$  is greater than 1, use 1 in the above calculation for  $\frac{D}{S}$ .

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)															
		Duct chase length (in.)															
		8	10	12	14	16	18	20	22								
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"							
	NI-40s	5-3"	5-8"	6-0"	6-5"	7-0"	7-3"	7-8"	8-2"	8-7"							
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-8"							
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-5"	8-0"	8-4"							
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-1"	8-6"							
11-7/8"	NI-20	5-8"	6-2"	6-4"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"							
	NI-40s	6-2"	6-7"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	10-1"							
	NI-60	7-3"	7-8"	8-0"	8-5"	8-9"	9-3"	9-8"	10-2"	10-7"							
	NI-70	7-2"	7-7"	8-4"	8-5"	9-0"	9-3"	9-8"	10-2"	10-7"							
	NI-80	7-2"	7-7"	8-4"	8-5"	9-0"	9-3"	9-8"	10-2"	10-7"							
14"	NI-20	6-1"	6-5"	6-10"	7-4"	7-8"	8-2"	8-6"	9-0"	9-5"							
	NI-40s	7-1"	7-6"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-7"							
	NI-60	8-2"	8-7"	9-0"	9-4"	9-9"	10-1"	10-7"	11-0"	11-5"							
	NI-70	8-1"	8-6"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"							
	NI-80	8-1"	8-6"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"							
16"	NI-20	6-5"	6-9"	7-4"	7-8"	8-2"	8-6"	9-0"	9-4"	9-8"							
	NI-40s	7-5"	7-9"	8-4"	8-8"	9-2"	9-6"	10-0"	10-4"	10-8"							
	NI-60	8-6"	9-1"	9-5"	10-0"	10-4"	10-8"	11-1"	11-5"	11-9"							
	NI-70	8-4"	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"							
	NI-80	8-4"	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"							
18"	NI-20	6-9"	7-3"	7-8"	8-2"	8-6"	9-0"	9-4"	9-8"	10-2"							
	NI-40s	7-9"	8-3"	8-8"	9-2"	9-6"	10-0"	10-4"	10-8"	11-2"							
	NI-60	9-0"	9-5"	9-9"	10-3"	10-7"	11-1"	11-5"	11-9"	12-3"							
	NI-70	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"							
	NI-80	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"							
20"	NI-20	7-3"	7-7"	8-1"	8-5"	8-9"	9-3"	9-7"	10-1"	10-5"							
	NI-40s	8-3"	8-7"	9-1"	9-5"	9-9"	10-3"	10-7"	11-1"	11-5"							
	NI-60	9-4"	9-9"	10-2"	10-6"	11-0"	11-4"	11-8"	12-2"	12-6"							
	NI-70	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"	12-5"							
	NI-80	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"	12-5"							
22"	NI-20	7-7"	8-1"	8-5"	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"							
	NI-40s	8-7"	9-1"	9-5"	9-9"	10-3"	10-7"	11-1"	11-5"	11-9"							
	NI-60	9-8"	10-3"	10-6"	11-0"	11-4"	11-8"	12-2"	12-6"	13-0"							
	NI-70	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"	12-5"	12-9"							
	NI-80	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"	12-5"	12-9"							



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

# WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the 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.

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

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)															
		Round Hole Diameter (in.)															
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4	
9-1/2"	NI-20	0'-7"	1'-6"	2'-10"	4'-3"	5'-8"	6'-0"	---	---	---	---	---	---	---	---	---	---
	NI-40x	0'-7"	1'-6"	3'-0"	4'-4"	6'-0"	6'-4"	---	---	---	---	---	---	---	---	---	---
	NI-60	1'-3"	2'-6"	4'-0"	5'-4"	7'-0"	7'-5"	---	---	---	---	---	---	---	---	---	---
	NI-70	2'-0"	3'-4"	4'-9"	6'-3"	8'-0"	8'-4"	---	---	---	---	---	---	---	---	---	---
	NI-80	2'-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-8"	---	---	---	---	---	---	---	---	---	---
11-7/8"	NI-20	0'-7"	0'-8"	1'-0"	2'-4"	3'-8"	4'-0"	5'-0"	6'-6"	7'-9"	---	---	---	---	---	---	---
	NI-40x	0'-7"	0'-8"	1'-3"	2'-8"	4'-0"	4'-4"	5'-5"	7'-0"	8'-4"	---	---	---	---	---	---	---
	NI-60	0'-7"	1'-8"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	8'-10"	10'-0"	---	---	---	---	---	---	---
	NI-70	1'-3"	2'-6"	4'-0"	5'-4"	6'-9"	7'-2"	8'-4"	10'-0"	11'-2"	---	---	---	---	---	---	---
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-6"	10'-3"	11'-4"	---	---	---	---	---	---	---
14"	NI-20	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	---	---	---	---	---	---	---
	NI-40x	0'-7"	0'-8"	0'-9"	2'-5"	4'-4"	4'-9"	6'-3"	---	---	---	---	---	---	---	---	---
	NI-60	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	---	---	---	---
	NI-70	0'-7"	0'-8"	1'-8"	3'-0"	4'-3"	4'-8"	5'-8"	7'-2"	8'-0"	8'-8"	10'-4"	11'-9"	---	---	---	---
	NI-80	0'-8"	1'-10"	3'-0"	4'-5"	5'-10"	6'-2"	7'-3"	8'-9"	9'-9"	10'-4"	12'-0"	13'-5"	---	---	---	---
16"	NI-20	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	---	---	---	---	---	---	---
	NI-40x	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	---	---	---	---
	NI-60	0'-7"	1'-0"	2'-3"	3'-6"	4'-10"	5'-3"	6'-3"	7'-8"	8'-6"	9'-2"	10'-8"	12'-0"	12'-4"	14'-0"	15'-6"	---
	NI-70	0'-7"	1'-3"	2'-6"	3'-10"	5'-2"	5'-6"	6'-6"	8'-0"	9'-0"	9'-5"	11'-0"	12'-7"	13'-1"	14'-5"	16'-0"	---
	NI-80	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	12'-0"	12'-4"	14'-0"	15'-6"
16"	NI-20	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	12'-0"	12'-4"	14'-0"	15'-6"
	NI-40x	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	12'-0"	12'-4"	14'-0"	15'-6"
	NI-60	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	12'-0"	12'-4"	14'-0"	15'-6"
	NI-70	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	12'-0"	12'-4"	14'-0"	15'-6"
	NI-80	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	12'-0"	12'-4"	14'-0"	15'-6"

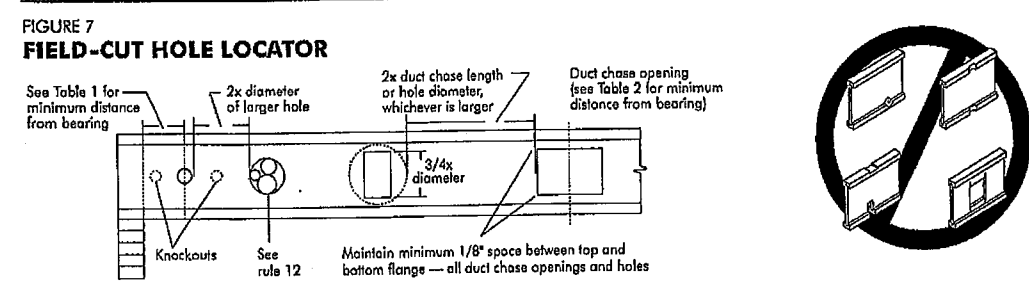
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joists being used at their maximum spans.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

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

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

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.)															
		Duct Chase Length (in.)															
		8	10	12	14	16	18	20	22	24							
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-6"	7'-1"	7'-5"	---	---	---	---	---	---	---
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	---	---	---	---	---	---	---
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	8'-3"	8'-9"	---	---	---	---	---	---	---
	NI-70	5'-1"	5'-6"	5'-10"	6'-3"	6'-7"	7'-1"	7'-6"	8'-1"	8'-4"	---	---	---	---	---	---	---
	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	---	---	---	---	---	---	---
11-7/8"	NI-20	5'-9"	6'-2"	6'-6"	7'-1"	7'-5"	7'-9"	8'-3"	8'-9"	9'-4"	---	---	---	---	---	---	---
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	10'-1"	10'-9"	---	---	---	---	---	---	---
	NI-60	7'-3"	7'-8"	8'-0"	8'-6"	9'-0"	9'-3"	9'-9"	10'-3"	11'-0"	---	---	---	---	---	---	---
	NI-70	7'-1"	7'-4"	7'-9"	8'-3"	8'-7"	9'-1"	9'-6"	10'-1"	10'-4"	---	---	---	---	---	---	---
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"	---	---	---	---	---	---	---
14"	NI-20	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"	---	---	---	---	---	---	---
	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	11'-8"	12'-3"	---	---	---	---	---	---	---
	NI-60	8'-9"	9'-3"	9'-8"	10'-1"	10'-4"	11'-1"	11'-6"	12'-0"	12'-6"	---	---	---	---	---	---	---
	NI-70	8'-7"	9'-1"	9'-5"	9'-10"	10'-4"	10'-8"	11'-2"	11'-7"	12'-3"	---	---	---	---	---	---	---
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	---	---	---	---	---	---	---
16"	NI-20	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"	---	---	---	---	---	---	---
	NI-40x	9'-4"	9'-9"	10'-3"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-2"	---	---	---	---	---	---	---
	NI-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	14'-1"	14'-10"	---	---	---	---	---	---	---
	NI-70	10'-1"	10'-5"	11'-0"	11'-4"	11'-10"	12'-3"	12'-8"	13'-3"	14'-0"	---	---	---	---	---	---	---
	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"	---	---	---	---	---	---	---
16"	NI-20	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-10"	---	---	---	---	---	---	---
	NI-40x	11'-1"	11'-5"	11'-10"	12'-2"	12'-10"	13'-2"	13'-9"	14'-4"	15'-2"	---	---	---	---	---	---	---
	NI-60	11'-3"	11'-7"	12'-1"	12'-5"	12'-11"	13'-3"	13'-10"	14'-5"	15'-3"	---	---	---	---	---	---	---
	NI-70	11'-6"	12'-0"	12'-4"	12'-8"	13'-0"	13'-7"	14'-2"	14'-10"	15'-8"	---	---	---	---	---	---	---
	NI-80	11'-9"	12'-3"	12'-7"	13'-1"	13'-8"	14'-3"	14'-11"	15'-6"	16'-4"	---	---	---	---	---	---	---

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




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

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

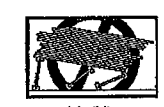
Holes in webs should be cut with a sharp saw.

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

# SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

**AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:**

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

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



**CHANTERS**  
CHIBONGAMAU

## PRODUCT WARRANTY

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

Furthermore, Chanters Chibongamau 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.

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

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

Attach I-joist to top plate per detail 1b

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

Rim board  
One 2-1/2" face nail at each side at bearing  
Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c.

To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. 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.

Squash block  
Pair of Squash Blocks  
Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)  
2x Lumber  
1-1/8" Rim Board Plus  
Provide lateral bracing per detail 1a or 1b

Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.  
Joist attachment per detail 1b  
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.  
Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support  
NI blocking panel per detail 1a

Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.  
BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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

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

Top- or face-mount hanger  
Double I-joist header  
NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.  
Backer block required (both sides for face-mount h

# NORDIC STRUCTURES

**COMPANY**  
J9 1ST FLOOR  
Oct. 24, 2018 09:29

**PROJECT**  
J1 1ST FLOOR  
J1 1ST FLOOR

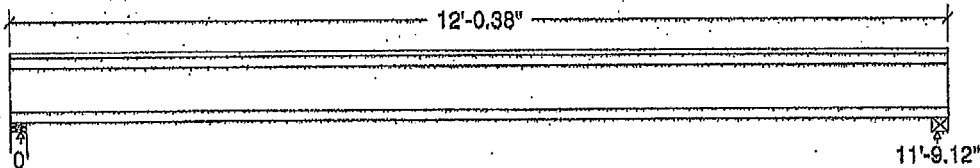
## Design Check Calculation Sheet

Nordic Sizer - Canada 7.1

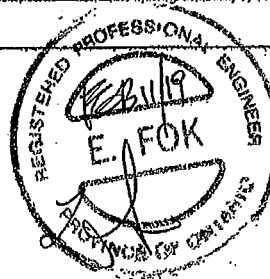
### Loads:

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

### Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	157		157
Live	314		314
Factored:			
Total	666		666
Bearing:			
Resistance			
Joist	1865		1869
Support	3981		-
Des ratio			
Joist	0.36		0.36
Support	0.17		-
Load case	#2		#2
Length	2-3/8		2-5/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.09		-



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

### Nordic 9-1/2" NI-40x Floor Joist @ 16" o.c.

Supports: 1 - Lumber Wall, No.1/No.2; 2 - Steel Beam, W;  
Total length: 12'-0.38"; Clear span: 11'-7.37"; 5/8" nailed and glued OSB sheathing  
This section **PASSES** the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V_f = 666$	$V_r = 1895$	lbs	$V_f/V_r = 0.35$
Moment (+)	$M_f = 1959$	$M_r = 4824$	lbs-ft	$M_f/M_r = 0.41$
Perm. Defl'n	$0.05 = < L/999$	$0.39 = L/360$	in	0.13
Live Defl'n	$0.10 = < L/999$	$0.29 = L/480$	in	0.35
Total Defl'n	$0.16 = L/907$	$0.59 = L/240$	in	0.26
Bare Defl'n	$0.12 = < L/999$	$0.39 = L/360$	in	0.31
Vibration	$L_{max} = 11'-9.1$	$L_v = 15'-4.4$	ft	0.77
Defl'n	$= 0.025$	$= 0.060$	in	0.42

DWG NO. TAM 2382-18H  
STRUCTURAL

T-1902171

**Additional Data:**

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

**CRITICAL LOAD COMBINATIONS:**

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

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

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

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

**CALCULATIONS:**

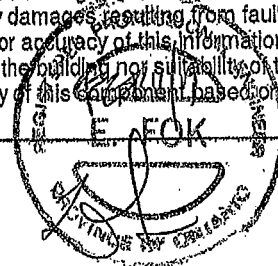
Deflection: E<sub>IEff</sub> = 268e06 lb-in<sup>2</sup> K = 4.94e06 lbs

"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

CONFORMS TO CBC 2012

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



10/2/2011  
 DWG NO. YAM 230219H  
 STRUCTURAL  
 COMPONENT ONLY

T-190217160



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLOOR FRAMING\Flush Beams\B1(11384)**

BC CALC® Member Report

Dry | 1 span | No cant.

October 25, 2018 16:20:07

Build 8475

Job name:

File name: TH1E.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B1(11384)

City, Province, Postal Code: ST ...NES

Specifier:

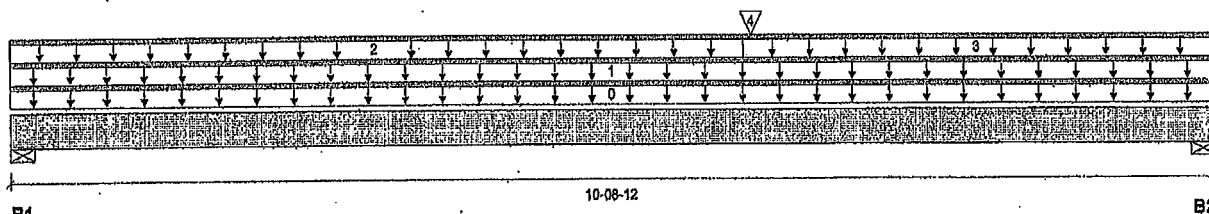
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	295 / 0	202 / 0		
B2, 4-3/8"	433 / 0	273 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-08-12	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-08-12	Top	11	5			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-08-02	Top	6	3			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	06-08-02	10-08-12	Top	9	5			n/a
4	B6(11352)	Conc. Pt. (lbs)	L	06-07-00	06-07-00	Top	535	276			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,342 ft-lbs	23,220 ft-lbs	14.4%	1	06-07-00
End Shear	928 lbs	11,571 lbs	8.0%	1	09-08-14
Total Load Deflection	L/999 (0.073")	n/a	n/a	4	06-08-01
Live Load Deflection	L/999 (0.045")	n/a	n/a	5	06-08-01
Max Defl.	0.073"	n/a	n/a	4	06-08-01
Span / Depth	12.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	695 lbs	8.5%	3.7%	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	991 lbs	12.1%	5.3%	Unspecified

**Notes**

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

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

Calculations assume member is fully braced.

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

**CONFORMS TO QBC 2012**

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

HWENO.TAW 2303-19H

STRUCTURAL  
COMPONENT ONLY

T-1902172





Boise Cascade



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B1(I1384)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

File name: TH1E.mmdl

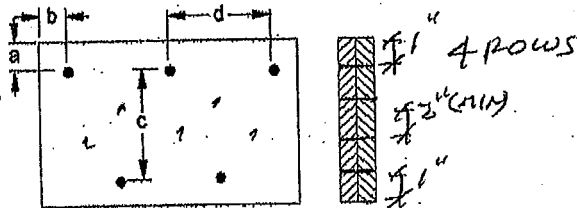
Description: 1ST FLOOR FRAMING\Flush Beams\B1(I1384)

Specifier:

Designer: AJ

Company:

## Connection Diagram: Full Length of Member

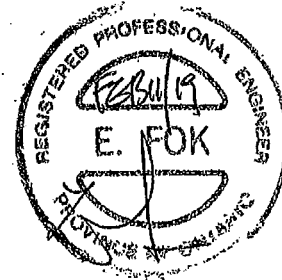


a minimum = 8"  
b minimum = 3"

c = 7 1/2"  
d = 20 0"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.  
Connectors are: Nails

3 1/2" ARDOX SPIRAL





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

**PASSED**

## 1ST FLOOR FRAMING\Flush Beams\B2(I1395)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

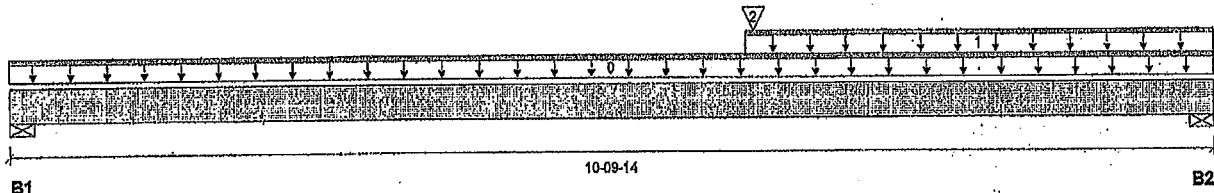
File name: TH1E.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B2(I1395)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10-09-14

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	208 / 0	161 / 0		
B2, 4-3/8"	371 / 0	244 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-09-14	Top		10			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	06-07-04	10-09-14	Top	14	7			n/a
2	B7(I1359)	Conc. Pt. (lbs)	L	06-08-02	06-08-02	Top	519	271			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,952 ft-lbs	20,563 ft-lbs	14.4%	1	06-08-02
End Shear	813 lbs	11,571 lbs	7.0%	1	09-08-00
Total Load Deflection	L/999 (0.062")	n/a	n/a	4	05-09-03
Live Load Deflection	L/999 (0.038")	n/a	n/a	5	05-09-03
Max Defl.	0.062"	n/a	n/a	4	05-09-03
Span / Depth	12.8				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	512 lbs	5.0%	2.2%	Unspecified
B2	Wall/Plate 4-3/8" x 3-1/2"	862 lbs	10.5%	4.6%	Unspecified

### Notes

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

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

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

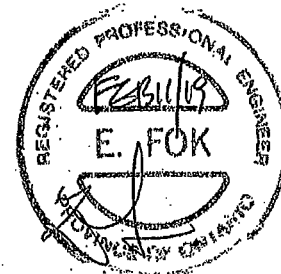
Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.



DWG NO. FAN2304-19H  
STRUCTURAL  
COMPONENT ONLY

T-190273



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLOOR FRAMING\Flush Beams\B2(I1395)**

Dry | 1 span | No cant.

**PASSED**

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

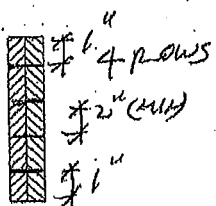
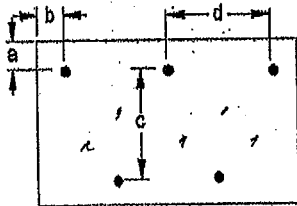
File name: TH1E.mxd

Description: 1ST FLOOR FRAMING\Flush Beams\B2(I1395)

Specifier:

Designer: AJ

Company:

**Connection Diagram: Full Length of Member**

a minimum = 6"

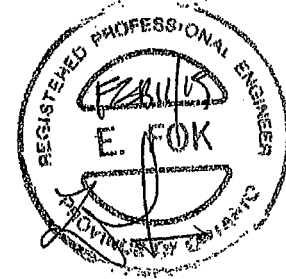
c = 7-1/2"

b minimum = 3"

d = 8"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 3 1/2" ARDOX SPIRAL Nails

**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.

DWG NO. TAM 2384-18H  
STRUCTURAL  
COMPONENT ONLY

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

T-1902173(1)



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

**PASSED**

1ST FLOOR FRAMING\Flush Beams\B3(1287)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

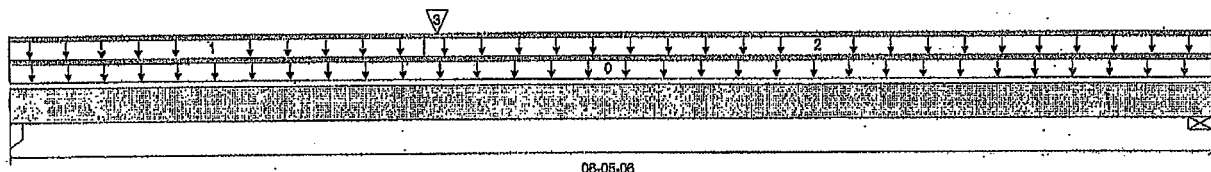
File name: TH1E.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B3(1287)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 06-05-06

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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	404 / 0	222 / 0		
B2, 4-3/8"	309 / 0	173 / 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	06-05-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-02-12	Top	19	9			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	02-02-12	06-05-06	Top	40	20			n/a
3	B6(11352)	Conc. Pt. (lbs)	L	02-03-10	02-03-10	Top	502	259			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,837 ft-lbs	11,610 ft-lbs	15.8%	1	02-03-10
End Shear	840 lbs	5,785 lbs	14.5%	1	00-11-04
Total Load Deflection	L/999 (0.029")	n/a	n/a	4	02-11-08
Live Load Deflection	L/999 (0.019")	n/a	n/a	5	02-11-08
Max Defl.	0.029"	n/a	n/a	4	02-11-08
Span / Depth	7.7				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	883 lbs	35.5%	23.6%	Unspecified
B2	Wall/Plate 4-3/8" x 1-3/4"	680 lbs	16.6%	7.3%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA Q86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA Q86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## 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™, BCIO®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

DWG NO. TAM 2305-19H  
STRUCTURAL  
COMPONENT ONLY

T-1902174



Boise Cascade



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

PASSED

## 1ST FLOOR FRAMING\Flush Beams\B4(I1371)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 8476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

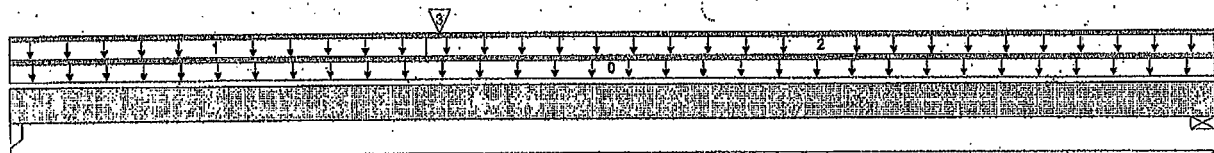
File name: TH1E.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B4(I1371)

Specifier:

Designer: AJ

Company:



B1

Total Horizontal Product Length = 06-05-06

B2

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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	506 / 0	276 / 0		
B2, 4-3/8"	325 / 0	183 / 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	06-05-06	Top	1.00	0.65	1.00	1.16	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-02-12	Top	17	9			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	02-02-12	06-05-06	Top	20	10			n/a
3	B7(I1359)	Conc. Pt. (lbs)	L	02-03-10	02-03-10	Top	708	366			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,335 ft-lbs	11,610 ft-lbs	20.1%	1	02-03-10
End Shear	1,084 lbs	5,785 lbs	18.4%	1	00-11-04
Total Load Deflection	L/999 (0.035")	n/a	n/a	4	02-11-08
Live Load Deflection	L/999 (0.023")	n/a	n/a	5	02-11-08
Max Defl.	0.035"	n/a	n/a	4	02-11-08
Span / Depth	7.7				

## Bearing Supports

			Demand/Resistance Support	Demand/Resistance Member		
Bearing Supports	Dim. (LxW)	Demand			Material	
B1	Column	1-3/4" x 1-3/4"	1,103 lbs	44.4%	29.5%	Unspecified
B2	Wall/Plate	4-3/8" x 1-3/4"	715 lbs	17.5%	7.7%	Unspecified

## Notes

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

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

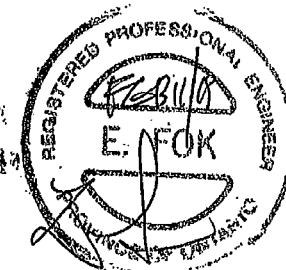
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00. CONFORMS TO OBC 2012

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



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

DWG NO. YAM 2386-18H  
STRUCTURAL  
COMPONENT ONLY

T-1902175





Boise Cascade



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

PASSED

## 1ST FLOOR FRAMING\Flush Beams\B5(11367)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

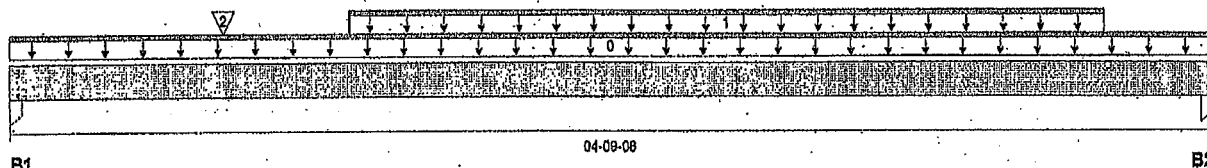
File name: TH1E.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B5(11367)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 04-09-08

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	253 / 0	137 / 0		
B2, 3-1/2"	248 / 0	135 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-09-08	Top	1.00	0.88	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-04	04-04-04	Top	126	84			n/a
2	J4(1393)	Conc. Pt. (lbs)	L	00-10-04	00-10-04	Top	118	59			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	646 ft-lbs	11,810 ft-lbs	5.6%	1	02-10-04
End Shear	483 lbs	5,785 lbs	8.4%	1	03-08-08
Total Load Deflection	L/999 (0.008")	n/a	n/a	4	02-05-00
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	02-05-00
Max Defl.	0.008"	n/a	n/a	4	02-05-00
Span / Depth	5.5				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	551 lbs	11.1%	7.4%	Unspecified
B2	Column 3-1/2" x 1-3/4"	538 lbs	10.8%	7.2%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

## Disclosure

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

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

DRWING YAM 2387-18H  
STRUCTURAL  
COMPONENT ONLY

T-1902176



Boise Cascade



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

1ST FLOOR FRAMING\Flush Beams\B6(11352)

Dry | 1 span | No cant.

PASSED

October 25, 2018 16:20:07

BC CALC® Member Report

Build 8476

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

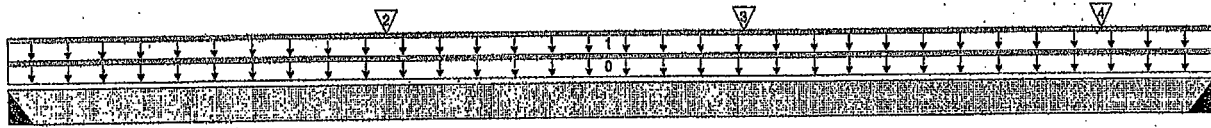
File name: TH1E.mmd

Description: 1ST FLOOR FRAMING\Flush Beams\B6(11352)

Specifier:

Designer: AJ

Company:



03-04-08

B2

Total Horizontal Product Length = 03-04-08

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	500 / 0	268 / 0		
B2, 2"	537 / 0	277 / 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	5				00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-04-08	Top	240	120			n/a
2	J5(11285)	Conc. Pt. (lbs)	L	01-00-12	01-00-12	Top	87	43			n/a
3	J5(11347)	Conc. Pt. (lbs)	L	02-00-12	02-00-12	Top	81	41			n/a
4	J5(11340)	Conc. Pt. (lbs)	L	03-00-12	03-00-12	Top	69	30			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	853 ft-lbs	11,810 ft-lbs	7.3%	1	01-08-10
End Shear	579 lbs	6,785 lbs	10.0%	1	00-11-08
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	01-08-04
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	01-08-04
Max Defl.	0.004"	n/a	n/a	4	01-08-04
Span / Depth	4.0				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1,073 lbs	n/a	26.1%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1,151 lbs	n/a	27.0%	HUS1.81/10

## Cautions

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

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO CBC 2012

DWG NO. FAM 2308-18H  
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™, BC1®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

— (19277)



Boise Cascade



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

PASSED

## 1ST FLOOR FRAMING\Flush Beams\B7(11359)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

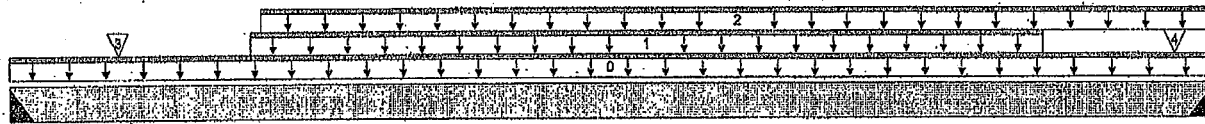
File name: TH1E.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B7(11359)

Specifier:

Designer: AJ

Company:



B1

04-06-12

B2

Total Horizontal Product Length = 04-06-12

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	516 / 0	270 / 0		
B2, 2"	711 / 0	367 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-06-12	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-00	03-11-00	Top	81	41			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-11-08	04-06-12	Top	240	120			n/a
3	J5(11279)	Conc. Pt. (lbs)	L	00-05-00	00-05-00	Top	69	35			n/a
4	J5(11307)	Conc. Pt. (lbs)	L	04-05-00	04-05-00	Top	50	25			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,544 ft-lbs	11,610 ft-lbs	13.3%	1	02-05-00
End Shear	1,008 lbs	5,785 lbs	17.4%	1	00-11-08
Total Load Deflection	L/999 (0.015")	n/a	n/a	4	02-03-08
Live Load Deflection	L/999 (0.01")	n/a	n/a	5	02-03-08
Max Defl.	0.015"	n/a	n/a	4	02-03-08
Span / Depth	5.5				

## Bearing Supports

	Dlm. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 1-3/4"	1,112 lbs	n/a	26.0%	HUS1.81/10
B2 Hanger	2" x 1-3/4"	1,526 lbs	n/a	35.7%	HUS1.81/10

## Cautions

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

Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

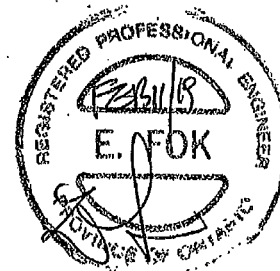
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

W66ND.TAM2389-1814  
STRUCTURAL  
COMPONENT ONLY



## Disclosure

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

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

T-190128



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP  
2ND FLOOR FRAMING/Dropped Beams\B13 DR(I1308)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

October 25, 2018 16:20:07

Built 8476

Job name:

File name: TH1E.mmdl

Address:

Description: 2ND FLOOR FRAMING/Dropped Beams\B13 DR(I1308)

City, Province, Postal Code: ST...NES

Specifier:

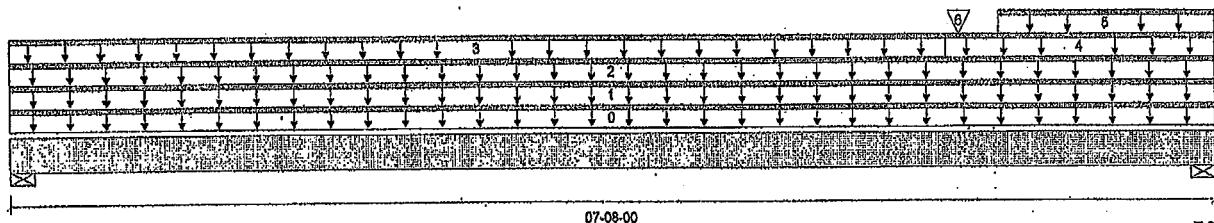
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 07-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	278 / 0	608 / 0	258 / 0	
B2, 4"	986 / 0	1,215 / 0	1,394 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-08-00	Top		10			00-00-00
1	J2(I1430)	Unf. Lin. (lb/ft)	L	00-00-00	07-08-00	Top	27	16			n/a
2	R1(I1267)	Unf. Lin. (lb/ft)	L	00-00-00	07-08-00	Top	4	4			n/a
3	R1(I1267)	Unf. Lin. (lb/ft)	L	00-00-00	05-11-08	Top		61			n/a
4	R1(I1267)	Unf. Lin. (lb/ft)	L	05-11-08	07-08-00	Top		81			n/a
5	R1(I1267)	Unf. Lin. (lb/ft)	L	06-03-08	07-08-00	Top	198	180	318		n/a
6	R1(I1267)	Conc. Pt. (lbs)	L	06-00-08	06-00-08	Top	757	745	1,215		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,880 ft-lbs	23,220 ft-lbs	21.0%	13	06-00-08
End Shear	3,394 lbs	11,571 lbs	29.3%	13	06-06-08
Total Load Deflection	L/999 (0.058")	n/a	n/a	35	04-02-11
Live Load Deflection	L/999 (0.035")	n/a	n/a	51	04-03-09
Max Defl.	0.058"	n/a	n/a	35	04-02-11
Span / Depth	9.0				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	1,311 lbs	11.5%	7.7%	Unspecified
B2	Wall/Plate 4" x 3-1/2"	4,597 lbs	40.4%	26.9%	Unspecified

16/12  
DWG NO. TAM 2890-1811  
STRUCTURAL  
COMPONENT ONLY

T-190479



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Dropped Beams\B13 DR\1308)****PASSED**

BC CALCO® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMQ 12472-R

Dry | 1 span | No cant.

October 25, 2018 16:20:07

File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Dro...d Beams\B13 DR\1308)

Specifier:

Designer: AJ

Company:

**Notes**

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

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

Calculations assume member is fully braced.

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

**CONFORMS TO DBC 2012**

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

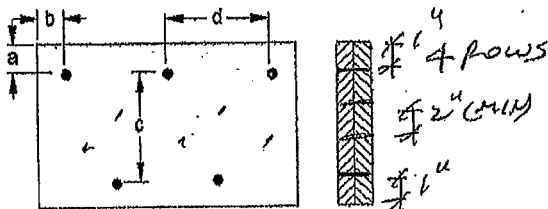
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

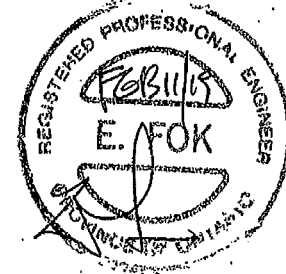
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

**Connection Diagram: Full Length of Member**a minimum = 2"  
b minimum = 3"c = 1-1/2"  
d = 6"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: 1 Nails  
3 1/2" ARDOX SPIRAL**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.

P62  
DWA ND.TAM 2390-18H  
STRUCTURAL  
COMPONENT ONLY

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

T-1902179(1)





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

PASSED

## 2ND FLOOR FRAMING\Flush Beams\B10(I1423)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

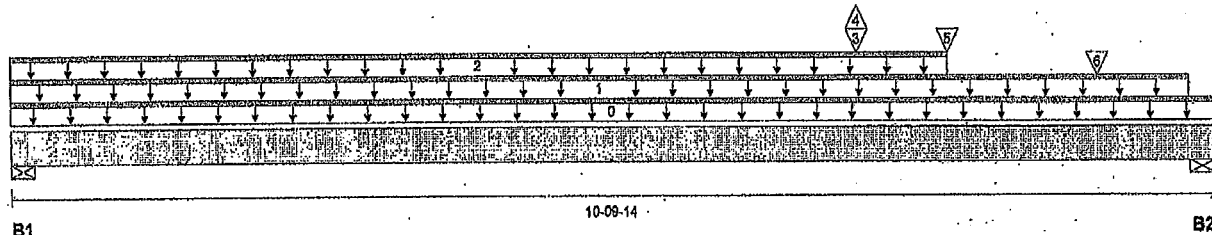
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B10(I1423)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10-09-14

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	405 / 5	238 / 0		
B2, 5-1/2"	1,211 / 13	657 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-09-14	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-07-02	Top	11	6			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-05-02	Top	3	1			n/a
3	B11(I1356)	Conc. Pt. (lbs)	L	07-07-04	07-07-04	Top	916	493			n/a
4	B11(I1356)	Conc. Pt. (lbs)	L	07-07-04	07-07-04	Top	-18				n/a
5	J1(I1314)	Conc. Pt. (lbs)	L	08-05-02	08-05-02	Top	280	140			n/a
6	J1(I1320)	Conc. Pt. (lbs)	L	09-09-02	09-09-02	Top	274	137			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5,558 ft-lbs	11,610 ft-lbs	47.9%	1	07-07-04
End Shear	2,467 lbs	5,785 lbs	42.6%	1	09-06-14
Total Load Deflection	L/522 (0.233")	n/a	45.9%	6	05-10-01
Live Load Deflection	L/813 (0.149")	n/a	44.3%	8	05-11-04
Max Defl.	0.233"	n/a	n/a	6	05-10-01
Span / Depth	12.8				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	906 lbs	22.1%	9.7%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	2,637 lbs	51.3%	22.5%	Unspecified

### Notes

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

CONFORMS TO DBC 2012

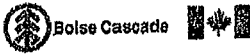
### Disclosure

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®.

DWG NO. TAM 2391-18H  
 STRUCTURAL  
 COMPONENT ONLY

T-1902180



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

PASSED

## 2ND FLOOR FRAMING/Flush Beams/B11(I1356)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

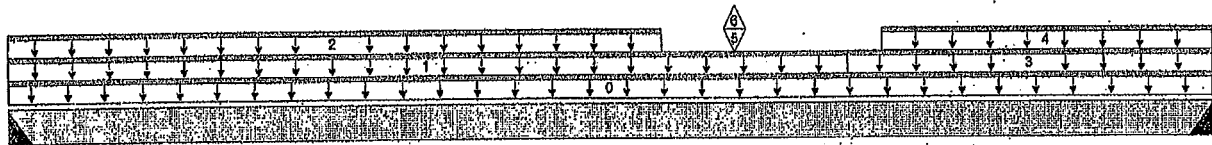
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING/Flush Beams/B11(I1356)

Specifier:

Designer: AJ

Company:



12-08-00  
B1 Total Horizontal Product Length = 12-08-00 B2

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	303 / 12	185 / 0		
B2, 2"	921 / 18	496 / 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	12-08-00	Top		5			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-10-00	Top	16	8			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-10-07	Top	8	4			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	08-10-00	12-08-00	Top	18	9			n/a
4	STAIR	Unf. Lin. (lb/ft)	L	09-02-05	12-08-00	Top	240	120			n/a
5	B12(I1370)	Conc. Pl. (lbs)	L	07-07-10	07-07-10	Top	111	63			n/a
6	B12(I1370)	Conc. Pl. (lbs)	L	07-07-10	07-07-10	Top	-30				n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,465 ft-lbs	11,610 ft-lbs	29.8%	1	07-07-10
End Shear	1,470 lbs	5,785 lbs	25.4%	1	11-08-08
Total Load Deflection	L/573 (0.261")	n/a	41.9%	6	06-10-07
Live Load Deflection	L/902 (0.166")	n/a	39.9%	8	06-10-07
Max Defl.	0.261"	n/a	n/a	6	06-10-07
Span / Depth	15.7				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	685 lbs	n/a	16.1%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	2,001 lbs	n/a	46.9%	HUS1.81/10

### Cautions

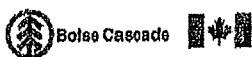
Header for the hanger HUS1.81/10 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.



DWG NO. TAM 2392-18H  
STRUCTURAL  
COMPONENT ONLY

T-1802181



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B11(11356)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 8475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B11(11356)

Specifier:

Designer: AJ

Company:

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



## 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)232-0768 before installation.

P62  
DWG NO. TAM 2392-18H  
STRUCTURAL  
COMPONENT ONLY

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

T-19021816



Boise Cascade



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

PASSED

## 2ND FLOOR FRAMING\Flush Beams\B12(11370)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALCO Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

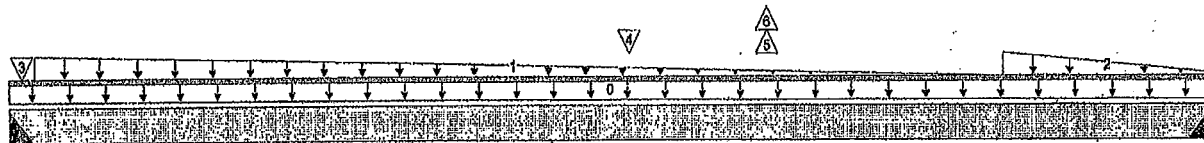
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B12(11370)

Specifier:

Designer: AJ

Company:



B1

08-08-03

B2

Total Horizontal Product Length = 08-08-03

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

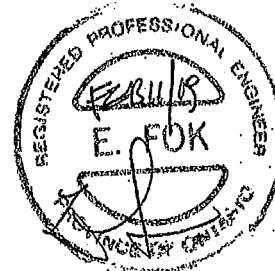
Bearing	Live	Dead	Snow	Wind
B1, 2"	122 / 16	73 / 0		
B2, 2"	100 / 28	66 / 0		

## 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	08-08-03	Top	1.00	0.66	1.00	1.15	00-00-00
1	FC3 Floor Material	Trapezoidal (lb/ft)	L	00-02-03	06-11-08	Top	23	12			n/a
2	FC3 Floor Material	Trapezoidal (lb/ft)	L	07-00-05	08-06-03	Top	8	4			n/a
3	FC3 Floor Material	Conc. Pt. (lbs)	L	00-01-02	00-01-02	Top	4	2			n/a
4	J4(11334)	Conc. Pt. (lbs)	L	04-04-11	04-04-11	Top	108	54			n/a
5	J4(11334)	Conc. Pt. (lbs)	L	05-04-04	05-04-04	Top	24	-10			n/a
6	J4(11334)	Conc. Pt. (lbs)	L	05-04-04	05-04-04	Top	-44				n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	740 ft-lbs	11,610 ft-lbs	6.4%	1	04-04-11
Neg. Moment	-2 ft-lbs	-11,610 ft-lbs	n/a	4	05-04-04
End Shear	262 lbs	5,785 lbs	4.5%	1	00-11-08
Total Load Deflection	L/999 (0.023")	n/a	n/a	6	04-03-06
Live Load Deflection	L/999 (0.015")	n/a	n/a	8	04-03-06
Max Defl.	0.023"	n/a	n/a	6	04-03-06
Span / Depth	10.5				



## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 1-3/4"	275 lbs	n/a	6.4%	LSSUI25
B2 Hanger	2" x 1-3/4"	220 lbs	n/a	5.1%	LS90

## Cautions

Header for the hanger LSSUI25 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model LSSUI25 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

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

DWYND, TAM 2393-18H  
STRUCTURAL  
COMPONENT ONLY

T-192182



Boise Cascade



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

PASSED

## 2ND FLOOR FRAMING\Flush Beams\B12(I1370)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports:

CCMC 12472-R

File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B12(I1370)

Specifier:

Designer: AJ

Company:

**Notes**

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

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

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

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

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

**Disclosure**

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA).

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

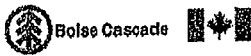
Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before Installation.

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

OWEN. TAM 2393.18H  
STRUCTURAL  
COMPONENT ONLY

T-19024261





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

## 2ND FLOOR FRAMING\Flush Beams\B14(11346)

**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

October 25, 2018 16:20:07

Buld 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

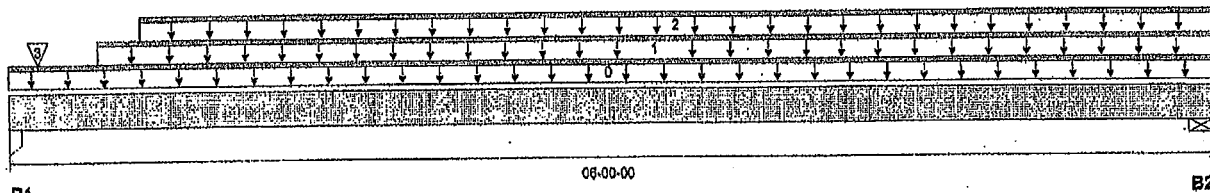
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B14(11346)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 06-00-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	972 / 0	1,286 / 0	694 / 0	
B2, 5-1/2"	879 / 0	816 / 0	453 / 0	

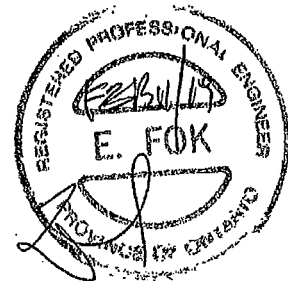
### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	Top	100	0.65	1.00	1.15	00-00-00
1	E12(11076)	Unf. Lin. (lb/ft)	L	00-05-08	06-00-00	Top	77	151	147		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	06-00-00	Top	209	104			n/a
3	-	Conc. Pt. (lbs)	L	00-01-13	00-01-13	Top	303	651	332		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,298 ft-lbs	23,220 ft-lbs	14.2%	1	02-08-00
End Shear	2,131 lbs	11,671 lbs	18.4%	1	01-01-00
Total Load Deflection	L/999 (0.026")	n/a	n/a	35	02-11-00
Live Load Deflection	L/999 (0.016")	n/a	n/a	51	02-11-00
Max Defl.	0.026"	n/a	n/a	35	02-11-00
Span / Depth	6.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 3-1/2"	3,760 lbs	37.8%	26.2%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	2,791 lbs	27.1%	11.9%	Unspecified



### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Unbalanced snow loads determined from building geometry were used in selected product's verification.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9.  
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

OWNED BY 2394-184  
 STRUCTURAL  
 COMPONENT ONLY

T-190283



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B14(I1346)**

Dry | 1 span | No cant.

**PASSED**

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

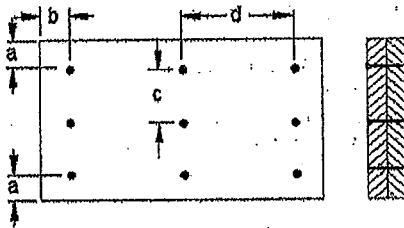
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B14(I1346)

Specifier:

Designer: AJ

Company:

**Connection Diagram: Full Length of Member**

a minimum = 2"

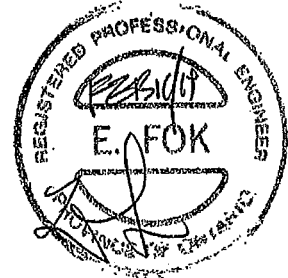
c = 2-3/4"

b minimum = 3"

d = 6"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 1 Nails

**3 1/2" ARDOX SPIRAL****Disclosure**

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

BC CALC®, BC FRAMER®, AJST®, ALLJOIST®, BC RIM BOARD™, BCIO®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,  
 STRUCTURAL  
 COMPONENT ONLY

T-1902183(1)

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B15(I1273)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

October 25, 2018 16:20:07

Build 6475

Job name:

File name: TH1E.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B15(I1273)

City, Province, Postal Code: ST ...NES

Specifier:

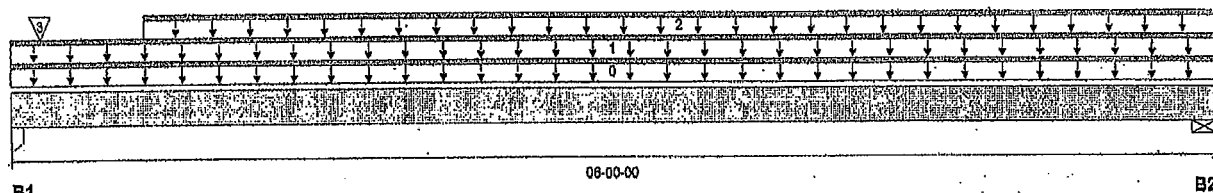
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 06-00-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1,002 / 0	1,314 / 0	753 / 0	
B2, 5-1/2"	880 / 0	816 / 0	453 / 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	06-00-00	Top		10			00-00-00
1	E16(I1080)	Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	Top	77	151	147		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	06-00-00	Top	209	104			n/a
3		Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	293	597	324		n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,304 ft-lbs	23,220 ft-lbs	14.2%	1	02-08-00
End Shear	1,847 lbs	11,571 lbs	16.0%	1	01-01-00
Total Load Deflection	L/999 (0.026")	n/a	n/a	35	02-11-00
Live Load Deflection	L/999 (0.016")	n/a	n/a	51	02-11-00
Max Defl.	0.026"	n/a	n/a	35	02-11-00
Span / Depth	6.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 3-1/2"	3,899 lbs	39.2%	26.1%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	2,793 lbs	27.2%	11.9%	Unspecified

**Notes**

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

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

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

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

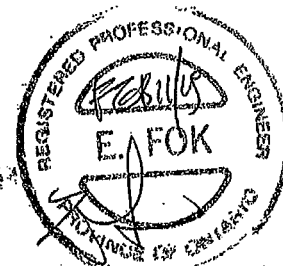
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.



DWG NO. TAM 2395-1811  
 STRUCTURAL  
 COMPONENT ONLY

T-1902184



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

PASSED

BC CALCO® Member Report

Bulld 6476

Dry | 1 span | No cant.

October 25, 2018 16:20:07

Job name:

File name: TH1E.mmdl

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B15(I1273)

City, Province, Postal Code: ST ...NES

Specifier:

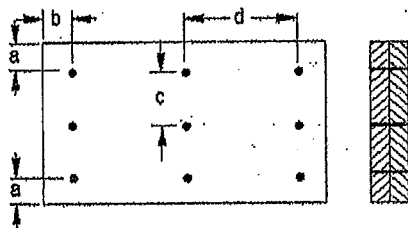
Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

## Connection Diagram: Full Length of Member



a minimum = 2"  
b minimum = 3"

c = 2-3/4"  
d = 4"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.  
Connectors are: 1 Nails

3 1/2" ARDUX SPIRAL



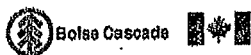
## Disclosure

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.

OWNED, TAM 2395-18H  
STRUCTURAL  
COMPONENT ONLY

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

C-190218461



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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B16(11426)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

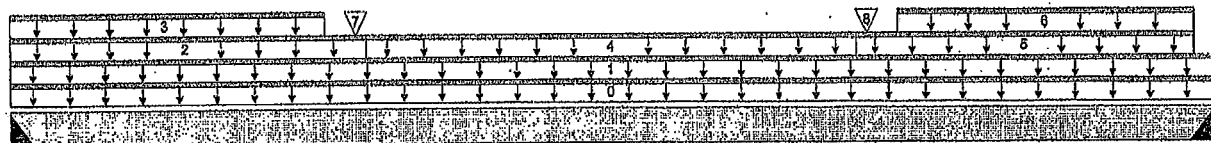
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B16(11426)

Specifier:

Designer: AJ

Company:



B1

09-10-00

B2

Total Horizontal Product Length = 09-10-00

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

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	294 / 0	614 / 0	310 / 0	
B2, 2-1/2"	287 / 0	594 / 0	299 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-10-00	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-10-00	Top	27	13			n/a
2	E18(11086)	Unf. Lin. (lb/ft)	L	00-00-00	02-11-00	Top		81			n/a
3	E18(11086)	Unf. Lin. (lb/ft)	L	00-00-00	02-07-00	Top	33	30	63		n/a
4	E19(11087)	Unf. Lin. (lb/ft)	L	02-11-00	06-11-00	Top		41			n/a
5	E17(11077)	Unf. Lin. (lb/ft)	L	06-11-00	09-08-00	Top		81			n/a
6	E17(11077)	Unf. Lin. (lb/ft)	L	07-03-00	09-08-00	Top	33	30	63		n/a
7	E18(11086)	Conc. Pt. (lbs)	L	02-10-00	02-10-00	Top	78	106	148		n/a
8	E17(11077)	Conc. Pt. (lbs)	L	07-00-00	07-00-00	Top	78	104	146		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,080 ft-lbs	23,220 ft-lbs	13.2%	1	04-11-00
End Shear	1,205 lbs	11,671 lbs	10.4%	13	01-00-00
Total Load Deflection	L/999 (0.085")	n/a	n/a	35	04-11-00
Live Load Deflection	L/999 (0.042")	n/a	n/a	51	04-11-00
Max Defl.	0.085"	n/a	n/a	35	04-11-00
Span / Depth	12.1				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2-1/2" x 3-1/2"	1,526 lbs	n/a	14.3%	HUC410
B2 Hanger	2-1/2" x 3-1/2"	1,479 lbs	n/a	13.9%	HUC410

### Cautions

Header for the hanger HUC410 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.  
Hanger model HUC410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.  
Header for the hanger HUC410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

DOWND.FAM 23969H  
STRUCTURAL  
COMPONENT ONLY

T-1902185





Boise Cascade



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B16\1426

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B16\1426

Specifier:

Designer: AJ

Company:

**Notes**

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

CONFORMS TO OBC 2012

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

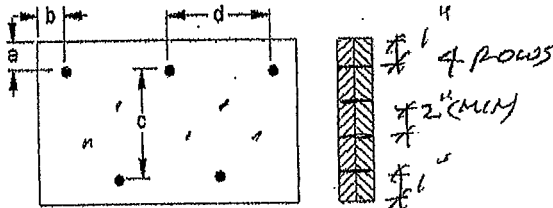
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

**Connection Diagram: Full Length of Member**

a minimum = 1"

b minimum = 3"

c = 7-1/2"

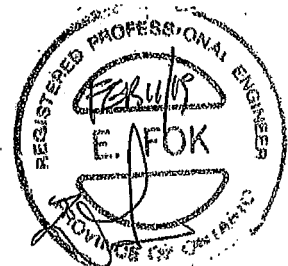
d = 12"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Member has no side loads.

Connectors are: Nails

3/8" ARDOX SPIRAL

**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.

OWNED BY TAM 2396-18H  
STRUCTURAL  
COMPONENT ONLY

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

T-19021815



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

**PASSED**

## 2ND FLOOR FRAMING\Flush Beams\B17(I1381)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALC® Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

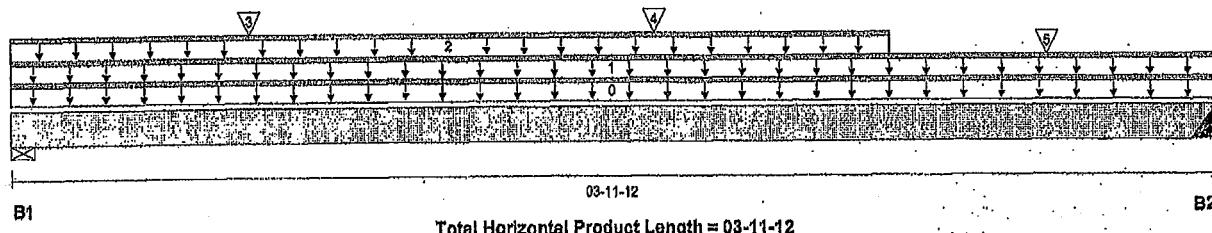
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B17(I1381)

Specifier:

Designer: AJ

Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	527 / 0	504 / 0	279 / 0	
B2, 3"	455 / 0	390 / 0	148 / 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	03-11-12	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-11-12	Top	6	3			n/a
2	E16(I1080)	Unf. Lin. (lb/ft)	L	00-00-00	02-10-14	Top	77	151	147		n/a
3	J2(I1332)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	Top	267	134			n/a
4	J2(I1282)	Conc. Pt. (lbs)	L	02-01-08	02-01-08	Top	267	134			n/a
5	-	Conc. Pt. (lbs)	L	03-05-01	03-05-01	Top	201	137			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,402 ft-lbs	23,220 ft-lbs	6.0%	1	02-01-08
End Shear	1,000 lbs	11,571 lbs	8.6%	1	02-11-04
Total Load Deflection	L/999 (0.005")	n/a	n/a	35	01-11-15
Live Load Deflection	L/999 (0.003")	n/a	n/a	51	01-11-15
Max Defl.	0.005"	n/a	n/a	35	01-11-15
Span / Depth	4.5				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	1,699 lbs	26.0%	11.4%	Unspecified
B2	Hanger 3" x 3-1/2"	1,318 lbs	n/a	10.3%	HGUS410

### Cautions

Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWG NO. TAM 2397-18H  
STRUCTURAL  
COMPONENT ONLY

T-1902186



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B17\11381**

Dry | 1 span | No cant.

**PASSED**

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B17\11381

Specifier:

Designer: AJ

Company:

**Notes**

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA Q86.

**CONFORMS TO OBC 2012**

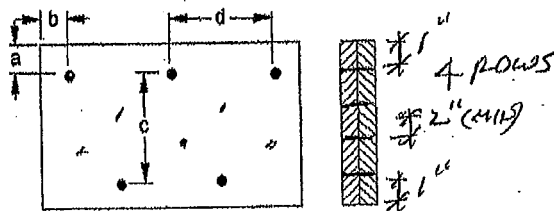
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA Q86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

**Connection Diagram: Full Length of Member**

a minimum = 1"

c = 7-1/2"

b minimum = 3"

d = 8"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL

**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®,  
 UWB NO. TAM 2397-1811  
 STRUCTURAL  
 COMPONENT ONLY

T-19021866



Boise Cascade



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

PASSED

## 2ND FLOOR FRAMING\Flush Beams\B8(11321)

Dry | 1 span | No cant.

October 25, 2018 16:20:07

BC CALCO Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

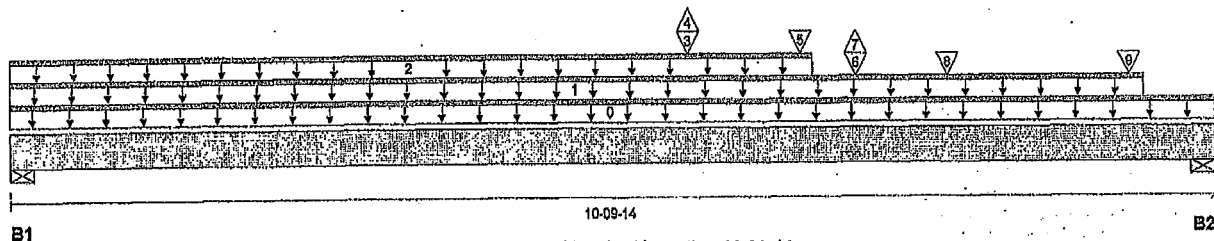
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B8(11321)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10-09-14

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	335 / 8	237 / 0	4 / 0	
B2, 5-1/2"	1,317 / 17	895 / 0	141 / 0	

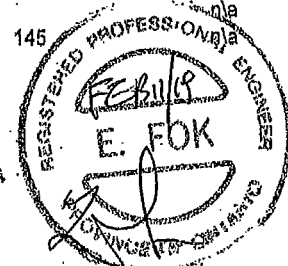
## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-09-14	Top	1.00	0.85	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-02-02	Top	13	7			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-02-06	Top	6	3			n/a
3	B12(11370)	Conc. Pt. (lbs)	L	06-01-02	06-01-02	Top	114	69			n/a
4	B12(11370)	Conc. Pt. (lbs)	L	06-01-02	06-01-02	Top	-14				n/a
5	J4(11334)	Conc. Pt. (lbs)	L	07-01-02	07-01-02	Top	47	23			n/a
6	B11(11356)	Conc. Pt. (lbs)	L	07-07-04	07-07-04	Top	311	189			n/a
7	B11(11356)	Conc. Pt. (lbs)	L	07-07-04	07-07-04	Top	-12				n/a
8	J1(11314)	Conc. Pt. (lbs)	L	08-05-02	08-05-02	Top	280	140			n/a
9	-	Conc. Pt. (lbs)	L	10-00-10	10-00-10	Top	711	513			n/a

## Controls Summary

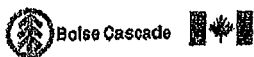
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,897 ft-lbs	23,220 ft-lbs	16.8%	1	07-07-04
End Shear	2,089 lbs	11,571 lbs	18.1%	1	09-06-14
Total Load Deflection	L/999 (0.093")	n/a	n/a	58	05-08-11
Live Load Deflection	L/999 (0.057")	n/a	n/a	85	05-10-09
Max Defl.	0.093"	n/a	n/a	58	05-08-11
Span / Depth	12.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	802 lbs	9.8%	4.3%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	3,236 lbs	31.5%	13.8%	Unspecified



1642  
 HUND, TAW 2398-1811  
 STRUCTURAL  
 COMPONENT ONLY

T-1902187



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

PASSED

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

October 25, 2018 18:20:07

File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B8(11321)

Specifier:

Designer: AJ

Company:

## Notes

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

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

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86. **CONFORMS TO OBC 2012**

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

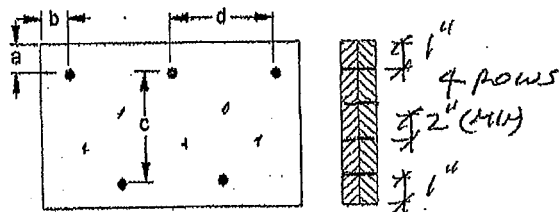
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

## Connection Diagram: Full Length of Member



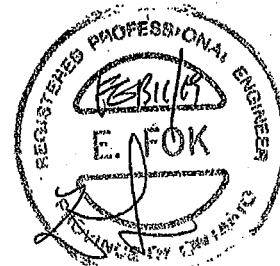
a minimum = 2"  
b minimum = 3"

c = 1-1/2"  
d = 8"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: Nails

3/4" ARDOX SPIRAL



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

STRUCTURAL  
COMPONENT ONLY

T-19/218761



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B9(11389)

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST...NES

Customer:

Code reports: CCMC 12472-R

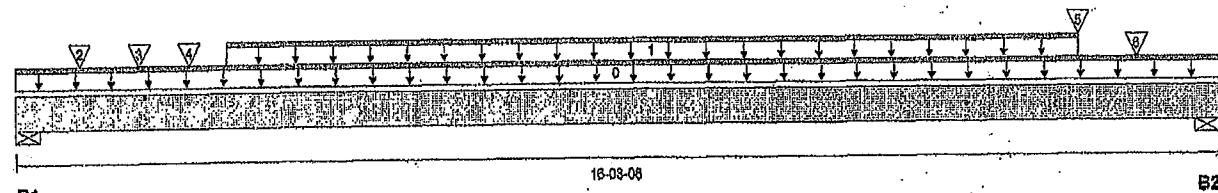
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B9(11389)

Specifier:

Designer: AJ

Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	3,576 / 0	1,934 / 0		
B2, 4-3/8"	3,392 / 0	1,842 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-03-06	Top	18				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	02-10-08	14-04-08	Top	453	227			n/a
2	-	Conc. Pt. (lbs)	L	00-10-08	00-10-08	Top	524	261			n/a
3	J2(11409)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	Top	283	141			n/a
4	J2(11364)	Conc. Pt. (lbs)	L	02-04-08	02-04-08	Top	247	123			n/a
5	J2(11312)	Conc. Pt. (lbs)	L	14-04-08	14-04-08	Top	212	106			n/a
6	-	Conc. Pt. (lbs)	L	15-02-01	15-02-01	Top	487	243			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	29,934 ft-lbs	55,212 ft-lbs	54.2%	1	08-04-08
End Shear	7,105 lbs	21,696 lbs	32.7%	1	01-05-06
Total Load Deflection	L/297 (0.63")	n/a	80.8%	4	08-04-08
Live Load Deflection	L/457 (0.409")	n/a	78.7%	5	08-04-08
Max Defl.	0.63"	n/a	n/a	4	08-04-08
Span / Depth	15.7				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 5-1/4"	7,782 lbs	50.5%	22.1%	Unspecified
B2	Wall/Plate 4-3/8" x 5-1/4"	7,390 lbs	60.3%	26.4%	Unspecified

### Notes

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

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

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA 086. CONFORMS TO OBC 2012

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA 086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nailing schedule applies to both sides of the member.

DWG NO. TAM 2399-18H  
STRUCTURAL  
COMPONENT ONLY

T. 1902188



Boise Cascade

**Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B9(11389)**

Dry | 1 span | No cant.

**PASSED**

October 25, 2018 16:20:07

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: ST ...NES

Customer:

Code reports: CCMC 12472-R

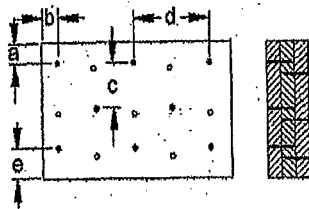
File name: TH1E.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B9(11389)

Specifier:

Designer: AJ

Company:

**Connection Diagram: Full Length of Member**

a minimum = 2"  
b minimum = 3"

c = 3-1/2"  
d = 3"  
e minimum = 3"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.  
Nailing schedule applies to both sides of the member.

Connectors are: 1/2" x 3" Nails

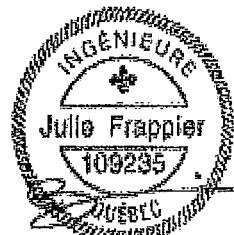
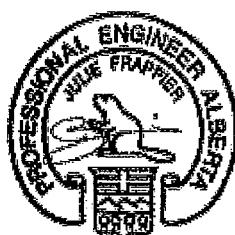
3/4" ARDOX SPIRAL

**Disclosure**

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

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

T-19021886



## Maximum Floor Spans

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

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

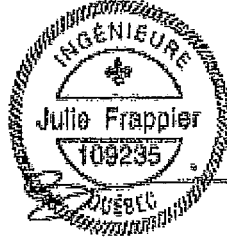
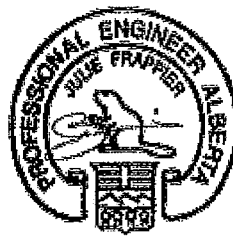
Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60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

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



## Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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

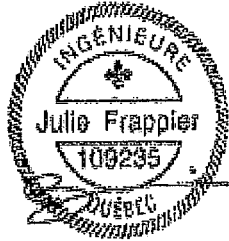
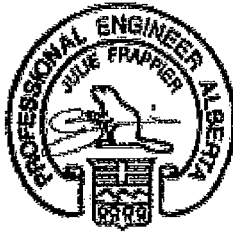
  

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	17'-9"	16'-1"	15'-1"	N/A	17'-9"	16'-1"	15'-1"	N/A
	NI-60	18'-1"	16'-4"	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 = 15 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

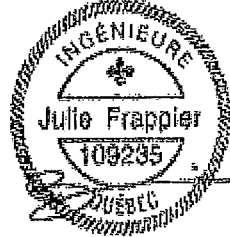
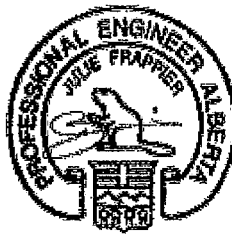


Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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

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

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



## Maximum Floor Spans

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

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

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

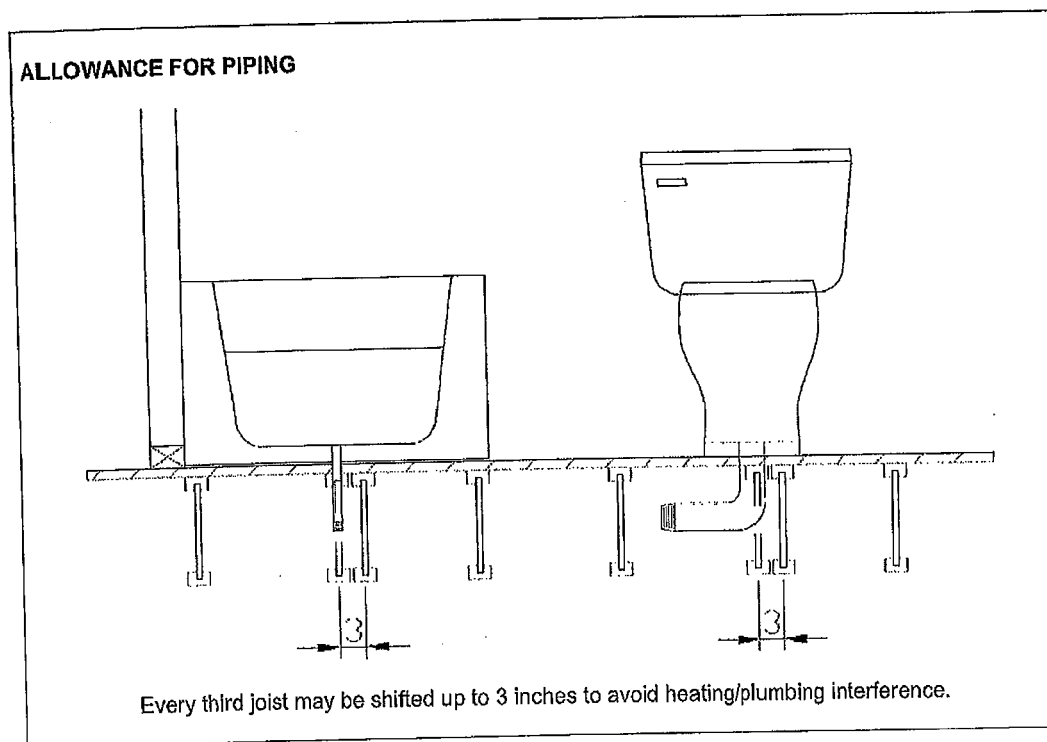
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load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

## Allowance for Piping (Installation Notes)

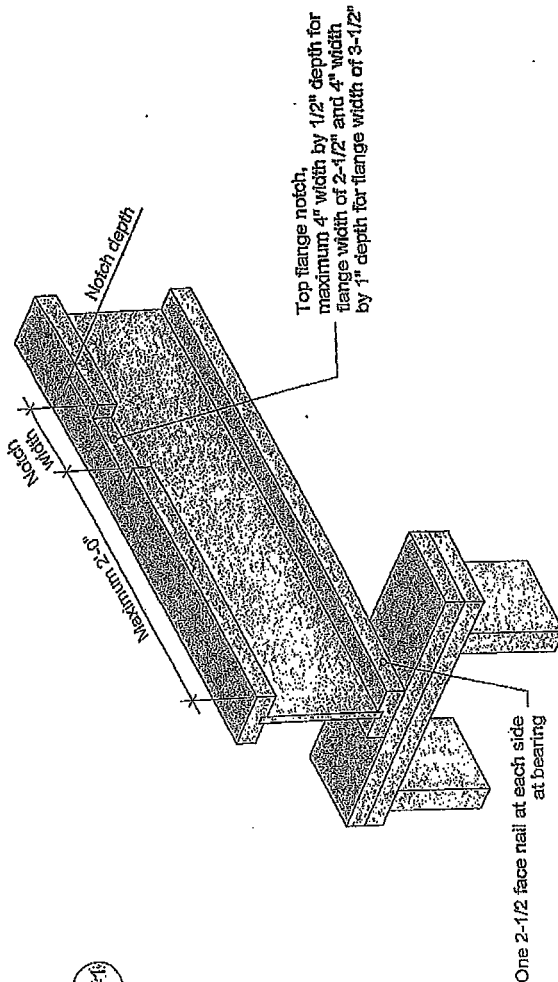
The floor layouts have usually not been checked for heating and/or plumbing interference. On-site adjustment of joists of up to 3 inches is permitted to avoid Interferences. When moving a joist, the subfloor thickness shall be checked with code requirements when the joist spacing exceeds 19.2 inches. 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.

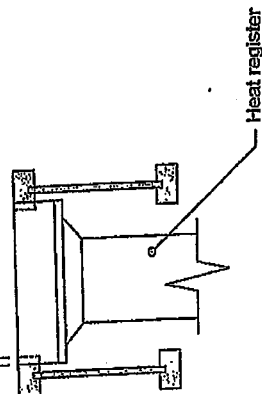
The detail below shows the 3-inch allowance for piping. Every third joist may be shifted up to 3 inches to avoid heating/plumbing interference. For other applications, please contact your distributor.



Revised April 12, 2012



Maximum 1/2" depth for flange width of 2'-1/2"  
and 1" depth for flange width of 3'-1/2"



- Notes:
1. Blocking required at bearing for lateral support, not shown for clarity.
  2. Maximum notch depth 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](http://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.

<b>NORDIC STRUCTURES</b>	T 514-871-8528 1.868.817-3418 <a href="http://nordic.ca">nordic.ca</a>	TITLE Notch in I-joist for Heat Register	CATEGORY I-joist - Typical Floor Framing and Construction Details	DOCUMENT	
				DATE 2018-04-10	NUMBER 1W-1