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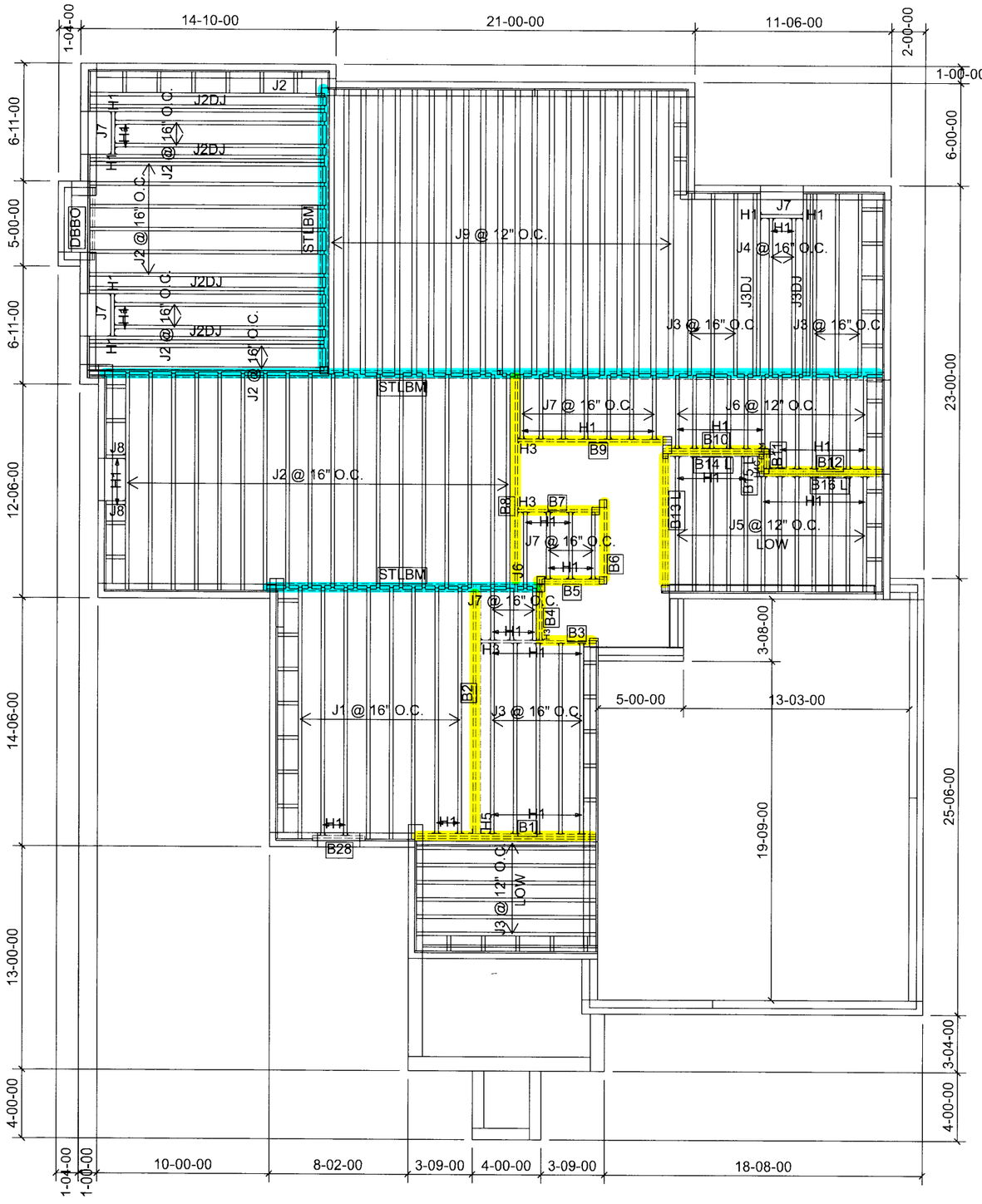


Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	8
J2	14-00-00	9 1/2" NI-40x	1	31
J2DJ	14-00-00	9 1/2" NI-40x	2	8
J3	12-00-00	9 1/2" NI-40x	1	18
J3DJ	12-00-00	9 1/2" NI-40x	2	4
J4	10-00-00	9 1/2" NI-40x	1	2
J5	8-00-00	9 1/2" NI-40x	1	12
J6	6-00-00	9 1/2" NI-40x	1	13
J7	4-00-00	9 1/2" NI-40x	1	16
J8	2-00-00	9 1/2" NI-40x	1	2
J9	18-00-00	9 1/2" NI-80	1	21
B2	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B8	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B16 L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13 L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14 L	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	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
B4	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B28	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15 L	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B11	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
30	H1	IUS2.56/11.88
17	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
3	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4C	HUC410
1	H4	HGUS410
1	H5	HGUS5.5/10

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: JULY 2021

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY ESTATES

MODEL: S42-19C

ELEVATION: A

LOT: 48

CITY: BRADFORD

SALESMAN: RICK DICIANO
DESIGNER: EEO
REVISION: lbv

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

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

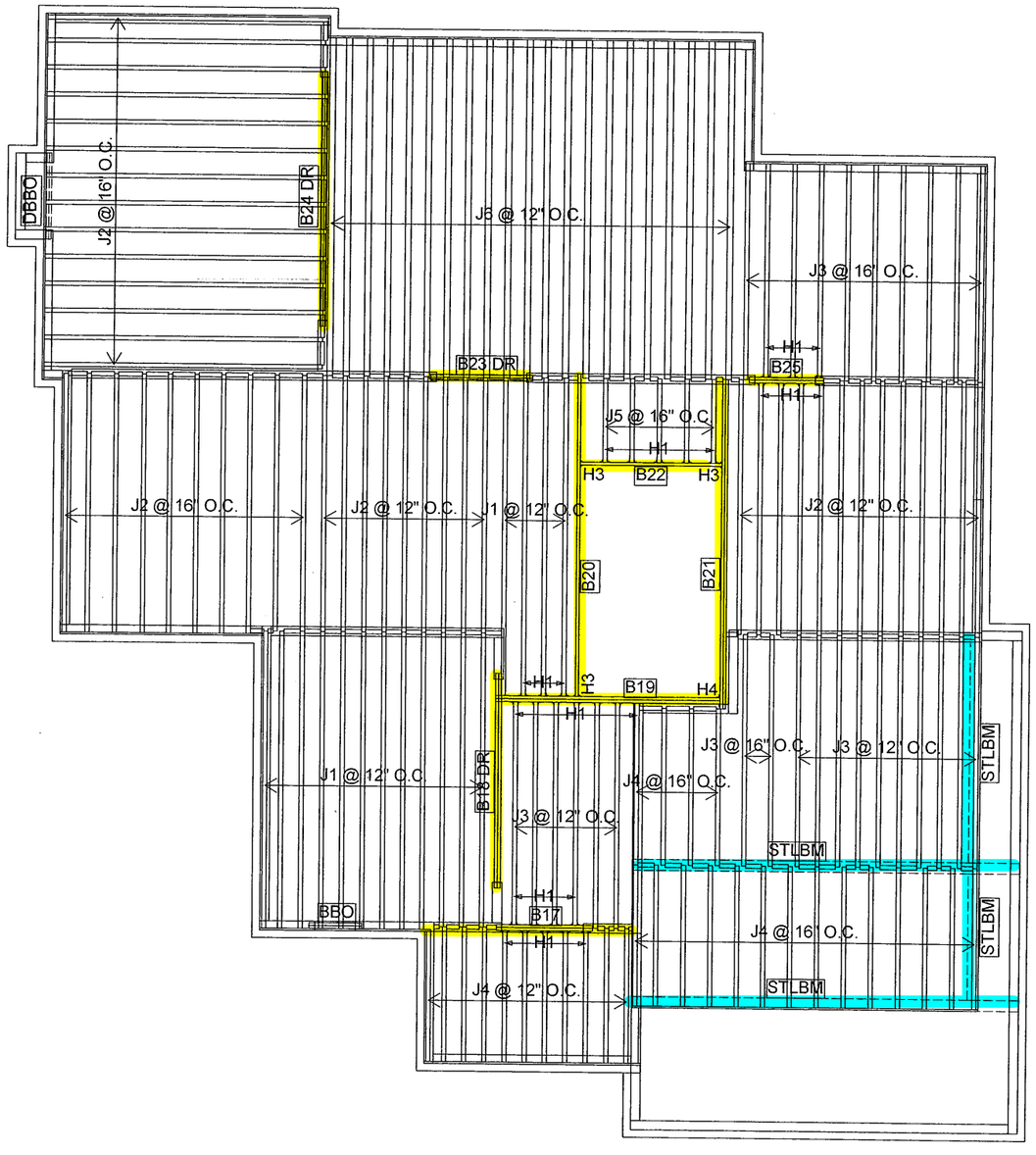
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2022-07-11

1st FLOOR

W/ OPT. DBBO

REVIEWED



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	16
J2	14-00-00	9 1/2" NI-40x	1	46
J3	12-00-00	9 1/2" NI-40x	1	28
J4	8-00-00	9 1/2" NI-40x	1	29
J5	6-00-00	9 1/2" NI-40x	1	5
J6	18-00-00	9 1/2" NI-80	1	21
B21	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B20	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B24 DR	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B18 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B19	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B22	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B17	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B23 DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B25	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
5	H1	IUS2.56/11.88
26	H1	IUS2.56/11.88
1	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: JULY 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY ESTATES
MODEL: S42-19C
ELEVATION: A
LOT: 48
CITY: BRADFORD

SALESMAN: RICK DICIANO
DESIGNER: EEO
REVISION: lbv

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

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

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2022-03-02

2ND FLOOR

REVIEWED

NORDIC

INSTALLATION GUIDE
NORDIC JOIST

NS-GI33

ENGLISH

VERSION
2020-10-01

Engineered Wood Products

BASIC INSTALLATION GUIDE FOR RESIDENTIAL FLOORS

NORDIC JOIST

NORDIC STRUCTURES

nordic.ca

INSTALLING NORDIC I-JOISTS

1. Installation of Nordic I-joists shall be as shown in details 1.
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. Concentrated loads should only be applied to the top surface of the top flange. Concentrated loads should not be suspended from the bottom flange with the exception of light loads, such as ceiling fans or light fixtures.
5. I-joists must be protected from the weather prior to installation.
6. I-joists must not be used in applications where they will be permanently exposed to weather, or will reach a moisture content of 15 percent or greater, such as in swimming pool or hot tub areas. They must not be installed where they will remain in direct contact with concrete or masonry.
7. End bearing length must be at least 1-3/4 inch. For multiple-span joists, intermediate bearing length must be at least 3-1/2 inches.
8. Ends of floor joists shall be restrained to prevent rollover. Use rim board or I-joist blocking panels.
9. I-joists installed beneath bearing walls perpendicular to the joists shall have full-depth blocking panels, rim board, or squash blocks (cripple blocks) to transfer gravity loads from above the floor system to the wall or foundation below.
10. For I-joists installed directly beneath bearing walls parallel to the joists or used as rim board or blocking panels, the maximum vertical load using a single I-joist is 3,300 plf, and 6,600 plf if double I-joists are used.
11. Continuous lateral support of the I-joist's compression flange is required to prevent rotation and buckling. In simple span uses, lateral support of the top flange is normally supplied by the floor sheathing. In multiple-span or cantilever applications, bracing of the I-joist's bottom flange is also required at interior supports of multiple-span joists, and at the end support next to the cantilever extension. The ends of all cantilever extensions must be laterally braced as shown in details 3, 4, or 5.
12. Nails installed in flange face or edge shall be spaced in accordance with the applicable building code requirements or approved building plans, but should not be closer than those specified on page 3.3 of the Nordic Joist Technical Guide (NS-GT3).
13. Details 1 show only I-joist-specific fastener requirements. For other fastener requirements, see the applicable building code.
14. For proper temporary bracing of wood I-joists and placement of temporary construction loads, see APA Technical Note, Temporary Construction Loads over I-Joist Roofs and Floors, Form J735.

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.

SAFETY AND CONSTRUCTION PRECAUTIONS

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 continuous 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 centre, and must be secured with a minimum of two 2-1/2-inch 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.

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

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

NORDIC I-JOIST SERIES — RESIDENTIAL SERIES

NI-20
2x3 S-P-F No. 2
3/8 in. web
Depths
9-1/2 and 11-7/8 in.
33 pieces per unit

NI-40x
2x3 1950f MSR
3/8 in. web
Depths
9-1/2, 11-7/8 and 14 in
33 pieces per unit

NI-60
2x3 2100f MSR
3/8 in. web
Depths
9-1/2, 11-7/8, 14 and 16 in
33 pieces per unit

NI-80
2x4 2100f MSR
3/8 in. web
Depths
9-1/2, 11-7/8, 14 and 16 in
23 pieces per unit

NI-90
2x4 2400f MSP
7/16 in. web
Depths
11-7/8, 14 and 16 in.
23 pieces per unit

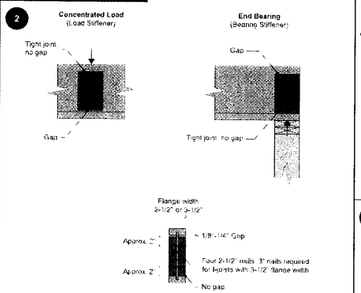
RIM BOARDS

Width	Length
1-1/8 in	16 ft

Depths
9-1/2 to 16 in
APA Rim Board Plus

WEB STIFFENERS

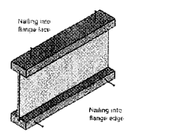
2 — Concentrated Load (Load Stiffener) / End Bearing (Bearing Stiffener)



Stiffener Size Requirements

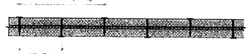
Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

NAIL SPACING



Nailed to Only One Flange Edge (Top View)

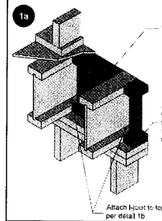
Nailed to Both Flange Edges (Top View)

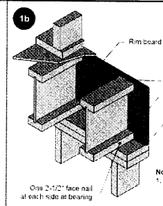


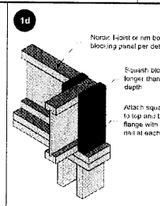
Recommended Closest Nail Spacing for Fastening Sheathing to I-joist Flanges to Minimize Splitting

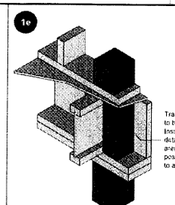
Fastener size (diameter x length)	Flange face nailing[1]		Flange edge nailing[1]		
			Nail spacing (in.)		
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nailed to only one flange edge	Nailed to both flange edges
0.128" or smaller in diameter and 3-1/4" or shorter in length	2	2	2	2	3
Greater than 0.128" up to 0.148" in diameter and 3-1/4" or shorter in length	2	3	2	3	6

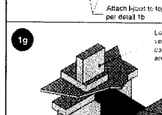
a. If more than one row is required, offset rows a minimum of 1/2 inch, and stagger.
1. Closest nail spacing measured from one flange edge. Nails on opposite flange edge must be offset one-half the minimum spacing.

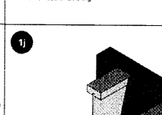


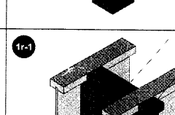


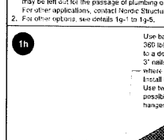








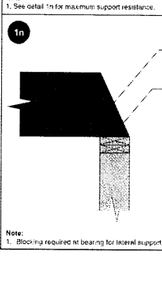




Flange width (in.)	Material thickness required (in.)[1,2]	Minimum depth (in.)[1,2,3]
2-1/2	1	5-1/2
3-1/2	1-1/2	7-1/4

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

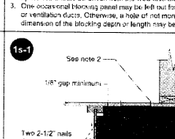
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For hanger resistance, see manufacturer's recommendations.
3. Verify double I-joist resistance to support concentrated loads.
4. Backer blocks must be long enough to permit required nailing without splitting.



Filler Block Requirements for Double I-joist Construction

Flange width (in.)	Net depth (in.)	Filler block size (in.)	Example
2-1/2	9-1/2	2-1/8 to 2-1/4 x 6	2x6 + 5/8" or 3/4" sheathing
	11-7/8	2-1/8 to 2-1/4 x 8	2x8 + 5/8" or 3/4" sheathing
	14	2-1/8 to 2-1/4 x 10	2x10 + 5/8" or 3/4" sheathing
	16	2-1/8 to 2-1/4 x 12	2x12 + 5/8" or 3/4" sheathing
3-1/2	9-1/2	3 x 6	2 x 2x6
	11-7/8	3 x 8	2 x 2x8
	14	3 x 10	2 x 2x10
	16	3 x 12	2 x 2x12

Note:
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.



This document supersedes all previous versions. For the latest version, consult nordic.ca or contact Nordic Structures.

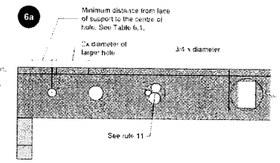
FOR ALL construction details →DC3

WEB HOLES AND OPENINGS

WEB HOLES IN I-JOISTS

Rules for Cutting Holes in I-Joists

1. The distance between the inside edge of the support and the centreline of any hole shall be in compliance with the requirements of Table 6.1.
2. I-joist top and bottom flanges must never be cut, notched or otherwise modified.
3. Whenever possible, factory-cut holes should be centred on the middle of the web.
4. The maximum size hole 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 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 equivalent 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 side of the largest square hole – or twice the length of the longest side of the largest rectangular hole – and each hole must be sized and located in compliance with the requirements of Table 6.1.
7. Holes measuring 1-1/2 inch or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
8. 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.
9. All holes shall be cut in accordance with the restrictions listed above and as illustrated in detail 6a.
10. Limit three maximum-size holes per span.
11. A group of round holes at approximately the same location shall be permitted if it meets the requirements for a single round hole circumscribed around them.

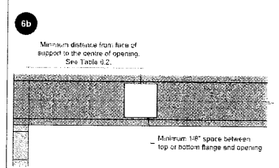


Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
2. Holes in web should be cut with a sharp saw.
3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole 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.

DUCT CHASE OPENINGS

Rules for Cutting Duct Chase Openings in I-joists

1. The distance between the inside edge of the support and the centreline of a duct chase opening shall be in compliance with the requirements of Table 6.2.
2. I-joist top and bottom flanges must never be cut, notched or otherwise modified.
3. 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 opening and the adjacent I-joist flange.
4. All openings shall be cut in accordance with the restrictions listed above and as illustrated in detail 6b.
5. Limit one maximum-size duct chase opening per span.



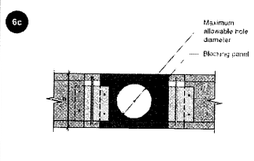
Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
2. Holes in web should be cut with a sharp saw.
3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch-diameter 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.

I-joist depth (in.)	Maximum depth of the opening (in.)
9-1/2	6-1/4
11-7/8	6-5/8
14	10-3/4
16	12-3/4

HOLES IN BLOCKING PANELS

Maximum Allowable Hole Size in Lateral-restraint-only Blocking Panels

1. The maximum allowable hole size for a lateral-restraint-only blocking panel is 2/3 of the lesser dimension of the blocking's depth or length. Assuming the blocking panel is longer than its height (or depth), the table below applies. For other applications, contact Nordic Structures.
2. Holes cut into the blocking panels are subject to the following limitations:
   - The top and bottom flanges of an I-joist blocking panel must never be cut, notched or otherwise modified.
   - Field-cut holes must be centred in the blocking horizontally.
   - While round holes are preferred, rectangle holes may be used provided the corners are not over-cut. Slightly rounding corners or predrilling corners with a 1-inch-diameter bit is recommended.
   - All holes must be cut in a workmanlike manner in accordance with the limitations listed above.



I-joist or rim board blocking depth (in.)	Maximum allowable hole diameter (in.)[a,1]
9-1/2	6-1/2
11-7/8	7-3/4
14	9-1/4
16	10-1/2

a. Maximum allowable hole diameter in blocking panel where the blocking panel is longer than its height.

TABLE 6.1 – LOCATION OF WEB HOLES

Simple or multiple span

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

Joist depth	Joist series	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'-0"	2'-10"	4'-3"	5'-8"	6'-0"	-	-	-	-	-	-	-	-	-
	NI-40x	0'-7"	1'-0"	3'-0"	4'-4"	5'-9"	6'-4"	-	-	-	-	-	-	-	-	-
	NI-60	1'-3"	2'-6"	4'-0"	5'-4"	7'-0"	7'-5"	-	-	-	-	-	-	-	-	-
	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'-5"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	8'-10"	10'-0"	-	-	-	-	-	-
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-8"	10'-3"	11'-4"	-	-	-	-	-	-
	NI-90	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	-	-	-	-	-	-
14"	NI-40x	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-8"	3'-9"	5'-2"	6'-0"	8'-8"	9'-3"	10'-2"	-	-	-
	NI-60	0'-7"	0'-8"	1'-8"	3'-0"	4'-3"	4'-8"	5'-8"	7'-2"	8'-0"	8'-5"	10'-4"	11'-9"	-	-	-
	NI-80	0'-10"	2'-0"	3'-4"	4'-9"	6'-2"	6'-5"	7'-6"	9'-0"	10'-0"	10'-6"	12'-4"	13'-9"	-	-	-
	NI-90	0'-7"	0'-8"	0'-10"	2'-5"	3'-10"	4'-3"	5'-3"	7'-5"	8'-8"	8'-4"	11'-4"	12'-11"	-	-	-
16"	NI-60	0'-7"	0'-8"	0'-8"	1'-6"	2'-10"	3'-2"	4'-2"	5'-6"	6'-4"	7'-0"	8'-5"	9'-6"	10'-2"	12'-2"	13'-9"
	NI-80	0'-7"	1'-3"	2'-5"	3'-10"	5'-3"	5'-6"	6'-6"	8'-0"	9'-0"	9'-0"	11'-0"	12'-3"	12'-9"	14'-5"	16'-0"
	NI-90	0'-7"	0'-8"	0'-8"	1'-8"	3'-3"	3'-8"	4'-9"	6'-6"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"	13'-6"	15'-4"

Notes:
1. Tabulated values are applicable to residential floor construction meeting the above design criteria.
2. 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.

Design Criteria

Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

TABLE 6.2 – LOCATION OF DUCT CHASE OPENINGS

Simple span

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

Joist depth	Joist series	Duct chase length (in.)								
		8	10	12	14	16	18	20	22	24
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	-	-	-	-	-	-
	NI-40x	5'-3"	5'-8"	6'-0"	6'-8"	6'-10"	7'-3"	7'-8"	-	-
	NI-60	5'-4"	5'-8"	6'-2"	7'-1"	7'-5"	8'-0"	-	-	-
	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"	-	-	-	-	-	-
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	-	-
	NI-60	7'-3"	7'-8"	8'-0"	8'-5"	8'-9"	9'-3"	9'-9"	-	-
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"
	NI-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"
14"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	9'-11"	10'-7"	11'-2"	-	-
	NI-60	8'-9"	9'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	-	-
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"
	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"
16"	NI-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	-	-
	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"
	NI-90	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-8"	14'-2"	14'-10"

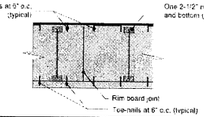
Design Criteria

Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

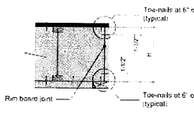
Note:
1. Tabulated values are applicable to residential floor construction meeting the above design criteria.

RIM BOARDS

8a — **Rim Board Joint Between Floor Joists**

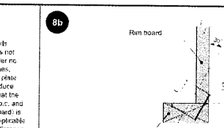


Rim Board Joint at Corner



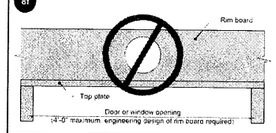
Notes:
1. Floor sheathing to rim board – Use 2-1/2-inch common nails at 6 inches o.c. Caution: The horizontal load resistance is not necessarily increased with a decreased nail spacing. Under no circumstances should the nail spacing be less than 3 inches. The 3-1/2-inch common nails used to connect the bottom plate of a wall to the rim board through the sheathing do not reduce the horizontal load resistance of the rim board provided that the 2-1/2-inch nail spacing (sheath-to-rim board) is 6 inches o.c. and the 3-1/2-inch nail spacing (bottom plate-sheathing-rim board) is in accordance with the prescriptive requirements of the applicable code. APA recommends a minimum 3/8-inch panel edge distance be maintained when nailing. Calculations show that the tongue does not need to be removed for floor sheathing 7/8-inch thick or less when used in conjunction with rim boards of 1-1/8 inch. Some local code jurisdictions, however, may require removal of the tongue at the edge of floor framing when nailing it to rim board.
2. Rim board to I-joist – Use two 2-1/2-inch common nails: one each into the top and bottom flange.

8b



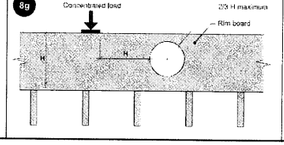
Note:
1. Rim board to sill plate – Toe-nail using 2-1/2-inch common nails at 6 inches o.c.

8f

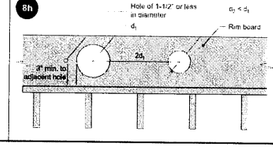


Note:
1. Do not cut holes in rim board installed over openings, such as doors or windows, where the rim board is not fully supported except that holes of 1-1/2 inch or less in size are permitted provided they are positioned at the mid-depth and in the middle one-third of the span.

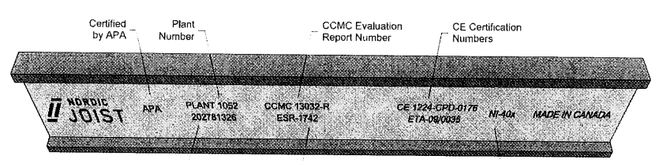
8g



8h



I-JOIST MARKING



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NORDIC STRUCTURES

COMPANY	PROJECT
Apr. 8, 2021 15:29	J9 GROUND FLOOR

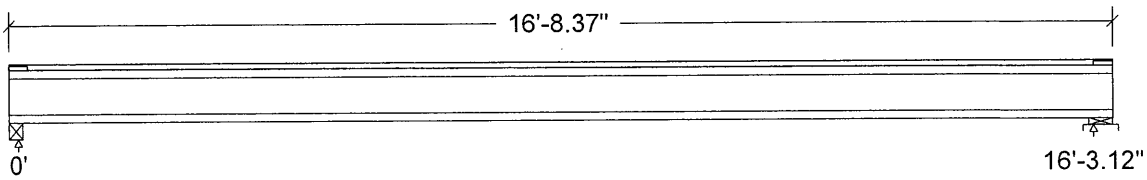
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	163		163
Live	325		325
Factored:			
Total	691		691
Bearing:			
Capacity			
Joist	1893		1893
Support	-		10841
Des ratio			
Joist	0.37		0.37
Support	-		0.06
Load case	#2		#2
Length	2-5/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	-		769
Kzcp sup	-		1.15

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

Supports: 1 - Steel Beam, W; 2 - Lumber Sill plate, No.1/No.2;
Total length: 16'-8.37"; Clear span: 16'-1.36"; 5/8" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 691	Vr = 1895	lbs	Vf/Vr = 0.36
Moment(+)	Mf = 2809	Mr = 8958	lbs-ft	Mf/Mr = 0.31
Perm. Defl'n	0.10 = < L/999	0.54 = L/360	in	0.18
Live Defl'n	0.20 = L/990	0.41 = L/480	in	0.48
Total Defl'n	0.30 = L/660	0.81 = L/240	in	0.36
Bare Defl'n	0.22 = L/887	0.54 = L/360	in	0.41
Vibration	Lmax = 16'-3.1	Lv = 17'-5	ft	0.93
Defl'n	= 0.032	= 0.039	in	0.81

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3222
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PROVINCE OF ONTARIO

pg 1/2

DWG NO. TAM 4187-22
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Additional Data:

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

CRITICAL LOAD COMBINATIONS:

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

CALCULATIONS:

```
EIeff = 367.27 lb-in^2  K=  4.94e06 lbs
"Live" deflection is due to all non-dead loads (live, wind, snow...)
```

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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

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S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4187-22
STRUCTURAL
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NORDIC STRUCTURES

COMPANY	PROJECT
Apr. 8, 2021 15:27	J1 SECOND FLOOR

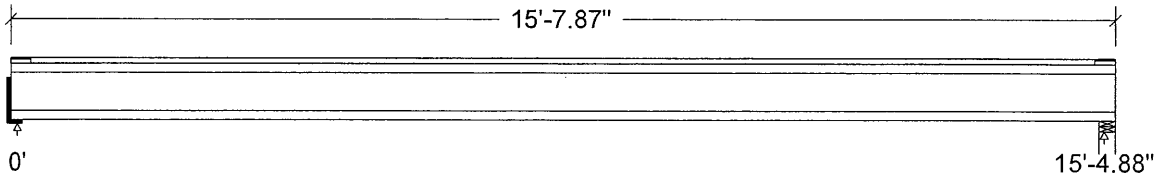
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	154		154
Live	308		308
Factored:			
Total	655		655
Bearing:			
Capacity			
Joist	1859		1872
Support	-		4756
Des ratio			
Joist	0.35		0.35
Support	-		0.14
Load case	#2		#2
Length	2		2-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	-		769
Kzcp sup	-		-

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

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

Supports: 1 - Hanger; 2 - Lumber Wall, No.1/No.2;

Total length: 15'-7.87"; Clear span: 15'-3.13"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 655	Vr = 1895	lbs	Vf/Vr = 0.35
Moment(+)	Mf = 2522	Mr = 4824	lbs-ft	Mf/Mr = 0.52
Perm. Defl'n	0.11 = < L/999	0.51 = L/360	in	0.21
Live Defl'n	0.22 = L/842	0.39 = L/480	in	0.57
Total Defl'n	0.33 = L/561	0.77 = L/240	in	0.43
Bare Defl'n	0.26 = L/723	0.51 = L/360	in	0.50
Vibration	Lmax = 15'-4.9	Lv = 16'-8.5	ft	0.92
Defl'n	= 0.033	= 0.042	in	0.78

LICENCED PROFESSIONAL ENGINEER S. KATSOULAKOS PROVINCE OF ONTARIO

DWG NO. TAM4/00-22
STRUCTURAL COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

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

CALCULATIONS:

```
 EIeff = 258.29 lb-in^2  K=  4.94e06 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow...)
```

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

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

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NORDIC STRUCTURES

COMPANY	PROJECT
Apr. 8, 2021 15:24	J6 SECOND FLOOR

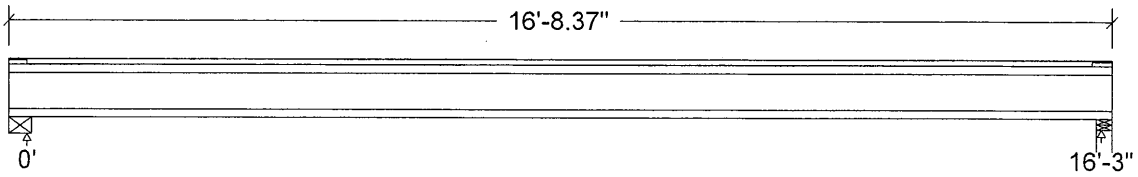
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	162		162
Live	325		325
Factored:			
Total	691		691
Bearing:			
Capacity			
Joist	1893		1893
Support	15342		6659
Des ratio			
Joist	0.36		0.36
Support	0.05		0.10
Load case	#2		#2
Length	4-3/8		2-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	1088		769
Kzcp sup	1.15		-

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

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

Supports: 1 - Nordic Lam Beam, 24F-1.9E; 2 - Lumber Wall, No.1/No.2;

Total length: 16'-8.37"; Clear span: 16'-1.24"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 691	Vr = 1895	lbs	Vf/Vr = 0.36
Moment(+)	Mf = 2806	Mr = 8958	lbs-ft	Mf/Mr = 0.31
Perm. Defl'n	0.10 = < L/999	0.54 = L/360	in	0.18
Live Defl'n	0.20 = L/992	0.41 = L/480	in	0.48
Total Defl'n	0.29 = L/661	0.81 = L/240	in	0.36
Bare Defl'n	0.22 = L/889	0.54 = L/360	in	0.40
Vibration	Lmax = 16'-3	Lv = 17'-9.5	ft	0.91
Defl'n	= 0.030	= 0.039	in	0.75

LICENSED PROFESSIONAL ENGINEER 3222 S. KATSOULAKOS PROVINCE OF ONTARIO

DWG NO. TAM 4/09-22
STRUCTURAL COMPONENT ONLY

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

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

CALCULATIONS:

```
 EIeff = 367.27 lb-in^2  K=  4.94e06 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
```

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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

DWG NO. TAM 4189-22
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

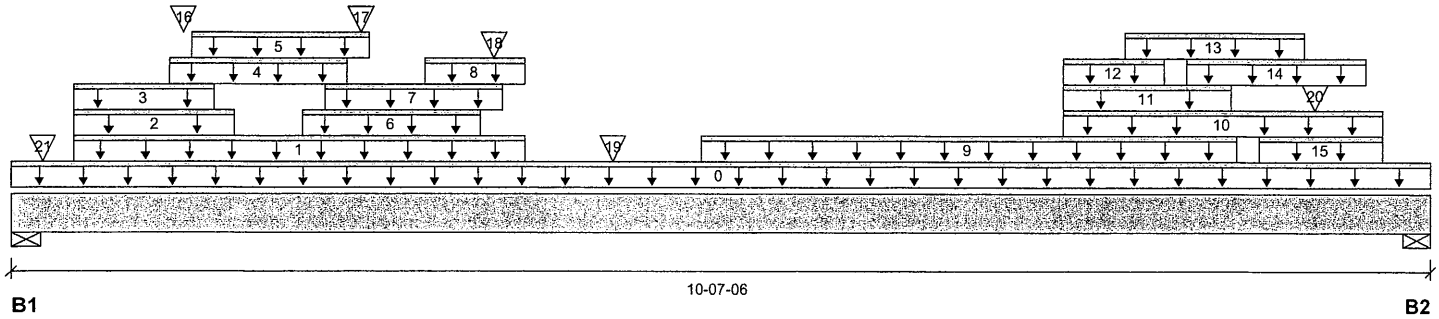
PASSED

1ST FLR FRAMING\Flush Beams\B1(i16494) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B1(i16494)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 10-07-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	3840 / 0	2875 / 0	132 / 0	
B2, 4-3/8"	3156 / 0	2074 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-07-06	Top		14			00-00-00
1	5(i161)	Unf. Lin. (lb/ft)	L	00-05-08	03-10-00	Top		141			n\a
2	5(i161)	Unf. Lin. (lb/ft)	L	00-05-08	01-08-00	Top	94	47			n\a
3	5(i161)	Unf. Lin. (lb/ft)	L	00-05-08	01-06-00	Top	279	140			n\a
4	5(i161)	Unf. Lin. (lb/ft)	L	01-02-00	02-06-00	Top	218	109			n\a
5	5(i161)	Unf. Lin. (lb/ft)	L	01-04-00	02-08-00	Top	98	49			n\a
6	5(i161)	Unf. Lin. (lb/ft)	L	02-02-00	03-06-00	Top	282	141			n\a
7	5(i161)	Unf. Lin. (lb/ft)	L	02-04-00	03-08-00	Top	98	49			n\a
8	5(i161)	Unf. Lin. (lb/ft)	L	03-01-00	03-10-00	Top	1066	562			n\a
9	Smoothed Load	Unf. Lin. (lb/ft)	L	05-02-00	09-02-00	Top	238	119			n\a
10	6(i162)	Unf. Lin. (lb/ft)	L	07-10-08	10-03-00	Top		81			n\a
11	6(i162)	Unf. Lin. (lb/ft)	L	07-10-08	09-01-08	Top	181	90			n\a
12	6(i162)	Unf. Lin. (lb/ft)	L	07-10-08	08-07-08	Top	1100	581			n\a
13	6(i162)	Unf. Lin. (lb/ft)	L	08-04-00	09-08-00	Top	98	49			n\a
14	6(i162)	Unf. Lin. (lb/ft)	L	08-09-08	10-01-08	Top	166	83			n\a
15	6(i162)	Unf. Lin. (lb/ft)	L	09-04-00	10-03-00	Top	104				n\a
16	J1(i15996)	Conc. Pt. (lbs)	L	01-03-04	01-03-04	Top	409	204			n\a
17	J1(i16271)	Conc. Pt. (lbs)	L	02-07-04	02-07-04	Top	352	176			n\a
18	B2(i15935)	Conc. Pt. (lbs)	L	03-07-04	03-07-04	Top	1015	954			n\a
19	J3(i14474)	Conc. Pt. (lbs)	L	04-06-00	04-06-00	Top	268	134			n\a
20	J3(i16465)	Conc. Pt. (lbs)	L	09-09-00	09-09-00	Top	265	133			n\a
21	E44(i77)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	106	193	132		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	20083 ft-lbs	36222 ft-lbs	55.4%	1	03-07-04
End Shear	8160 lbs	17356 lbs	47.0%	1	01-03-00
Total Load Deflection	L/366 (0.325")	n\a	65.6%	35	05-10-00
Live Load Deflection	L/617 (0.193")	n\a	58.3%	51	05-10-00
Max Defl.	0.325"	n\a	n\a	35	05-10-00
Span / Depth	12.5				

LICENCED PROFESSIONAL ENGINEER
3222
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4190-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

1ST FLR FRAMING\Flush Beams\B1(i16494) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B1(i16494)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

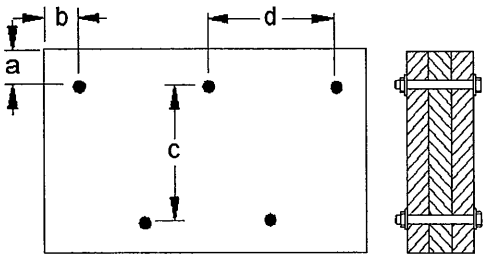
Bearing Supports		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 5-1/4"	9486 lbs	53.4%	26.9%	Spruce-Pine-Fir
B2	Wall/Plate	4-3/8" x 5-1/4"	7327 lbs	51.9%	26.1%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2½" c = 4-1/2"
b minimum = 2-1/2" d = 6"

Calculated Side Load = 2016.3 lb/ft
Bolts are assumed to be Grade A307 or Grade 2 or higher.
Connectors are: 1/2 in. Staggered Through Bolt

LICENCED PROFESSIONAL ENGINEER
3224
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4190-22
STRUCTURAL
COMPONENT ONLY

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Boise Cascade ENGINEERED WOOD PRODUCTS

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

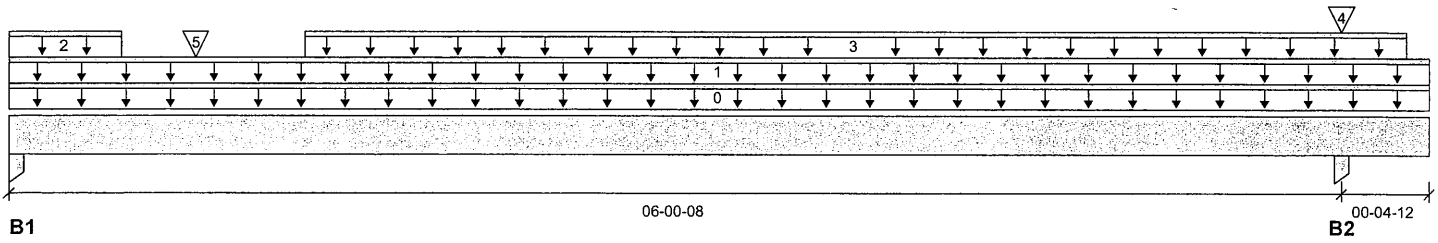
PASSED

1ST FLR FRAMING\Flush Beams\B10(i16003) (Flush Beam)

BC CALC® Member Report | Dry | 2 spans | R cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B10(i16003)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-05-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 6"	288 / 0	368 / 0		
B2, 3-1/2"	306 / 0	406 / 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	06-05-04	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-05-04	Top		60			n\a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	00-06-00	Top	15				n\a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-00	06-04-00	Top	94	47			n\a
4	B11(i14578)	Conc. Pt. (lbs)	L	06-00-08	06-00-08	Top	8	35			n\a
5	J6(i16460)	Conc. Pt. (lbs)	L	00-10-00	00-10-00	Top	101	51			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1129 ft-lbs	23219 ft-lbs	4.9%	2	02-11-08
Neg. Moment	-8 ft-lbs	-15093 ft-lbs	n\a	0	06-00-08
End Shear	640 lbs	11571 lbs	5.5%	1	01-03-08
Cont. Shear	603 lbs	11571 lbs	5.2%	1	05-01-04
Total Load Deflection	L/999 (0.009")	n\a	n\a	9	03-02-08
Live Load Deflection	L/999 (0.004")	n\a	n\a	12	03-02-08
Total Neg. Defl.	2xL/1998 (-0.002")	n\a	n\a	9	06-05-04
Max Defl.	0.009"	n\a	n\a	9	03-02-08
Span / Depth	7.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	6" x 3-1/2"	893 lbs	5.2%	3.5%	Unspecified
B2	Column	3-1/2" x 3-1/2"	967 lbs	9.7%	6.5%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4191 -22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

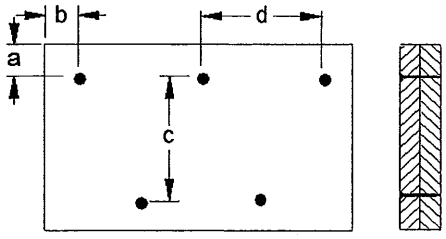
PASSED

1ST FLR FRAMING\Flush Beams\B10(i16003) (Flush Beam)

BC CALC® Member Report — Dry | 2 spans | R cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B10(i16003)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 201.3 lb/ft
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4191-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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REVIEWED

Boise Cascade ENGINEERED WOOD PRODUCTS

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

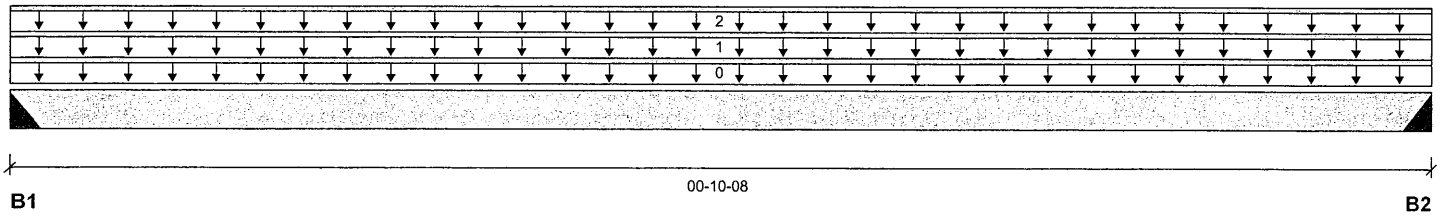
PASSED

1ST FLR FRAMING\Flush Beams\B11(i14578) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B11(i14578)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 00-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	7 / 0	30 / 0		
B2, 4"	9 / 0	40 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	00-10-08	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	00-10-08	Top		60			n\a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-08	Top	19	9			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3 ft-lbs	15093 ft-lbs	n\a	0	00-04-08
End Shear	18 lbs	7521 lbs	0.2%	0	00-02-08
Span / Depth	0.6				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	2-1/2" x 3-1/2"	41 lbs	n\a	0.6%	HUC410
B2	Hanger	4" x 3-1/2"	55 lbs	n\a	0.5%	HGUS410

Cautions

Header for the hanger HUC410 is a Double 1-3/4" x 9-1/2" LVL Beam.

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

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.

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

) 069

Notes

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-10-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
3224
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4192-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

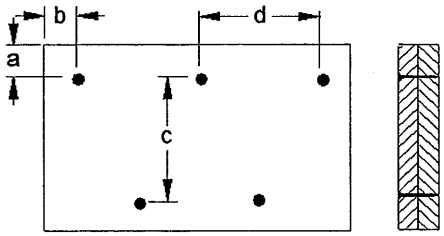
1ST FLR FRAMING\Flush Beams\B11(i14578) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B11(i14578)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = [illegible]

Connectors are: [illegible] Nails

3-1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
3222
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4192-22
STRUCTURAL
COMPONENT ONLY

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Boise Cascade® ENGINEERED WOOD PRODUCTS

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

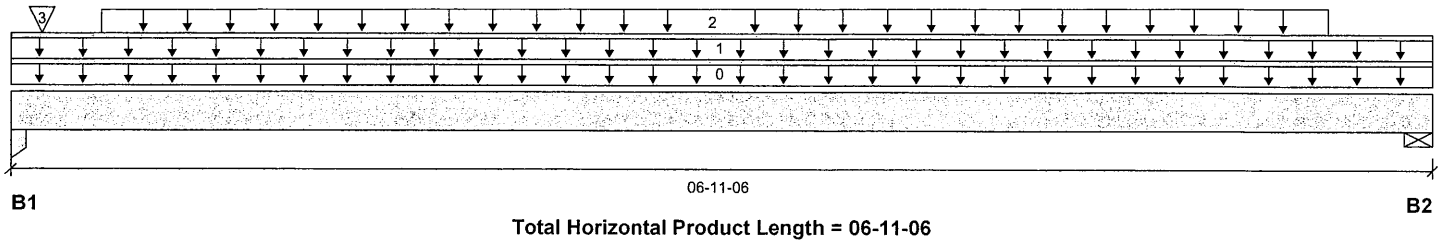
PASSED

1ST FLR FRAMING\Flush Beams\B12(i16361) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B12(i16361)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-11-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	365 / 0	452 / 0		
B2, 4-3/8"	359 / 0	424 / 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	06-11-06	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-11-06	Top		60			n\a
2	Smoothed Load	Trapezoidal (lb/ft)	L	00-05-04		Top	112	56			n\a
					06-05-04		124	62			
3	B11(i14578)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	14	37			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1735 ft-lbs	23219 ft-lbs	7.5%	1	03-05-04
End Shear	919 lbs	11571 lbs	7.9%	1	05-09-08
Total Load Deflection	L/999 (0.019")	n\a	n\a	4	03-05-04
Live Load Deflection	L/999 (0.009")	n\a	n\a	5	03-05-04
Max Defl.	0.019"	n\a	n\a	4	03-05-04
Span / Depth	8.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	3-1/2" x 3-1/2"	1113 lbs	11.2%	7.4%	Unspecified
B2	Wall/Plate	4-3/8" x 3-1/2"	1068 lbs	11.3%	5.7%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENCED PROFESSIONAL ENGINEER
3222
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4193-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

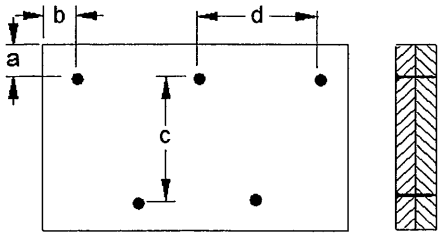
1ST FLR FRAMING\Flush Beams\B12(i16361) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B12(i16361)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 3 8"

Calculated Side Load = 250.8 lb/ft
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4193 -22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

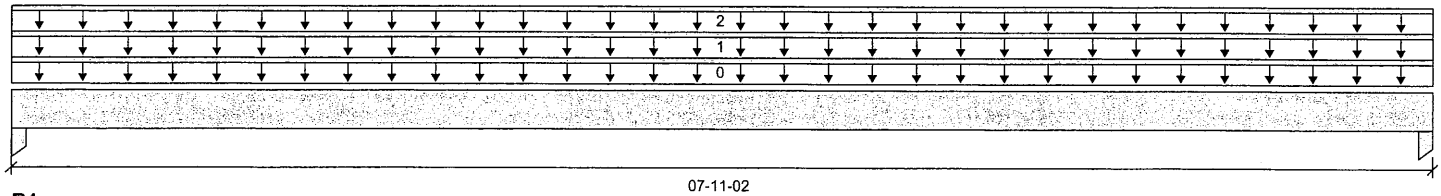
PASSED

1ST FLR FRAMING\Flush Beams\B13 L(i14247) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B13 L(i14247)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 07-11-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	68 / 0	318 / 0		
B2, 1-3/4"	64 / 0	300 / 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	07-11-02	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	07-11-02	Top		60			n\a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	07-11-02	Top	17	8			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	776 ft-lbs	15093 ft-lbs	5.1%	0	04-00-14
End Shear	318 lbs	7521 lbs	4.2%	0	01-01-14
Total Load Deflection	L/999 (0.014")	n\a	n\a	4	04-00-14
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	04-00-14
Max Defl.	0.014"	n\a	n\a	4	04-00-14
Span / Depth	9.5				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	4-3/8" x 3-1/2"	445 lbs	5.5%	3.7%	Unspecified
B2	Column	1-3/4" x 3-1/2"	421 lbs	13.0%	8.7%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 07-11-02.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
3222
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4199-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

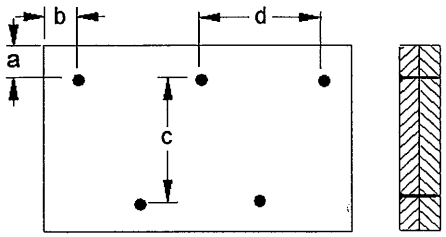
1ST FLR FRAMING\Flush Beams\B13 L(i14247) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B13 L(i14247)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = [illegible] 8"

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4194-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

REVIEWED

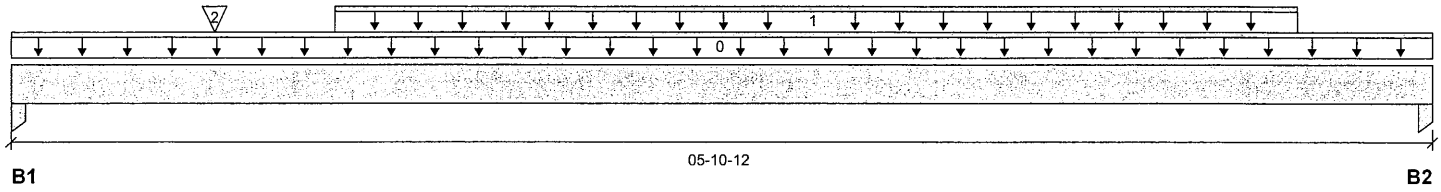
Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B14 L(i15974) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B14 L(i15974)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 05-10-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	400 / 0	215 / 0		
B2, 3-1/2"	379 / 0	204 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-10-12	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-00	05-04-00	Top	158	79			n\a
2	J5(i16281)	Conc. Pt. (lbs)	L	00-10-00	00-10-00	Top	145	73			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1285 ft-lbs	11610 ft-lbs	11.1%	1	02-10-00
End Shear	806 lbs	5785 lbs	13.9%	1	04-09-12
Total Load Deflection	L/999 (0.019")	n\a	n\a	4	02-11-08
Live Load Deflection	L/999 (0.012")	n\a	n\a	5	02-11-08
Max Defl.	0.019"	n\a	n\a	4	02-11-08
Span / Depth	6.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	3-1/2" x 1-3/4"	869 lbs	17.5%	11.6%	Unspecified
B2	Column	3-1/2" x 1-3/4"	823 lbs	16.5%	11.0%	Unspecified

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4195-22
STRUCTURAL
COMPONENT ONLY

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-12.

CONFORMS TO OBC 2012
AMENDED 2020

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.

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

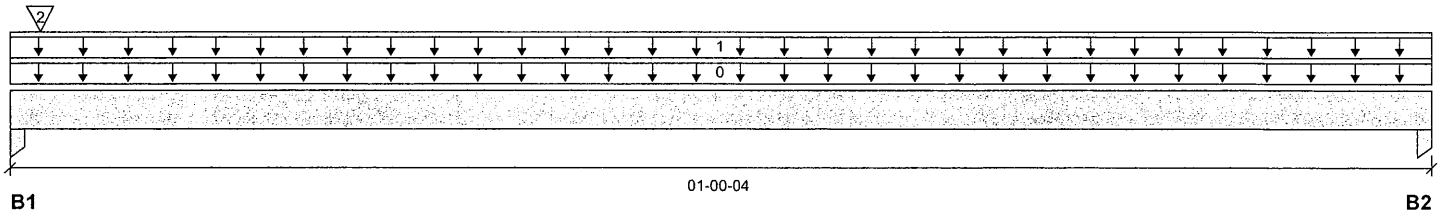
PASSED

1ST FLR FRAMING\Flush Beams\B15 L(i14346) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B15 L(i14346)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 01-00-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	14 / 0	9 / 0		
B2, 1-3/4"	11 / 0	8 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-00-04	Top		5			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-04	Top	21	11			n\a
2	FC2 Floor Decking (Plan View Fill)	Conc. Pt. (lbs)	L	00-00-04	00-00-04	Top	3	1			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	5 ft-lbs	11610 ft-lbs	n\a	1	00-06-02
End Shear	19 lbs	5785 lbs	0.3%	1	00-01-12
Span / Depth	1.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 1-3/4"	32 lbs	1.3%	0.9%	Unspecified
B2	Column	1-3/4" x 1-3/4"	26 lbs	1.0%	0.7%	Unspecified

Notes

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-00-04.

CONFORMS TO OBC 2012
AMENDED 2020

REGISTERED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO
DWG NO. 9AM 4/26-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

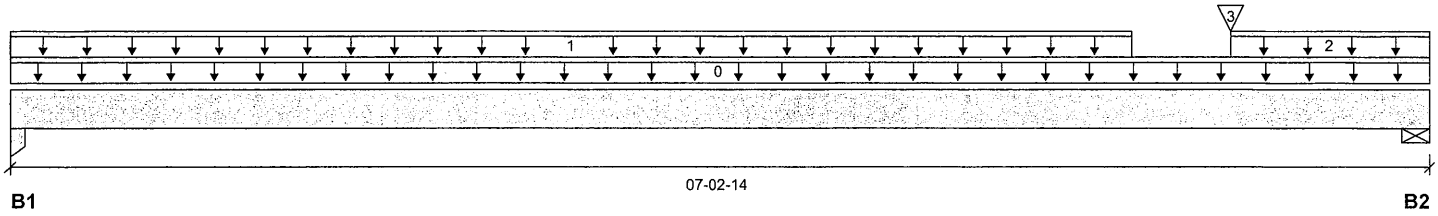
PASSED

1ST FLR FRAMING\Flush Beams\B16 L(i16455) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B16 L(i16455)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 07-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	521 / 0	279 / 0		
B2, 4-3/8"	436 / 0	237 / 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	07-02-14	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	05-08-12	Top	141	71			n\a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	06-02-12	07-02-14	Top	20	10			n\a
3	J5(i16291)	Conc. Pt. (lbs)	L	06-02-12	06-02-12	Top	128	64			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1648 ft-lbs	11610 ft-lbs	14.2%	1	03-02-12
End Shear	878 lbs	5785 lbs	15.2%	1	06-01-00
Total Load Deflection	L/999 (0.038")	n\a	n\a	4	03-07-04
Live Load Deflection	L/999 (0.024")	n\a	n\a	5	03-07-04
Max Defl.	0.038"	n\a	n\a	4	03-07-04
Span / Depth	8.5				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	3-1/2" x 1-3/4"	1130 lbs	22.7%	15.1%	Unspecified
B2	Wall/Plate	4-3/8" x 1-3/4"	950 lbs	20.2%	10.2%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012

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

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

AMENDED 2020

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

LICENSED PROFESSIONAL ENGINEER
S KATSOULAROS
PROVINCE OF ONTARIO

DWG NO. TAM 4198-22
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.

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

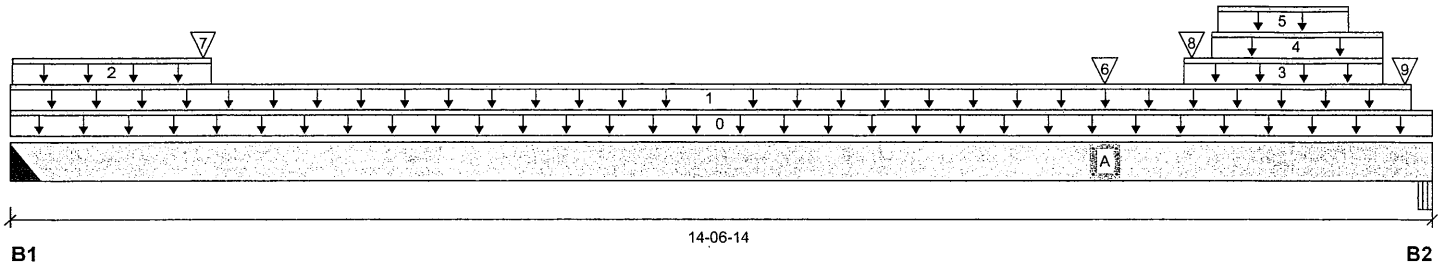
PASSED

1ST FLR FRAMING\Flush Beams\B2(i15935) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B2(i15935)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 14-06-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	1032 / 0	972 / 0		
B2, 5-1/4"	3400 / 0	2489 / 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	14-06-14	Top		14			00-00-00
1	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	14-04-04	Top	38	19			n\a
2	7(i164)	Unf. Lin. (lb/ft)	L	00-00-04	02-00-04	Top		81			n\a
3	9(i165)	Unf. Lin. (lb/ft)	L	12-00-04	14-00-12	Top		81			n\a
4	9(i165)	Unf. Lin. (lb/ft)	L	12-03-12	14-00-12	Top		60			n\a
5	9(i165)	Unf. Lin. (lb/ft)	L	12-04-08	13-08-08	Top	255	128			n\a
6	B3(i16251)	Conc. Pt. (lbs)	L	11-02-10	11-02-10	Top	1003	521			n\a
7	7(i164)	Conc. Pt. (lbs)	L	01-11-04	01-11-04	Top	238	256			n\a
8	9(i165)	Conc. Pt. (lbs)	L	12-01-04	12-01-04	Top	2110	1438			n\a
9	22(i1240)	Conc. Pt. (lbs)	L	14-03-08	14-03-08	Top	196	161			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	16153 ft-lbs	36222 ft-lbs	44.6%	1	11-02-10
End Shear	7613 lbs	17356 lbs	43.9%	1	13-04-02
Total Load Deflection	L/358 (0.472")	n\a	67.0%	4	07-09-04
Live Load Deflection	L/616 (0.274")	n\a	58.4%	5	07-09-04
Max Defl.	0.472"	n\a	n\a	4	07-09-04
Span / Depth	17.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	2" x 5-1/4"	2762 lbs	n\a	21.6%	HGUS5.5/10
B2	Beam	5-1/4" x 5-1/4"	8212 lbs	55.8%	24.4%	Unspecified

Cautions

Header for the hanger HGUS5.5/10 is a Triple 1-3/4" x 9-1/2" LVL Beam.

Hanger model HGUS5.5/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4198-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

1ST FLR FRAMING\Flush Beams\B2(i15935) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

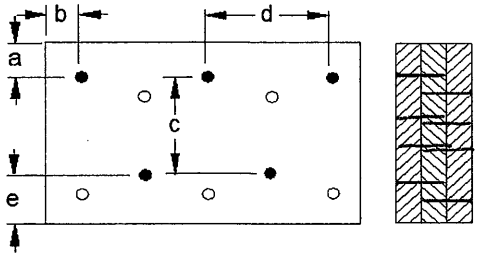
Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B2(i15935)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 11-01-12.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



4 rows

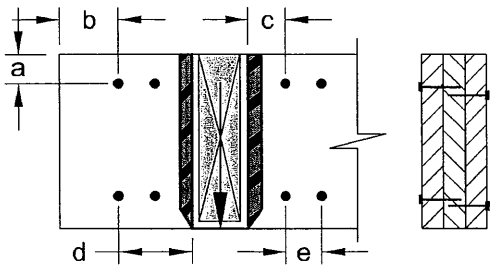
a minimum = 1"
b minimum = 3"
c = 6-1/2"
d = 20 0 11
e minimum = 3"

Nailing applies to both sides of the member
Connectors are: ... 1 ... Nails

3-1/2" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 5



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
e minimum = 4"
Nailing applies to both sides of the member
Connectors are: 16d 1 Nails

3-1/2" ARDOX SPIRAL

REGISTERED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4198-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

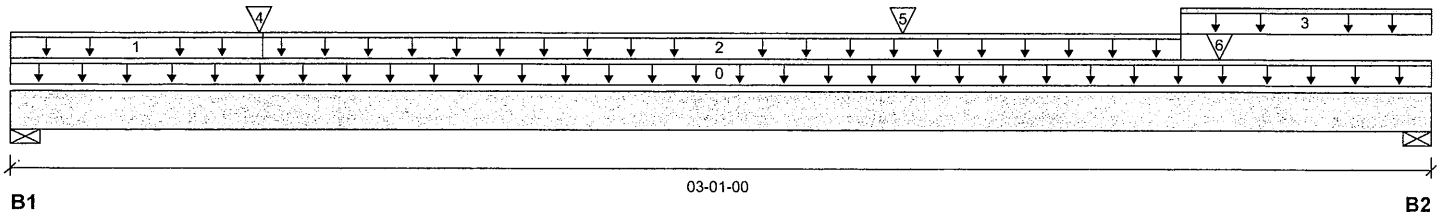
Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B28(i15916) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B28(i15916)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 03-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	947 / 0	760 / 0	313 / 0	
B2, 3-1/2"	681 / 0	729 / 0	457 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	Top		10			00-00-00
1	E73(i11221)	Unf. Lin. (lb/ft)	L	00-00-00	00-06-08	Top	224	509	569		n\a
2	E74(i11302)	Unf. Lin. (lb/ft)	L	00-06-08	02-06-08	Top		41			n\a
3	E44(i77)	Unf. Lin. (lb/ft)	L	02-06-08	03-01-00	Top	210	705	854		n\a
4	-	Conc. Pt. (lbs)	L	00-06-07	00-06-07	Top	754	389			n\a
5	J1(i16447)	Conc. Pt. (lbs)	L	01-11-04	01-11-04	Top	399	199			n\a
6	E44(i77)	Conc. Pt. (lbs)	L	02-07-08	02-07-08	Top	241	133			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	894 ft-lbs	23219 ft-lbs	3.9%	1	01-11-04
End Shear	1363 lbs	11571 lbs	11.8%	1	02-00-00
Total Load Deflection	L/999 (0.002")	n\a	n\a	35	01-06-12
Live Load Deflection	L/999 (0.001")	n\a	n\a	51	01-06-12
Max Defl.	0.002"	n\a	n\a	35	01-06-12
Span / Depth	3.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	2684 lbs	35.6%	18.0%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	2391 lbs	31.7%	16.0%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4194-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

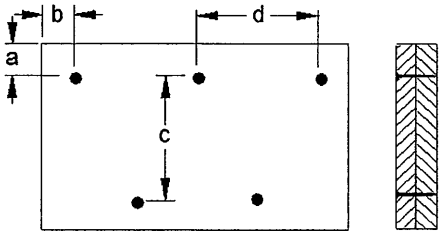
1ST FLR FRAMING\Flush Beams\B28(i15916) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B28(i15916)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

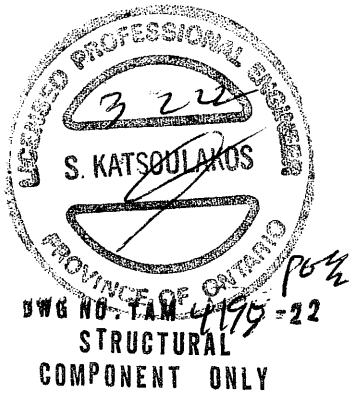
Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 423.6 lb/ft
Connectors are: 16d 1 Nails

3-1/2" ARDOX SPIRAL



Disclosure

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

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

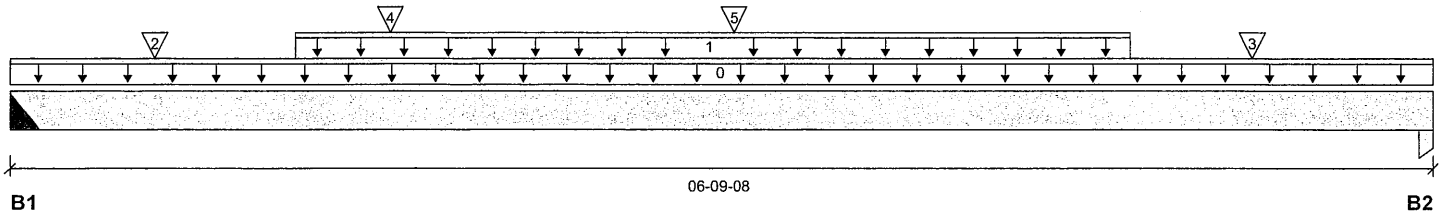
PASSED

1ST FLR FRAMING\Flush Beams\B3(i16251) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B3(i16251)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-09-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	1026 / 0	534 / 0		
B2, 4-7/8"	961 / 0	502 / 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	06-09-08	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-02	05-04-02	Top	224	112			n\a
2	-	Conc. Pt. (lbs)	L	00-08-02	00-08-02	Top	314	157			n\a
3	J3(i16465)	Conc. Pt. (lbs)	L	05-11-02	05-11-02	Top	249	125			n\a
4	J7(i14409)	Conc. Pt. (lbs)	L	01-09-10	01-09-10	Top	75	38			n\a
5	-	Conc. Pt. (lbs)	L	03-05-08	03-05-08	Top	445	230			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4027 ft-lbs	11610 ft-lbs	34.7%	1	03-04-02
End Shear	1893 lbs	5785 lbs	32.7%	1	01-00-08
Total Load Deflection	L/999 (0.075")	n\a	n\a	4	03-04-02
Live Load Deflection	L/999 (0.049")	n\a	n\a	5	03-04-02
Max Defl.	0.075"	n\a	n\a	4	03-04-02
Span / Depth	7.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	2206 lbs	n\a	34.4%	HUS1.81/10
B2	Column	4-7/8" x 1-3/4"	2070 lbs	29.9%	19.9%	Unspecified

Cautions

Header for the hanger HUS1.81/10 is a Triple 1-3/4" x 9-1/2" LVL Beam.

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

Notes

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

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

Hanger Manufacturer: Unassigned

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

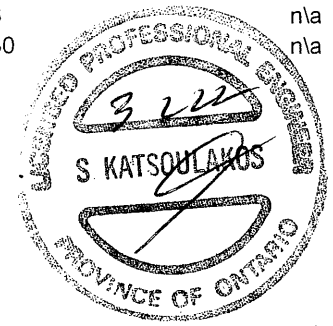
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012 AMENDED 2020



DWG NO. TAM 4200-22
STRUCTURAL COMPONENT ONLY

Disclosure

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

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

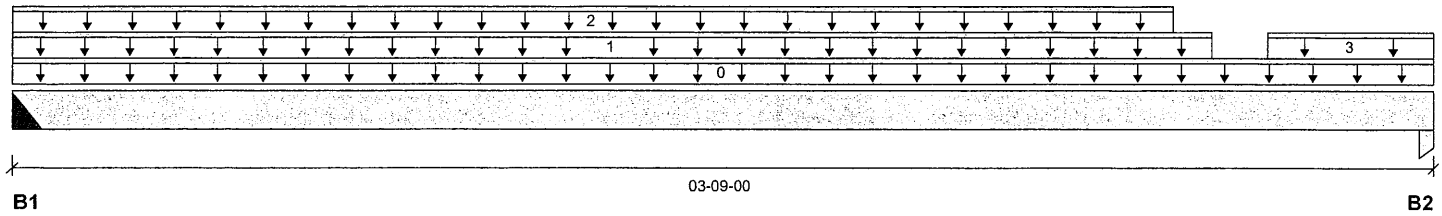
PASSED

1ST FLR FRAMING\Flush Beams\B4(i14370) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B4(i14370)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 03-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	416 / 0	216 / 0		
B2, 7-7/8"	385 / 0	203 / 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	03-09-00	Top		5			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	Top	240	120			n\a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-00-12	Top	9	4			n\a
3	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-03-12	03-09-00	Top	27	13			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	589 ft-lbs	11610 ft-lbs	5.1%	1	01-08-01
End Shear	352 lbs	5785 lbs	6.1%	1	02-03-10
Total Load Deflection	L/999 (0.003")	n\a	n\a	4	01-08-01
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	01-08-01
Max Defl.	0.003"	n\a	n\a	4	01-08-01
Span / Depth	3.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	894 lbs	n\a	14.0%	HUS1.81/10
B2	Column	7-7/8" x 1-3/4"	831 lbs	11.3%	4.9%	Unspecified

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 9-1/2" LVL Beam.

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

Notes

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

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

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 02-11-07.

LICENSED PROFESSIONAL ENGINEER
S KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4204 -22
STRUCTURAL
COMPONENT ONLY

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

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Boise Cascade® ENGINEERED WOOD PRODUCTS

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

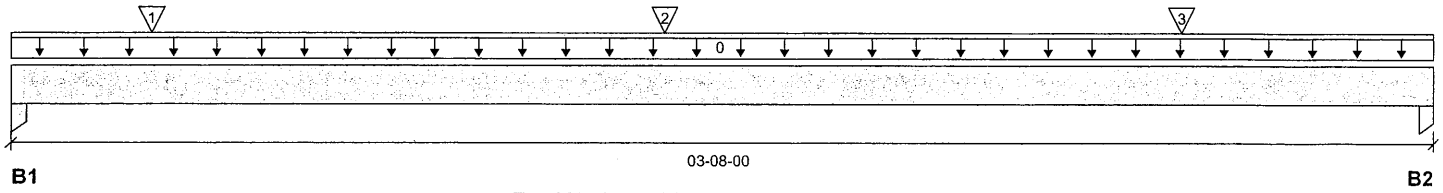
PASSED

1ST FLR FRAMING\Flush Beams\B5(i14379) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B5(i14379)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 03-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	179 / 0	107 / 0		
B2, 3-1/2"	151 / 0	94 / 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	03-08-00	Top		10			00-00-00
1	J7(i14374)	Conc. Pt. (lbs)	L	00-04-04	00-04-04	Top	114	57			n\a
2	J7(i14377)	Conc. Pt. (lbs)	L	01-08-04	01-08-04	Top	120	60			n\a
3	J7(i14369)	Conc. Pt. (lbs)	L	03-00-04	03-00-04	Top	96	48			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	305 ft-lbs	23219 ft-lbs	1.3%	1	01-08-04
End Shear	217 lbs	11571 lbs	1.9%	1	02-07-00
Total Load Deflection	L/999 (0.001")	n\a	n\a	4	01-08-15
Live Load Deflection	L/999 (0")	n\a	n\a	5	01-08-15
Max Defl.	0.001"	n\a	n\a	4	01-08-15
Span / Depth	4.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 3-1/2"	402 lbs	8.1%	5.4%	Unspecified
B2	Column	3-1/2" x 3-1/2"	343 lbs	3.4%	2.3%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012
AMENDED 2020

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

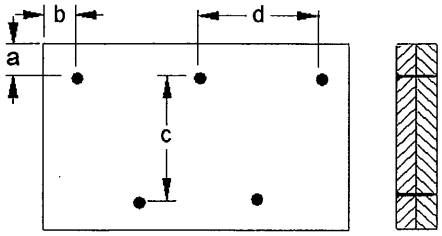
PASSED

1ST FLR FRAMING\Flush Beams\B5(i14379) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B5(i14379)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 6"

Calculated Side Load = 127.5 lb/ft
Connectors are: 1 . Nails

3-1/2" ARDOX SPIRAL

DWG NO. TAM 4202-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

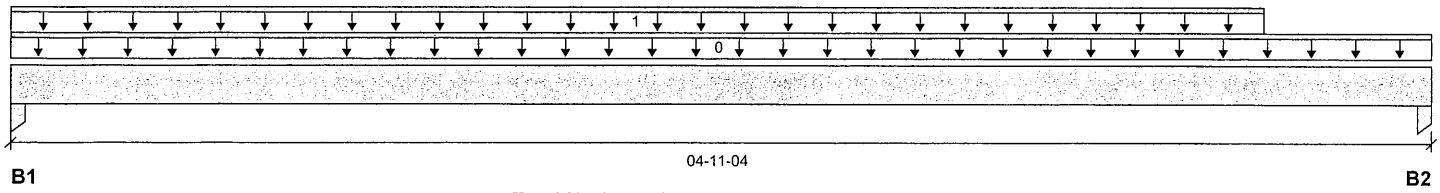
Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B6(i14373) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B6(i14373)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 04-11-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	39 / 0	31 / 0		
B2, 5-1/4"	30 / 0	27 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-11-04	Top		5			00-00-00
1	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	04-04-04	Top	16	8			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	87 ft-lbs	11610 ft-lbs	0.7%	1	02-05-10
End Shear	71 lbs	5785 lbs	1.2%	1	03-08-08
Total Load Deflection	L/999 (0.001")	n\a	n\a	4	02-05-10
Live Load Deflection	L/999 (0")	n\a	n\a	5	02-05-10
Max Defl.	0.001"	n\a	n\a	4	02-05-10
Span / Depth	5.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	5-1/4" x 1-3/4"	98 lbs	1.3%	0.9%	Unspecified
B2	Column	5-1/4" x 1-3/4"	78 lbs	1.1%	0.7%	Unspecified

LICENSED PROFESSIONAL ENGINEER
S KATSOULAKOS
PROVINCE OF ONTARIO
B222

DWG NO. TAM4203-22
STRUCTURAL
COMPONENT ONLY

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-07-00, Bottom: 04-07-12.

CONFORMS TO OBC 2012
AMENDED 2020

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® ,

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

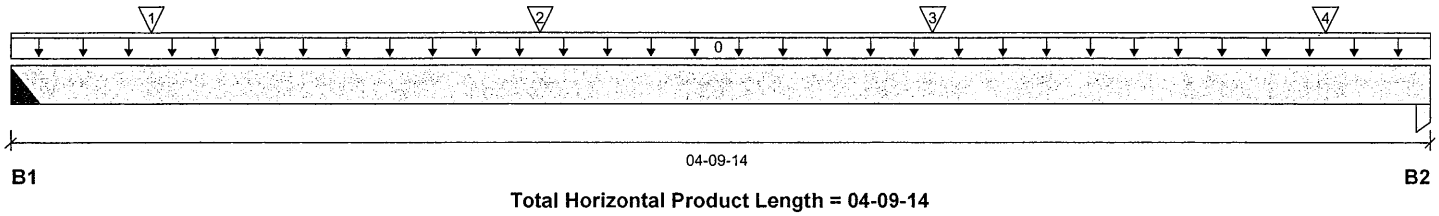
Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B7(i14378) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B7(i14378)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 04-09-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	184 / 0	103 / 0		
B2, 5-1/4"	214 / 0	120 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-09-14	Top		5			00-00-00
1	J6(i14462)	Conc. Pt. (lbs)	L	00-05-10	00-05-10	Top	87	43			n\a
2	J7(i14374)	Conc. Pt. (lbs)	L	01-09-10	01-09-10	Top	110	55			n\a
3	J7(i14377)	Conc. Pt. (lbs)	L	03-01-10	03-01-10	Top	112	56			n\a
4	J7(i14369)	Conc. Pt. (lbs)	L	04-05-10	04-05-10	Top	89	45			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	398 ft-lbs	11610 ft-lbs	3.4%	1	01-09-10
End Shear	273 lbs	5785 lbs	4.7%	1	03-07-02
Total Load Deflection	L/999 (0.004")	n\a	n\a	4	02-03-10
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	02-03-10
Max Defl.	0.004"	n\a	n\a	4	02-03-10
Span / Depth	5.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	404 lbs	n\a	6.3%	HUS1.81/10
B2	Column	5-1/4" x 1-3/4"	470 lbs	6.3%	4.2%	Unspecified

S KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4202A-22
STRUCTURAL
COMPONENT ONLY

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 9-1/2" LVL Beam.
Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

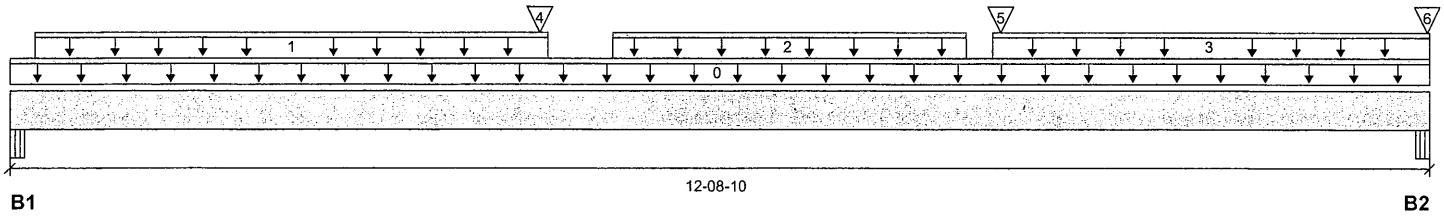
PASSED

1ST FLR FRAMING\Flush Beams\B8(i16253) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B8(i16253)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 12-08-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	653 / 0	370 / 0		
B2, 2-5/8"	910 / 0	521 / 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	12-08-10	Top		5			00-00-00
1	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	04-09-14	Top	20	10			n\a
2	STAIR	Unf. Lin. (lb/ft)	L	05-04-14	08-06-14	Top	240	120			n\a
3	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	08-09-12	12-08-10	Top	16	8			n\a
4	B7(i14378)	Conc. Pt. (lbs)	L	04-09-00	04-09-00	Top	177	99			n\a
5	B9(i16341)	Conc. Pt. (lbs)	L	08-10-10	08-10-10	Top	333	187			n\a
6	12(i178)	Conc. Pt. (lbs)	L	12-08-06	12-08-06	Top	126	81			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6983 ft-lbs	11610 ft-lbs	60.1%	1	06-11-14
End Shear	1686 lbs	5785 lbs	29.1%	1	11-08-08
Total Load Deflection	L/293 (0.498")	n\a	81.8%	4	06-07-02
Live Load Deflection	L/455 (0.321")	n\a	79.1%	5	06-07-02
Max Defl.	0.498"	n\a	n\a	4	06-07-02
Span / Depth	15.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5-1/4" x 1-3/4"	1442 lbs	29.4%	12.9%	Unspecified
B2	Beam	2-5/8" x 1-3/4"	2016 lbs	82.2%	36.0%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 04-02-14.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4205-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

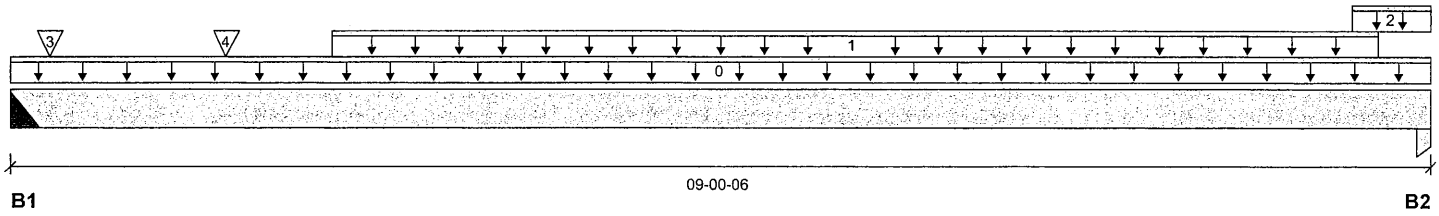
PASSED

1ST FLR FRAMING\Flush Beams\B9(i16341) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B9(i16341)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 09-00-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	338 / 0	190 / 0		
B2, 6"	341 / 0	193 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-00-06	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	02-00-06	08-08-06	Top	78	39			n\a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	08-06-06	09-00-06	Top	15	8			n\a
3	J7(i16299)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	56	28			n\a
4	J7(i15924)	Conc. Pt. (lbs)	L	01-04-06	01-04-06	Top	96	48			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1519 ft-lbs	11610 ft-lbs	13.1%	1	04-00-06
End Shear	648 lbs	5785 lbs	11.2%	1	07-08-14
Total Load Deflection	L/999 (0.054")	n\a	n\a	4	04-04-06
Live Load Deflection	L/999 (0.035")	n\a	n\a	5	04-04-06
Max Defl.	0.054"	n\a	n\a	4	04-04-06
Span / Depth	10.6				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	745 lbs	n\a	11.6%	HUS1.81/10
B2	Column	6" x 1-3/4"	752 lbs	8.8%	5.9%	Unspecified

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 9-1/2" LVL Beam.

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

Notes

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

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

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

LICENCED PROFESSIONAL ENGINEER 3222 S. KATSOULAKOS PROVINCE OF ONTARIO

BWG NO. TAM 4208-22 STRUCTURAL COMPONENT ONLY

CONFORMS TO OBC 2012 AMENDED 2020

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.

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Boise Cascade® ENGINEERED WOOD PRODUCTS

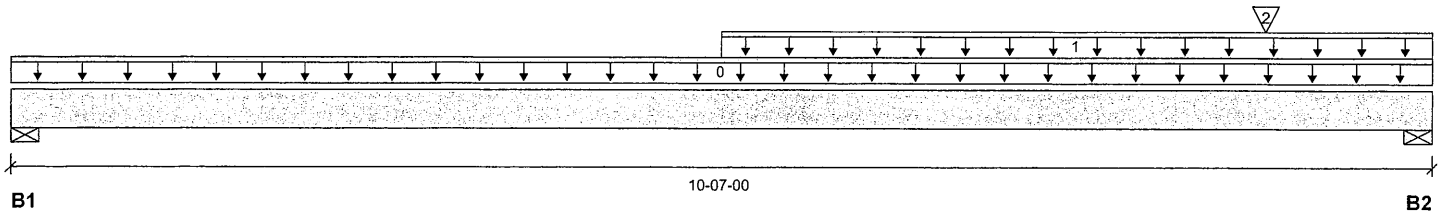
Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Dropped Beams\B18 DR(i16401) (Dropped Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B18 DR(i16401)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 10-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	234 / 0	254 / 0		
B2, 3-1/2"	2114 / 0	1440 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-07-00	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	05-03-08	10-07-00	Top		60			n\a
2	B19(i16257)	Conc. Pt. (lbs)	L	09-04-02	09-04-02	Top	2348	1275			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4960 ft-lbs	17269 ft-lbs	28.7%	1	09-04-02
End Shear	4876 lbs	11571 lbs	42.1%	1	09-06-00
Total Load Deflection	L/999 (0.101")	n\a	n\a	4	05-11-02
Live Load Deflection	L/999 (0.053")	n\a	n\a	5	06-00-10
Max Defl.	0.101"	n\a	n\a	4	05-11-02
Span / Depth	12.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	669 lbs	4.1%	4.5%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	4971 lbs	30.4%	33.3%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 09-02-06, Bottom: 10-07-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENCED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4200 -22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

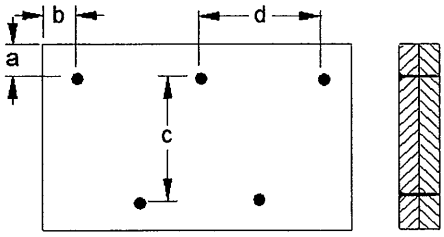
PASSED

2ND FLR FRAMING\Dropped Beams\B18 DR(i16401) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B18 DR(i16401)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2"
b minimum = 3" d = [illegible]

Connectors are: [illegible] ; Nails

3 1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4[illegible]-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade ENGINEERED WOOD PRODUCTS

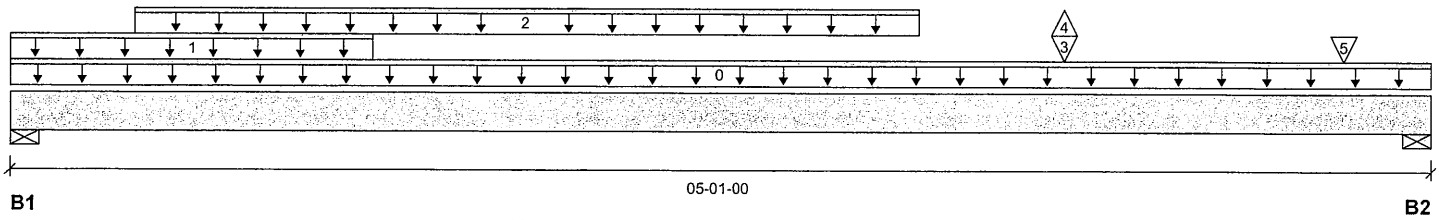
Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Dropped Beams\B23 DR(i16476) (Dropped Beam)

BC CALC® Member Report
Build 7773
Dry | 1 span | No cant.
March 2, 2022 08:15:18

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B23 DR(i16476)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 05-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1304 / 0	746 / 0		
B2, 3-1/2"	1684 / 2	872 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-01-00	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	01-03-08	Top		60			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-04	03-03-00	Top	618	308			n\a
3	-	Conc. Pt. (lbs)	L	03-09-04	03-09-04	Top	622	310			n\a
4	-	Conc. Pt. (lbs)	L	03-09-04	03-09-04	Top	-2				n\a
5	-	Conc. Pt. (lbs)	L	04-09-04	04-09-04	Top	626	313			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3396 ft-lbs	23219 ft-lbs	14.6%	1	02-09-00
End Shear	2312 lbs	11571 lbs	20.0%	1	01-01-00
Total Load Deflection	L/999 (0.018")	n\a	n\a	6	02-06-11
Live Load Deflection	L/999 (0.012")	n\a	n\a	8	02-06-11
Max Defl.	0.018"	n\a	n\a	6	02-06-11
Span / Depth	5.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	2889 lbs	17.7%	19.3%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	3616 lbs	22.1%	24.2%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-10-00, Bottom: 05-01-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4208-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

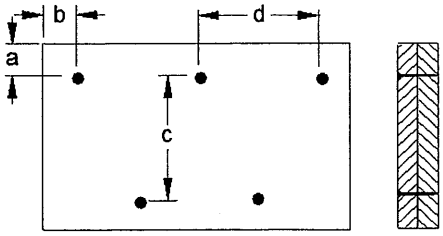
PASSED

2ND FLR FRAMING\Dropped Beams\B23 DR(i16476) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B23 DR(i16476)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4208-22
STRUCTURAL
COMPONENT ONLY

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

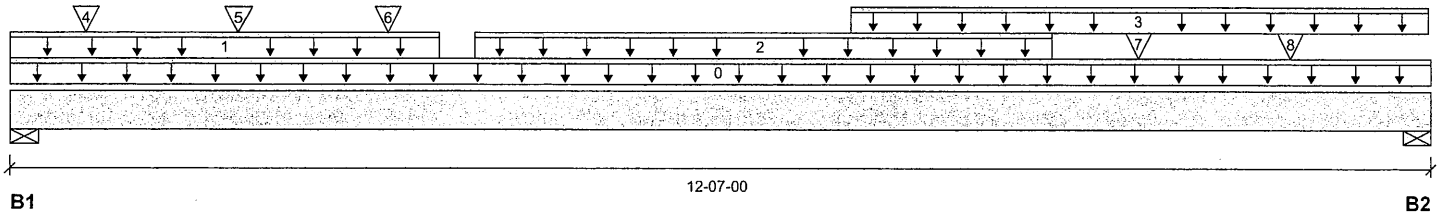
Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Dropped Beams\B24 DR(i15808) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B24 DR(i15808)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 12-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1751 / 0	1191 / 0		
B2, 3-1/2"	1601 / 0	1139 / 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	12-07-00	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	03-09-08	Top		60			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-01-04	09-02-12	Top	284	142			n\a
3	WALL	Unf. Lin. (lb/ft)	L	07-05-08	12-06-12	Top		60			n\a
4	J2(i15789)	Conc. Pt. (lbs)	L	00-08-00	00-08-00	Top	361	180			n\a
5	J2(i15780)	Conc. Pt. (lbs)	L	02-00-00	02-00-00	Top	361	180			n\a
6	J2(i15804)	Conc. Pt. (lbs)	L	03-04-00	03-04-00	Top	361	180			n\a
7	J2(i15832)	Conc. Pt. (lbs)	L	10-00-00	10-00-00	Top	361	180			n\a
8	J2(i15812)	Conc. Pt. (lbs)	L	11-04-00	11-04-00	Top	361	180			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	11880 ft-lbs	23219 ft-lbs	51.2%	1	06-00-00
End Shear	3725 lbs	11571 lbs	32.2%	1	11-06-00
Total Load Deflection	L/324 (0.448")	n\a	74.0%	4	06-01-04
Live Load Deflection	L/536 (0.272")	n\a	67.2%	5	06-01-04
Max Defl.	0.448"	n\a	n\a	4	06-01-04
Span / Depth	15.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	4115 lbs	25.2%	27.5%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	3825 lbs	23.4%	25.6%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 01-02-12, Bottom: 12-07-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO
Mar 2/22

DWG NO. TAM 4209-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

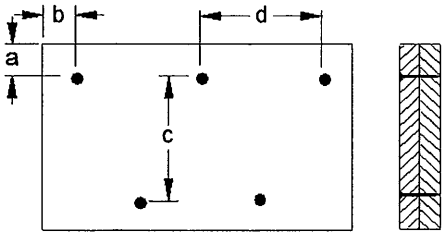
PASSED

2ND FLR FRAMING\Dropped Beams\B24 DR(i15808) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B24 DR(i15808)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 84

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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO
3 22

DWG NO. TAM 4209-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

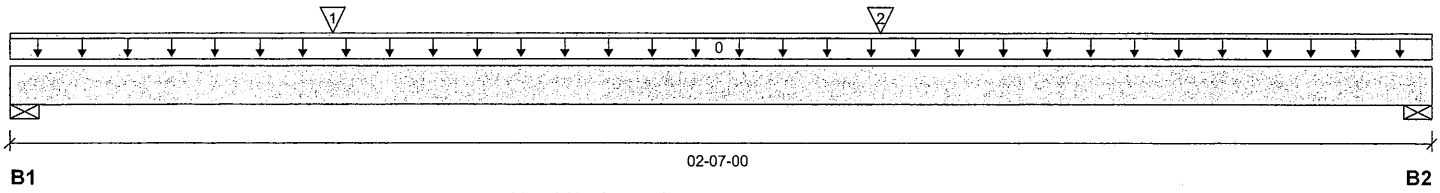
PASSED

2ND FLR FRAMING\Dropped Beams\BBO(i15933) (Dropped Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\BBO(i15933)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 02-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	356 / 0	191 / 0		
B2, 3-1/2"	240 / 0	132 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-07-00	Top		10			00-00-00
1	J1(i16397)	Conc. Pt. (lbs)	L	00-07-00	00-07-00	Top	298	149			n\a
2	J1(i16042)	Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	298	149			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	398 ft-lbs	23219 ft-lbs	1.7%	1	01-07-00
End Shear	445 lbs	11571 lbs	3.8%	1	01-06-00
Total Load Deflection	L/999 (0")	n\a	n\a	4	01-03-08
Live Load Deflection	L/999 (0")	n\a	n\a	5	01-03-08
Max Defl.	0"	n\a	n\a	4	01-03-08
Span / Depth	2.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	773 lbs	4.7%	5.2%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	525 lbs	3.2%	3.5%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-09-08, Bottom: 02-07-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 42[illegible]22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

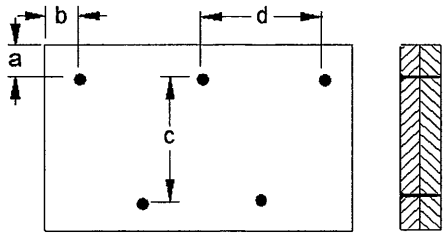
PASSED

2ND FLR FRAMING\Dropped Beams\BBO(i15933) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\BBO(i15933)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = [illegible]

Connectors are: [illegible] Nails

3 1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM-2200-22
STRUCTURAL
COMPONENT ONLY

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Boise Cascade® ENGINEERED WOOD PRODUCTS

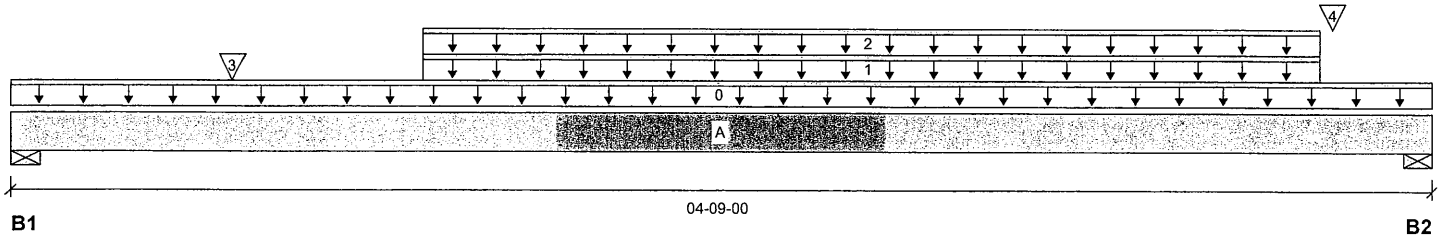
Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B17(i16014) (Flush Beam)

BC CALC® Member Report
Build 7773
Dry | 1 span | No cant.
March 2, 2022 08:15:18

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B17(i16014)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 04-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	792 / 0	418 / 0		
B2, 5-1/2"	832 / 0	440 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-09-00	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	04-04-08	Top	226	113			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-08	04-04-08	Top	130	65			n\a
3	-	Conc. Pt. (lbs)	L	00-08-13	00-08-13	Top	426	213			n\a
4	J4(i16359)	Conc. Pt. (lbs)	L	04-05-00	04-05-00	Top	130	65			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1720 ft-lbs	23219 ft-lbs	7.4%	1	02-05-00
End Shear	1347 lbs	11571 lbs	11.6%	1	01-00-08
Total Load Deflection	L/999 (0.008")	n\a	n\a	4	02-03-06
Live Load Deflection	L/999 (0.005")	n\a	n\a	5	02-03-06
Max Defl.	0.008"	n\a	n\a	4	02-03-06
Span / Depth	5.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3" x 3-1/2"	1710 lbs	26.5%	13.4%	Spruce-Pine-Fir
B2	Wall/Plate	5-1/2" x 3-1/2"	1798 lbs	15.2%	7.7%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-04-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

BWG NO. TAM 4210-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

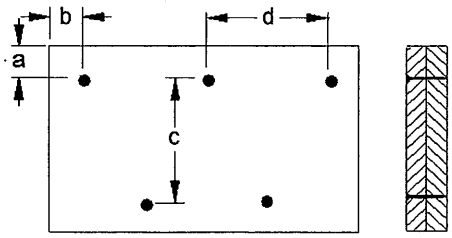
2ND FLR FRAMING\Flush Beams\B17(i16014) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B17(i16014)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



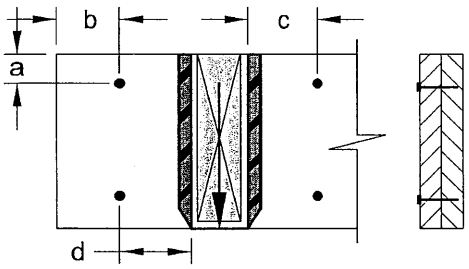
a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = [illegible] 6"

Calculated Side Load = 314.5 lb/ft
Connectors are: 16d [illegible] Nails

3 1/2" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 4+5+6



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are: [illegible] Nails

3 1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4210-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

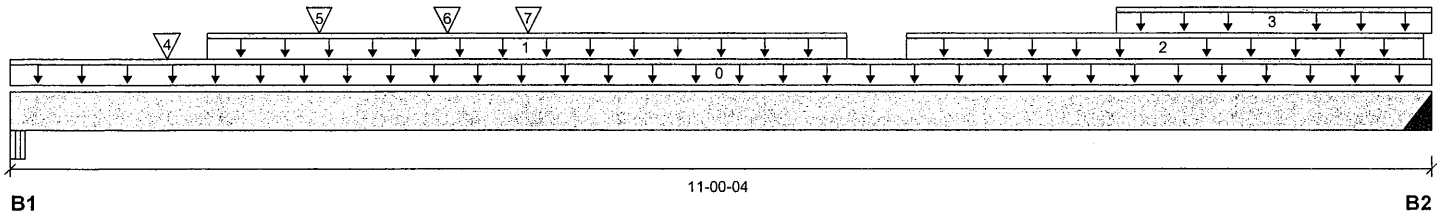
PASSED

2ND FLR FRAMING\Flush Beams\B19(i16257) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B19(i16257)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 11-00-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2337 / 0	1265 / 0		
B2, 4"	989 / 0	697 / 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	11-00-04	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-06-00	06-06-00	Top	227	113			n\a
2	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	06-11-08	10-11-08	Top	11	6			n\a
3	WALL	Unf. Lin. (lb/ft)	L	08-07-00	11-00-04	Top		60			n\a
4	-	Conc. Pt. (lbs)	L	01-02-05	01-02-05	Top	613	307			n\a
5	J1(i16272)	Conc. Pt. (lbs)	L	02-04-08	02-04-08	Top	316	158			n\a
6	J1(i16113)	Conc. Pt. (lbs)	L	03-04-08	03-04-08	Top	267	134			n\a
7	B20(i16441)	Conc. Pt. (lbs)	L	04-00-02	04-00-02	Top	935	514			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	12538 ft-lbs	23219 ft-lbs	54.0%	1	04-00-00
End Shear	5007 lbs	11571 lbs	43.3%	1	01-01-00
Total Load Deflection	L/408 (0.31")	n\a	58.9%	4	05-01-08
Live Load Deflection	L/636 (0.199")	n\a	56.6%	5	05-01-08
Max Defl.	0.31"	n\a	n\a	4	05-01-08
Span / Depth	13.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	3-1/2" x 3-1/2"	5086 lbs	34.0%	34.0%	VL 2.0 3100 SP
B2	Hanger	4" x 3-1/2"	2355 lbs	n\a	13.8%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.

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

0167

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAROS
PROVINCE OF ONTARIO

DWG NO. TAM 4212-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B19(i16257) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18
Build 7773

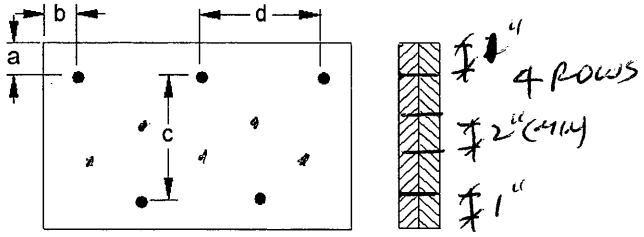
Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B19(i16257)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 03-11-08.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 1"
b minimum = 3"
c = 7-1/2"
d = 8"

Calculated Side Load = 1642.3 lb/ft
Connectors are: 16d 1 Nails

3-1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4211-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

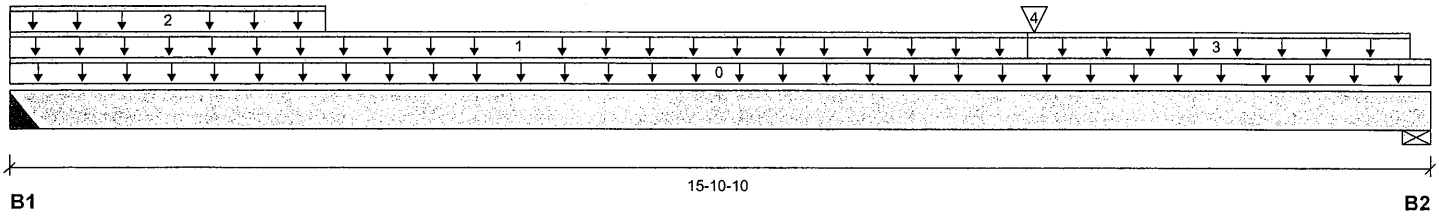
PASSED

2ND FLR FRAMING\Flush Beams\B20(i16441) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B20(i16441)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 15-10-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	944 / 0	519 / 0		
B2, 5-1/2"	469 / 0	299 / 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	15-10-10	Top		5			00-00-00
1	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	11-04-10	Top	14	7			n\a
2	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top	240	120			n\a
3	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	11-04-10	15-07-14	Top	38	19			n\a
4	B22(i16394)	Conc. Pt. (lbs)	L	11-05-08	11-05-08	Top	249	160			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3827 ft-lbs	11610 ft-lbs	33.0%	1	07-08-04
End Shear	1513 lbs	5785 lbs	26.1%	1	01-00-08
Total Load Deflection	L/365 (0.502")	n\a	65.7%	4	07-08-04
Live Load Deflection	L/591 (0.31")	n\a	60.9%	5	07-08-04
Max Defl.	0.502"	n\a	n\a	4	07-08-04
Span / Depth	19.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	2065 lbs	n\a	32.2%	HUS1.81/10
B2	Wall/Plate	5-1/2" x 1-3/4"	1077 lbs	18.2%	9.2%	Spruce-Pine-Fir

Cautions

Header for the hanger HUS1.81/10 is a Double 1-3/4" x 9-1/2" LVL Beam.

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

OK

Notes

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

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

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 11-04-10.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 423-22
STRUCTURAL
COMPONENT ONLY

Disclosure

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

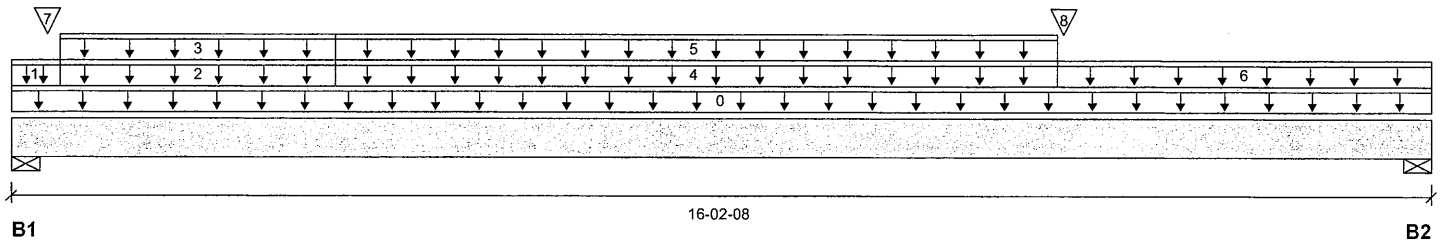
PASSED

2ND FLR FRAMING\Flush Beams\B21(i16329) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B21(i16329)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 16-02-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	1214 / 0	1309 / 0		
B2, 2-3/4"	413 / 0	605 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-02-08	Top		10			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	00-06-10	Top		60			n\a
2	WALL	Unf. Lin. (lb/ft)	L	00-06-10	03-08-00	Top		53			n\a
3	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-06-10	03-08-00	Top	25	13			n\a
4	WALL	Unf. Lin. (lb/ft)	L	03-08-00	11-11-04	Top		51			n\a
5	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-08-00	11-11-04	Top	19	9			n\a
6	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	11-11-04	16-02-08	Top	27	14			n\a
7	B19(i16257)	Conc. Pt. (lbs)	L	00-04-14	00-04-14	Top	977	687			n\a
8	B22(i16394)	Conc. Pt. (lbs)	L	12-00-02	12-00-02	Top	285	266			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3713 ft-lbs	15093 ft-lbs	24.6%	0	08-06-15
End Shear	1048 lbs	7521 lbs	13.9%	0	01-00-04
Total Load Deflection	L/510 (0.373")	n\a	47.0%	4	08-03-13
Live Load Deflection	L/1471 (0.129")	n\a	24.5%	5	08-03-13
Max Defl.	0.373"	n\a	n\a	4	08-03-13
Span / Depth	20.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	2-3/4" x 3-1/2"	3458 lbs	58.4%	29.4%	Spruce-Pine-Fir
B2	Wall/Plate	2-3/4" x 3-1/2"	1376 lbs	23.2%	11.7%	Spruce-Pine-Fir

Cautions

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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4214-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B21(i16329) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

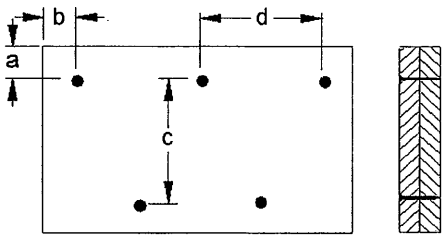
Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B21(i16329)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 08-02-00.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 380.0 lb/ft
Connectors are: 16d 1 Nails

3-1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4213A-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

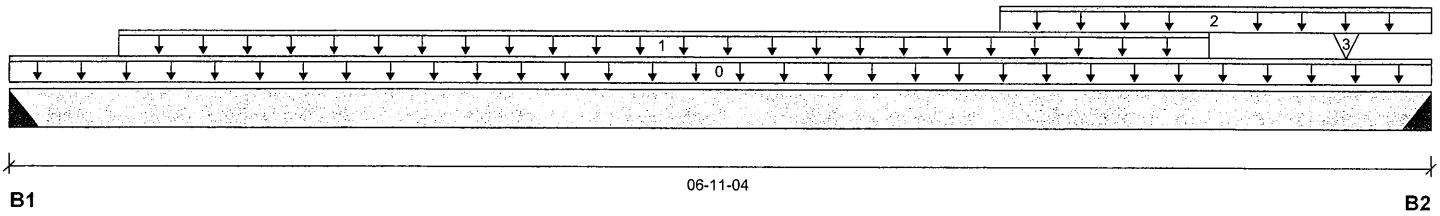
PASSED

2ND FLR FRAMING\Flush Beams\B22(i16394) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B22(i16394)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-11-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	248 / 0	157 / 0		
B2, 3"	286 / 0	269 / 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	06-11-04	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-04	05-10-04	Top	85	42			n\a
2	WALL	Unf. Lin. (lb/ft)	L	04-10-00	06-11-04	Top		60			n\a
3	J5(i16082)	Conc. Pt. (lbs)	L	06-06-04	06-06-04	Top	81	40			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1088 ft-lbs	11610 ft-lbs	9.4%	1	03-10-04
End Shear	562 lbs	5785 lbs	9.7%	1	01-00-08
Total Load Deflection	L/999 (0.024")	n\a	n\a	4	03-06-04
Live Load Deflection	L/999 (0.014")	n\a	n\a	5	03-05-04
Max Defl.	0.024"	n\a	n\a	4	03-06-04
Span / Depth	8.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	568 lbs	n\a	8.9%	HUS1.81/10
B2	Hanger	3" x 1-3/4"	765 lbs	n\a	11.9%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER S. KATSOULAKOS PROVINCE OF ONTARIO

DWG NO. TAM 4215-22
STRUCTURAL COMPONENT ONLY

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 9-1/2" LVL Beam.
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 is a Double 1-3/4" x 9-1/2" LVL Beam.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

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

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

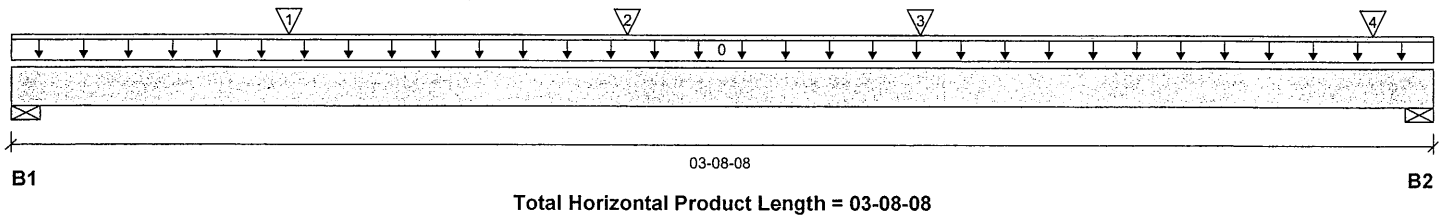
PASSED

2ND FLR FRAMING\Flush Beams\B25(i15917) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B25(i15917)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 03-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	728 / 0	380 / 0		
B2, 5"	1085 / 0	559 / 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	03-08-08	Top		10			00-00-00
1	-	Conc. Pt. (lbs)	L	00-08-10	00-08-10	Top	498	248			n\a
2	J2(i16124)	Conc. Pt. (lbs)	L	01-07-04	01-07-04	Top	251	125			n\a
3	-	Conc. Pt. (lbs)	L	02-04-08	02-04-08	Top	532	265			n\a
4	-	Conc. Pt. (lbs)	L	03-06-09	03-06-09	Top	532	265			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1200 ft-lbs	23219 ft-lbs	5.2%	1	01-07-04
End Shear	1113 lbs	11571 lbs	9.6%	1	02-06-00
Total Load Deflection	L/999 (0.003")	n\a	n\a	4	01-09-06
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	01-09-06
Max Defl.	0.003"	n\a	n\a	4	01-09-06
Span / Depth	3.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	1566 lbs	20.8%	10.5%	Spruce-Pine-Fir
B2	Wall/Plate	5" x 3-1/2"	2327 lbs	21.6%	10.9%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-08-04.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
3222
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4216-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

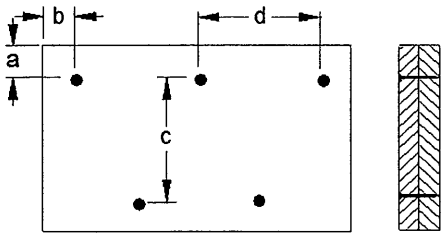
2ND FLR FRAMING\Flush Beams\B25(i15917) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B25(i15917)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 6"

Calculated Side Load = 298.3 lb/ft
Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4216-22
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.

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

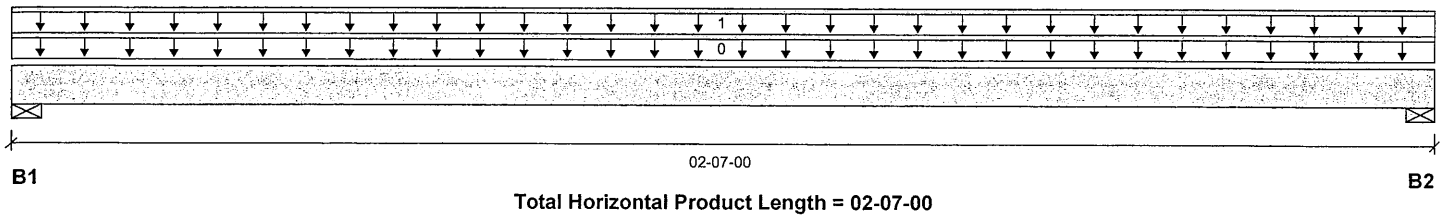
PASSED

UPPER WALLS\Dropped Beams\BBO(i13615) (Dropped Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 2, 2022 08:15:18

Build 7773

Job name:		File name:	LOT 48.mmdl
Address:		Description:	UPPER WALLS\Dropped Beams\BBO(i13615)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 02-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"		74 / 0	260 / 0	
B2, 3-1/2"		74 / 0	260 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-07-00	Top		10			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	02-07-00	Top		48	201		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	211 ft-lbs	23219 ft-lbs	0.9%	1	01-03-08
End Shear	78 lbs	11571 lbs	0.7%	1	01-01-00
Total Load Deflection	L/999 (0")	n\a	n\a	12	01-03-08
Live Load Deflection	L/999 (0")	n\a	n\a	17	01-03-08
Max Defl.	0"	n\a	n\a	12	01-03-08
Span / Depth	2.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	482 lbs	3.0%	3.2%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	482 lbs	3.0%	3.2%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 02-07-00, Bottom: 02-07-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 4218-22
STRUCTURAL
COMPONENT ONLY

REVIEWED

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

UPPER WALLS\Dropped Beams\BBO(i13615) (Dropped Beam)

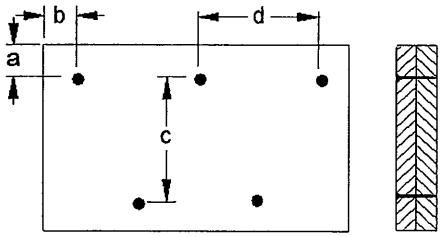
BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

March 2, 2022 08:15:18

Job name:		File name:	LOT 48.mmdl
Address:		Description:	UPPER WALLS\Dropped Beams\BBO(i13615)
City, Province, Postal Code:	BRADFORD	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 5-1/2"
d = 8"

Connectors are: 1 , Nails
3 1/2" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM4218-22
STRUCTURAL
COMPONENT ONLY

Disclosure

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NORDIC
STRUCTURES

Maximum Floor Spans – S2.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 in. nailed-glued oriented strand board (OSB) sheathing

Maximum Floor Spans

Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-3"	13'-10"	-	15'-7"	14'-9"	14'-3"	-
	NI-40x	16'-2"	15'-3"	14'-8"	-	16'-7"	15'-8"	15'-1"	-
	NI-60	16'-4"	15'-4"	14'-10"	-	16'-9"	15'-9"	15'-3"	-
	NI-80	17'-3"	16'-3"	15'-8"	-	17'-8"	16'-7"	16'-0"	-
11-7/8"	NI-20	17'-0"	16'-0"	15'-6"	-	17'-6"	16'-7"	16'-0"	-
	NI-40x	18'-2"	17'-1"	16'-6"	-	18'-9"	17'-6"	16'-11"	-
	NI-60	18'-5"	17'-3"	16'-8"	-	19'-0"	17'-8"	17'-1"	-
	NI-80	19'-9"	18'-3"	17'-7"	-	20'-4"	18'-10"	18'-0"	-
	NI-90	20'-2"	18'-8"	17'-10"	-	20'-9"	19'-2"	18'-4"	-
14"	NI-40x	20'-1"	18'-8"	17'-10"	-	20'-10"	19'-4"	18'-6"	-
	NI-60	20'-6"	18'-11"	18'-2"	-	21'-2"	19'-8"	18'-9"	-
	NI-80	21'-11"	20'-3"	19'-4"	-	22'-7"	20'-11"	20'-0"	-
	NI-90	22'-5"	20'-8"	19'-9"	-	23'-0"	21'-4"	20'-4"	-
16"	NI-60	22'-4"	20'-8"	19'-9"	-	23'-1"	21'-5"	20'-6"	-
	NI-80	23'-11"	22'-1"	21'-1"	-	24'-8"	22'-10"	21'-9"	-
	NI-90	24'-5"	22'-6"	21'-6"	-	25'-1"	23'-2"	22'-2"	-

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap, On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-8"	15'-3"	14'-5"	-	16'-8"	15'-3"	14'-5"	-
	NI-40x	17'-11"	17'-0"	16'-1"	-	18'-5"	17'-1"	16'-1"	-
	NI-60	18'-2"	17'-1"	16'-4"	-	18'-8"	17'-4"	16'-4"	-
	NI-80	19'-5"	18'-0"	17'-5"	-	19'-10"	18'-5"	17'-8"	-
11-7/8"	NI-20	19'-7"	18'-2"	17'-3"	-	19'-11"	18'-3"	17'-3"	-
	NI-40x	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-2"	-
	NI-60	21'-4"	19'-9"	18'-11"	-	21'-11"	20'-5"	19'-6"	-
	NI-80	22'-9"	21'-1"	20'-2"	-	23'-3"	21'-8"	20'-8"	-
	NI-90	23'-3"	21'-6"	20'-6"	-	23'-9"	22'-0"	21'-0"	-
14"	NI-40x	23'-8"	21'-11"	20'-11"	-	24'-4"	22'-8"	21'-8"	-
	NI-60	24'-0"	22'-3"	21'-3"	-	24'-8"	22'-11"	21'-11"	-
	NI-80	25'-7"	23'-9"	22'-7"	-	26'-2"	24'-4"	23'-3"	-
	NI-90	26'-1"	24'-2"	23'-0"	-	26'-8"	24'-9"	23'-7"	-
16"	NI-60	26'-5"	24'-6"	23'-5"	-	27'-2"	25'-3"	24'-2"	-
	NI-80	28'-2"	26'-1"	24'-10"	-	28'-10"	26'-9"	25'-6"	-
	NI-90	28'-8"	26'-6"	25'-3"	-	29'-3"	27'-2"	25'-11"	-

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – S4.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	3/4 in. nailed-glued oriented strand board (OSB) sheathing

Maximum Floor Spans

Joist depth	Joist series	Bare				1/2 in. gypsum ceiling			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-11"	15'-0"	14'-6"	13'-5"	16'-5"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-10"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-7"	16'-7"	16'-0"	15'-4"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-11"	16'-11"	16'-3"	15'-8"	18'-7"	17'-5"	16'-10"	16'-2"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-7"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-6"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-80	21'-1"	19'-6"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90	21'-6"	19'-10"	18'-11"	17'-11"	22'-0"	20'-4"	19'-5"	18'-4"
14"	NI-40x	21'-5"	19'-11"	18'-11"	18'-0"	22'-1"	20'-7"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-3"	22'-6"	20'-10"	19'-11"	18'-10"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90	23'-10"	22'-1"	21'-0"	19'-10"	24'-5"	22'-7"	21'-6"	20'-4"
16"	NI-60	23'-9"	22'-0"	21'-0"	19'-10"	24'-6"	22'-9"	21'-8"	20'-7"
	NI-80	25'-6"	23'-7"	22'-5"	21'-2"	26'-2"	24'-3"	23'-1"	21'-10"
	NI-90	26'-0"	24'-0"	22'-10"	21'-6"	26'-7"	24'-8"	23'-5"	22'-2"

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap				Mid-span blocking and 1/2 in. 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-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'-8"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-80	23'-8"	22'-0"	20'-11"	19'-10"	24'-1"	22'-6"	21'-6"	20'-0"
	NI-90	24'-1"	22'-5"	21'-4"	20'-2"	24'-7"	22'-11"	21'-10"	20'-7"
14"	NI-40x	24'-5"	22'-9"	21'-9"	19'-5"	25'-1"	23'-2"	21'-9"	19'-5"
	NI-60	24'-10"	23'-2"	22'-1"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	NI-80	26'-6"	24'-8"	23'-6"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
	NI-90	27'-0"	25'-1"	23'-11"	22'-7"	27'-6"	25'-8"	24'-6"	23'-2"
16"	NI-60	27'-3"	25'-5"	24'-3"	22'-11"	28'-0"	26'-2"	24'-9"	23'-1"
	NI-80	29'-1"	27'-1"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90	29'-7"	27'-6"	26'-2"	24'-9"	30'-2"	28'-2"	26'-10"	25'-5"

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – S6.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 in. nailed-glued Canadian softwood plywood

Maximum Floor Spans

Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	14'-11"	14'-1"	13'-7"	-	15'-4"	14'-6"	14'-1"	-
	NI-40x	15'-11"	15'-0"	14'-6"	-	16'-4"	15'-5"	14'-11"	-
	NI-60	16'-1"	15'-2"	14'-8"	-	16'-6"	15'-7"	15'-1"	-
	NI-80	17'-1"	16'-1"	15'-6"	-	17'-5"	16'-5"	15'-10"	-
11-7/8"	NI-20	16'-9"	15'-10"	15'-4"	-	17'-4"	16'-4"	15'-10"	-
	NI-40x	17'-10"	16'-10"	16'-3"	-	18'-6"	17'-4"	16'-9"	-
	NI-60	18'-1"	17'-0"	16'-5"	-	18'-9"	17'-6"	16'-11"	-
	NI-80	19'-6"	18'-0"	17'-4"	-	20'-1"	18'-7"	17'-9"	-
	NI-90	19'-11"	18'-4"	17'-8"	-	20'-5"	18'-11"	18'-1"	-
14"	NI-40x	19'-10"	18'-4"	17'-8"	-	20'-6"	19'-1"	18'-3"	-
	NI-60	20'-2"	18'-8"	17'-11"	-	20'-10"	19'-4"	18'-6"	-
	NI-80	21'-8"	20'-0"	19'-1"	-	22'-4"	20'-8"	19'-9"	-
	NI-90	22'-1"	20'-5"	19'-6"	-	22'-9"	21'-0"	20'-1"	-
16"	NI-60	22'-0"	20'-4"	19'-6"	-	22'-9"	21'-1"	20'-2"	-
	NI-80	23'-7"	21'-10"	20'-10"	-	24'-4"	22'-6"	21'-6"	-
	NI-90	24'-1"	22'-2"	21'-2"	-	24'-9"	22'-11"	21'-10"	-

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap, On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-6"	15'-1"	14'-3"	-	16'-6"	15'-1"	14'-3"	-
	NI-40x	17'-9"	16'-10"	15'-11"	-	18'-2"	16'-11"	15'-11"	-
	NI-60	17'-11"	16'-11"	16'-2"	-	18'-5"	17'-2"	16'-2"	-
	NI-80	19'-3"	17'-10"	17'-3"	-	19'-8"	18'-3"	17'-7"	-
11-7/8"	NI-20	19'-4"	18'-0"	17'-1"	-	19'-9"	18'-1"	17'-1"	-
	NI-40x	20'-10"	19'-4"	18'-6"	-	21'-5"	19'-11"	19'-0"	-
	NI-60	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-3"	-
	NI-80	22'-6"	20'-10"	19'-11"	-	23'-1"	21'-5"	20'-5"	-
	NI-90	23'-0"	21'-3"	20'-4"	-	23'-6"	21'-10"	20'-10"	-
14"	NI-40x	23'-5"	21'-8"	20'-9"	-	24'-0"	22'-5"	21'-5"	-
	NI-60	23'-9"	22'-0"	21'-0"	-	24'-5"	22'-8"	21'-8"	-
	NI-80	25'-4"	23'-6"	22'-5"	-	25'-11"	24'-1"	23'-0"	-
	NI-90	25'-10"	23'-11"	22'-9"	-	26'-5"	24'-6"	23'-4"	-
16"	NI-60	26'-2"	24'-3"	23'-2"	-	26'-11"	25'-0"	23'-11"	-
	NI-80	27'-11"	25'-10"	24'-7"	-	28'-7"	26'-6"	25'-3"	-
	NI-90	28'-5"	26'-3"	25'-0"	-	29'-0"	26'-11"	25'-8"	-

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – S7.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	3/4 in. nailed-glued Canadian softwood plywood

Maximum Floor Spans

Joist depth	Joist series	Bare				1/2 in. 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	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	15'-1"
	NI-60	17'-1"	16'-1"	15'-6"	14'-10"	17'-6"	16'-6"	15'-11"	15'-3"
	NI-80	18'-1"	17'-0"	16'-4"	15'-8"	18'-7"	17'-4"	16'-8"	16'-0"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-7"	18'-5"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-3"	17'-10"	17'-2"	16'-6"	19'-10"	18'-5"	17'-8"	16'-11"
	NI-60	19'-6"	18'-1"	17'-4"	16'-8"	20'-1"	18'-8"	17'-10"	17'-1"
	NI-80	20'-11"	19'-4"	18'-5"	17'-7"	21'-5"	19'-10"	18'-11"	17'-11"
	NI-90	21'-4"	19'-9"	18'-9"	17'-10"	21'-10"	20'-3"	19'-3"	18'-3"
14"	NI-40x	21'-4"	19'-9"	18'-10"	17'-11"	22'-0"	20'-5"	19'-6"	18'-6"
	NI-60	21'-8"	20'-1"	19'-2"	18'-2"	22'-4"	20'-9"	19'-9"	18'-9"
	NI-80	23'-3"	21'-6"	20'-5"	19'-4"	23'-10"	22'-1"	21'-0"	19'-11"
	NI-90	23'-9"	21'-11"	20'-10"	19'-8"	24'-3"	22'-6"	21'-5"	20'-3"
16"	NI-60	23'-7"	21'-10"	20'-10"	19'-9"	24'-4"	22'-7"	21'-7"	20'-5"
	NI-80	25'-4"	23'-5"	22'-3"	21'-1"	26'-0"	24'-1"	22'-11"	21'-8"
	NI-90	25'-10"	23'-10"	22'-8"	21'-5"	26'-5"	24'-6"	23'-4"	22'-0"

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap				Mid-span blocking and 1/2 in. 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'-7"	17'-2"	16'-3"	15'-2"	18'-10"	17'-2"	16'-3"	15'-2"
	NI-60	18'-10"	17'-6"	16'-6"	15'-5"	19'-1"	17'-6"	16'-6"	15'-5"
	NI-80	20'-2"	18'-9"	17'-11"	16'-10"	20'-7"	19'-2"	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'-9"	20'-3"	19'-4"	17'-8"	22'-4"	20'-5"	19'-4"	17'-8"
	NI-60	22'-0"	20'-6"	19'-7"	18'-4"	22'-7"	20'-10"	19'-8"	18'-4"
	NI-80	23'-6"	21'-10"	20'-10"	19'-9"	24'-0"	22'-5"	21'-4"	20'-0"
	NI-90	24'-0"	22'-4"	21'-3"	20'-1"	24'-6"	22'-10"	21'-9"	20'-7"
14"	NI-40x	24'-4"	22'-8"	21'-8"	19'-5"	25'-0"	23'-2"	21'-9"	19'-5"
	NI-60	24'-9"	23'-0"	22'-0"	20'-9"	25'-5"	23'-8"	22'-4"	20'-10"
	NI-80	26'-5"	24'-6"	23'-4"	22'-1"	27'-0"	25'-2"	24'-0"	22'-8"
	NI-90	26'-11"	25'-0"	23'-10"	22'-6"	27'-5"	25'-7"	24'-5"	23'-1"
16"	NI-60	27'-2"	25'-4"	24'-2"	22'-10"	27'-11"	26'-1"	24'-9"	23'-1"
	NI-80	29'-0"	26'-11"	25'-8"	24'-3"	29'-7"	27'-7"	26'-4"	24'-11"
	NI-90	29'-6"	27'-5"	26'-1"	24'-8"	30'-1"	28'-1"	26'-9"	25'-4"

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – M2.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 in. nailed-glued oriented strand board (OSB) sheathing

Maximum Floor Spans

Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-3"	13'-10"	-	15'-7"	14'-9"	14'-3"	-
	NI-40x	16'-2"	15'-3"	14'-8"	-	16'-7"	15'-8"	15'-1"	-
	NI-60	16'-4"	15'-4"	14'-10"	-	16'-9"	15'-9"	15'-3"	-
	NI-80	17'-3"	16'-3"	15'-8"	-	17'-8"	16'-7"	16'-0"	-
11-7/8"	NI-20	17'-0"	16'-0"	15'-6"	-	17'-6"	16'-7"	16'-0"	-
	NI-40x	18'-2"	17'-1"	16'-6"	-	18'-9"	17'-6"	16'-11"	-
	NI-60	18'-5"	17'-3"	16'-8"	-	19'-0"	17'-8"	17'-1"	-
	NI-80	19'-9"	18'-3"	17'-7"	-	20'-4"	18'-10"	18'-0"	-
	NI-90	20'-2"	18'-8"	17'-10"	-	20'-9"	19'-2"	18'-4"	-
14"	NI-40x	20'-1"	18'-8"	17'-10"	-	20'-10"	19'-4"	18'-6"	-
	NI-60	20'-6"	18'-11"	18'-2"	-	21'-2"	19'-8"	18'-9"	-
	NI-80	21'-11"	20'-3"	19'-4"	-	22'-7"	20'-11"	20'-0"	-
	NI-90	22'-5"	20'-8"	19'-9"	-	23'-0"	21'-4"	20'-4"	-
16"	NI-60	22'-4"	20'-8"	19'-9"	-	23'-1"	21'-5"	20'-6"	-
	NI-80	23'-11"	22'-1"	21'-1"	-	24'-8"	22'-10"	21'-9"	-
	NI-90	24'-5"	22'-6"	21'-6"	-	25'-1"	23'-2"	22'-2"	-

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap, On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-8"	15'-3"	14'-5"	-	16'-8"	15'-3"	14'-5"	-
	NI-40x	17'-11"	17'-0"	16'-1"	-	18'-5"	17'-1"	16'-1"	-
	NI-60	18'-2"	17'-1"	16'-4"	-	18'-8"	17'-4"	16'-4"	-
	NI-80	19'-5"	18'-0"	17'-5"	-	19'-10"	18'-5"	17'-8"	-
11-7/8"	NI-20	19'-7"	18'-2"	17'-3"	-	19'-11"	18'-3"	17'-3"	-
	NI-40x	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-0"	-
	NI-60	21'-4"	19'-9"	18'-11"	-	21'-11"	20'-5"	19'-6"	-
	NI-80	22'-9"	21'-1"	20'-2"	-	23'-3"	21'-8"	20'-8"	-
	NI-90	23'-3"	21'-6"	20'-6"	-	23'-9"	22'-0"	21'-0"	-
14"	NI-40x	23'-8"	21'-11"	20'-11"	-	24'-4"	22'-8"	20'-11"	-
	NI-60	24'-0"	22'-3"	21'-3"	-	24'-8"	22'-11"	21'-11"	-
	NI-80	25'-7"	23'-9"	22'-7"	-	26'-2"	24'-4"	23'-3"	-
	NI-90	26'-1"	24'-2"	23'-0"	-	26'-8"	24'-9"	23'-7"	-
16"	NI-60	26'-5"	24'-6"	23'-5"	-	27'-2"	25'-3"	24'-2"	-
	NI-80	28'-2"	26'-1"	24'-10"	-	28'-10"	26'-9"	25'-6"	-
	NI-90	28'-8"	26'-6"	25'-3"	-	29'-3"	27'-2"	25'-11"	-

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – M4.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	3/4 in. nailed-glued oriented strand board (OSB) sheathing

Maximum Floor Spans

Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-11"	15'-0"	14'-6"	13'-5"	16'-5"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-10"	17'-5"	16'-5"	15'-10"	14'-11"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-7"	16'-7"	16'-0"	15'-4"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-11"	16'-11"	16'-3"	15'-8"	18'-7"	17'-5"	16'-10"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-7"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-6"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-80	21'-1"	19'-6"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90	21'-6"	19'-10"	18'-11"	17'-11"	22'-0"	20'-4"	19'-5"	18'-4"
14"	NI-40x	21'-5"	19'-11"	18'-11"	18'-0"	22'-1"	20'-7"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-3"	22'-6"	20'-10"	19'-11"	18'-10"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90	23'-10"	22'-1"	21'-0"	19'-10"	24'-5"	22'-7"	21'-6"	20'-4"
16"	NI-60	23'-9"	22'-0"	21'-0"	19'-10"	24'-6"	22'-9"	21'-8"	20'-7"
	NI-80	25'-6"	23'-7"	22'-5"	21'-2"	26'-2"	24'-3"	23'-1"	21'-10"
	NI-90	26'-0"	24'-0"	22'-10"	21'-6"	26'-7"	24'-8"	23'-5"	22'-2"

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap, On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling, 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"	14'-11"	18'-10"	17'-2"	16'-3"	14'-11"
	NI-60	18'-11"	17'-6"	16'-6"	15'-5"	19'-2"	17'-6"	16'-6"	15'-5"
	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'-1"	20'-1"	18'-5"	17'-5"	16'-1"
	NI-40x	21'-10"	20'-4"	19'-0"	17'-0"	22'-5"	20'-6"	19'-0"	17'-0"
	NI-60	22'-1"	20'-7"	19'-8"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-80	23'-8"	22'-0"	20'-11"	19'-10"	24'-1"	22'-6"	21'-6"	20'-0"
	NI-90	24'-1"	22'-5"	21'-4"	20'-2"	24'-7"	22'-11"	21'-10"	20'-7"
14"	NI-40x	24'-5"	22'-9"	20'-11"	18'-8"	25'-1"	22'-11"	20'-11"	18'-8"
	NI-60	24'-10"	23'-2"	22'-1"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	NI-80	26'-6"	24'-8"	23'-6"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
	NI-90	27'-0"	25'-1"	23'-11"	22'-7"	27'-6"	25'-8"	24'-6"	23'-2"
16"	NI-60	27'-3"	25'-5"	24'-3"	22'-11"	28'-0"	26'-2"	24'-9"	23'-1"
	NI-80	29'-1"	27'-1"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90	29'-7"	27'-6"	26'-2"	24'-9"	30'-2"	28'-2"	26'-10"	25'-5"

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – M6.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 in. nailed-glued Canadian softwood plywood

Maximum Floor Spans

Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	14'-11"	14'-1"	13'-7"	-	15'-4"	14'-6"	14'-1"	-
	NI-40x	15'-11"	15'-0"	14'-6"	-	16'-4"	15'-5"	14'-11"	-
	NI-60	16'-1"	15'-2"	14'-8"	-	16'-6"	15'-7"	15'-1"	-
	NI-80	17'-1"	16'-1"	15'-6"	-	17'-5"	16'-5"	15'-10"	-
11-7/8"	NI-20	16'-9"	15'-10"	15'-4"	-	17'-4"	16'-4"	15'-10"	-
	NI-40x	17'-10"	16'-10"	16'-3"	-	18'-6"	17'-4"	16'-9"	-
	NI-60	18'-1"	17'-0"	16'-5"	-	18'-9"	17'-6"	16'-11"	-
	NI-80	19'-6"	18'-0"	17'-4"	-	20'-1"	18'-7"	17'-9"	-
	NI-90	19'-11"	18'-4"	17'-8"	-	20'-5"	18'-11"	18'-1"	-
14"	NI-40x	19'-10"	18'-4"	17'-8"	-	20'-6"	19'-1"	18'-3"	-
	NI-60	20'-2"	18'-8"	17'-11"	-	20'-10"	19'-4"	18'-6"	-
	NI-80	21'-8"	20'-0"	19'-1"	-	22'-4"	20'-8"	19'-9"	-
	NI-90	22'-1"	20'-5"	19'-6"	-	22'-9"	21'-0"	20'-1"	-
16"	NI-60	22'-0"	20'-4"	19'-6"	-	22'-9"	21'-1"	20'-2"	-
	NI-80	23'-7"	21'-10"	20'-10"	-	24'-4"	22'-6"	21'-6"	-
	NI-90	24'-1"	22'-2"	21'-2"	-	24'-9"	22'-11"	21'-10"	-

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap, On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-6"	15'-1"	14'-3"	-	16'-6"	15'-1"	14'-3"	-
	NI-40x	17'-9"	16'-10"	15'-11"	-	18'-2"	16'-11"	15'-11"	-
	NI-60	17'-11"	16'-11"	16'-2"	-	18'-5"	17'-2"	16'-2"	-
	NI-80	19'-3"	17'-10"	17'-3"	-	19'-8"	18'-3"	17'-7"	-
11-7/8"	NI-20	19'-4"	18'-0"	17'-1"	-	19'-9"	18'-1"	17'-1"	-
	NI-40x	20'-10"	19'-4"	18'-6"	-	21'-5"	19'-11"	19'-0"	-
	NI-60	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-3"	-
	NI-80	22'-6"	20'-10"	19'-11"	-	23'-1"	21'-5"	20'-5"	-
	NI-90	23'-0"	21'-3"	20'-4"	-	23'-6"	21'-10"	20'-10"	-
14"	NI-40x	23'-5"	21'-8"	20'-9"	-	24'-0"	22'-5"	20'-11"	-
	NI-60	23'-9"	22'-0"	21'-0"	-	24'-5"	22'-8"	21'-8"	-
	NI-80	25'-4"	23'-6"	22'-5"	-	25'-11"	24'-1"	23'-0"	-
	NI-90	25'-10"	23'-11"	22'-9"	-	26'-5"	24'-6"	23'-4"	-
16"	NI-60	26'-2"	24'-3"	23'-2"	-	26'-11"	25'-0"	23'-11"	-
	NI-80	27'-11"	25'-10"	24'-7"	-	28'-7"	26'-6"	25'-3"	-
	NI-90	28'-5"	26'-3"	25'-0"	-	29'-0"	26'-11"	25'-8"	-

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

NORDIC
STRUCTURES

Maximum Floor Spans – M7.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	3/4 in. nailed-glued Canadian softwood plywood

Maximum Floor Spans

Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, 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	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	14'-11"
	NI-60	17'-1"	16'-1"	15'-6"	14'-10"	17'-6"	16'-6"	15'-11"	15'-3"
	NI-80	18'-1"	17'-0"	16'-4"	15'-8"	18'-7"	17'-4"	16'-8"	16'-0"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-7"	18'-5"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-3"	17'-10"	17'-2"	16'-6"	19'-10"	18'-5"	17'-8"	16'-11"
	NI-60	19'-6"	18'-1"	17'-4"	16'-8"	20'-1"	18'-8"	17'-10"	17'-1"
	NI-80	20'-11"	19'-4"	18'-5"	17'-7"	21'-5"	19'-10"	18'-11"	17'-11"
	NI-90	21'-4"	19'-9"	18'-9"	17'-10"	21'-10"	20'-3"	19'-3"	18'-3"
14"	NI-40x	21'-4"	19'-9"	18'-10"	17'-11"	22'-0"	20'-5"	19'-6"	18'-6"
	NI-60	21'-8"	20'-1"	19'-2"	18'-2"	22'-4"	20'-9"	19'-9"	18'-9"
	NI-80	23'-3"	21'-6"	20'-5"	19'-4"	23'-10"	22'-1"	21'-0"	19'-11"
	NI-90	23'-9"	21'-11"	20'-10"	19'-8"	24'-3"	22'-6"	21'-5"	20'-3"
16"	NI-60	23'-7"	21'-10"	20'-10"	19'-9"	24'-4"	22'-7"	21'-7"	20'-5"
	NI-80	25'-4"	23'-5"	22'-3"	21'-1"	26'-0"	24'-1"	22'-11"	21'-8"
	NI-90	25'-10"	23'-10"	22'-8"	21'-5"	26'-5"	24'-6"	23'-4"	22'-0"

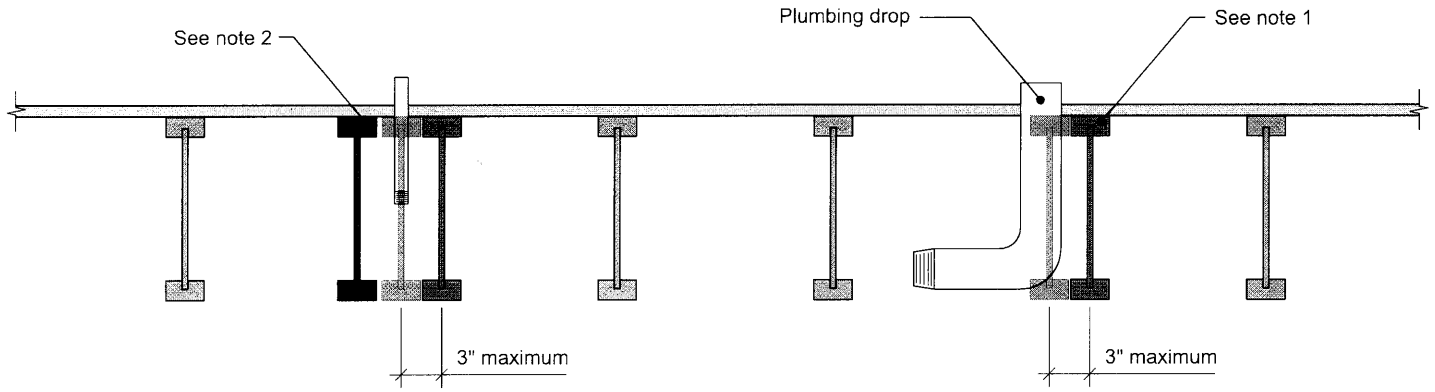
Joist depth	Joist series	Mid-span blocking with 1x4 inch strap, On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-10"	15'-5"	14'-6"	13'-5"	16'-10"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-7"	17'-2"	16'-3"	14'-11"	18'-10"	17'-2"	16'-3"	14'-11"
	NI-60	18'-10"	17'-6"	16'-6"	15'-5"	19'-1"	17'-6"	16'-6"	15'-5"
	NI-80	20'-2"	18'-9"	17'-11"	16'-10"	20'-7"	19'-2"	18'-2"	16'-10"
11-7/8"	NI-20	20'-1"	18'-5"	17'-5"	16'-1"	20'-1"	18'-5"	17'-5"	16'-1"
	NI-40x	21'-9"	20'-3"	19'-0"	17'-0"	22'-4"	20'-5"	19'-0"	17'-0"
	NI-60	22'-0"	20'-6"	19'-7"	18'-4"	22'-7"	20'-10"	19'-8"	18'-4"
	NI-80	23'-6"	21'-10"	20'-10"	19'-9"	24'-0"	22'-5"	21'-4"	20'-0"
	NI-90	24'-0"	22'-4"	21'-3"	20'-1"	24'-6"	22'-10"	21'-9"	20'-7"
14"	NI-40x	24'-4"	22'-8"	20'-11"	18'-8"	25'-0"	22'-11"	20'-11"	18'-8"
	NI-60	24'-9"	23'-0"	22'-0"	20'-9"	25'-5"	23'-8"	22'-4"	20'-10"
	NI-80	26'-5"	24'-6"	23'-4"	22'-1"	27'-0"	25'-2"	24'-0"	22'-8"
	NI-90	26'-11"	25'-0"	23'-10"	22'-6"	27'-5"	25'-7"	24'-5"	23'-1"
16"	NI-60	27'-2"	25'-4"	24'-2"	22'-10"	27'-11"	26'-1"	24'-9"	23'-1"
	NI-80	29'-0"	26'-11"	25'-8"	24'-3"	29'-7"	27'-7"	26'-4"	24'-11"
	NI-90	29'-6"	27'-5"	26'-1"	24'-8"	30'-1"	28'-1"	26'-9"	25'-4"

Notes:

1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

REVIEWED

7c



Notes:

1. To prevent interference with plumbing, a joist may be shifted up to 3 inches if the edge of the floor panel is supported and the span rating is not exceeded.
2. In all other cases, an additional joist is required.

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.

REVIEWED

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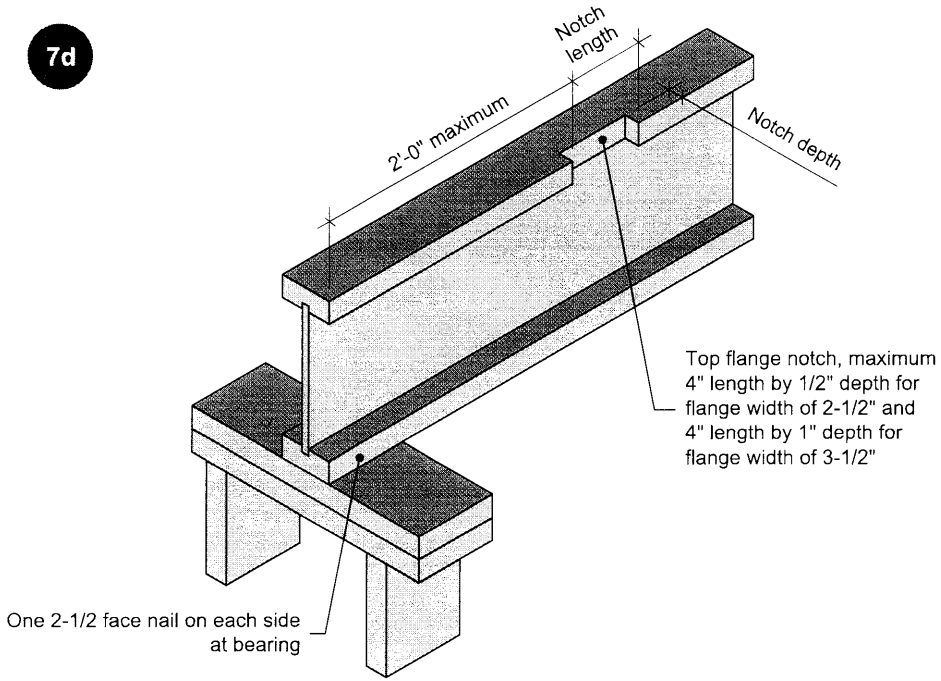

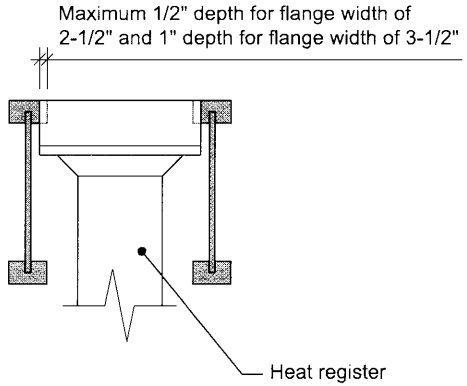

Notes:

1. Blocking required at bearing for lateral support, not shown for clarity.
2. The maximum dimensions for a notch on the side of the top flange are 4-inch length by 1/2-inch depth for flange width of 2-1/2 inches, and 4-inch length 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.

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.